



Indiana Maternal Mortality Review Committee 2025 Annual Report



Division of Family Health Data and Fatality Prevention

Table of Contents

Dedication and Acknowledgements.....	3
Executive Summary	4
Recommendations to Prevent Future Deaths.....	5
Introduction and Methods	7
MMRC Findings	8
Conclusion	13
Appendices	15



Dedication and Acknowledgements

Dedication

The Indiana Department of Health dedicates this report to the 69 Indiana women who lost their lives in 2023 during pregnancy or within one year of pregnancy. These women and their families are not forgotten during the fatality review process. We understand these data represent real lives, and we know there is a lasting impact on entire communities. The fatality review process is an important step in addressing maternal mortality and creating recommendations for prevention, but we recognize it does not take away what these families have been through.

Acknowledgements

This report and data are made possible through the Indiana Maternal Mortality Review Committee (MMRC), a multidisciplinary group that volunteers their time to review maternal deaths. We would like to thank the IDOH divisions that support the MMRC and the Division of Family Health Data and Fatality Prevention (DFP) in this important work. Thank you to the following Divisions: Maternal and Child Health, Office of Data and Analytics, Vital Records, and Trauma and Injury Prevention. We would also like to thank many external partners for their assistance in gathering records, participating in the review process, and helping implement recommendations. Thank you to the Indiana Hospital Association, the Indiana Department of Child Services, the Indiana Family and Social Services Administration, hospitals, providers, local law enforcement, and coroners. Thank you to the IDOH staff who help honor the lives of each woman lost and for their continued commitment to preventing future deaths.

Indiana Department of Health Staff

Lindsay Weaver, MD, FACEP, State Health Commissioner

Eden Bezy, MPH, Deputy Health Commissioner Public Health Practice

Naima Gardner, MPH, Assistant Commissioner, Commission of Women, Children, and Families

Jamie Smith, MS, MPH, Director, Division of Family Health Data and Fatality Prevention

Cameron Willett, MPH, Maternal Mortality Programs Director

Caitlin Gandarilla, BSN, RNC, Nurse Abstractor

Shelby Howe, BSN, RN, Nurse Abstractor

Megan O'Day, BSN, RN- Nurse Abstractor

Maria Bukowska, MPH, Maternal Mortality Epidemiologist



Executive Summary

Maternal mortality is a measure of the health and general well-being of a community. The MMRC is tasked with identifying and understanding the causes and contributing factors of maternal mortality and creating recommendations to prevent future deaths.

The maternal deaths reviewed in Indiana are all pregnancy-associated and, after a complete committee review, are determined to be either pregnancy-associated, but not related or pregnancy-related.

Pregnancy-associated death: A death during pregnancy or within one year of pregnancy irrespective of the cause.

Pregnancy-associated, but not related death: A death during pregnancy or within one year of pregnancy, from a cause that is not related to pregnancy.

Pregnancy-related death: A death during pregnancy or within one year of pregnancy from a pregnancy complication, a chain of events initiated by the pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy.

Some rates or percentages may be unstable due to low counts; any unstable rate and percentage are noted with an asterisk. This report also includes data compiled over five years to create counts large enough to be stable. The data in this report are descriptive and should not be used to assign mortality risk to certain populations. Indiana maternal mortality data cannot be compared to other states or national maternal mortality datasets or statistics.

2023 Indiana MMRC Key Findings:

- 69 pregnancy-associated deaths occurred during pregnancy or within one year of pregnancy.
- Of 69 deaths, 41 were pregnancy-associated, but not related, and 23 were pregnancy-related. For five deaths, relatedness could not be determined.
- **In 2019-2023:**
 - **58% of pregnancy-associated deaths occurred 43 days to one year after pregnancy.**
 - **54% of pregnancy-related deaths occurred within 42 days of pregnancy.**
 - **The leading cause of pregnancy-associated death was overdose, followed by homicide.**
 - **The leading cause of pregnancy-related death was cardiovascular conditions including cardiomyopathy, followed closely by hemorrhage of various etiologies.**
 - **78% of pregnancy-associated deaths were determined to be preventable.**



MMRC Recommendations

After completing reviews of all maternal deaths that occurred in 2023, the MMRC created the following recommendations to prevent future deaths.

Provider Education

- Train providers on female presentation of cardiovascular diseases.
- Sustain education on medical procedures and treatments allowed during pregnancy.
- Educate providers on using Indiana Consultations for Healthcare providers in Addiction, Mental Health, and Perinatal Psychiatry Program (CHAMP) when mental health concerns occur during or after pregnancy, including the use of medication.
- Educate Emergency Department providers on the importance of asking if a patient is pregnant or has been pregnant in the last year.

Consistency of Care

- Create an advisory panel through the Indiana Perinatal Quality Improvement Collaborative to develop best practices for urgent care obstetric readiness and general treatment of pregnant women.
- Support implementation of Alliance for Innovation on Maternal Health bundles across all hospital Levels of Care.
- Use OB/GYN referrals and notifications when pregnant women enter the emergency department.
- Ensure emergency medical and first responders carry naloxone and are trained to administer it for all suspected overdoses.

Maternal Health

- Educate all healthcare staff on early pregnancy signs.
- Improve patient access to physician-recommended contraceptive counseling and options.
- Ensure ultrasounds and laboratory testing rule out potential ectopic pregnancies.
- Follow American College of Obstetricians and Gynecologists (ACOG) guidelines for complex maternal comorbidities and referrals.
- Expand referrals to maternal-fetal medicine physicians for high-risk patients.

Substance Use Disorder

- Provide naloxone to patients identified as high-risk at time of discharge, per clinical judgment.
- Ensure all prenatal care patients receive substance use disorder verbal screening, which is mandated through legislation, including in emergency rooms and non-traditional care settings.



- Expand access to evidence-based addiction treatment options, including medication-assisted therapies, within correctional facilities, skilled nursing facilities, and rehabilitation facilities.
- Expand awareness of the Indiana Pregnancy Promise Program and Indiana CHAMP to all providers.
- Provide patients and families with clear, balanced clinical information on treatment options for opioid use disorder.
- Ensure pregnant women with a history of SUD are referred to the Indiana Pregnancy Promise Program.

Mental Health and Psychiatric Care

- Increase access to inpatient psychiatric and dual-diagnosis (mental health and substance use disorder) care.
- Screen all postpartum patients using evidence-based depression screening tools.
- Expand perinatal-specific intensive outpatient programs.
- Improve grief and loss counseling services, including for early pregnancy loss.
- Encourage providers to refer patients to higher levels of psychiatric care and use Indiana CHAMP for complex psychiatric cases.

Intimate Partner Violence

- Strengthen IPV education and screening protocols in healthcare settings.
- Ensure IPV resources and materials are accessible to non-English-speaking patients.
- Screen for IPV in all clinical settings, not only obstetric settings.
- Ensure IPV screens occur with only the patient present.
- Expand connections to victim services, community resources, and housing assistance for women experiencing IPV.

Improving Death Investigations

- Identify obstacles limiting autopsy completion for pregnancy-related deaths and unclear causes and develop recommendations for best practices.
- Require minimum standards for forensic pathologists statewide.
- Educate law enforcement to ensure records are available to fatality review teams.
- Secure specimens for testing all substances and paraphernalia at potential overdose scenes.
- Reinforce the importance of conducting toxicology screenings at crash sites.



Introduction and Methods

Introduction

Indiana Code (IC) 16-50 requires IDOH to establish a multidisciplinary committee to conduct confidential reviews of all pregnancy-associated deaths. The Indiana MMRC includes diverse subject matter experts and providers from various specialties (obstetrics and gynecology, cardiology, pathology, maternal-fetal medicine, psychiatry), along with perinatal mood disorder specialists, law enforcement, public health professionals, and other related health professionals. Appendix A provides a complete list of MMRC members for the 2023 cohort. Case reviews are fully de-identified. Names of patients, medical providers, institutions, and locations remain confidential during the review process and are not included in this report. Recommendations are developed to improve health outcomes for pregnant and postpartum women in Indiana, not place blame on specific individuals or facilities.

[IC 16-50-1-7](#) describes the goals of the MMRC, which include reviewing cases and determining factors that contributed to the deaths in addition to developing recommendations for the prevention of maternal morbidities and maternal mortalities. The DFP maternal mortality team works to identify public health and clinical interventions aimed at improving systems of care to best serve Indiana mothers.

Methods

The Indiana MMRC reviews cases involving women between the ages of 10 and 60 years of age. Identifying deaths is the first step in understanding the burden of maternal mortality in Indiana. DFP uses multiple methods to ensure pregnancy-associated deaths are accurately identified each year. Cases are identified via death certificates and/or facility notifications. Death certificate identifications include being marked as pregnant within a year of death, dying due to an obstetric cause, or the matching of maternal death records to an infant birth or fetal death record within the year prior to a maternal death. All Indiana hospitals are required by IC 16-50 to report any known pregnancy-associated deaths to IDOH via the Maternal Mortality Notice of Death Form ([Appendix B](#)).

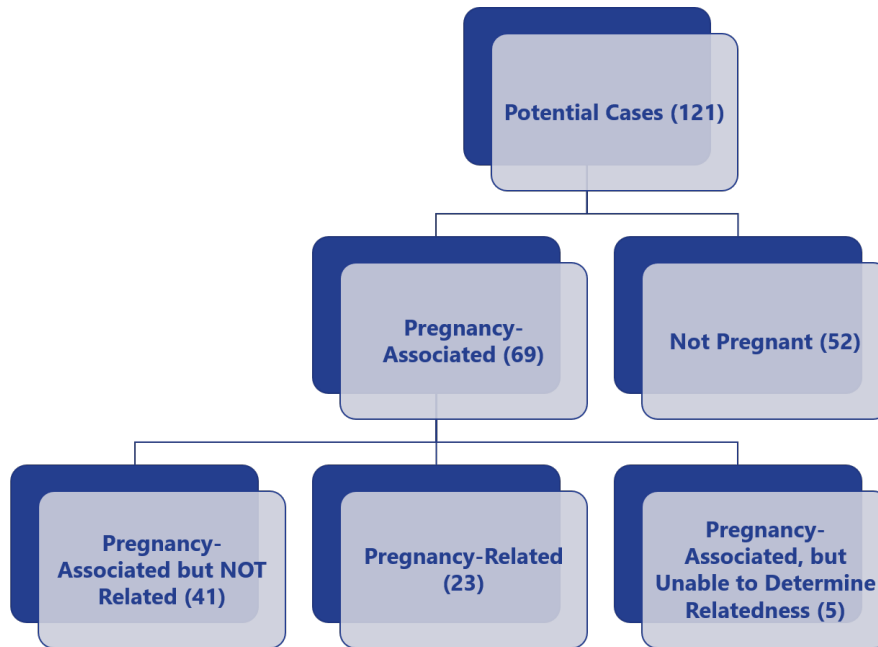
After these women are identified, DFP abstraction staff obtain any records necessary to confirm or negate pregnancy status. These may include hospital records from death, birth, or prenatal care, autopsy reports, and communication with coroners or local health officers. This process is critical to eliminate any false positives.

Figure 1 shows the Indiana MMRC case breakdown of identification counts, the false positives excluded from the review, and the categories of the 69 cases that received a comprehensive review.



Figure 1: 2023 Indiana MMRC Case Breakdown

Indiana MMRC, 2023



MMRC Findings

There were 69 pregnancy-associated deaths in 2023 in Indiana. Of those deaths, 41 were determined to be pregnancy-associated but not related, and 23 were determined to be pregnancy-related.

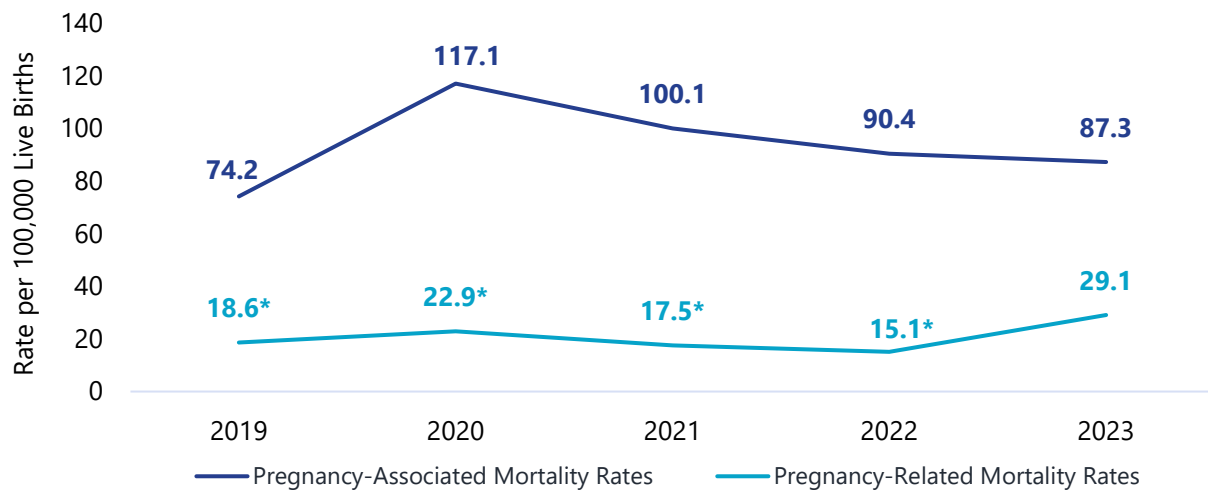
The 2023 pregnancy-associated rate was 87.3 deaths per 100,000 live births, down from 90.4 in 2022. The 2023 pregnancy-related rate was 29.1 deaths per 100,000 live births, an increase from 2022 but not statistically significant. The pregnancy-related mortality rate is a subset of the overall pregnancy-associated mortality rate.

Figure 2 shows the mortality rates for pregnancy-associated deaths and pregnancy-related deaths from 2019-2023. Pregnancy-related rates with asterisks are unstable and should be interpreted with caution.



Figure 2: Maternal Mortality Rates per 100,000 Live Births

Indiana MMRC, 2019-2023 (N=373)



*Rates based on counts less than 20 are considered unstable and should be interpreted with caution.

Figure 3 shows the preventability of maternal mortality in Indiana. Seventy eight percent of deaths from 2019-2023 were determined to be preventable by the MMRC. Of the preventable deaths, 57 percent of cases were given a good chance to alter the outcome, and 24 percent had some chance to alter the outcome. If the committee decided there was a chance to alter the outcome, they created recommendations that if implemented might have changed the course of events.

Figure 3: Maternal Mortality by Preventability

Indiana MMRC, 2019-2023

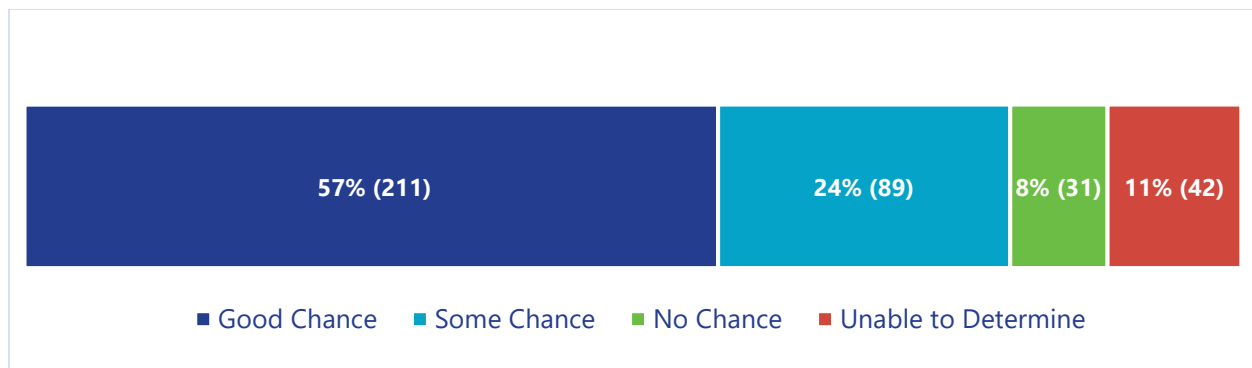


Table 1 shows pregnancy-associated and pregnancy-related deaths by race and ethnicity over a five-year period (2019-2023). The percentages of pregnancy-associated deaths were similar to the percentages of live births for White, non-Hispanic women, Hispanic any race, and other race during the same period. The other race category includes Indian, Chinese, Japanese, Hawaiian, other White, Filipino, other Asian or Pacific Islander, multiracial, and unknown. Black, non-Hispanic women represented 13 percent of live births from 2019-2023, while representing 21



percent of pregnancy-associated deaths and 22 percent of pregnancy-related deaths in the same years. Race and ethnicity are collected from many data sources and could be self-reported or reported by providers without input from the mother or family. This information is verified whenever possible but may have slight discrepancies.

Table 1: Maternal Mortality by Race and Ethnicity

Indiana MMRC, 2019-2023

Race/Ethnicity	Indiana Live Births	Pregnancy-Associated Deaths	Pregnancy-Related Deaths
White, non-Hispanic	70%	68% (254)	68% (56)
Black, non-Hispanic	13%	21% (79)	22%* (18)
Hispanic, Any Race	12%	7% (27)	9%* (7)
Other/Unknown	5%	3%* (13)	1%* (1)

*Percentages based on counts fewer than 20 are considered unstable and should be interpreted with caution.

Table 2 shows maternal mortality in Indiana by insurance type. Insurance status is determined based on birth certificates and is therefore only determined for maternal mortality cases with delivery. This method allows maternal mortality insurance to be compared to state births. The following data only pertain to those with deliveries. Sixty five percent of pregnancy-associated deaths that occurred from 2019-2023 were to women with Medicaid compared to 40 percent of live births in the same period. Twenty nine percent of pregnancy-associated deaths that occurred from 2019-2023 were to women with private insurance compared to 52 percent of live births in the same period.

Table 2: Maternal Mortality by Insurance Type

Indiana MMRC, 2019-2023

Insurance Type	Indiana Live Births	Pregnancy-Associated Deaths	Pregnancy-Related Deaths
Private Insurance	52%	29% (62)	49%* (19)
Medicaid	40%	65% (140)	49%* (19)
Self-Pay/None	5%	3%* (7)	-
Other	3%	3%* (8)	2%* (1)

*Percentages based on counts fewer than 20 are considered unstable and should be interpreted with caution.



Table 3 shows maternal mortality by geographic designation. An urban or rural designation is based on residence of the mother at the time of her death. The percentage of pregnancy-associated deaths for urban and rural designations closely match the percentage of Indiana live births in the same five-year period.

Table 3: Maternal Mortality by Geographic Designation

Indiana MMRC, 2019-2023

Geographic Designation	Indiana Live Births	Pregnancy-Associated Deaths	Pregnancy-Related Deaths
Urban	78%	77% (288)	65% (53)
Rural	22%	23% (85)	35% (29)

Table 4 shows maternal mortality by Health First Indiana District. The percentage of pregnancy-associated deaths closely match the percentage of Indiana live births in each district. The highest percentage of pregnancy-associated deaths is in district five, which also has the highest percentage of live births in the state. A map of Health First Indiana Districts can be found in [Appendix C](#).

Table 4: Maternal Mortality by Health First Indiana District

Indiana MMRC, 2019-2023

District	Indiana Live Births	Pregnancy-Associated Deaths
1	11%	11%
2	10%	8%
3	12%	10%
4	5%	6%
5	31%	34%
6	8%	11%
7	4%	3%*
8	5%	4%*
9	6%	9%
10	7%	5%*

*Percentages based on counts fewer than 20 are considered unstable and should be interpreted with caution.



Figure 4 shows maternal mortality by timing of death for the five-year (2019-2023) period. The majority (58%) of pregnancy-associated deaths occurred 43 days to one year after a pregnancy. The majority (54%) of pregnancy-related deaths occurred within 42 days of pregnancy.

Figure 4: Maternal Mortality by Timing of Death

Indiana MMRC, 2019-2023

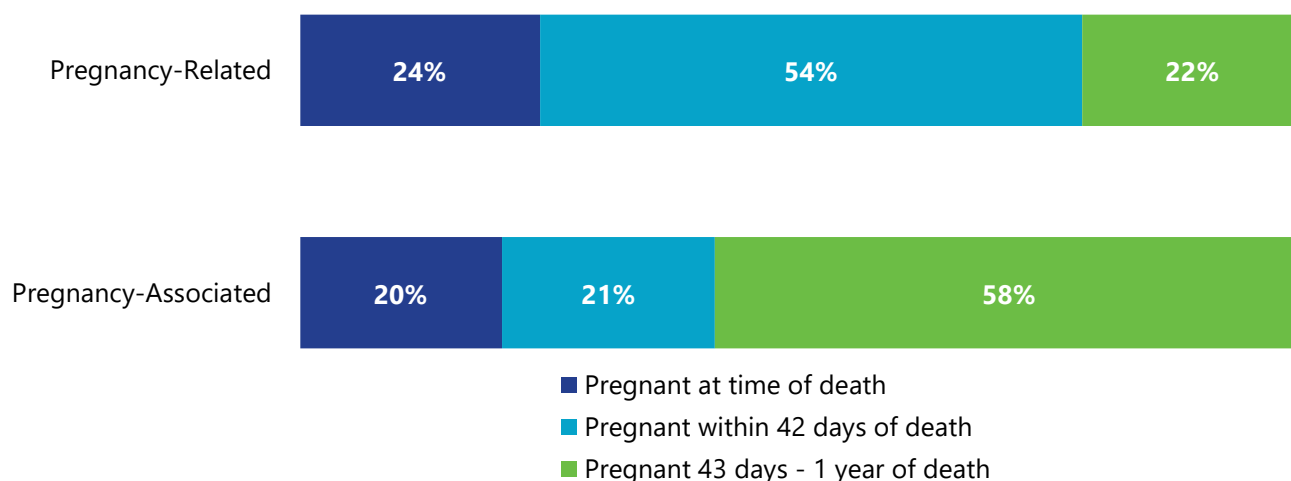


Figure 5 shows the leading causes or manners of death for pregnancy-associated deaths in Indiana from 2019-2023. The top cause of death (26%) was overdose of accidental or undetermined intent. This was followed by homicide of all causes with 11 percent of pregnancy-associated deaths. Causes or manners are only presented for those with counts of five or higher.

Figure 5: Maternal Mortality by Cause or Manner of Death

Indiana MMRC, 2019-2023

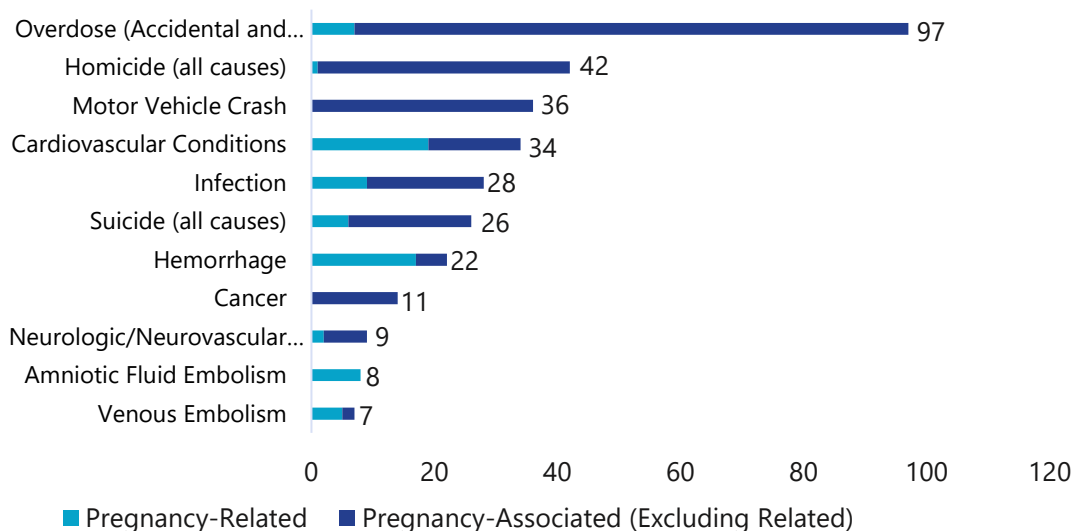
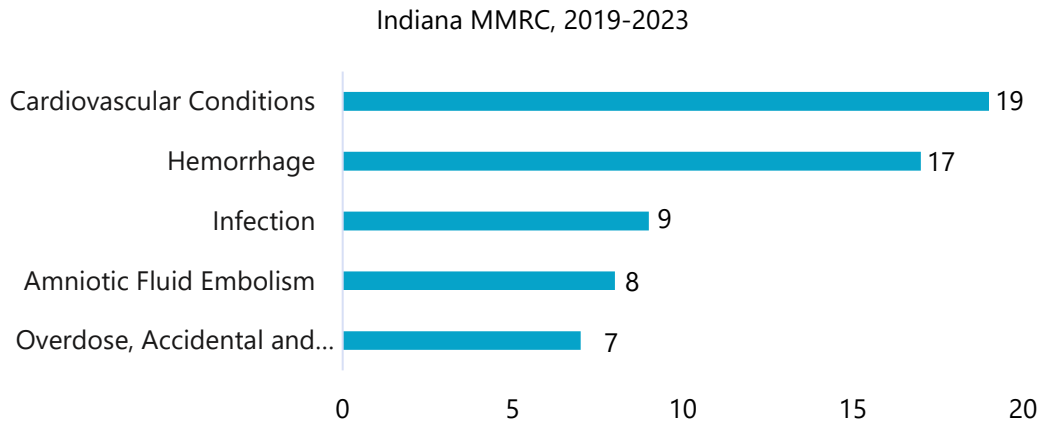


Figure 6 shows the leading causes of death for pregnancy-related deaths from 2019-2023. The top cause of pregnancy-related death (23%) was cardiovascular conditions, including cardiomyopathy. This was closely followed by hemorrhage of various etiologies with 21 percent. Causes are only presented for those with counts of five or higher. A further breakdown of cardiovascular conditions and hemorrhage can be found as Figure D1 and Figure D2 in [Appendix D](#). The Indiana MMRC has nothing to report pursuant to IC 16-50-1-8 (g) 1.

Figure 6: Pregnancy-Related Mortality by Cause of Death



Conclusion

The Indiana MMRC remains the most comprehensive review of all pregnancy-associated deaths in Indiana. Through the collection and analysis of data, the MMRC identifies opportunities to reduce future maternal deaths.

Key takeaways from 2019-2023:

- Overdose, accidental and undetermined intent, was the top cause of pregnancy-associated deaths in 2019, 2020, 2021, 2022, and 2023.
- The second leading manner of death in 2019-2023 was homicide of all causes.
- 78 percent of pregnancy-associated deaths were preventable.

Key recommendations from the committee for the 2023 cohort:

- Educate providers on using Indiana Consultations for Healthcare providers in Addiction, Mental Health, and Perinatal Psychiatry Program (CHAMP) when mental health concerns occur during or after pregnancy, including the use of medication.
- Ensure all prenatal care patients receive substance use disorder verbal screening, which is mandated through legislation, including in emergency rooms and non-traditional care settings.
- Improve patient access to physician-recommended contraceptive counseling and options.

It is important to continue to learn from these deaths and take steps to improve the health and well-being of Hoosier mothers. IDOH and the Indiana MMRC are committed to lowering maternal mortality rates in Indiana.



Appendices

Appendix A

Indiana Maternal Mortality Review Committee Members

COMMITTEE CHAIR, Mary Pell Abernathy, MD, MBA- Maternal-Fetal Medicine, Union Hospital

Regina Adair, MD, MBA- Regional Medical Director, TeamHealth

Olubunmi Amakor, MD, MSc- Assistant Medical Director, IU Health North and IU Health Fishers; Assistant Professor, IU School of Medicine

Camila Arnaudo, MD- Medical Director, Addictions Treatment and Recovery Center, IU Health Bloomington

Darla Berry, MSN, CNM- Rural Health Maternal Outreach Lead, Lugar Center for Rural Health, Union Health

Michelle E. Brown, PharmD, BCPS- Clinical Pharmacy Specialist, Eskenazi Health

Caryn C. Burton, MS- Homicide Reduction Strategies Coordinator, Indiana Coalition Against Domestic Violence

Shamika Crowder, MPA, CCHW- Community Health Worker, Office of Minority Health, Indiana Department of Health

Kathy Detweiler, MHL, BSN, RN- Director, Perinatal Center and Nurse Navigation, Parkview Health

Elizabeth Ferries-Rowe, MD, FACOG- Director of Women's Services, Eskenazi Health; OBGYN, IU Health

Lori Grimm, MSN, RN- Perinatal Services Director, Deaconess- The Women's Hospital

Birdie Gunyon Meyer, RN, MA, PMH-C- Certification and Training Director, Postpartum Support International

Haley Hannant, MPH- Epidemiology Director, Family Health Data and Fatality Prevention Division, Indiana Department of Health

Tronya Hawkins, MD, FACOG- OBGYN, Ascension St. Vincent

Linzi Horsley, MA- Fetal-Infant Mortality Programs Director, Family Health Data and Fatality Prevention Division, Indiana Department of Health

Captain Kevin Hunter- Fort Wayne Police Department

Beth Keeney, DrPH, MBA- President and Chief Executive Officer, LifeSpring Health Systems

Roland Kohr, MD- Forensic Pathologist

Spencer Kuper, MD, FACOG- Maternal Fetal Medicine Physician, Deaconess



Mallory Lown- Epidemiologist, Family Health Data and Fatality Prevention Division, Indiana Department of Health

Cat Meyer, MSW, PMH-C, INHC- Maternal Health Manager, Maternal and Child Health Division, Indiana Department of Health

Jessica Morse- Suicide and Overdose Fatality Programs Director, Family Health Data and Fatality Prevention Division, Indiana Department of Health

Nanette B. Oscherwitz, MD- Cardiologist, Community Health Network

Ashley Rainey, MSN, RNC-OB, IAP- Clinical Director, Women Children and Families Commission, Indiana Department of Health

Jami Rayles, MD- Family Medicine Physician, Decatur County Memorial Hospital

Hope Robinson, MSN, RNC-NIC, PMH-C- Perinatal Navigation Coordinator, Powers Health

Caroline Rouse, MD- Maternal Fetal Medicine Physician, IU Health

Amy Rouse-Ho, MD- Maternal Fetal Medicine Physician, Artemis for Women, LLC

Brooke Shaefer, NP- Senior Vice President of Integrated Services, Volunteers of America Ohio and Indiana

Ashli Smiley, BSN, RN, SANE-A, SANE-P- Statewide SANE Coordinator, Maternal and Child Health Division, Indiana Department of Health

Ruthie Smith, LPN, LCCE, CCHW- Bereavement Coordinator, Community Hospital Anderson

Ayren Staton, BSN, RN- Director of Women's Services, Reid Health

Stephanie VanderHorst, MSN, CNM- Director and Co-Founder, Auburn Birthing Center

Brittany Waggoner, MSN, RN, AGCNS-BC- Maternal Infant Quality Improvement Advisor, Indiana Hospital Association

Elizabeth Wahl, MSW, LSW, IMH-E- Indiana Pregnancy Promise Program Director, Indiana Family and Social Services Administration

Michelle Washington, MSN, RN- Director of Operations, Central Region, Nurse Family Partnership

Jennifer Weida, MD- Maternal Fetal Medicine Physician, Geneticist, IU Health; Assistant Professor, IU School of Medicine

Nicole Woodard, LSW, PMH-C- Licensed Social Worker, Union Hospital

Cameual Wright, MD, MBA- President, CareSource



Appendix B

Maternal Notice of Death Form



MATERNAL NOTICE OF DEATH

State Form 57687 (2-25)

INDIANA DEPARTMENT OF HEALTH



Indiana
Department
of
Health

Reset Form

INSTRUCTIONS: 1. PER IC-16-50-1-6(A) PLEASE SEND THIS REPORT IMMEDIATELY AFTER THE DEATH OF A WOMAN WHO WAS CURRENTLY PREGNANT OR WAS PREGNANT WITHIN 365 DAYS OF DEATH. REPORT THE EVENT REGARDLESS OF WHERE THE PATIENT DIED WITH AS MUCH DETAILS AS POSSIBLE.

Name of Woman:
Last First Middle Maiden

Address:
Street City State ZIP-code

Date of Birth (MM/DD/YYYY):

Date of Death (MM/DD/YYYY):

Name of birth hospital (if known):

Name of Obstetric Provider (if known):

Place of Death
☐ Hospital (name of facility and city):

☐ Residence ☐ Other (Please specify):

Medical Record number:

☐ No Autopsy

☐ Autopsy Performed
Facility or address where autopsy was performed:

Autopsy performed by:

☐ Autopsy Pending

Cause of Death
Primary:

Contributing factors:

Manner of Death:

Report Prepared by: Date:

Email: Telephone Number:

Please send any questions and complete forms to MMR@health.in.gov



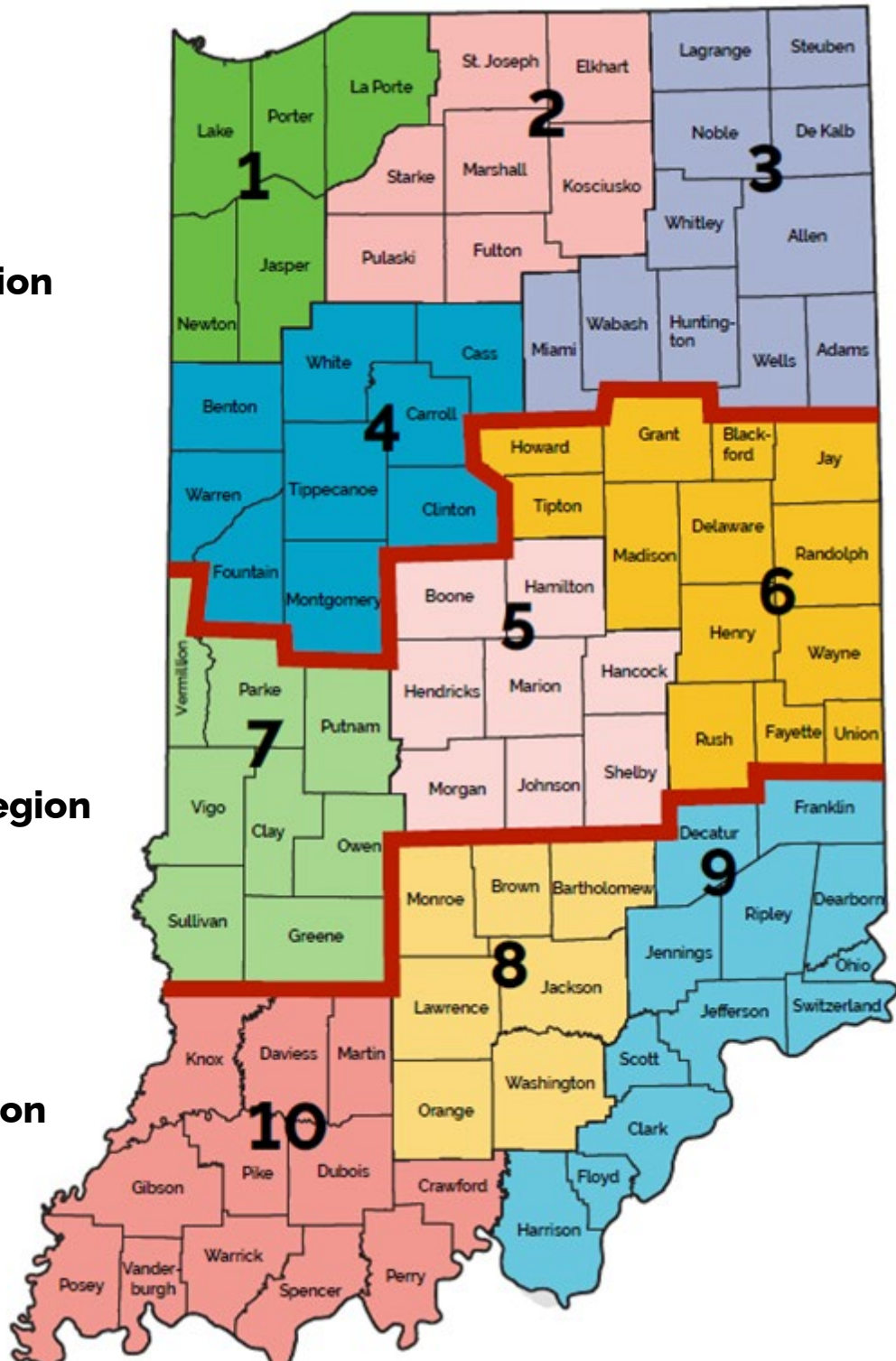
Appendix C

Health First Indiana Map

North Region

Central Region

South Region



Appendix D

Figure D1: Pregnancy-Related Cardiovascular Conditions

Indiana MMRC, 2019-2023

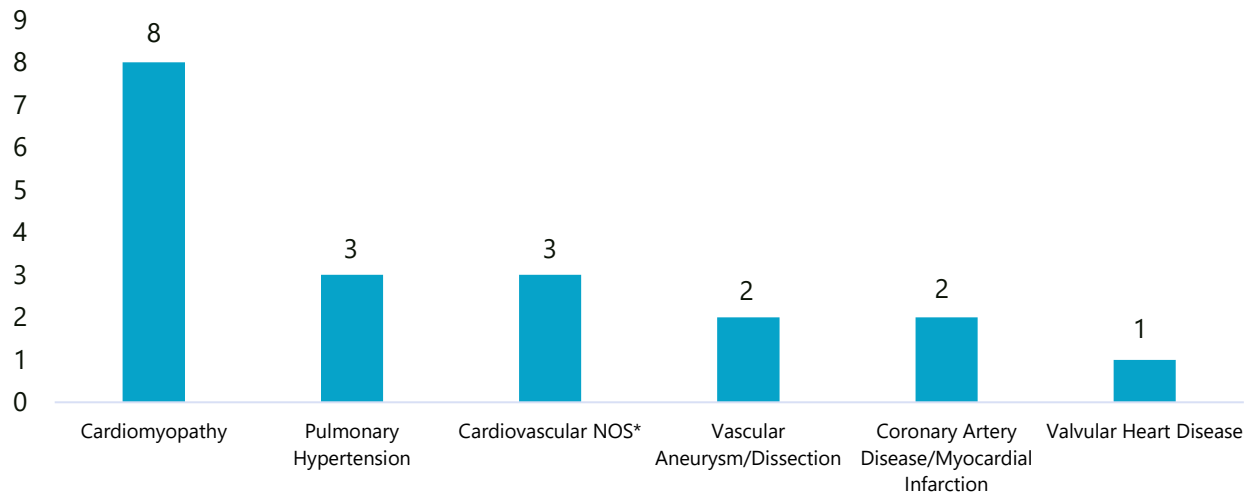


Figure D2: Pregnancy-Related Hemorrhages

Indiana MMRC, 2019-2023

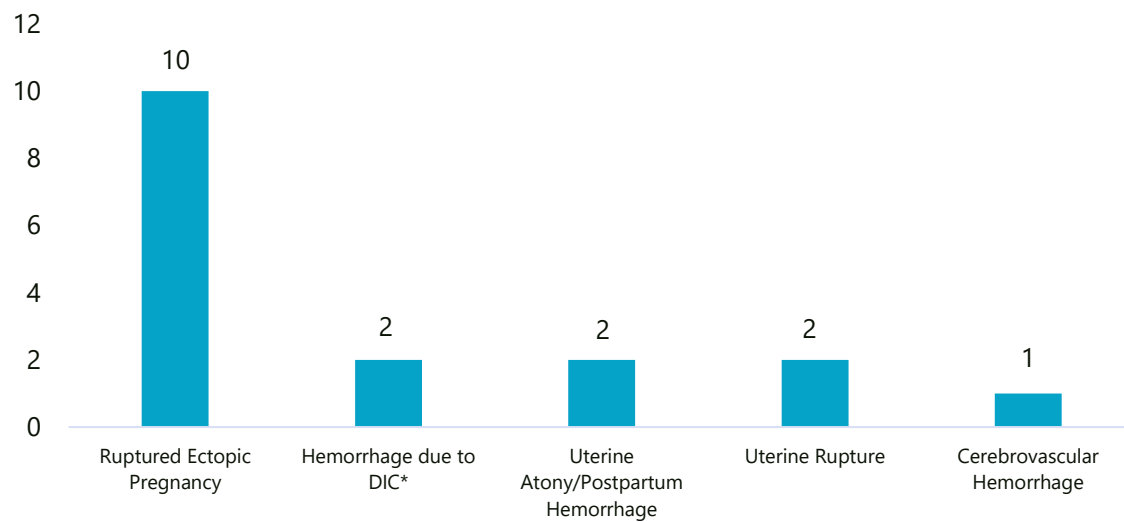


Figure D3: Maternal Mortality Contributing Factors

Indiana MMRC, 2019-2023

Contributing Factor	Yes	Probably	No	Unknown
Substance Use Disorder	45% (168)	1%* (5)	49% (184)	4%* (16)
Mental Health Conditions	26% (96)	5%* (17)	58% (215)	12% (45)
Obesity	7% (26)	2%* (7)	88% (329)	3%* (11)
Discrimination	7% (26)	2%* (7)	86% (320)	5% (20)

*Percentages based on counts fewer than 20 are considered unstable and should be interpreted with caution.

