

Master of Public Health
Integrative Learning Experience Report

***ADDRESSING MATERNAL MORTALITY IN KANSAS: A
COMPREHENSIVE ANALYSIS OF HEALTH DISPARITIES AND
STATE INITIATIVES***

by

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Summary

The way we intervene, educate, and provide maternal care has a profound impact on public health. Access to high-quality maternal healthcare and education is essential for maternal well-being. However, significant health disparities, such as disproportionately high rates of maternal mortality, continue to exist in many communities, particularly among racial and ethnic minorities. These disparities are often driven by social determinants of health, including socioeconomic status, geographic location, systemic barriers to care, and more. Despite advancements in medical knowledge and technology, many women still struggle to access comprehensive prenatal, perinatal, and postpartum care.

Addressing these gaps requires a multifaceted approach that includes policy changes, community engagement, healthcare provider education, and targeted interventions to reach underserved populations. Several initiatives, such as the Fourth Trimester Initiative, the MAVIS Project, and collaborations between the Kansas Department of Health and Environment and various health committees, have been established to address the maternal mortality rate and its contributing factors in Kansas. These efforts focus on improving maternal health outcomes through enhanced screening, provider education and training, and addressing social determinants of health.

This project was conducted at the Kansas Department of Health and Environment - Bureau of Family Health and involved surveying Maternal Health Innovation Task Force members. Additionally, two infographics were created for information sharing in future Maternal Health Innovation Task Force meetings and the future published (2016-2022) Kansas Maternal Mortality Review Committee report. These projects focused on education, advocacy, and decision-making efforts to improve maternal health outcomes in Kansas.

Subject Keywords: Maternal mortality, health disparities, maternal health initiatives, pregnancy-associated deaths, pregnancy-related deaths, maternal mortality Kansas

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Chapter 1 - Literature Review

The United States faces a persistent maternal health crisis, with maternal mortality rates the highest as compared to ten other developed countries around the globe (Tikkenen et al., 2020). The most recent data published by the Centers for Disease Control and Prevention (CDC) reveals a promising trend in maternal mortality rates. For the first time since 2018, the national rate decreased to 22.3 deaths per 100,000 live births in 2022. This decline was observed across various racial and ethnic groups, with significant reductions among Black, White, and Hispanic women and a notable, though not statistically significant, decrease for Asian women. Despite this overall improvement, stark health disparities persist, with Black women experiencing a disproportionately higher maternal mortality rate of 49.5 deaths per 100,000 live births, compared to 19 for White women, 16.9 for Hispanic women, and 13.2 for Asian women (Hoyert et al., 2024). The positive trend extended across age groups, with all categories showing significant decreases from 2021 to 2022. However, age-related disparities remain, as women aged 40 and older face a maternal mortality rate six times higher than that of women aged 25 and younger (Hoyert et al., 2024).

Three standard measures of maternal deaths in the U.S. are used to capture some aspects of maternal deaths; however, they are not equivalent. Pregnancy-associated death encompasses any death occurring during pregnancy or within one year postpartum, regardless of cause (Declercq et al., 2020). Pregnancy-related death, a CDC measure specific to the U.S., refers to deaths during pregnancy or within one year postpartum resulting from pregnancy complications, a chain of events initiated by pregnancy, or the exacerbation of an unrelated condition due to pregnancy's physiological effects. This is typically reported as a ratio per 100,000 births. Lastly, maternal mortality, as defined by the World Health Organization (WHO) for international comparisons, includes deaths during pregnancy or within 42 days postpartum related to or aggravated by pregnancy or its management, excluding accidental or incidental causes (Declercq et al., 2020).

Trost and colleagues (2022) found that more than 80% of pregnancy-related deaths are preventable. A death is considered preventable if reasonable modifications to various factors – including those related to the patient, family, healthcare providers, medical facilities, healthcare systems, or community – could have potentially averted the outcome (Trost et al., 2022). The timing of preventable maternal deaths is framed within five measurements: during pregnancy, day of delivery, 1-6 days postpartum, 7-42 days postpartum, and 43-365 days postpartum (Trost et al., 2022). Understanding the timing of preventable maternal deaths is vital as it helps identify

trends in quality of care and health care utilization, root causes of each death, develop prevention strategies, improve care for pregnant and postpartum people, and understand the leading causes of pregnancy-related deaths as varied by the timing of death (Trost et al., 2022; Office of the Surgeon General., 2020; Petersen E., 2019).

State of Kansas Review:

As of 2022, Kansas ranks 18th nationally with a maternal mortality rate of 22.8 deaths per 100,000 live births, encompassing deaths during pregnancy or within 42 days postpartum from pregnancy-related or aggravated causes, excluding accidental or incidental causes (*Maternal deaths and mortality rates by state, 2018-2022*, 2022). This rate remains slightly higher than the national average of 22.3 deaths per 100,00 live births (Hoyert et al., 2024). According to the latest report published by the Kansas Maternal Mortality Review Committee (KMMRC), the array of pregnancy-associated deaths in the state was revealed between 2016 and 2020. Among 105 such deaths, 29 (27.6%) were classified as pregnancy-related, with a significant portion occurring during pregnancy or within 42 days postpartum. The leading causes of pregnancy-related deaths in Kansas, as of 2020, are cardiovascular conditions, embolism, hypertensive disorders, and infection. Notably, of the 29 pregnancy-related deaths, 23 were deemed preventable (Kansas Department of Health and Environment, 2023).

Similar to national statistics, data from Kansas between 2016 and 2020 shows that racial and ethnic minorities were disproportionately affected. These disparities are exacerbated mainly by various interconnected challenges, including poverty, limited education, income inequality, geographic disparities in access to quality maternal healthcare services, and heightened stress levels during pregnancy, further impacting mental health outcomes (Coussons-Read et al., 2013; Dagher et al., 2022; Njoku et al., 2023). The number of pregnancy-associated deaths has increased since 2017, with non-Hispanic Black women and other non-Hispanic minority women disproportionately affected (Kansas Department of Health and Environment, 2023). Women from racial and ethnic minorities accounted for over 60% of pregnancy-related deaths, with most occurring among those aged 25-39 years old. Educational attainment and insurance status also emerged as critical factors, as more than half of the women had a high school education or less, and only about a third had private insurance (Kansas Department of Health and Environment, 2023).

During the annual review, a total of 103 contributing factors to preventable pregnancy-related deaths were identified. The KMMRC found that system, provider, and patient/family level factors were the most common contributors. Additionally, a lack of knowledge about the importance of events or treatment/follow-up, lack of continuity of care/care coordination, and

clinical skill quality were identified as the primary contributing factors to preventable pregnancy-related deaths. (Kansas Department of Health and Environment, 2023).

The KMMRC recommendations for action to reduce the contributing factors to pregnancy-related deaths in Kansas focus on a comprehensive approach to maternal healthcare. The committee emphasizes the importance of patient education and empowerment, recognizing that well-informed patients can better manage their health during pregnancy and postpartum. The KMMRC also advocates for the implementation of Screening, Brief Intervention, and Referral to Treatment (SBIRT) protocols across various critical areas. These include screening for

- A) comorbidities and chronic illnesses
- B) intimate partner violence
- C) Pregnancy intention
- D) Mental health conditions
- E) Substance use disorders
- F) Social determinants of health (SDoH).

In addressing SDoH specifically, it is essential to recognize how these factors influence health outcomes and contribute to persistent disparities in maternal health. SDoH encompasses the environments where people live, learn, work, worship, and play, along with structural barriers such as discriminatory practices embedded in policy (Hacker et al., 2022). Understanding demographic characteristics related to pregnancy-associated deaths in Kansas is vital for targeting interventions.

Lastly, the committee stresses improved communication and multidisciplinary collaboration among healthcare providers, including a robust referral system. Each of these recommendations provides a pathway to using acquired maternal health outcome data to create quality interventions and initiatives.

Health Disparities, Agency Description, and how the Agency is Addressing the KMMRC Recommendations

In the Kansas Department of Health and Environment, where my projects took place, various committees, teams, initiatives, and collaboratives work in partnership to improve the health of women and children in Kansas (Appendix C). The department is organized into three main branches: the Kansas Maternal Mortality Review Committee (KMMRC), the Kansas Maternal Child Health (MCH) Team, and the Kansas Perinatal Quality Collaborative (KPQC). The KMMRC oversees The Maternal Anti-Violence Innovation & Sharing (MAVIS) Project, while the MCH team is responsible for the Kansas Connecting Communities (KCC) and Kansas

Perinatal Community Collaborative (KPCC). Lastly, the KPQC manages the Fourth Trimester Initiative (FTI). Implementing these recommendations requires a collective effort from public health workers, health initiatives, and policymakers.

Comorbidities and Chronic Illness: Comorbidities and chronic health conditions are a leading cause of maternal mortality in the U.S., and more women than ever before are pregnant with pre-existing conditions (Katella, 2023). Of note, the severe maternal morbidity (SMM) rate for non-Hispanic Black women was significantly higher than any other race and ethnicity in Kansas between 2016 and 2020. While the rate did decrease over time, the rate of SMM for non-Hispanic Black women remained remarkably high at 103.5 hospitalizations per 10,000 deliveries (Kansas Department of Health and Environment, 2023). Of the leading causes of pregnancy-related death in Kansas, obesity was found to be the leading circumstance contributing to two out of three deaths (Kansas Department of Health and Environment, 2023).

To effectively implement the KMMRC recommendations to action and address these health disparities, which disproportionately affect racial and ethnic minorities, it is noted that providers should educate all patients, particularly during pregnancy, about the risks of maternal obesity, such as gestational diabetes and hypertensive conditions like preeclampsia, and encourage a healthy lifestyle, to mitigate adverse health outcomes, like hemorrhage, infection, and more extended hospital stays (Kansas Department of Health and Environment, 2023; Norman & Reynolds, 2011; Denison et al., 2019). Patient education is provided through the KPCC and home-visiting programs. The KPQCs Fourth Trimester Initiative aims to decrease maternal morbidity and mortality, targeting assessments and intentional interventions during the postpartum period to improve maternal health outcomes as data from the KDHE Vital Statistics and the KMMRC reveal this should be the primary focus. These assessments and interventions include directional coaching and support for enrolled birthing facilities at no cost, and receive free resources, training, and constant access to collaboration with maternal health leaders across Kansas to improve the prevalence of maternal chronic disease and more (Kansas Department of Health and Environment, 2023).

Intimate Partner Violence (IPV): Social and economic factors play a significant role in increasing the risk of intimate partner violence (IPV) and its impact on maternal health outcomes. Poverty, lack of education, and cultural norms can create environments where IPV is more likely to occur and where victims face more significant barriers to seeking help. Women living in poverty may be more economically dependent on their partners, making it harder to leave abusive relationships. Limited education can reduce awareness of available resources and rights, while certain cultural norms may normalize or justify abusive behaviors. These

factors can lead to increased stress, reduced access to healthcare, and delayed help-seeking behaviors, all of which can negatively impact maternal health outcomes (Campbell, 2021; Noursi et al., 2020).

Women from ethnic minorities are disproportionately affected by these social and economic factors, leading to higher rates of IPV and worse maternal health outcomes. In Kansas, racial and ethnic minorities accounted for over 60% of pregnancy-related deaths between 2016 and 2020 (Kansas Department of Health and Environment, 2023). This disparity can be attributed to a combination of factors, including systemic racism, language barriers, cultural stigma, and lack of culturally competent healthcare services. To address these issues, initiatives like the MAVIS Project in Kansas are working to gather more data on violent maternal deaths and provide cross-training to perinatal care providers and domestic service providers on IPV and related issues (KDHE Launches New Initiatives to Address Maternal Mortality, 2021). These efforts aim to improve understanding of the intersection between IPV and maternal health, particularly for vulnerable populations, and develop more effective interventions.

The intersection of intimate partner violence (IPV) during pregnancy has also been shown to contribute to the three leading causes of pregnancy-associated deaths – homicide, suicide, and drug-related overdose/substance use (Campbell, 2021). When evaluating deaths due to homicides, suicides, and unintentional poisoning or overdoses, these factors represented 45.5% of deaths among non-Hispanic Other women, 31.6% among non-Hispanic Black women, and 27.1% among non-Hispanic white women. In contrast, these causes accounted for only 12.5% of deaths among Hispanic women (Kansas Department of Health and Environment, 2023). To address the issue of maternal deaths and further the implementation of the KMMRC recommendations, the KDHE has introduced several initiatives aimed at improving these causes of maternal deaths.

Homicide: During the review of maternal deaths in Kansas from 2016 to 2018, it was found that homicide was the second leading cause of maternal mortality. Between 2016 and 2020, non-Hispanic Black women represented just 7.1% of live births in Kansas, yet they accounted for a disproportionate 18.1% of pregnancy-associated deaths. Among these deaths, homicide was a significant factor, contributing to 15.8%. For comparison, the rates were 12.5% for Hispanic women and only 8.5% for non-Hispanic white women (Kansas Department of Health and Environment, 2023). As a result, the KDHE partnered with the Kansas Coalition Against Sexual and Domestic Violence (KCSDV), KCC, KPQC, and the KMMRC to launch the MAVIS Project in December of 2021 to reduce maternal deaths in Kansas due to homicide and suicide. The MAVIS Project is expanding on the success of the KMMRC by gathering more data

on violent maternal deaths. The MAVIS project is highly impactful in addressing the recommendation put forward by Noursi and colleagues (2020) to create specialized panels of local experts in maternal health or maternal mortality review committees (MMRCs) specifically tasked with investigating violent deaths to help fill the existing knowledge gaps on the intersection of intimate partner violence (IPV) and maternal health (*KDHE Launches New Initiatives to Address Maternal Mortality*, 2021). In addition, the MAVIS project offers also cross-training to perinatal care providers and domestic violence service providers on perinatal mood and anxiety disorders, perinatal substance use, and intimate partner violence (IPV) (*KDHE Launches New Initiatives to Address Maternal Mortality*, 2021).

Suicide: Suicides, including three cases linked to mental health conditions (one confirmed, one likely, and one unknown), accounted for 27.3 percent of pregnancy-related deaths among non-Hispanic other women and 15.8 percent among non-Hispanic Black women. Among non-Hispanic white women, this figure was lower at 8.5 percent, while there were no reported pregnancy-related suicides among Hispanic women (Kansas Department of Health and Environment, 2023). Women who attempt or complete suicide often have recent interactions with healthcare providers before their deaths (Goldman-Mellor et al., 2019). In 2018, the American College of Obstetricians and Gynecologists (ACOG) released updated clinical recommendations for women's health providers to screen patients at least once during the perinatal period for depression and anxiety using validated, standardized tools (Milgrom et al., 2014). It is also recommended by the United States Preventative Services Task Force (USPSTF) to provide brief counseling or referrals for pregnant and postpartum women who are at increased risk of perinatal depression to behavioral health services (Jin, J. 2019). According to the Pregnancy Risk Assessment Monitoring System (PRAMS), as of 2018, 77.9% of women were asked about depression by healthcare providers, and 85.2% during the postpartum period in Kansas (Bauman et al., 2018). To enhance adherence to the recommendations of ACOG, the USPSTF, and the KMMRC, the FTI has enrolled in the Alliance for Innovation on Maternal Health (AIM) program's Postpartum Discharge Transition patient safety bundle (*KDHE Launches New Initiatives to Address Maternal Mortality*, 2021). This bundle emphasizes establishing collaborative referral processes between providers, follow-up on referrals, screening, communication, provider collaboration, and the development of individualized care plans with input and involvement from each mother. AIM also provides a national platform for other perinatal quality collaboratives to share groundbreaking ideas and is a valuable resource for ongoing improvements in maternal safety and quality (*Postpartum Discharge Transition*, 2021). (The new postpartum model for Kansas can be viewed in Appendix D)

Drug-related overdose/Substance use disorder: In the Kansas Severe Maternal Morbidity and Maternal Mortality report (2023), it was found that substance use disorder was a contributing factor in one out of every four pregnancy-related deaths between 2016 and 2020. Accidental drug poisoning/overdose accounted for 10.2% of pregnancy-associated deaths among non-Hispanic white women, while there were no such deaths among non-Hispanic Black and Hispanic women (Kansas Department of Health and Environment, 2023). Out of the 105 pregnancy-associated deaths (2016-2020), eleven (10.5%) were linked to substance poisoning/overdose, with two being intentional and nine unintentional; mental health conditions contributed to ten out of the eleven overdose deaths, and all eleven victims had a history of substance use disorder. To identify women who may be at risk for substance misuse, the KDHE, Bureau of Family Health, recommends using the Alcohol, Smoking, and Substance Involvement Screening Test (ASSIST) to ensure consistent and fair screening processes. ASSIST is available in over ten languages and is designed for use in primary healthcare settings across different cultures, making it valuable for any human service worker (*ASSIST Project-Alcohol, Smoking, and Substance Involvement Screening Test*, n.d.).

Pregnancy Intention: Screening for pregnancy intention enables healthcare providers to assist patients in enhancing their reproductive goals, leading to improved pregnancy outcomes, reproductive health equity, and increased contraceptive use (St Clair et al., 2023). In December 2020, KDHE launched Well Woman Toolkits for providers and communities, providing an overview of comprehensive well-woman care, including screening and education on overall health and pregnancy intention. The One Key Question®, recommended by the Health Resources Service Administration, is a transformative tool for initiating discussions regarding a patient's intentions regarding pregnancy. It offers a structured approach for healthcare providers, social services providers, and advocates to routinely inquire: "Would you like to become pregnant in the next year?" (One Key Question Online, 2020) In 2020, the Kansas MCH team provided One Key Question® webinars and education to over 100 professionals, including local MCH, Family Planning, Home Visiting, and WIC staff. They also organized two open consultation calls facilitated by Power to Decide to address implementation questions and discuss best practices and challenges in asking the One Key Question (Kansas Department of Health and Environment, 2023).

Mental Health Conditions: A seminal study revealed women were around 22 times more likely to have a psychiatric admission in the month following birth than in the pre-pregnancy period (Kendell et al., 1987). The risk of postnatal admission is higher for women with or without prior psychiatric illness, especially for those with a pre-existing severe mood

disorder (Munk-Olsen et al., 2016). While the evidence for postpartum triggering in less severe mental disorders is less clear, studies have shown that depressive and anxiety symptoms often begin during or before pregnancy. However, women are less likely to receive treatment during pregnancy compared to postnatally (Howard et al., 2014; Munk-Olsen et al., 2016; Wisner et al., 2013; Patton et al., 2015)

Between 2016 and 2020, most maternal deaths in Kansas were influenced by mental health conditions (79.2%, 19 deaths) and classified as pregnancy-associated deaths, though not directly linked to pregnancy. These cases included incidents such as suicides or poisoning/overdose (Kansas Department of Health and Environment, 2023). To combat this and improve mental health conditions and, therefore, maternal health outcomes, FTI, MAVIS, and the KCC are working to educate providers on comprehensive screening for mental health. Those in KPCC sites and home visiting programs also inform patients of the importance of maternal health treatment (Kansas Department of Health and Environment, 2023) The KCC also provides free psychiatric consultation and resources, as well as training and technical assistance needs for physicians and advanced practice providers, home visitors, behavioral health clinics, and other professionals working with pregnant and postpartum people to ensure provider capacity to implement quality universal screening practices, provide interventions for positive screens, integrate quality referral options into care plans, and provide evidence-based treatment recommendations (*Psychiatric Consultation and Care Coordination*, 2024).

Social Determinants of Health (SDoH) The alarmingly high rates of maternal mortality among Black women in Kansas highlight a broader national crisis regarding maternal health equity. This disparity is deeply rooted in the SDoH, which encompass the conditions in which individuals live, learn, work, worship, and play, as well as structural barriers, including discriminatory practices entrenched in policies (Hacker et al., 2022). Discrimination can be a fundamental factor leading to adverse outcomes, manifesting through inequities in care, clinical communication, and shared decision-making (Kansas Department of Health and Environment, 2023). These social determinants profoundly influence health outcomes and contribute to the persistence of health disparities.

The KDHE and the Kansas Birth Equity Network (KBEN) have implemented various strategies, each with unique approaches and strengths, to address this critical issue. Understanding the demographic characteristics of women who experienced pregnancy-associated deaths in Kansas between 2016 and 2020 is essential for effectively targeting quality interventions and resources. These characteristics, detailed in Appendix E, include race and ethnicity, education level, health insurance type, prenatal care entry, median household income

by zip code, marital status, and urban-rural residence status. KDHE has recognized the urgency of addressing racial disparities in maternal health outcomes. Through initiatives like the KMMRC, the FTI, and the MAVIS Project, KDHE aims to collect comprehensive data, identify trends, and develop targeted interventions to reduce the disproportionately high rates of maternal mortality among Black women.

The KPQC's Fourth Trimester Initiative educates providers about patient barriers and available community resources. This initiative trains providers to screen all patients for social determinants of health, enhancing their understanding of their challenges and the resources available for referrals. Providers receive technical assistance to develop comprehensive community resource guides and are trained on warm hand-offs to improve provider education and patient care within the healthcare system.

In contrast, KBEN takes a more grassroots, community-centered approach to addressing the high rates of maternal mortality among Black women. Their strategies include mini-grants to local organizations and the development of a Birth Equity Curriculum, which directly targets the systemic racism and implicit biases contributing to poor maternal health outcomes for Black women. KBEN's innovative outreach programs, such as the CROWN Wellness Barbershop initiative, highlight the importance of cultural competency and community trust in addressing health disparities (*Kansas Birth Equity Network*).

While both organizations are dedicated to improving maternal health outcomes for Black women, their differing approaches underscore the complexity of the issue and the need for multi-faceted solutions. KDHE's broad, data-driven strategies establish a crucial foundation for statewide initiatives. At the same time, KBEN's targeted, community-based interventions provide the cultural specificity and direct engagement necessary to instigate change at the grassroots level.

Moving forward, a collaborative approach that combines KDHE's resources and statewide reach with KBEN's community connections and cultural competency could lead to more comprehensive and effective strategies for addressing the high rates of maternal mortality among Black women in Kansas. By leveraging the strengths of both approaches and focusing on the social determinants of health, Kansas can work toward creating a more equitable maternal health landscape that ensures better outcomes for all women, particularly those most at risk.

The sources found indicate the significance of a comprehensive approach that engages healthcare providers, policymakers, and community organizations to decrease maternal mortality rates. By adopting evidence-based strategies, improving patient education, enhancing

healthcare accessibility, and considering social determinants of health, Kansas has and can continue to make substantial strides in reducing maternal deaths and enhancing maternal health outcomes. Ongoing research, data gathering, and assessment of current initiatives will be essential in refining and maximizing these endeavors to guarantee optimal care for pregnant and postpartum individuals in the state.

Alyson D. Dalrymple, MPH, acted as my preceptor and oversaw all my interactions for my projects with my mentors. She is the Administration and Policy/Deputy Bureau Director for the Bureau of Family Health, Division of Public Health, KDHE. Dalrymple has a BS in Biochemistry from the University of Central Missouri and a Master of Public Health focusing on Epidemiology and Biostatistics from the University of Southern California. She has worked in public service within the Division of Public Health for eight years as a microbiologist, birth defects coordinator, and her current position. My mentors within the department were Jill Nelson, the Maternal and Perinatal Initiative Consultant and KPQC and KMMRC Coordinator; Jamie Kim, the Maternal and Child Health Epidemiologist; and Kayla Stangis, MPH, CHES, the Maternal Health Innovation Coordinator.

Chapter 2 - Learning Objectives and Project Description

My interest in maternal and child health led me to pursue projects related to current health initiatives in Kansas and assess their impact on Kansas communities. In April 2024, I began reviewing the Kansas Maternal Mortality Review Committee's (KMMRC) recommendations and the health initiatives that the KDHE and the KPQC have to address the recommendations. I also met, either in person or virtually, with many members of the MCH team to learn about their roles and the initiatives and interventions they are responsible for. This helped me better understand the MCH team's intricacies within the public health department of KDHE-BFH. I then attended the Kansas Maternal and Child Health Council meeting in August, where I better understood the current and prospective achievements and challenges facing Kansas maternal and child health. Eventually, this led me to work with the KPQC and KMMRC coordinator and Kansas MCH epidemiologist to create two infographics surrounding the topics of pregnancy-related deaths and the CDC PRAMS data for Kansas (2017-2022) to be used for information sharing at the Kansas Maternal Health Innovation Task Force meeting(s) and to be used in the published KMMRC report (Appendix B). I also worked with the Maternal Health Innovation Coordinator to create a survey to assess the perceived barriers, challenges, gaps, and achievements of Kansas maternal health initiatives by the Maternal Health Innovation Task Force members (Appendix A). My daily activities mainly involved emailing my mentors, Kayla Stangis, Jill Nelson, and Jamie Kim. These communications helped in developing my products by clarifying the target audience, assessing the products' suitability for that audience, establishing the communication strategy, setting the expected schedule, and making general edits.

To accomplish these project activities, the following learning objectives were established:

1. Gain knowledge of current maternal health initiatives in Kansas and their impact on maternal health outcomes.
2. Review and analyze KMMRC and CDC PRAMS data to identify trends and factors influencing maternal and child health.
3. Evaluate perceived barriers, challenges, and gaps in implementing maternal health initiatives within Kansas communities.
4. Create informative materials, such as infographics and surveys, to communicate findings and recommendations regarding maternal health issues to various audiences.

The learning objectives involved the creation of two portfolio products, summarized below.

Figure 1.1 Summary of Portfolio Products

Portfolio Product	Description
Infographic(s)	The infographics contained the most recent KMMRC report and CDC PRAM data. The finished products were used for information sharing in future MHTIF meetings and the future published (2016-2022) KMMRC report. For these products, see Appendix B
Collaboration on Maternal Health Innovation Task Force (MHTIF) Survey	The survey aims to assess MHTIF members' perceived awareness and effectiveness of various maternal health initiatives in Kansas, seeking to gather comprehensive insights on enhancing maternal health outcomes in Kansas by identifying gaps, barriers, and opportunities for collaboration and improvement of state health departments and local communities. I created the survey questions, and my mentors reviewed the final draft and assisted in piloting the survey. For this product, see Appendix A

Chapter 3 - Results

Survey Results:

I developed a survey to be administered before and during an upcoming MHITF meeting to evaluate members' knowledge and perceptions of Kansas maternal health initiatives—the survey aimed to identify areas for improvement and collaboration to enhance maternal health outcomes across the state. The survey drafts are included in Appendix A. Most questions used a three-to-five-point Likert scale to prevent survey fatigue; the remaining were optional and open-ended. The mean represents the average score for each question or sub-question across all respondents. It provides a central tendency measure of the responses, indicating the overall sentiment or perception of the group surveyed. A higher score is not always better in this survey. A higher score indicates a more positive perception or greater effectiveness for most questions. However, for questions about gaps and overlaps in initiatives and barriers, a higher score indicates a more negative or challenging situation. The interpretation of the score depends on the specific question and its context within the survey.

Kayla Stangis, the Maternal Health Innovation Coordinator, made final edits, emailed the survey to all MHITF members, equating to around 40 members, and gave a verbal reminder to complete the survey at the MHITF meeting on October 8, 2024. A week was given to members contacted by email to ensure quality time for them to complete the survey by email. A total of 4 members responded, leaving a nearly 10% response rate. Additional in-person surveys have the potential to be used in future MHITF meetings.

The survey results can be viewed below in Table 2.1. These results indicate a moderate understanding of Kansas maternal health programs and initiatives, with a perception that urban areas generally benefit more than rural areas. The data suggest a need for improved resources, a focus on rural areas, and addressing the identified barriers to health outcomes across Kansas. The complete statistics report and the comments left in the optional and open-ended questions can be viewed in Appendix A.

Table 2.1: Survey Statistics Results Table

Questions (not including open-ended questions)	Mean	Standard Deviation
Question 1- On a scale from 1 (not knowledgeable at all) to 3 (very knowledgeable), how knowledgeable are you about the resources provided by these Kansas maternal health programs and initiatives?		
Q1-1 – Alliance for Innovation on Maternal Health (AIM) program (3-point scale)	2.25	.83

Q1-2 – Fourth Trimester Initiative (FTI) (3-point scale)	2.75	.43
Q1-3 – Maternal Warning Signs (MWS) Initiative (3-point scale)	1.75	.43
Q1-4 – Kansas Connecting Communities (KCC)(3-point scale)	2.00	.71
Q1-5 – Kansas Perinatal Community Collaborative (KPCC) (3-point scale)	2.25	.43
Q1-6 – Maternal Anti-Violence Innovation & Sharing (MAVIS) Project (3-point scale)	1.75	.83
Question 2: On a scale 1 (not effective) to 3 (very effective), how effective do you believe the current maternal health initiatives are in improving maternal health outcomes in Kansas		
Q2-1 - urban counties (3-point scale)	2.25	.43
Q2-2 - rural counties (3-point scale)	1.67	.47
Question 4: On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of economic stability (e.g., poverty, employment, food security) on maternal health in Kansas?		
Q4-1 - urban counties (5-point scale)	4.25	.83
Q4-2 - rural counties (5-point scale)	3.75	1.3
Question 5: On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of education access and quality on maternal health in Kansas?		
Q5-1 - urban counties (5-point scale)	4.5	.5
Q5-2 - rural counties (5-point scale)	3.75	1.3
Question 6: On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of the neighborhood and built environment (e.g., housing, transportation, safety) on maternal health in Kansas?		
Q6-1 - urban counties (5-point scale)	4	1.22
Q6-2 - rural counties (5-point scale)	4	1.22
Question 7: On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of the social and community context (e.g., social cohesion, discrimination, incarcerations) on maternal health in Kansas?		
Q7-1 - urban counties (5-point scale)	4.5	.5
Q7-2 - rural counties (5-point scale)	4	1.22
Question 10: On a scale from 1 (not effective at all) to 3 (extremely effective), how effective do you believe the following strategies are for maternal health initiatives?		

Q10-1 - Community outreach (3-point scale)	2.75	.43
Q10-2 - Public health fairs (3-point scale)	1.75	.43
Q10-3 - Partnerships (3-point scale)	2.75	.43
Q10-4 - Social Media (3-point scale)	2.25	.43
Q10-5 - Town hall meetings (3-point scale)	2.00	.71
Question 12: On a scale from 1 (strongly disagree) to 5 (strongly agree), to what extent do you agree with the following statements: 1. "Maternal health initiatives in Kansas have positively evolved over the past few years." 2. "Kansas maternal health initiatives have integrated well with federal programs." 3. "There are significant gaps in maternal health initiatives." 4. "There are significant overlaps in maternal health initiatives in Kansas."		
Q12-1 - positively evolved (5-point scale)	4.25	.43
Q12-2 - federal program integration (5-point scale)	3.75	.83
Q12-3 - significant gaps (5-point scale)	4.75	.43
Q12-4 - significant overlaps (5-point scale)	2.5	.50
Question 14: On a scale from 1 (far below average) to 5 (far above average), how would you rate KDHE's:		
Q14-1 – current data collection methods (5-point scale)	3.25	.43
Q14-2 - evaluation methods (5-point scale)	3.25	.43
Q14-3 - accessibility of maternal health data (5-point scale)	3.00	.71
Question 15: On a scale from 1 (not a barrier) to 5 (extreme barrier), to what extent do you believe the following are barriers to implementing alternative or non-traditional maternal care options in your area:		
Q15-1 - lack of funding (5-point scale)	4.25	.83
Q15-2 - regulatory barriers (5-point scale)	4.00	.71
Q15-3 - lack of trained professionals (5-point scale)	4.25	.43
Q15-4 - cultural resistance (5-point scale)	3.75	.43
Q15-5 - lack of awareness (5-point scale)	2.75	.43

Infographics Results:

I created each infographic using CanvaPro.

The infographic on pregnancy-related deaths utilized the most recently published data from the KMMRC 2016-2022 report. This infographic included

- a) The amount of pregnancy-associated deaths later determined to be pregnancy-related
- b) How many were determined to be preventable, and at what level of chance
- c) The timing of the preventable pregnancy-deaths
- d) The age group pregnancy-related deaths most affected
- e) The leading causes of preventable pregnancy-related deaths
- f) The KMMRC determination on circumstances surrounding the pregnancy-related deaths; the recommendation for prevention and expected impact of actions if implemented for pregnancy-related deaths were also included.

The infographic on Kansas's PRAMS maternal and child health indicators from 2017-2022 included fourteen sections, each citing an indicator classified by the ongoing, site-specific, and population-based surveillance system. The infographic can be used in multiple ways, as a whole or as separate sections. A small introduction and reference list were also included to ensure that related information was evidence-based. The finished products were used for information sharing in future MHTIF meetings and are to be featured in the future published (2016-2022) KMMRC report.

The implementation and use of each infographic present:

- Increased awareness: By presenting complex data in a visually appealing and easy-to-understand format, more people, including healthcare providers, policymakers, and the general public, can grasp the severity and scope of the issues.
- Improved understanding of preventability: The infographic on pregnancy-related deaths highlights the proportion of preventable deaths and the level of chance for prevention. This information can motivate stakeholders to take action, knowing that many deaths could be avoided.
- Targeted interventions: By showcasing the timing of deaths, age groups most affected, leading causes, and circumstances surrounding pregnancy-related deaths, the infographic can help guide healthcare providers and policymakers in developing targeted interventions and policies.
- Enhanced prevention strategies: Including recommendations for prevention and the expected impact of actions can guide decision-making processes and resource

allocation, thus aiding in prioritizing interventions that are likely to reduce pregnancy-related deaths significantly.

- A comprehensive view of maternal and child health: The PRAMS infographics provide a holistic view of various maternal and child health indicators. This comprehensive approach can help identify areas of strength and weakness in the healthcare system, allowing for more informed decision-making and policy development.
- Flexibility: The PRAMS infographics can be used as a whole or in separate sections, allowing for versatile application in different contexts, such as presentations, reports, or educational materials.
- Evidence-based information dissemination: The infographics include references to ensure that the information presented is credible and evidence-based. Creating trust in the data and recommendations among healthcare professionals and policymakers.
- Tracking progress over time: Including data from multiple years (2017-2022 for PRAMS and 2016-2022 for pregnancy-related deaths) allows for the observation of trends and progress in maternal and child health indicators over time.
- Improved communication: These visual tools can facilitate better communication between stakeholders in maternal and child health, including healthcare providers, public health officials, policymakers, and community organizations.
- Support for funding and resource allocation: The clear presentation of data and its implications can be used to justify funding requests and resource allocation for maternal and child health initiatives.

Overall, these infographics serve as powerful tools for education, advocacy, and decision-making in efforts to improve maternal health outcomes in Kansas.

Chapter 4 - Discussion

Reflecting on my Applied Practice Experience (APE) with the Kansas Department of Health and Environment (KDHE), I gained valuable insights into the complexities of addressing maternal health disparities in Kansas. This experience enhanced my understanding of the intricate interplay between various social determinants of health and their impact on maternal outcomes, particularly for vulnerable populations.

One of the most significant gains from this experience was the opportunity to work directly with comprehensive data sets and contribute to the creation of informative materials. This hands-on experience allowed me to see how data analysis translates into actionable strategies for improving maternal health. I learned the importance of continuous assessment and surveillance in identifying emerging trends and evaluating the effectiveness of current interventions.

However, I also encountered challenges during my APE. One of the primary difficulties was navigating the complex network of initiatives and organizations working on maternal health in Kansas. Coordinating efforts between various stakeholders, including the KMMRC, KPQC, and community-based organizations like the Kansas Birth Equity Network (KBEN), required careful communication and collaboration. Additionally, I found it challenging to address the deeply rooted systemic issues contributing to health disparities, particularly those affecting racial and ethnic minorities.

Based on my experience, I would recommend several next steps for KDHE and future practicum students:

1. Enhance data integration: KDHE should focus on integrating data from various sources to create a more comprehensive picture of maternal health in Kansas. This could involve developing more robust data-sharing agreements between different agencies and healthcare providers.
2. Strengthen community partnerships: While KDHE has made strides in community engagement, there's room for improvement in collaborating with grassroots organizations like KBEN. Future initiatives should prioritize incorporating community voices in program design and implementation.
3. Focus on implementation science: For future practicum students, I recommend delving into implementation science to better understand how evidence-based practices can be effectively translated into real-world settings, particularly in resource-limited counties.

4. Evaluate program effectiveness: KDHE should continue to rigorously evaluate the effectiveness of its various initiatives, such as the Fourth Trimester Initiative and the MAVIS Project. This ongoing assessment is crucial for refining strategies and ensuring resources are allocated efficiently.
5. Address workforce development: Future efforts should focus on building a diverse and culturally competent healthcare workforce to better serve Kansas's diverse population.
6. Explore innovative outreach methods: Drawing inspiration from KBEN's community-based approaches, KDHE could explore more innovative outreach methods to engage hard-to-reach populations.

As Kansas continues to refine its strategies and adapt to emerging challenges, ongoing, systematic analysis remains critical. The state's commitment to implementing evidence-based practices, improving provider education, and enhancing community engagement demonstrates a proactive approach to reducing maternal mortality. However, continued vigilance and adaptability are necessary to ensure that Kansas becomes a leader in maternal health, leaving no mother behind in the pursuit of equitable healthcare options.

My work in analyzing data, creating informative materials, and assessing perceived barriers has contributed to fostering ongoing collaboration between healthcare providers, policymakers, and community organizations. This comprehensive effort is essential in achieving better maternal health outcomes for all women across the state. As the landscape of maternal health continues to evolve, so too must Kansas's understanding and response mechanisms to ensure equitable healthcare for all mothers.

Chapter 5 - Competencies and Reflection on MPH Experience

Please refer to Table 5.1 below to see how my ILE products met some of the MPH program's required competencies.

Table 5.1 Summary of MPH Foundational Competencies

Number and Competency		Description
2	Select quantitative and qualitative data collection methods appropriate for a given public health context.	This competency was fulfilled by designing a survey that included qualitative and quantitative components. The survey would be provided to members of the MHTIF through Qualtrics. My mentor, Kayla Stangis, suggested using this data collection method to account for timeliness and accuracy.
4	Interpret results of data analysis for public health research, policy, or practice.	The data collected via the survey was analyzed to evaluate members' knowledge and perceptions of Kansas maternal health initiatives.
11	Select methods to evaluate public programs.	My mentors, Kayla Stangis and Jill Nelson, chose the survey as the best way to evaluate the MHITF members' perceptions of the effectiveness of the MCH initiatives in Kansas. Evaluating public health initiatives is crucial for creating and implementing efficient and beneficial programs for the target populations.
14	Advocate for political, social, or economic policies and programs that will improve health in diverse populations.	The survey design advocated for improved maternal health policies by gathering diverse perspectives on current initiatives, identifying gaps in services, and soliciting suggestions for policy changes to address health disparities among different populations in Kansas. The infographics function as a potential tool for advocacy. They visually present data on maternal health disparities and outcomes, highlight areas requiring policy attention, and inform stakeholders about the impact of social determinants on maternal health in various Kansas communities.
16	Apply principles of leadership, governance, and management, which include creating a vision, empowering others, fostering collaboration, and guiding decision-making.	Creating infographics for the KMHTF showcased leadership by envisioning data presentation and guiding decision-making through strategic data visualization.

Table 5.2 MPH Foundational Competencies and Course Taught In

22 Public Health Foundational Competencies Course Mapping	MP H 701	MPH 720	MP H 754	MP H 802	MP H 818
Evidence-based Approaches to Public Health					
1. Apply epidemiological methods to the breadth of settings and situations in public health practice	x		x		
2. Select quantitative and qualitative data collection methods appropriate for a given public health context	x	x	x		
3. Analyze quantitative and qualitative data using biostatistics, informatics, computer-based programming and software, as appropriate	x	x	x		
4. Interpret results of data analysis for public health research, policy or practice	x		x		
Public Health and Health Care Systems					
5. Compare the organization, structure and function of health care, public health and regulatory systems across national and international settings		x			
6. Discuss the means by which structural bias, social inequities and racism undermine health and create challenges to achieving health equity at organizational, community and societal levels					x
Planning and Management to Promote Health					
7. Assess population needs, assets and capacities that affect communities' health		x		x	
8. Apply awareness of cultural values and practices to the design or implementation of public health policies or programs					x
9. Design a population-based policy, program, project or intervention			x		
10. Explain basic principles and tools of budget and resource management		x	x		
11. Select methods to evaluate public health programs	x	x	x		
Policy in Public Health					
12. Discuss multiple dimensions of the policy-making process, including the roles of ethics and evidence		x	x	x	
13. Propose strategies to identify stakeholders and build coalitions and partnerships for influencing public health outcomes		x		x	
14. Advocate for political, social or economic policies and programs that will improve health in diverse populations		x			x
15. Evaluate policies for their impact on public health and health equity		x		x	
Leadership					
16. Apply principles of leadership, governance and management, which include creating a vision, empowering others, fostering collaboration and guiding decision making		x			x
17. Apply negotiation and mediation skills to address organizational or community challenges		x			
Communication					
18. Select communication strategies for different audiences and sectors	DMP 815, FNDH 880 or KIN 796				
19. Communicate audience-appropriate public health content, both in writing and through oral presentation	DMP 815, FNDH 880 or KIN 796				

22 Public Health Foundational Competencies Course Mapping	MP H 701	MPH 720	MP H 754	MP H 802	MP H 818
20. Describe the importance of cultural competence in communicating public health content		x			x
Interprofessional Practice					
21. Perform effectively on interprofessional teams		x			x
Systems Thinking					
22. Apply systems thinking tools to a public health issue			x	x	

Student Attainment of MPH Emphasis Area Competencies

The competencies for the Public Health Physical Activity (PHPA) emphasis listed in Table 5.3 were achieved through my coursework, including core courses, PHPA emphasis required courses and electives. I applied the knowledge gained from coursework within my integrated learning experience (ILE).

Table 5.3 Summary of MPH Emphasis Area Competencies

MPH Emphasis Area:		
Number and Competency		Description
1	Population Health	Investigate the impact of physical activity on population health and disease outcomes.
2	Social, behavioral, and environmental influences	Investigate social, behavioral, and environmental factors that contribute to participation in physical activity.
3	Theory application	Examine and select social and behavioral theories and frameworks for physical activity programs in community settings.
4	Developing and evaluating physical activities interventions	Develop and evaluate physical activity interventions in diverse community settings.
5	Support evidence-based practice	Create evidence-based strategies to promote physical activity and communicate them to community stakeholders.

Competency #1: Population health (KIN 616)

In Obesity and Physical Activity: Behavioral, Environment, and Policy Influence (KIN 616), I gained insight into the correlation between physical activity and obesity, focusing on how environmental and policy factors contribute to weight gain. The systems approach was discussed to comprehend the multifaceted causes of obesity, emphasizing the potential for political action and implementation to address obesity disparities influenced by social determinants of health (SDoH), environmental factors affecting food and physical activity choices, opportunities for behavior change, and healthcare services and clinical intervention.

I applied the knowledge gained about the impact of physical activity on population health to understand how maternal obesity, a leading factor in pregnancy-related death in Kansas, affects maternal health outcomes, allowing for a deeper analysis of how physical activity interventions could potentially reduce obesity-related complications in pregnant women, as cited in my literature review and my MHITF infographic (Appendix B).

Competency #2: Social, behavioral influences (MPH 818, KIN 612)

In Social and Behavioral Bases of Public Health (MPH 818), I learned how various behavioral, social, psychological, economic, environmental, and social structural elements impact health issues and risks in populations. The focus was on understanding principles of health behavior change and the influence of social structural factors on health behavior and disparities. This knowledge was applied to analyze public health issues such as mental health, bullying, smoking/vaping cessation, and more while exploring the impact of health behavior change theories, community building and coalition theories, mental health examination practices, food systems, and policy on health behavior change. This knowledge was applied within my experience by analyzing and reviewing the social and behavioral factors influencing maternal health outcomes in Kansas, particularly in understanding how social determinants of health and behavioral patterns contribute to maternal mortality rates and in developing effective strategies for health communication and community engagement.

In Policy, Built Environment and Physical Activity (KIN 612), I learned how active living policies and neighborhood and community design contribute to improved health. The built environment (such as playgrounds, sidewalks/crosswalks, bike paths, public transportation, etc.) and related policies play a crucial role in influencing the physical activity levels of individuals across all age groups. This field is still emerging in research and health promotion. Still, there is a significant public interest in the potential of these concepts to bring about widespread improvements in population health. Considering how the built environment and related policies impact Kansas' community maternal health outcomes, the knowledge gained from this course was applied particularly in terms of access to healthcare facilities and opportunities for physical activity during pregnancy and postpartum periods.

Competency #3: Theory application (KIN 805)

In Physical Activity and Human Behavior (KIN 805), I learned about the psychological theories and research on motivation, behavior, and social factors influencing physical activity

participation and exercise adherence. I examined models like the social cognitive theory and social-ecological approaches to understand exercise engagement and the types of exercise interventions that can change people's behaviors, attitudes, social/environmental conditions, etc. Understanding social and behavioral theories can help analyze the effectiveness of current maternal health initiatives in Kansas. For example, these theories can explain why certain interventions for mental health screening or substance use disorder treatment may or may not be successful.

Competency #4: Developing and evaluating physical activities interventions (KIN 805)

In Physical Activity and Human Behavior (KIN 805), I learned about psychological theories and research on factors influencing exercise motivation and behavior. I examined models like social cognitive theory and social-ecological approaches to understand what drives people to engage in physical activity and the resulting outcomes. With the help of a partner, I developed a health intervention program to increase physical activity for working mothers, including a needs assessment, creating an intervention framework, intervention design, practical measurement tools, and intervention strategies. While the focus here is on physical activity, the skills in developing and evaluating interventions can be broadly applied to assess the effectiveness of various maternal health programs in Kansas, such as the Fourth Trimester Initiative or the MAVIS Project.

Competency #5: Support evidence-based practice (KIN 610, KIN 655)

In Program Planning and Evaluation (KIN 610), I learned various health program planning models and theories to create effective evidence-based health intervention strategies, the stages and activities of planning, implementing, and evaluating a successful health promotion program, and how to communicate effectively with community stakeholders. In Individual Physical Activity Promotion (KIN 655), I learned about the individual-level influences on physical activity and behavior-change intervention strategies to promote physical activity among individuals. These included reviewing evidence-based strategies to enhance self-efficacy and motivation and creating effective behavior change plans specific to individuals' needs and social determinants of health. This competency directly applies to analyzing the evidence-based strategies recommended by the Kansas Maternal Morality Review Committee. The knowledge gained can be used to evaluate the recommendations' potential impact and suggest ways to communicate them effectively to healthcare providers and community stakeholders.

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Appendix

Appendix A: Qualtrics Survey

Final Qualtrics Draft:

	Far below average	Somewhat below average	Average	Somewhat above average	Far above average
Current data collection methods	☐	☐	☐	☐	☐
Evaluation methods	☐	☐	☐	☐	☐
Accessibility of maternal health data	☐	☐	☐	☐	☐

On a scale from 1 (not a barrier) to 5 (extreme barrier), to what extent do you believe the following are barriers to implementing alternative or non-traditional maternal care options in your area:

	Not a barrier	Slight barrier	Moderate barrier	Considerable barrier	Extreme barrier
Lack of funding	☐	☐	☐	☐	☐
Regulatory barriers	☐	☐	☐	☐	☐
Lack of trained professionals	☐	☐	☐	☐	☐
Cultural resistance	☐	☐	☐	☐	☐
Lack of awareness	☐	☐	☐	☐	☐

Do you have any final thoughts about any strengths or gaps in maternal healthcare in Kansas?

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strategies are for involving local communities in maternal health initiatives:

	Not effective at all	Moderately effective	Extremely effective
Community outreach programs	☐	☐	☐
Local health fairs	☐	☐	☐
Partnerships with community organizations	☐	☐	☐
Social media campaigns	☐	☐	☐
Town hall meetings	☐	☐	☐

(Optional) What policies, if any, sufficiently support maternal health improvements in Kansas?

On a scale from 1 (strongly disagree) to 5 (strongly agree), to what extent do you agree with the following statements:

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On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of education access and quality for maternal health in Kansas?

	Extremely negative	Somewhat negative	Neither positive nor negative	Somewhat positive	Extremely positive
In urban counties?	☐	☐	☐	☐	☐
In rural counties?	☐	☐	☐	☐	☐

On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of the neighborhood and built environment (e.g., housing, transportation, safety) for maternal health in Kansas?

	Extremely negative	Somewhat negative	Neither positive nor negative	Somewhat positive	Extremely positive
In urban counties?	☐	☐	☐	☐	☐
In rural counties?	☐	☐	☐	☐	☐

On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of the social and community context (e.g., social cohesion,

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	Strongly disagree	Somewhat disagree	Neither agree nor disagree	Somewhat agree	Strongly agree
Maternal health initiatives in Kansas have positively evolved over the past few years.	☐	☐	☐	☐	☐
Kansas maternal health initiatives have integrated well with federal programs.	☐	☐	☐	☐	☐
There are significant gaps in maternal health initiatives.	☐	☐	☐	☐	☐
There are significant overlaps in maternal health initiatives in Kansas.	☐	☐	☐	☐	☐

(Optional) Could you elaborate on your answers?

On a scale from 1 (far below average) to 5 (far above average), how would you rate KDHE's:

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discrimination, incarceration) on maternal health in Kansas?

	Extremely negative	Somewhat negative	Neither positive nor negative	Somewhat positive	Extremely positive
In urban counties?	☐	☐	☐	☐	☐
In rural counties?	☐	☐	☐	☐	☐

(Optional) Are there any specific gaps that you want to highlight for urban or rural counties?

(Optional) Are there any specific assets or strengths that you want to highlight for urban or rural counties?

On a scale from 1 (not effective at all) to 3 (extremely effective), how effective do you believe the following

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Default Question Block

How knowledgeable are you about the resources provided by these Kansas maternal health programs and initiatives?

	Not knowledgeable at all	Moderately knowledgeable	Very knowledgeable
Alliance for Innovation on Maternal Health (AIM) program	☐	☐	☐
Fourth Trimester Initiative (FTI)	☐	☐	☐
Maternal Warning Signs Initiative	☐	☐	☐
Kansas Connecting Communities	☐	☐	☐
Kansas Perinatal Community Collaborative	☐	☐	☐
M.A.V.I.S Project	☐	☐	☐

On a scale 1 (not effective) to 5 (very effective), how effective do you believe the current maternal health

https://qualtricsxm5dvbhsbz.pdx1.qualtrics.com/Q/EditSection/Blocks/Ajax/GetSurveyPrintPreview?ContextSurveyID=SV_SinpQthDJaVe6km&Context... 1/8

initiatives are in improving maternal health outcomes in Kansas?

	Not effective at all	Moderately effective	Extremely effective
In urban counties?	☐	☐	☐
In rural counties?	☐	☐	☐

(Optional) Could you explain your answer?

On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact on economic stability (e.g., poverty, employment, food security) for maternal health in Kansas?

	Extremely negative	Somewhat negative	Neither positive nor negative	Somewhat positive	Extremely positive
In urban counties?	☐	☐	☐	☐	☐
In rural counties?	☐	☐	☐	☐	☐

https://qualtricsxm5dvbhsbz.pdx1.qualtrics.com/Q/EditSection/Blocks/Ajax/GetSurveyPrintPreview?ContextSurveyID=SV_SinpQthDJaVe6km&Context... 2/8

Survey Statistics Report:

Duration (in seconds)

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Duration (in seconds)	193.00	1048.00	444.50	351.76	123732.25	4	1778.00

Q1 - How knowledgeable are you about the resources provided by these Kansas mate...

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Alliance for Innovation on Maternal Health (AIM) program	1.00	3.00	2.25	0.83	0.69	4	9.00
Fourth Trimester Initiative (FTI)	2.00	3.00	2.75	0.43	0.19	4	11.00
Maternal Warning Signs Initiative	1.00	2.00	1.75	0.43	0.19	4	7.00
Kansas Connecting Communities	1.00	3.00	2.00	0.71	0.50	4	8.00
Kansas Perinatal Community Collaborative	2.00	3.00	2.25	0.43	0.19	4	9.00
M.A.V.I.S Project	1.00	3.00	1.75	0.83	0.69	4	7.00

Q2 - On a scale 1 (not effective) to 5 (very effective), how effective do you believe the current maternal health initiatives are in improving maternal health outcomes in Kansas?

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
In urban counties?	2.00	3.00	2.25	0.43	0.19	4	9.00
In rural counties?	1.00	2.00	1.67	0.47	0.22	3	5.00

Q3 - (Optional) Could you explain your answer?

(Optional) Could you explain your answer?

Less certain about rural counties

Urban communities get more resources and options for providers

Q4 - On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of economic stability (e.g., poverty, employment, food security) on maternal health in Kansas?

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
In urban counties?	3.00	5.00	4.25	0.83	0.69	4	17.00
In rural counties?	2.00	5.00	3.75	1.30	1.69	4	15.00

Q5 - On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of education access and quality on maternal health in Kansas?

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
In urban counties?	4.00	5.00	4.50	0.50	0.25	4	18.00
In rural counties?	2.00	5.00	3.75	1.30	1.69	4	15.00

Q6 - On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of the neighborhood and built environment (e.g., housing, transportation, safety) on maternal health in Kansas?

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
In urban counties?	2.00	5.00	4.00	1.22	1.50	4	16.00
In rural counties?	2.00	5.00	4.00	1.22	1.50	4	16.00

Q7 - On a scale from 1 (extremely negative) to 5 (extremely positive impact), how would you rate the impact of the social and community context (e.g., social cohesion, discrimination, incarceration) on maternal health in Kansas?

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
In urban counties?	4.00	5.00	4.50	0.50	0.25	4	18.00
In rural counties?	2.00	5.00	4.00	1.22	1.50	4	16.00

Q8 - (Optional) Are there any specific gaps that you want to highlight for urban or rural counties?

No data found - your filters may be too exclusive!

Q9 - (Optional) Are there any specific assets or strengths that you want to highlight for urban or rural counties?

No data found - your filters may be too exclusive!

Q10 - On a scale from 1 (not effective at all) to 3 (extremely effective), how effective do you believe the following strategies are for maternal health initiatives:

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Community outreach programs	2.00	3.00	2.75	0.43	0.19	4	11.00
Local health fairs	1.00	2.00	1.75	0.43	0.19	4	7.00
Partnerships with community organizations	2.00	3.00	2.75	0.43	0.19	4	11.00
Social media campaigns	2.00	3.00	2.25	0.43	0.19	4	9.00
Town hall meetings	1.00	3.00	2.00	0.71	0.50	4	8.00

Q11 - (Optional) What policies, if any, sufficiently support maternal health improvements in Kansas?

(Optional) What policies, if any, sufficiently support maternal health improvements in Kansas?

Community outreach is vital for disseminating information, but policy change at the institutional and systems level is likely more impactful in my opinion

Q11 - (Optional) What policies, if any, sufficiently support maternal health improvements in Kansas?

(Optional) What policies, if any, sufficiently support maternal health improvements in Kansas?

Community outreach is vital for disseminating information, but policy change at the institutional and systems level is likely more impactful in my opinion

Q12 - On a scale from 1 (strongly disagree) to 5 (strongly agree), to what extent do you agree with the following statement:

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Maternal health initiatives in Kansas have positively evolved over the past few years.	4.00	5.00	4.25	0.43	0.19	4	17.00
Kansas maternal health initiatives have integrated well with federal programs.	3.00	5.00	3.75	0.83	0.69	4	15.00
There are significant gaps in maternal health initiatives.	4.00	5.00	4.75	0.43	0.19	4	19.00
There are significant overlaps in maternal health initiatives in Kansas.	2.00	3.00	2.50	0.50	0.25	4	10.00

Q13 - (Optional) Could you elaborate on your answers?

No data found - your filters may be too exclusive!

Q14 - On a scale from 1 (far below average) to 5 (far above average), how would you rate KDHE's:

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Current data collection methods	3.00	4.00	3.25	0.43	0.19	4	13.00
Evaluation methods	3.00	4.00	3.25	0.43	0.19	4	13.00
Accessibility of maternal health data	2.00	4.00	3.00	0.71	0.50	4	12.00

Q15 - On a scale from 1 (not a barrier) to 5 (extreme barrier), to what extent do you believe the following are barriers to implementing alternative or non-traditional maternal care options in your area:

Field	Min	Max	Mean	Standard Deviation	Variance	Responses	Sum
Lack of funding	3.00	5.00	4.25	0.83	0.69	4	17.00
Regulatory barriers	3.00	5.00	4.00	0.71	0.50	4	16.00
Lack of trained professionals	4.00	5.00	4.25	0.43	0.19	4	17.00
Cultural resistance	3.00	4.00	3.75	0.43	0.19	4	15.00
Lack of awareness	2.00	3.00	2.75	0.43	0.19	4	11.00

Q16 - Do you have any final thoughts about any strengths or gaps in maternal healthcare in Kansas?

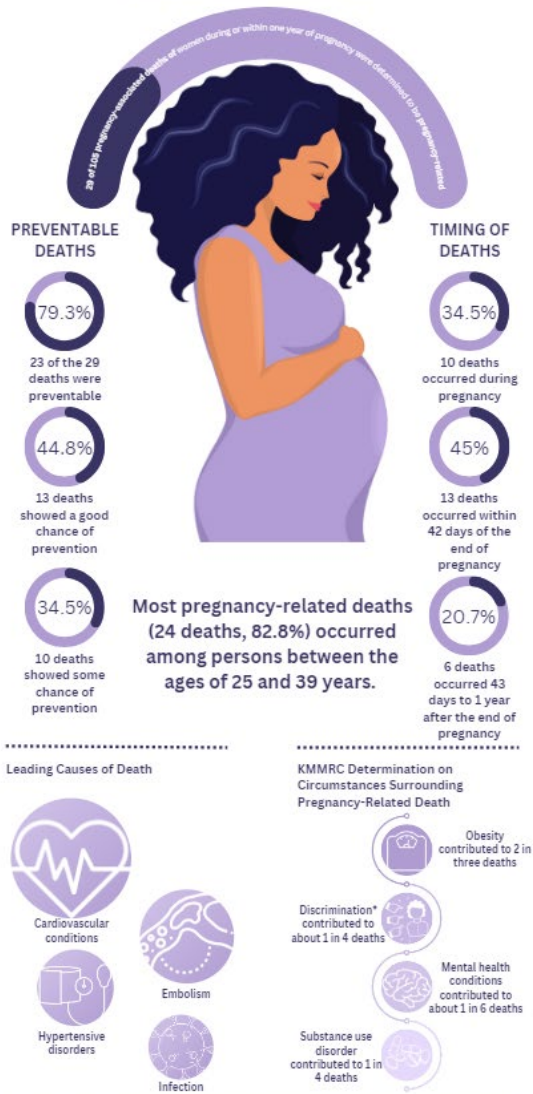
No data found - your filters may be too exclusive!

Appendix B: Infographics

MHITF Infographic:

Pregnancy-Related Death

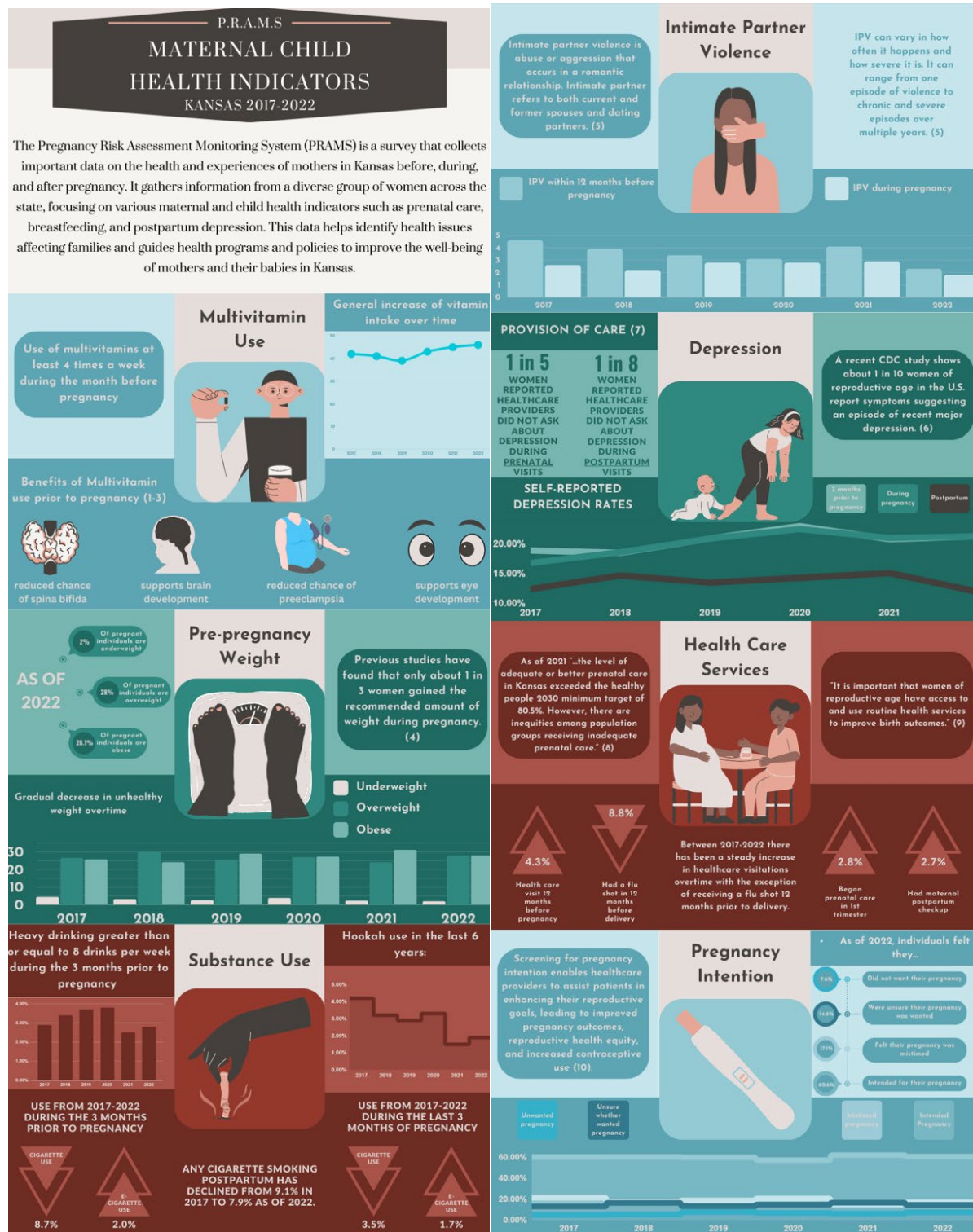
IN ACCORDANCE TO THE 2016-2020 KANSAS
MATERNAL MORTALITY REPORT

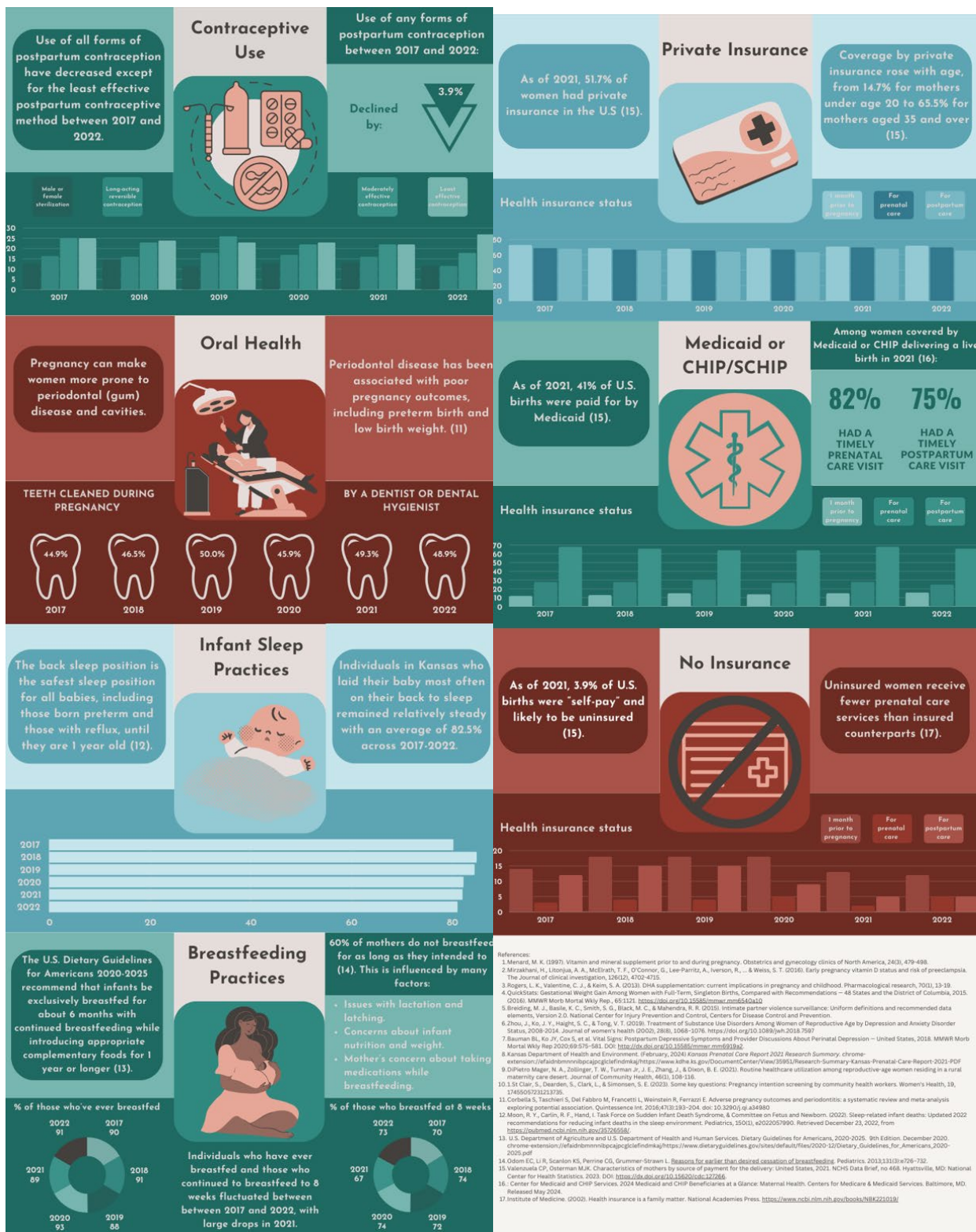


Recommendation for Prevention and Expected Impact of Actions if Implemented for Pregnancy-Related Deaths

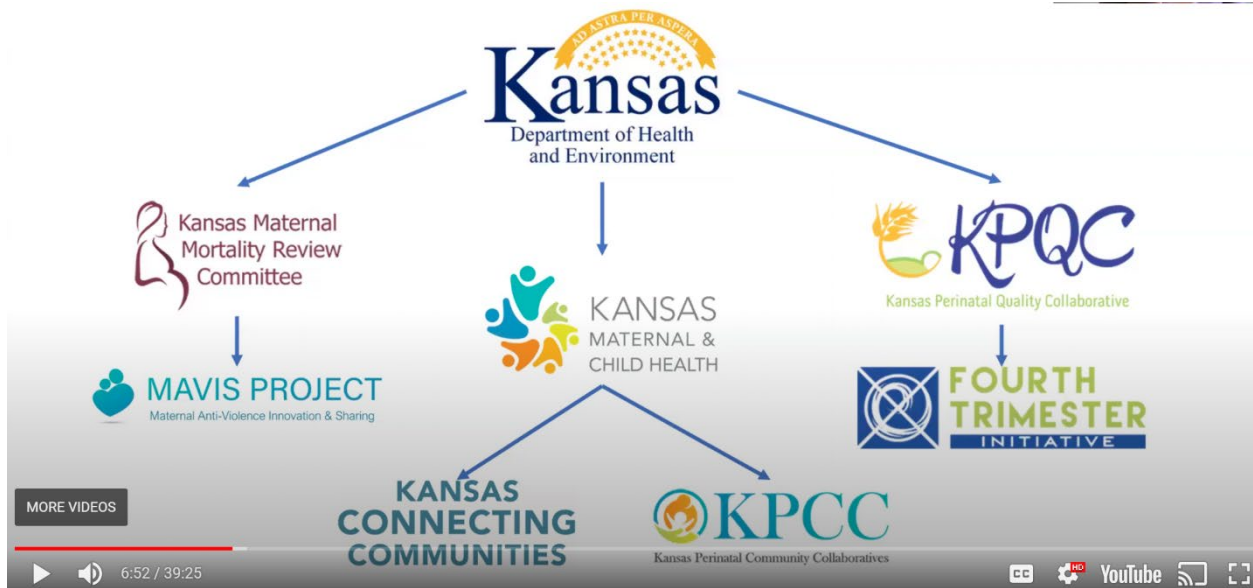
- 1 Most recommendations were identified as resulting in either primary (45.7%) or secondary (38.6%) prevention, and 15.5% of recommendations were identified as resulting in tertiary prevention. The level of expected impact if the recommendation was implemented was estimated to be large, extra large or giant for 57.9% of recommendations.
- 2
- 3 More consistent use of the key KMMRC recommendations for action and contributing factors for pregnancy-related deaths would likely have a large impact on prevention.

PRAMS Infographic:



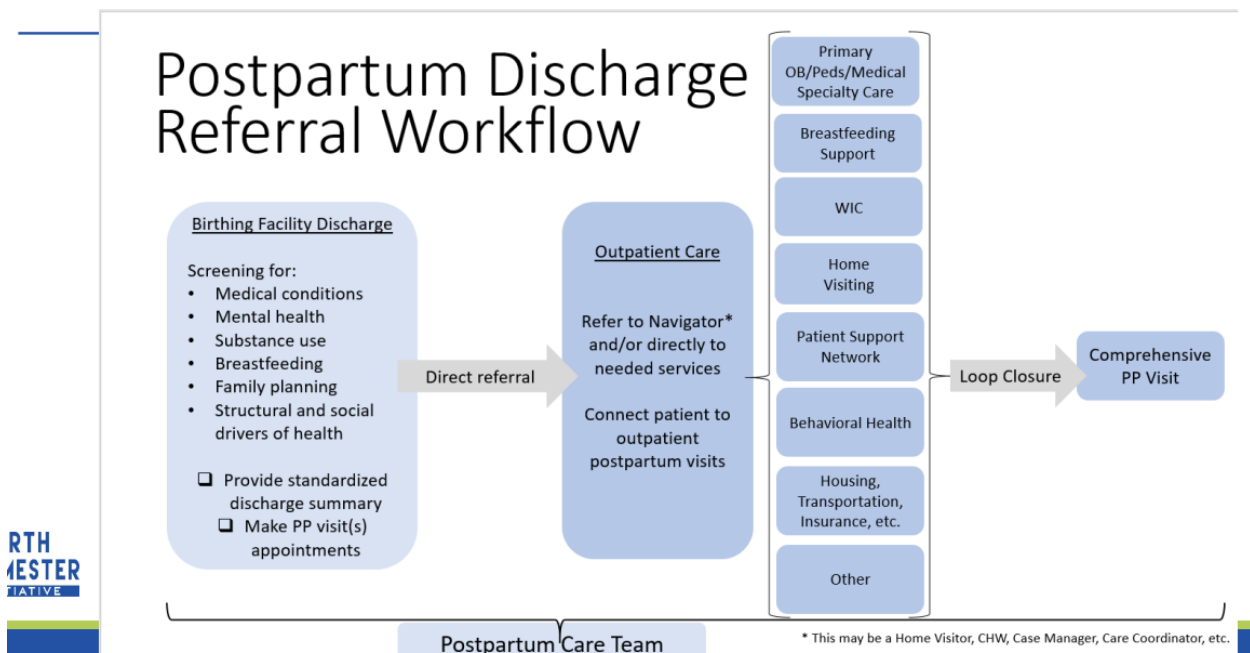


Appendix C: KDHE Health Initiatives branch



Appendix D: Postpartum Discharge Referral Workflow

New Postpartum Model for Kansas (aka Fourth Trimester Initiative)



Appendix E:

Demographics	Number	Percent ^a of all pregnancy-associated deaths	Pregnancy-associated mortality ratio		
			Ratio ^b	95 percent confidence interval	
All women	105	100.0	55.9	45.2	66.6
Age in years at time of death					
<20	9	8.6	- ^c	-	-
20-24	28	26.7	69.5	46.2	100.4
<25	37	35.2	73.7	51.9	101.6
25-29	25	23.8	42.5	27.5	62.8
30-34	27	25.7	51.7	34.1	75.2
35-39	13	12.4	58.0 ^e	30.9	99.2
≥40	3	2.9	-	-	-
≥35	16	15.2	60.6 ^e	34.7	98.5
Race and ethnicity					
Non-Hispanic White	59	56.2	45.3	34.5	58.4
Racial/ethnic minorities	46	43.8	80.1	58.6	106.8
Hispanic ^d	16	15.2	51.1 ^e	29.2	83.0
Non-Hispanic Black	19	18.1	141.6 ^e	85.2	221.1
Non-Hispanic, Other Race	11	10.5	86.4 ^e	43.1	154.6
American Indian or Alaska Native (3)					
Pacific Islander (1)					
Two or more races or other non-specified race and ethnicity (7)					
Education					
High school or less	64	61.0	96.9	74.6	123.8
More than high school	40	38.1	33.1	23.6	45.0
Some college	23	21.9	60.2	38.1	90.3
Associate or bachelor's degree	13	12.4	21.2 ^e	11.3	36.3
Advanced degree	4	3.8	-	-	-
Unknown	1	1.0	-	-	-
Health insurance during pregnancy or for delivery					
Medicaid	62	59.0	109.5	84.0	140.4
Private	31	29.5	29.2	19.8	41.4
Uninsured or self-pay	4	3.8	-	-	-
Unknown	8	7.6	-	-	-
Marital status					
Married	33	31.4	27.3	18.8	38.4
Unmarried	70	66.7	104.4	81.4	131.9
Divorced (9)					
Never married (61)					
Unknown	2	1.9	-	-	-
Pre-pregnancy Body mass index (BMI)^f					
Underweight	3	2.9	-	-	-
Normal weight	29	27.6	38.0	25.4	54.6
Overweight	17	16.2	33.5 ^e	19.5	53.7
Obese	37	35.2	67.6	47.6	93.1
Unknown	19	18.1	-	-	-
Prenatal care entry					
1 st trimester	64	61.0	42.1	32.4	53.7
Late and none	41	39.0	118.0	84.7	160.1
2 nd trimester	17	16.2	62.4 ^e	36.3	99.8
3 rd trimester	5	4.8	-	-	-
None	9	8.6	-	-	-
Unknown	10	9.5	-	-	-
Location of last residence within Kansas (excluding 14 out of state residents)					
Median household income of maternal residential ZIP Code^g					
Quartile 1 (poorest)	36	39.6	78.7	55.1	109
Quartile 2	23	25.3	54.1	34.3	81.1
Quartile 3	19	20.9	43.7 ^e	26.3	68.2
Quartile 4 (wealthiest)	13	14.3	31.5 ^e	16.8	53.8
Urban-rural residence^h					
Metropolitan	54	59.3	45.7	34.3	59.6
Metropolitan	24	26.4	68.7	44.0	102.3
Rural	13	14.3	63.5 ^e	33.8	108.7