

Maternal Mortality Review

2020 Annual Report



Kentucky Department for Public Health

Division of Maternal and Child Health

Data Ranging from 2013-2018

November 2020



Executive Summary

This annual report has been prepared pursuant to KRS 211.684.

Maternal mortality is a key indicator of a state's health and has a long-term impact on other related health factors such as infant mortality. Given the rise of maternal mortality within the United States, it is pertinent to track and implement means to reduce maternal mortality rates. To reduce mortality, Kentucky is promoting optimal health before, during, and after pregnancy. This includes addressing healthy nutrition, chronic health conditions, substance use, health equity, social determinants of health, prenatal care, and early elective deliveries.

Key Findings

- 50% of maternal deaths were pregnancy-related in the 2017 cohort
- In 2017, 46% of maternal mortality cases had substance use disorder (SUD) linked to their death
- In 2017, 78% of maternal mortality cases were deemed to be preventable

Key Recommendations

Prenatal and Pregnancy

- Providing comprehensive healthcare evaluations regardless of status during prenatal care
- Educating providers of the pregnancy treatment options for SUD care in Kentucky while pregnant through www.findhelpnowky.org
- Developing a standard care of women with substance use issues
- Having a Kentucky all schedule prescription electronic report (KASPER) available at the first prenatal visit
- Providing prenatal care in substance use disorder treatment centers flagged if a pregnant woman comes for medication assisted treatment (MAT) but has no prenatal care (PNC)
- Tracking source of patient prescriptions and efficacy of dosage prescribed
- Continuing maternal respiratory and cardiac evaluation throughout gestation
- Creating a consultation team related to opioid usage and intervention
- Documenting through considerate and careful means of which providers saw patient during pregnancy
- Recommending involuntary treatment when necessary

Post-delivery

- Educating on standards of practice for updated discharge protocol and a plan of safe care following proper, early, or against medical advice (AMA) discharges
- Providing social work, urine drug screen (UDS), additional postpartum case management, refer to Health Access Nurturing Development Services (HANDS) for home visits postpartum
- Integrating treatment access and tracking cases of separation of mother and baby
- Continuing care at discharge/post-delivery
- Accessing complete information that is available including newborn chart, medical records, neonatal abstinence syndrome (NAS), Medicaid, and coroner reports for maternal death review

- Providing targeted case management, incentive-based postpartum visit

General Safety

- Providing adequate education on seatbelt use for everyone
- Creating a fire evacuation plan for every person
- Testing for drugs in both the driver and passenger in vehicular accidents

Maternal Health and its Importance

The World Health Organization defines maternal death or mortality as “the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes.” The Centers for Disease Control and Prevention expanded this definition to include deaths occurring within one year of the end of the pregnancy. Kentucky is currently using this expanded definition for its maternal mortality reviews but tracking both sets of results.

The Centers for Disease Control and Prevention report nearly 700 women die each year in the United States as a result of pregnancy or delivery complications. The American College of Obstetricians and Gynecologists reported that more women die from pregnancy-related complications in the United States than in any other developed country. The national maternal mortality rate has increased by 26% in recent years. Racial disparities are apparent, as black women are three to four times more likely to die from a pregnancy-related complication than non-Hispanic White women (Centers for Disease Control and Prevention, 2019).

Disparities in Kentucky vary by geography, race, ethnicity, and access to care. Kentucky's population is 87.08% White/Caucasian, 7.98% Black/African American, and 3.9% Hispanic. Death certificates show maternal deaths appear to be higher among Black women in the two largest urban areas in Kentucky (Lexington and Louisville). Although, providers and birthing hospitals are more readily available, there are also a higher percentage of Black women residing in urban areas, areas where the regional referral centers are located.

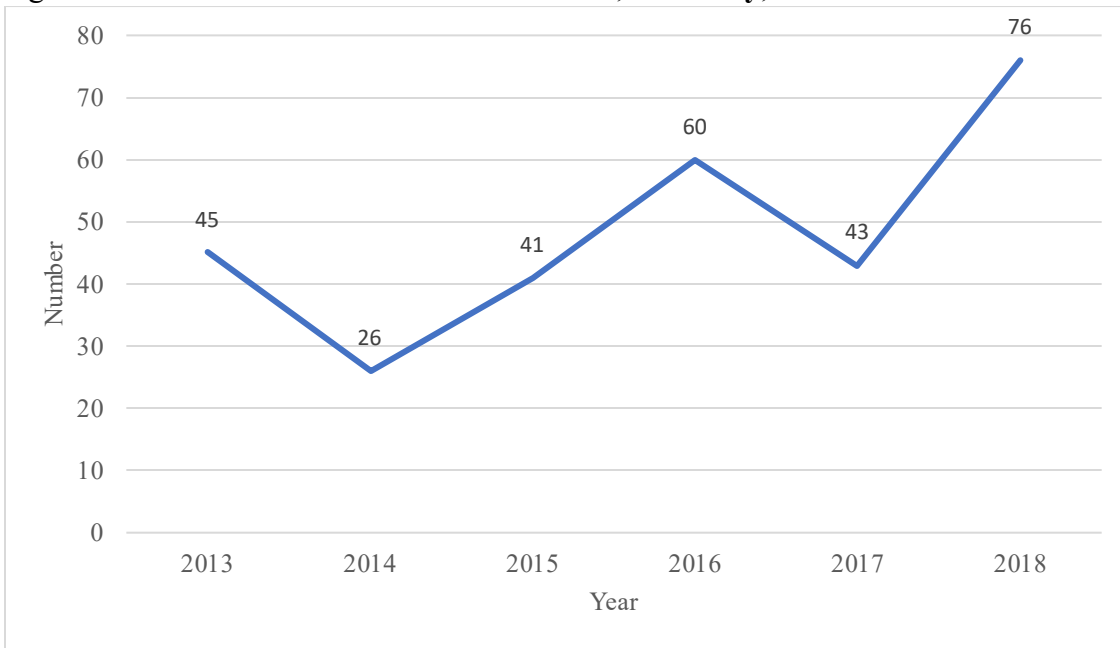
The 2018 maternal mortality rate in the U.S. is 17.4 deaths per 100,000 live births. Almost half of all pregnancy-related deaths are reported to be caused by hemorrhage, cardiovascular and coronary conditions, cardiomyopathy, or infection. However, it is estimated more than 60% of pregnancy-related deaths are preventable.

Maternal Mortality from Vital Statistic Records

The importance of Kentucky’s maternal health and well-being has a significant impact on the overall health of the state. Risk factors impacting maternal mortality include tobacco use, obesity, racial disparities, depression, opioid use, and other social determinants of health such as transportation, access to care, domestic violence, and a rural state. Morbidities such as diabetes, hypertension, or other health conditions require additional follow-up and management during the pregnancy.

Figure 1 represents the finite count of maternal deaths of those pregnant within one year before their death or pregnant at the time of death. Figure 2 represents the number of maternal deaths per 100,000 live births within the state of Kentucky. There was a small drop in this rate in 2014, but it has shown a startling increase in both 2016 and 2018. Both of these display data by their respective years from 2013 to 2018. These figures are inclusive of any cause of death. The rate of maternal death by race differs greatly with African American women having a maternal death rate almost two and half times that of White women (Figure 3).

Figure 1: Total Number of Maternal* Deaths; Kentucky, 2013-2018**

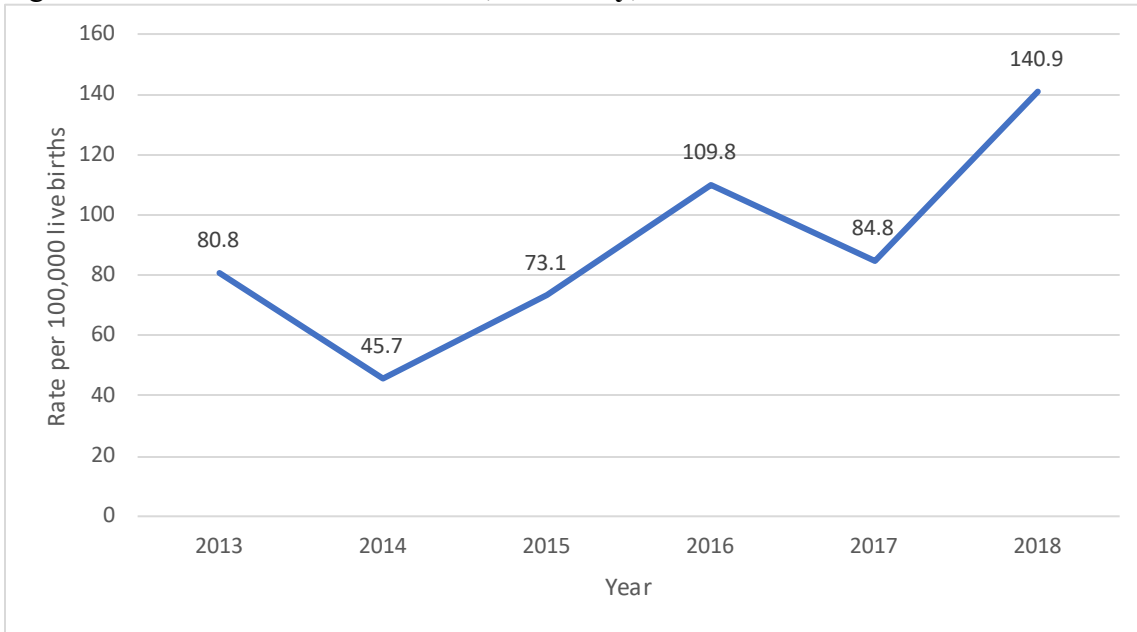


*Maternal death is defined as any female between the ages of 15-55 that was pregnant within one year prior to death or pregnant at death and died from any cause.

**2016-2018 data is preliminary and numbers may change

Data Source: KY Vital Statistics files, linked live birth, and death certificate files years 2013-2018

Figure 2: Rate of Maternal* Deaths; Kentucky, 2013-2018**

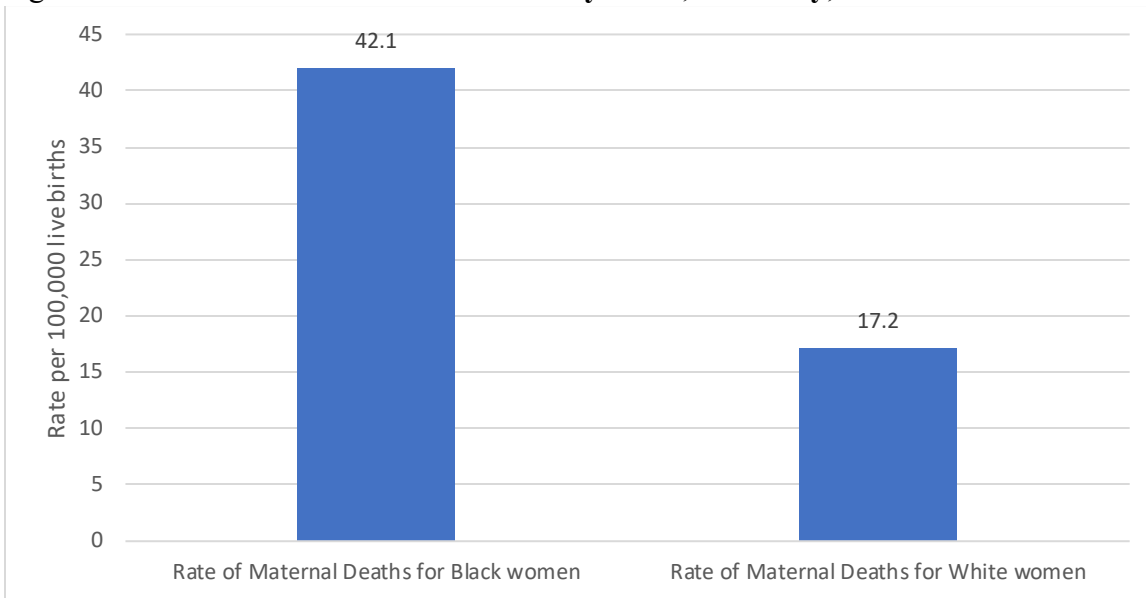


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Figure 3: Difference in Maternal* Deaths by Race; Kentucky, 2018**



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**2018 data is preliminary and numbers may change

Data Source: KY Vital Statistics files, linked live birth, and death certificate files years 2018

Maternal Mortality Review Assessment and Strategic Plans

The mission of maternal mortality review (MMR) is to:

- Identify all causes of maternal death in Kentucky
- Review cause and manner of maternal deaths to identify risk factors, system deficits, or preventable causes
- Prevent pregnancy complications related to or associated with maternal deaths

The maternal mortality review committee (MMRC) meets to determine program process and planning with the analysis of available data and technical assistance from the Centers for Disease Control and Prevention.

Figure 4: Summary of MMRC review process



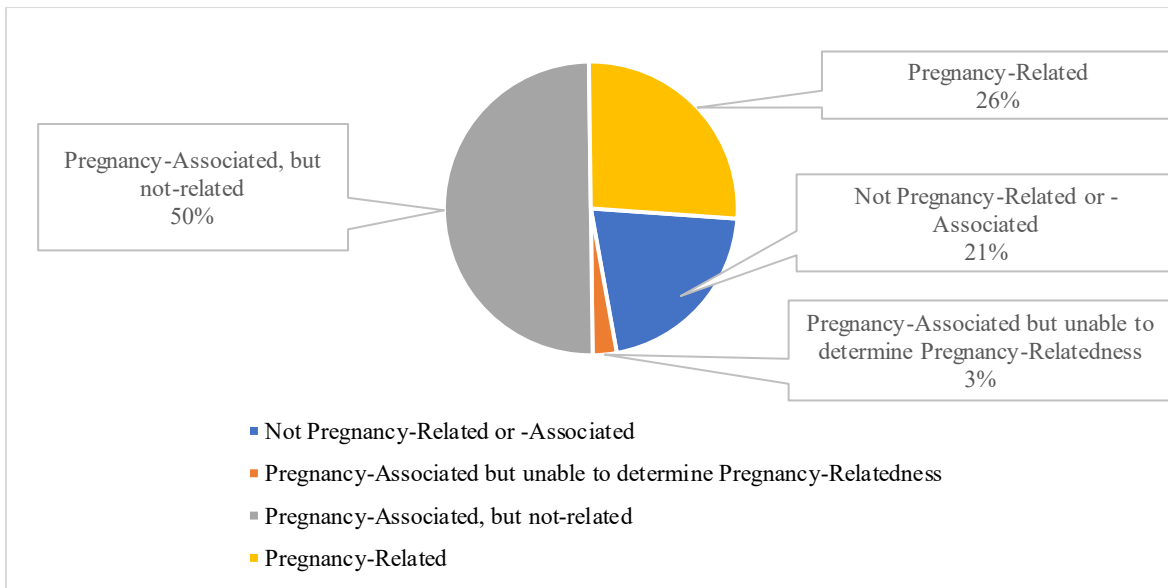
The MMRC works to answer a variety of questions including the following core questions:

- Was the death pregnancy related?
- What was the cause of the death?
- Was the death preventable?
- What factors contributed to the death?
- What recommendations and actions are needed to address the contributing factors?
- What is the anticipated impact if the recommendations and actions were implemented?

Review Findings for 2017 cohort

Using established review criteria, the Division of Maternal and Child Health had determined half of the 2017 maternal deaths in Kentucky were pregnancy-associated. The remainder of those deaths was due in part to pregnancy-associated causes such as motor vehicle collisions or other accidental deaths. The number of pregnancy-related cases appears to remain the same, while the number of pregnancy-associated cases represents half of the accidental deaths with substance use as a mitigating factor, as shown in Figure 5.

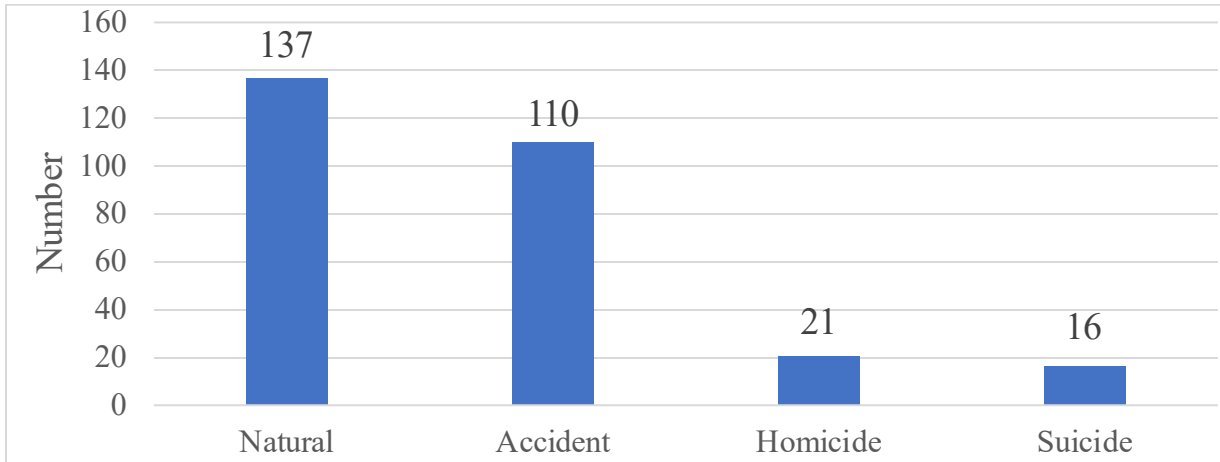
Figure 5: Pregnancy Relatedness in 2017 Maternal Deaths



On the death certificate, the manner of death is defined as natural, accidental, homicide, suicide, or undetermined. Figure 6 shows the total number of maternal deaths based on the manner of death. Natural deaths include any death occurring because of disease or a natural process. Accidental deaths are categorized as resulting from an inadvertent event. Homicide deaths are considered to occur due to the action of another party directly causing the death of a person. Suicide deaths are from self-inflicted injury with evidence of intent to die. Outside of the prior criteria are undetermined deaths, in which very little information is available, and other classification is unavailable.

In Kentucky, suicide deaths require clear evidence of intent such as a history of suicidal ideation documented in a note. A concern of our Kentucky maternal mortality reviews in some overdose deaths listed as accidental may have been suicide attempts. This presents as a clear limitation to some of the categorizations of Kentucky maternal deaths. Risk factors such as depression, other mental health disorders, or domestic violence have been noted during the abstraction of these cases for reference.

Figure 6: Total Number of Maternal* Deaths by Manner of Death; Kentucky, 2013-2018 Combined**



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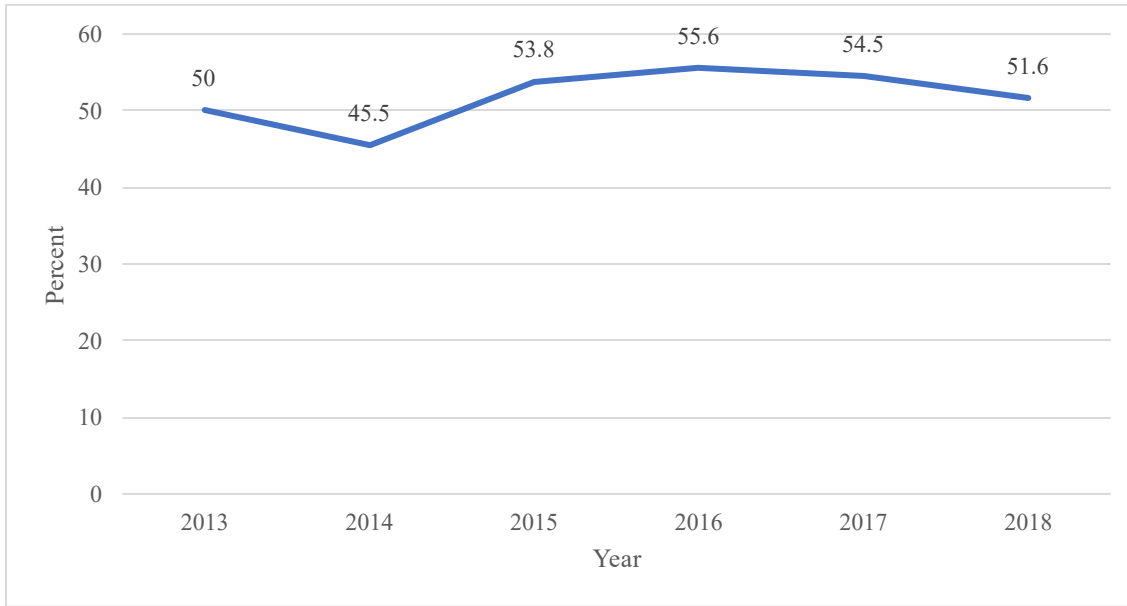
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Data Source: KY Vital Statistics files, linked live birth, and death certificate files years 2013-2018

The maternal mortality review committee determines agreement with the coroner’s cause of death. The committee did agree with the cause of death in 78% of reviewed cases. Differences between committee determinations and coroner determinations were related to the committee having more information and medical records. The coroner’s determination may have been based on limited information if the decedent had multiple providers in different facilities or jurisdictions in Kentucky or surrounding states. Abstraction of medical records and review of individual cases by the committee is necessary to confirm the causes of death based on all available details.

Many death certificates have causes of death consistent with substance use or infected injection sites based on the International Classification of Diseases 10 revision (ICD-10). Preliminary conclusions found more than half of the accidental maternal deaths were directly related to drug overdose (Figure 7), and the committee agreed that close to half of the cases reviewed substance use contributed to the death (Figure 8). The conclusions strengthen the need to address substance use before or during early pregnancy strengthens the need for ongoing care management after delivery.

Figure 7: Percentage of Accidental Maternal* Deaths due to Drug Overdose; Kentucky, 2013-2018**



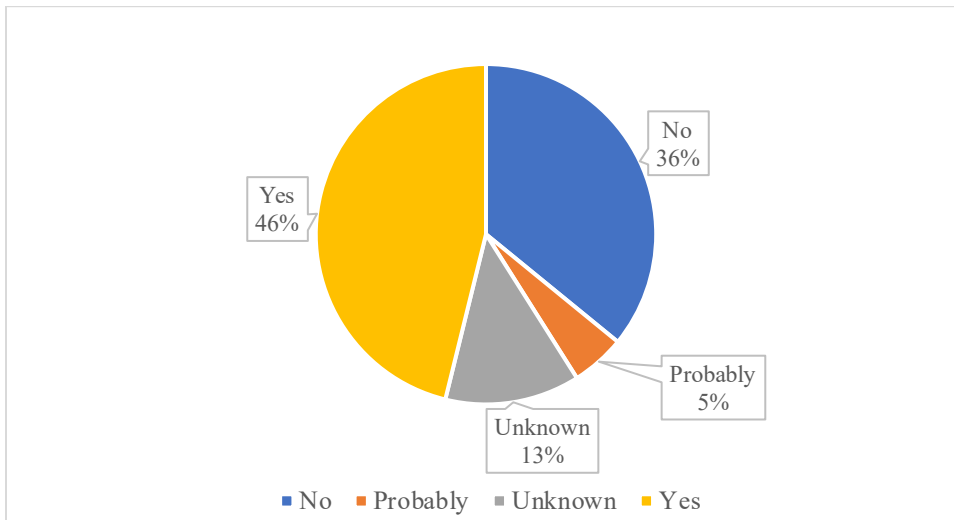
*Maternal death is defined as any female between the ages of 15-55 that was pregnant within one year prior to death or pregnant at death and died from any cause.

Drug overdose is defined by the ICD10 code X40-X49

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Figure 8: Substance Use as a Contributing Factor in 2017 Maternal Deaths



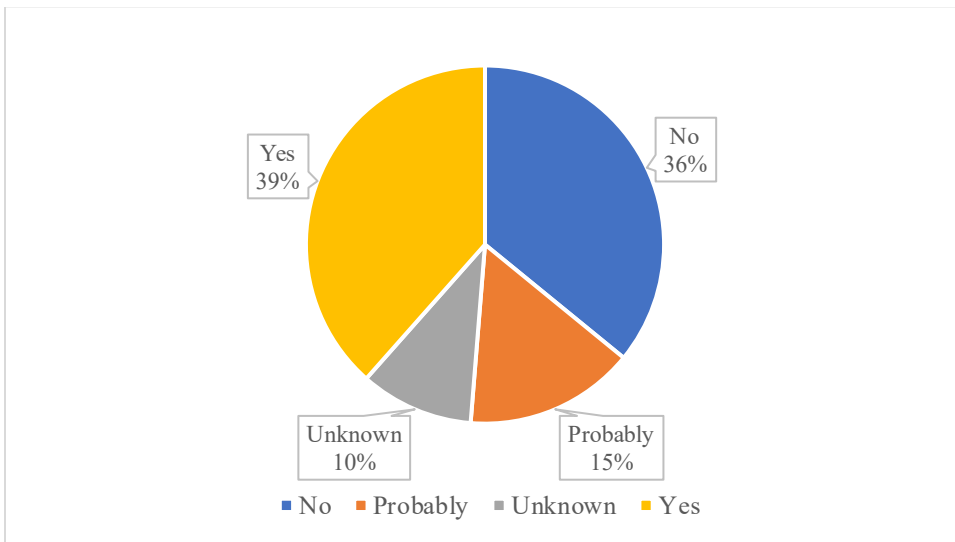
It is beneficial to learn if early identification and treatment for substance use has occurred for mothers throughout Kentucky. If depression screening was completed, it is necessary to understand if women were subsequently referred to community services that could help prevent accidental death.

Psychosocial and environmental risk factors associated with maternal health conditions such as social inequality, lack of access, homelessness, chronic disease management, substance use, and food

insecurity are pertinent to address. All of these factors impact a person’s mental health and must be considered during the review process (Figure 9).

The MMRC has aired concerns regarding follow-up of pregnant women who are enrolled in treatment programs and may be doing well in their recovery. However, many women have returned to previous patterns of substance use after pregnancy without understanding their lowered tolerance to substances after pregnancy. Another major issue is the continuity of care in providing support to these mothers post-delivery, considering comorbidities such as depression and traumatic stress are experienced when they lose custody of their newborn infant.

Figure 9: **Mental Health Conditions as a Contributing Factor in 2017 Maternal Deaths**

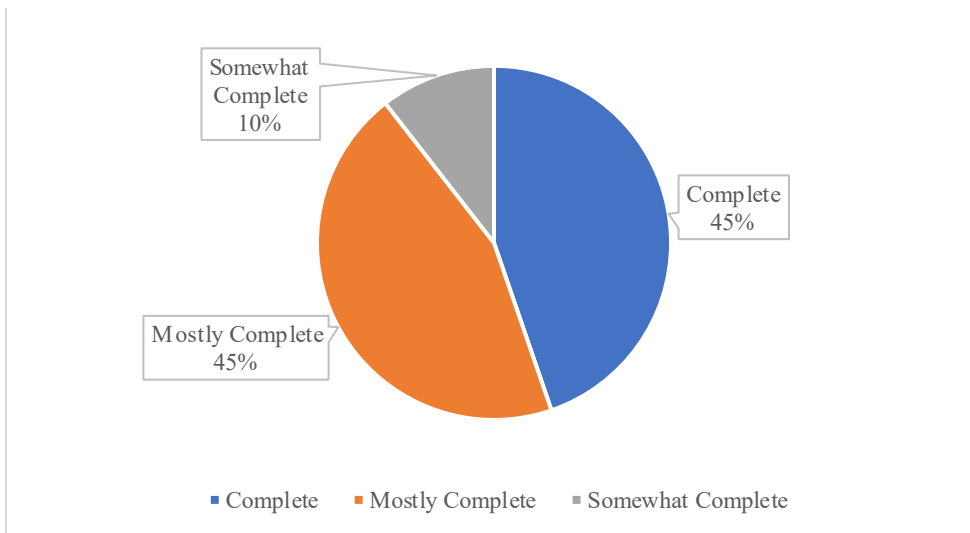


Evaluation

During the review process, the categorization of the case occurs with the consensus of the MMRC. This information is collected using the Centers for Disease Control and Prevention decision form. The MMRC agreed that half of Kentucky’s maternal deaths were associated or aggravated by the pregnancy, related in part to continued case management of morbidities during or after pregnancy and substance use.

A great challenge posed during abstraction is obtaining records for review. The treatment provider, and location of the birth or end of pregnancy, is often not where prenatal care or treatment for substance use or other health issues occurs. Abstractors spend a large amount of time researching many data sources (e.g., Medicaid claims data, hospital data, death certificate information, and pregnancy linked birth certificate to verify that delivery occurred). Abstractors may need to call healthcare providers for additional information. Reviews are greatly impacted by the availability and amount of information for review. Figure 10 depicts the completeness of records available to the review committee at time of review and is a testament to the hard work of the MMRC abstractors.

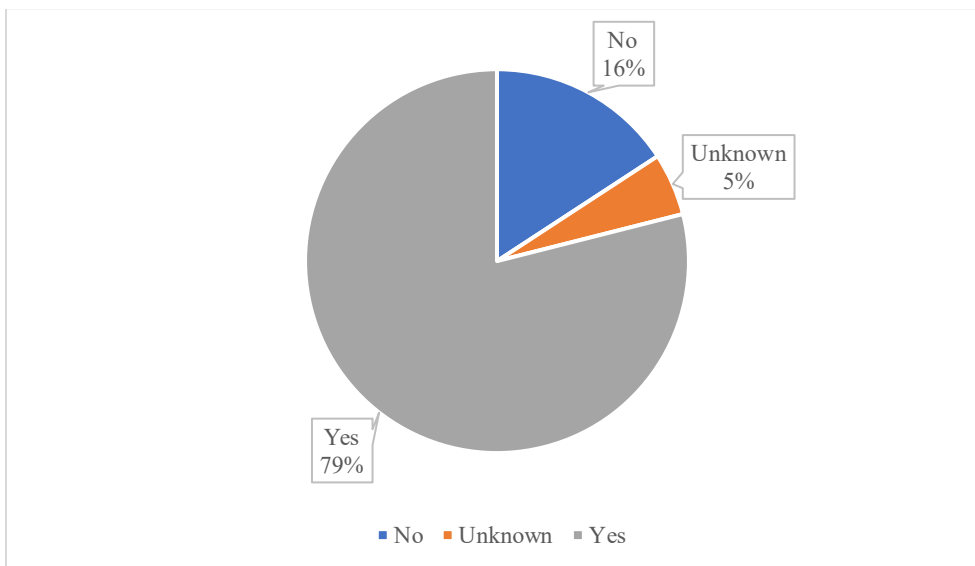
Figure 10: Degree of Complete Records/Information



- **Complete:** All records necessary for adequate review of the death were available
- **Mostly Complete:** Minor gaps (i.e., information that would have been beneficial but was not essential to the review of the death)
- **Somewhat Complete:** Major gaps (i.e., information that would have been crucial to the review of the death)

Overall, 79% of the maternal deaths reviewed from the 2017 cohort were considered to be preventable. This is higher than the CDC predicted average that 60% of maternal deaths in the United States are preventable (Figure 11). It is pertinent for Kentucky to continue reviewing maternal deaths, providing meaningful recommendations, and actionable interventions to prevent these outcomes.

Figure 11: Was the Death Preventable?



Continued Public Health Prevention Efforts

The Division of Maternal and Child Health led the implementation of the MMRC and provides and recommends prevention measures to reduce maternal mortality through the following efforts:

- Maternal and Child Health (MCH) Title V Block Grant supports evidence-informed perinatal education and strategies including assessment of health, chronic health conditions, substance use, tobacco use, domestic violence screening, and mental health screening. Referrals are made to various community programs and providers for evaluation and treatment.
- The MCH Division through its programs promotes health of mothers and babies through its home visiting program, the Health Access Nurturing Development Services (HANDS), the Special Supplemental Nutrition Program for Women, Infant, and Children Program (WIC), and provides early intervention for families directed to the child to achieve its optimal developmental potential.
- Continue collaboration with local health departments, birthing facilities, and Kentucky Chapter of March of Dimes to reduce early elective deliveries using evidence-informed strategies from Healthy Babies are Worth the Wait.
- Provide statewide education to promote positive health outcomes through a joint effort with the Kentucky Perinatal Association.
- Encourage local health departments to assist mothers with applying for presumptive eligibility for Medicaid.
- Maternal and Child Health participates in a Social Determinants of Health Collaborative Improvement and Innovation Network workgroup with the Office of Health Equity, March of Dimes, Louisville Healthy Start Program, and Maternal and Child Health Division. The workgroup provides ongoing training about social bias with long-term plans to address health equity in the local health departments.
- Kentucky's newly formed Kentucky Perinatal Quality Collaborative (KyPQC) is developing a workgroup to take the recommendation of the MMRC and incorporate these recommendations into the appropriate agencies/programs to address these needed changes. The KyPQC is also actively moving Kentucky to become an Alliance for Innovation on Maternal Health (AIM) state incorporating the Obstetric Care for Women with Opioid Use Disorder.