

2019 - 2021

MATERNAL MORTALITY REPORT



NOTES ON METHODS AND DATA SOURCES

Multiple definitions are used to estimate maternal mortality. This report focuses on deaths reviewed by Georgia's Maternal Mortality Review Committee (MMRC) and determined by the MMRC to be pregnancy-related deaths. The MMRC methodology is the most comprehensive process for understanding which deaths were truly related to pregnancy.

In keeping with evolving case review guidance from the CDC, changes have been continuously made to improve MMRC processes since the reviews began in 2012. Therefore, data for 2021 are most comparable to 2018 and later; comparison to prior years is not recommended.

Georgia's MMRC reviews are now timelier than ever, allowing this report to highlight data for a single year. Data are reported for 2021 and 2019-2021. Data for 2019-2021 include 2019 and 2020 deaths in DPH's 2018-2020 Maternal Mortality Report. MMRC determinations and preventability are only reported for 2021 to avoid repeating previously reported contributing factors and recommendations for informing action and initiatives.

Pregnant and recently pregnant women were at increased risk of severe illness with COVID-19, and this was reflected in the number of pregnancy-related deaths due to COVID-19, most of which occurred during 2021. Additionally, COVID-19 impacted health outcomes both directly, as a cause of death and other morbidities, and indirectly, through the all-encompassing effects of the pandemic.

Severe maternal morbidity (SMM) is often considered a near-miss for maternal mortality because, in some cases, these conditions could lead to death. SMM is included in this report to monitor trends and inform interventions to improve the quality of maternal care.

Percentages in the report have been rounded and may not add up to 100%.

References to "births" refer only to live births.

"Other" race/ethnicity in this report includes bi-racial, multi-racial, unknown, and all other racial/ethnic groups not included in non-Hispanic Black, non-Hispanic White, and Hispanic.

“Other” insurance in this report includes payors not included in Medicaid and Private and may include Medicare, Tricare, PeachCare, Self-Pay, and unknown.

Data sources for this report include Georgia’s Online Analytical Statistical Information System (OASIS), the Georgia Department of Public Health, the Office of Health Indicators for Planning (OHIP), and the Maternal Mortality Review Information Application (MMRIA).

2021 GEORGIA EXECUTIVE SUMMARY KEY FINDINGS

- There were **48.4** pregnancy-related deaths per 100,000 live births in 2021.
- **COVID-19**, which caused more severe illness in pregnant and recently pregnant women, was the leading cause of pregnancy-related deaths. **Thirty percent** of pregnancy-related deaths in 2021 were due to COVID-19. The other leading causes of pregnancy-related deaths were cardiovascular conditions, hemorrhage, and mental health conditions.
- Of the 60 pregnancy-related deaths, **85%** had at least some chance of being **prevented**. Deaths are determined to be preventable if there is at least some chance of the death being averted by one or more reasonable changes to patient, family, provider, facility, system, and/or community factors. For example, a death might be determined to be preventable if it was determined there was a need for education on chronic condition management prior to pregnancy or if an individual would have benefited from home visiting services.
- **Sixty-two percent** of pregnancy-related deaths were insured by **Medicaid**.
- There were **more than twice** as many pregnancy-related deaths among **non-Hispanic Black** women as non-Hispanic White women.
- Women **40 years of age and older** were **five times** as likely to die from pregnancy-related causes as women younger than 25 years of age.
- Of the 60 pregnancy-related deaths, **62% had a high school education or less**.
- In 2021, among Georgia residents delivering at Georgia hospitals, there were **1,078 severe maternal morbidity (SMM) events** (excluding blood transfusions alone) **for every 100,000 delivery hospitalizations**.

- Factors associated with higher SMM rates were like those for pregnancy-related deaths, with the highest rates among non-Hispanic Black women, women insured by Medicaid, those 40 years and older, and those with a high school education or less.

2019-2021 GEORGIA EXECUTIVE SUMMARY KEY FINDINGS

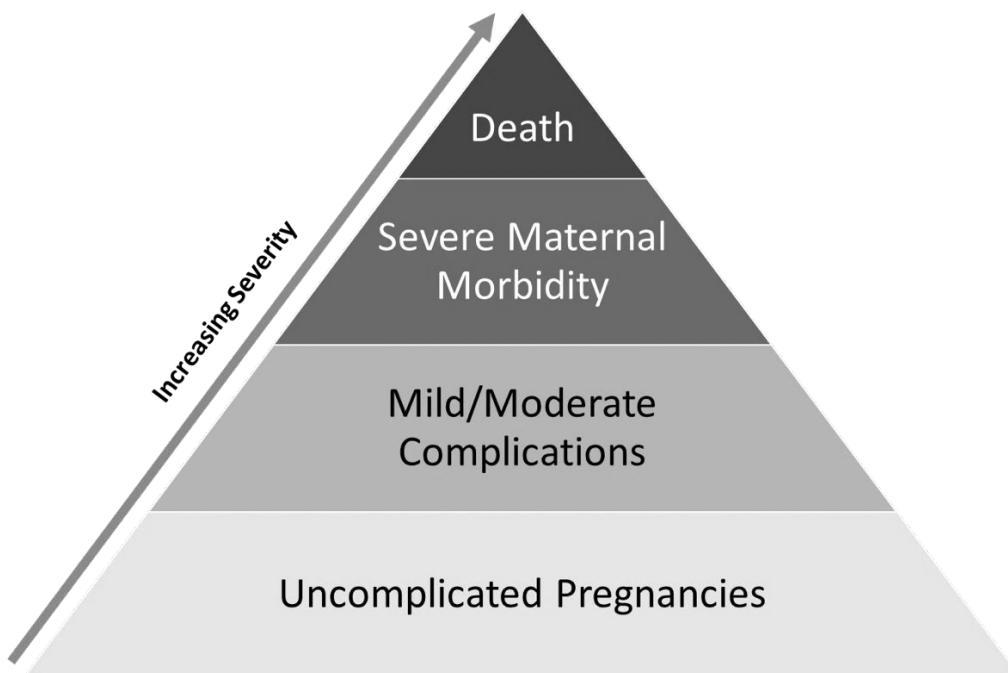
- There were **35.7** pregnancy-related deaths per 100,000 live births between 2019-2021.
- The leading causes of pregnancy-related deaths were cardiovascular conditions, COVID-19, hemorrhage, mental health conditions, and embolism. **Fourteen percent** of pregnancy-related deaths between 2019-2021 were due to **COVID-19**, which caused more severe illness in pregnant and recently pregnant women. Eighteen of the 19 deaths due to COVID-19 occurred in 2021.
- **Medicaid** insured **fifty-nine percent** of pregnancy-related deaths.
- There were almost **twice** as many pregnancy-related deaths among **non-Hispanic Black** women as non-Hispanic White women.
- Women **40 years of age and older** were **five times** as likely to die from pregnancy-related causes as women younger than 25 years of age.
- **Sixty percent** of pregnancy-related deaths had a **high school education or less**.
- Between 2019-2021, among Georgia residents delivering at Georgia hospitals, there were **957 severe maternal morbidity (SMM) events** (excluding blood transfusions alone) **for every 100,000 delivery hospitalizations**.
- Factors associated with higher SMM rates were like those for pregnancy-related deaths, with highest rates among non-Hispanic Black women, women insured by Medicaid, those 40 years and older, and those with high school education or less.

MATERNAL HEALTH OUTCOMES

Maternal morbidity (severe pregnancy and postpartum complications) and maternal mortality (death of a woman during pregnancy or within a specified timeframe, typically up to one year after delivery/end of the pregnancy) are indicators of overall maternal health.

Maternal health outcomes range from the least severe, an uncomplicated pregnancy, to the most severe outcome, death. Most women have healthy pregnancies and face no complications during the pregnancy and/or postpartum. Death during or after pregnancy is a devastating but rare occurrence; however, non-fatal severe maternal morbidity occurs more frequently and may have short- or long-term effects on a woman's health.

Figure 1 Continuum of Maternal Health Outcomes



DEFINITIONS

MATERNAL MORTALITY

Maternal mortality refers to deaths during pregnancy, childbirth, and the postpartum period. It is an indicator of population health and is estimated using different timeframes, definitions, and data sources; therefore, maternal mortality data from different sources are not comparable.

PREGNANCY-ASSOCIATED DEATH

A death during or within one year of pregnancy, regardless of the cause, including accidental causes. Data are obtained from multiple sources, including medical records and informant interviews. The Maternal Mortality Review Committee (MMRC) reviews all pregnancy-associated deaths to determine if the death was from a cause related to pregnancy or not (i.e., if the woman had not been pregnant, would she have died?).

PREGNANCY-RELATED DEATH

A death during or within one year of pregnancy from a pregnancy complication, a chain of events initiated by pregnancy, or the aggravation of an unrelated condition by the physiologic effects of pregnancy. Pregnancy-related deaths for this report refer to deaths reviewed and determined by Georgia's MMRC to be pregnancy-related. Because of the comprehensive MMRC process for determining pregnancy-related deaths, they are the "gold standard" for understanding maternal mortality. The information about specific factors contributing to these deaths allows the MMRC to make actionable, data-driven prevention recommendations.

PREGNANCY-ASSOCIATED, BUT NOT RELATED DEATH

A death during pregnancy or within one year of the end of pregnancy is determined by the MMRC to be from a cause that is not related to pregnancy.

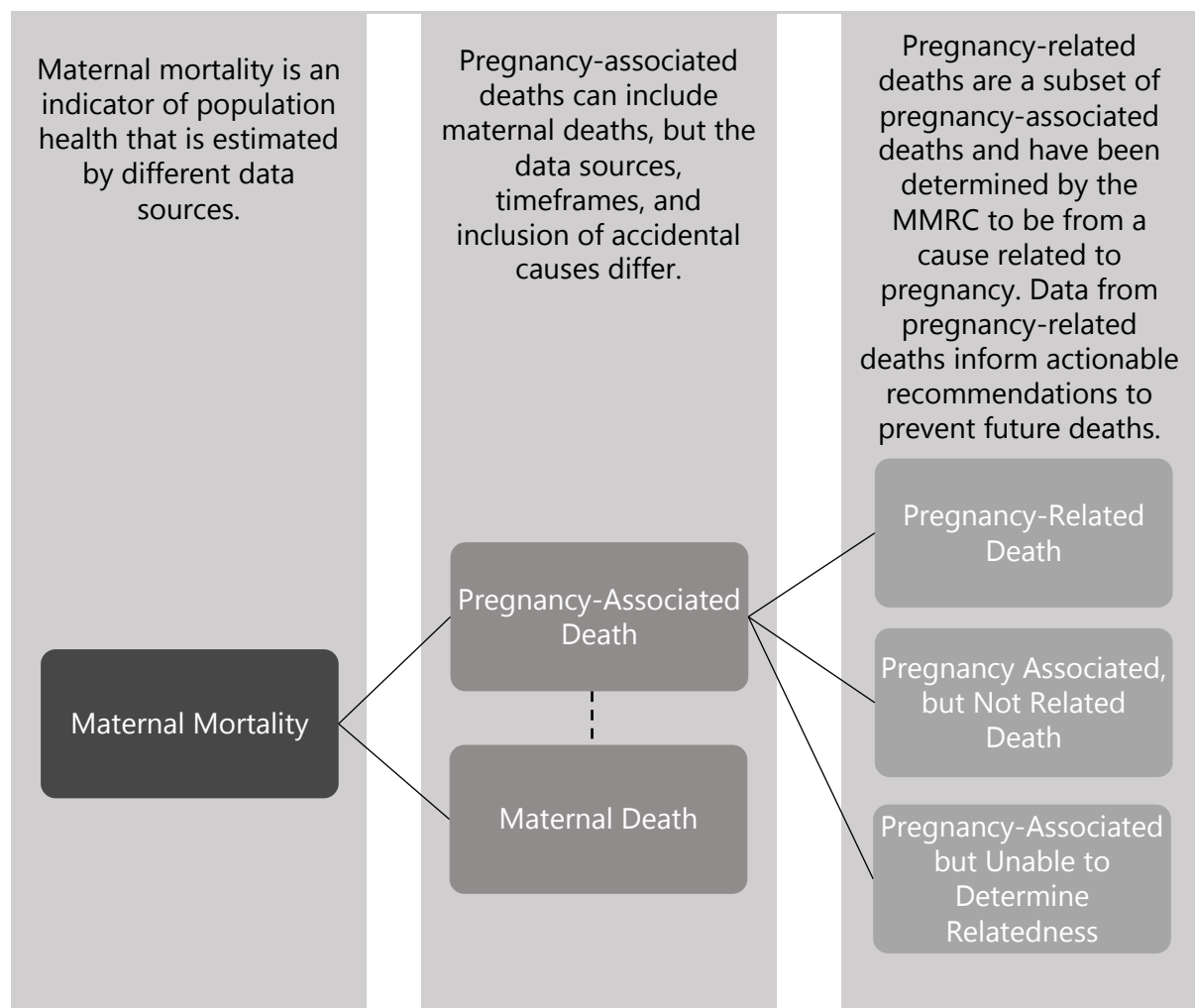
PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY RELATEDNESS

A pregnancy-associated death that the MMRC was unable to determine as pregnancy-related or pregnancy-associated, but not related.

MATERNAL DEATH

The death of a woman while pregnant or within 42 days of termination of pregnancy, regardless of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental causes. This definition is used by the National Center for Health Statistics and the World Health Organization. Data are obtained only from death certificates. Maternal deaths are not reviewed by the MMRC unless they are identified separately as pregnancy-associated deaths.

Figure 2 Maternal Mortality Definitions



MATERNAL MORTALITY RATIO

The maternal mortality ratio indicates the likelihood of a pregnant woman dying of maternal causes. It is calculated by dividing the number of deaths in a calendar year by the number of live births registered for the same period and is presented as a rate per 100,000 live births. In this report, maternal mortality ratios are presented for pregnancy-related deaths, pregnancy-associated deaths, and maternal deaths.

SEVERE MATERNAL MORBIDITY

Severe maternal morbidity (SMM) includes unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman's health. SMM calculations for this report follow an algorithm used by most U.S. jurisdictions that includes pregnancy complications only during the delivery hospitalization. SMM events can be fatal or non-fatal. They are not reviewed by the MMRC unless they are identified separately as pregnancy-associated deaths.

MATERNAL MORTALITY REVIEW COMMITTEE PROCESS

Georgia follows the MMRC process outlined by the Centers for Disease Control and Prevention (CDC). <https://www.cdc.gov/maternal-mortality/php/mmrc/index.html>

Potential pregnancy-associated deaths among Georgia residents, including those who died outside of Georgia, are identified by the Georgia Department of Public Health through death certificate data, mandated reporting, and linking death certificates with birth certificates, fetal death certificates, and hospital discharge data.

Case abstraction (reviewing and summarizing key information from medical records, informant interviews, and other records) is completed for all pregnancy-associated deaths.

A case narrative is created based on medical records and information from informant interviews to summarize the events that occurred prior to death.

The multidisciplinary MMRC reviews each pregnancy-associated death using the Committee Decisions Form developed by the CDC to determine if the death was from a cause related to pregnancy or not (i.e., if the woman had not been pregnant, would she have died?).

The MMRC makes recommendations for actionable items to prevent pregnancy-related deaths in the future. <https://www.cdc.gov/maternal-mortality/php/mmrc/decisions-form.html>

Figure 3 Maternal Mortality Review Committee Process



YEARS IN REVIEW 2012-2021

The MMRC reviewed a total of 916 pregnancy-associated deaths among Georgia residents occurring during 2012-2021. The committee identified 372 pregnancy-related deaths in this same timeframe.

In keeping with evolving case review guidance from the CDC, changes have been continuously made to improve MMRC processes since the reviews began in 2012. Because of these changes, data for 2018 and later are most comparable; **comparison to prior years is not recommended.**

Table 1 **Pregnancy-Associated Deaths, Georgia, 2012-2021**

YEARS	PREGNANCY- ASSOCIATED DEATHS	BIRTHS	PREGNANCY- ASSOCIATED MORTALITY RATIO¹
2012-2014	247	389,399	63.4
2015-2017	269	390,431	68.9
2018-2020	270	374,680	72.1
2019-2021 [‡]	303	372,600	81.3

¹ Pregnancy-associated mortality ratio per 100,000 live births.

[‡] 2019 and 2020 include deaths and births reported in DPH's 2018-2020 Maternal Mortality Report.

Table 2 **Pregnancy-Related Deaths, Georgia, 2012-2021**

YEARS	PREGNANCY- RELATED DEATHS	BIRTHS	PREGNANCY- RELATED MORTALITY RATIO¹
2012-2014	101	389,399	25.9
2015-2017	98	390,431	25.1
2018-2020	113	374,680	30.2
2019-2021 [‡]	133	372,600	35.7

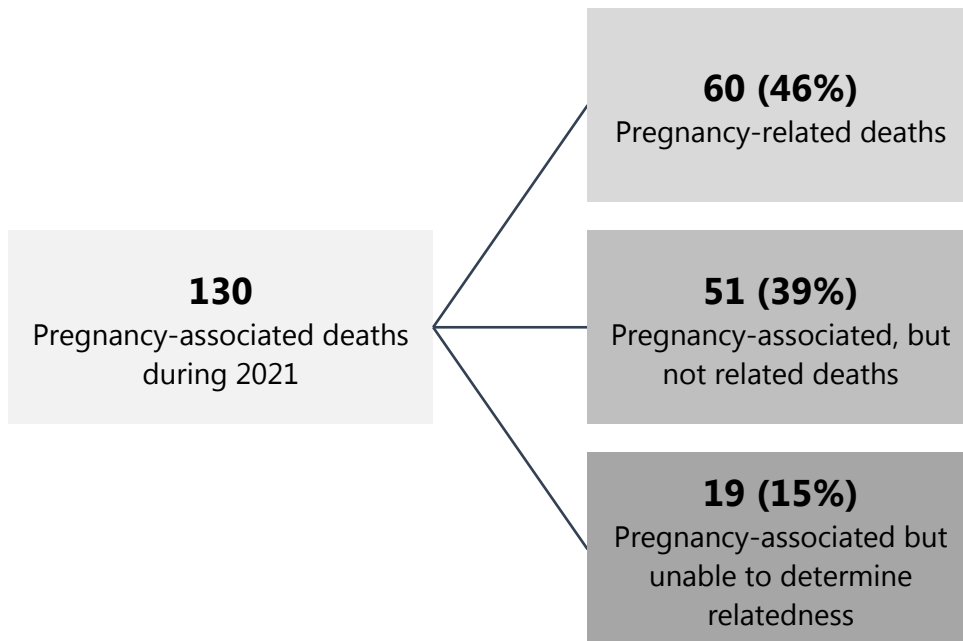
¹ Pregnancy-related mortality ratio per 100,000 live births.

[‡] 2019 and 2020 include deaths and births reported in DPH's 2018-2020 Maternal Mortality Report.

2021

The Maternal Mortality Review Committee (MMRC) reviewed 130 pregnancy-associated deaths among Georgia residents occurring during 2021. Sixty (46%) were determined by the MMRC to be pregnancy-related deaths.

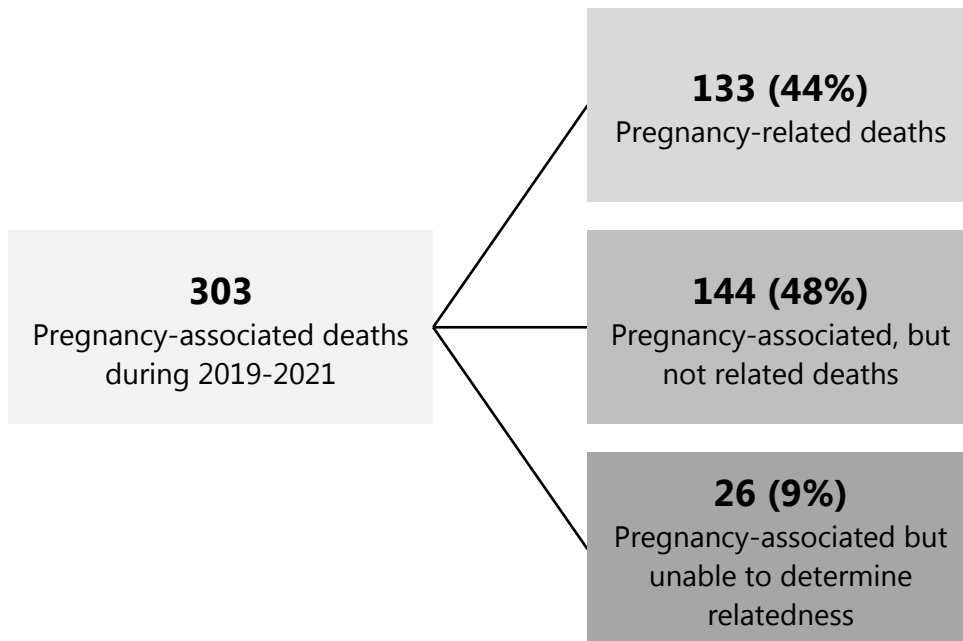
Figure 4 Pregnancy-Associated Death Categories, Georgia, 2021



2019-2021

The Maternal Mortality Review Committee (MMRC) reviewed 303 pregnancy-associated deaths among Georgia residents occurring during 2019-2021. One hundred thirty-three (44%) were determined to be pregnancy-related deaths.

Figure 5 Pregnancy-Associated Death Categories, Georgia, 2019-2021



2021 PREGNANCY-RELATED DEATHS

In 2021, pregnancy-related mortality ratios were highest among women ages 40 years and older, non-Hispanic Black women, and women with Medicaid insurance.

Table 3 Pregnancy-Related Deaths, Georgia, 2021

CHARACTERISTIC	2021 PREGNANCY-RELATED DEATHS (% OF TOTAL)	2021 BIRTHS (% OF ALL BIRTHS)	2021 PREGNANCY-RELATED MORTALITY RATIO ¹
ALL CATEGORIES	60 (100%)	123,971 (100%)	48.4
AGE AT DEATH			
<25	10 (17%)	31,607 (25%)	31.6
25-29	15 (25%)	35,727 (29%)	42.0
30-34	18 (30%)	34,728 (28%)	51.8
35-39	10 (17%)	17,609 (14%)	56.8
40+	7 (12%)	4,300 (3%)	162.8
RACE/ETHNICITY			
Non-Hispanic Black	34 (57%)	41,752 (34%)	81.4
Non-Hispanic White	15 (25%)	53,685 (43%)	27.9
Hispanic	6 (10%)	19,448 (16%)	30.9
Other	5 (8%)	9,086 (7%)	55.0
INSURANCE			
Medicaid	37 (62%)	57,049 (46%)	64.9
Private	15 (25%)	50,943 (41%)	29.4
Other/Unknown	8 (13%)	15,979 (13%)	50.1

¹ Pregnancy-related mortality ratio per 100,000 live births.

2019-2021 PREGNANCY-RELATED DEATHS

Between 2019-2021, pregnancy-related mortality ratios were highest among women age 40 years and older, non-Hispanic Black women, and women with Medicaid insurance.

Table 4 Pregnancy-Related Deaths, Georgia, 2019-2021

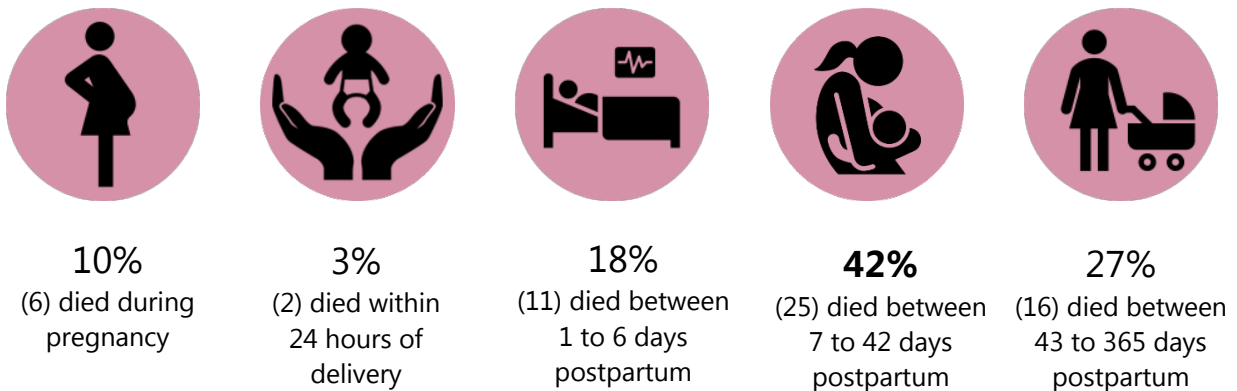
CHARACTERISTIC	2019-2021 PREGNANCY- RELATED DEATHS (% OF TOTAL)	2019-2021 BIRTHS (% OF ALL BIRTHS)	2019-2021 PREGNANCY- RELATED MORTALITY RATIO ¹
ALL CATEGORIES	133 (100%)	372,600 (100%)	35.7
AGE AT DEATH			
<25	21 (16%)	98,695 (26%)	21.3
25-29	41 (31%)	108,681 (29%)	37.7
30-34	37 (28%)	101,212 (27%)	36.6
35-39	21 (16%)	51,674 (14%)	40.6
40+	13 (10%)	12,338 (3%)	105.4
RACE/ETHNICITY			
Non-Hispanic Black	76 (57%)	127,760 (34%)	59.5
Non-Hispanic White	39 (29%)	160,976 (43%)	24.2
Hispanic	11 (8%)	56,242 (15%)	19.6
Other	7 (5%)	27,622 (7%)	25.3
INSURANCE			
Medicaid	79 (59%)	173,192 (46%)	45.6
Private	34 (26%)	150,354 (40%)	22.6
Other/Unknown	20 (15%)	49,054 (13%)	40.8

¹ Pregnancy-related mortality ratio per 100,000 live births.

2021 TIMING OF DEATH

In 2021, 36 (60%) of the 60 pregnancy-related deaths occurred within 6 weeks (1-42 days) after the end of the pregnancy.

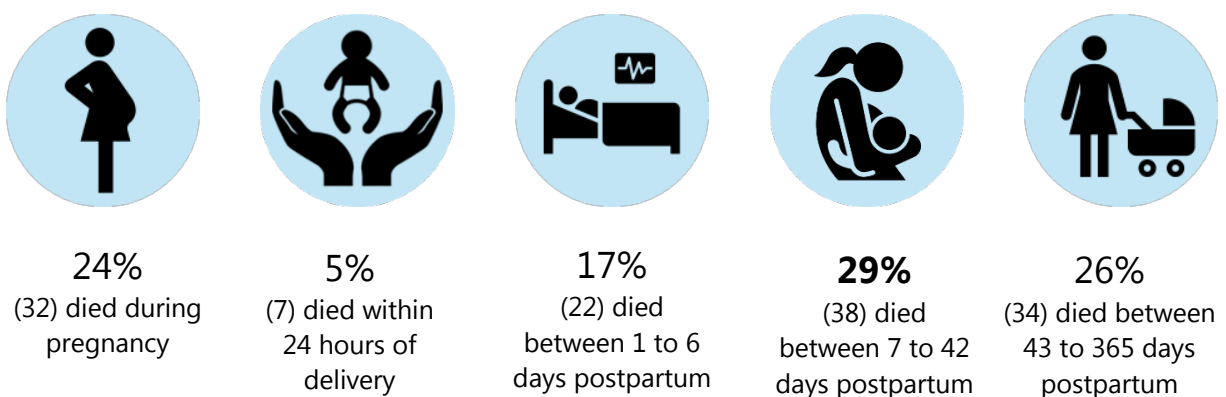
Figure 6 Proportion of Pregnancy-Related Deaths by Timing of Death in Relation to Pregnancy, Georgia, 2021 (n=60)



2019-2021 TIMING OF DEATH

Between 2019-2021, 60 (45%) of the 133 pregnancy-related deaths occurred within 6 weeks (1-42 days) after the end of the pregnancy.

Figure 7 Proportion of Pregnancy-Related Deaths by Timing of Death in Relation to Pregnancy, Georgia, 2019-2021 (n=133)



2021 PREGNANCY-RELATED DEATHS BY AGE

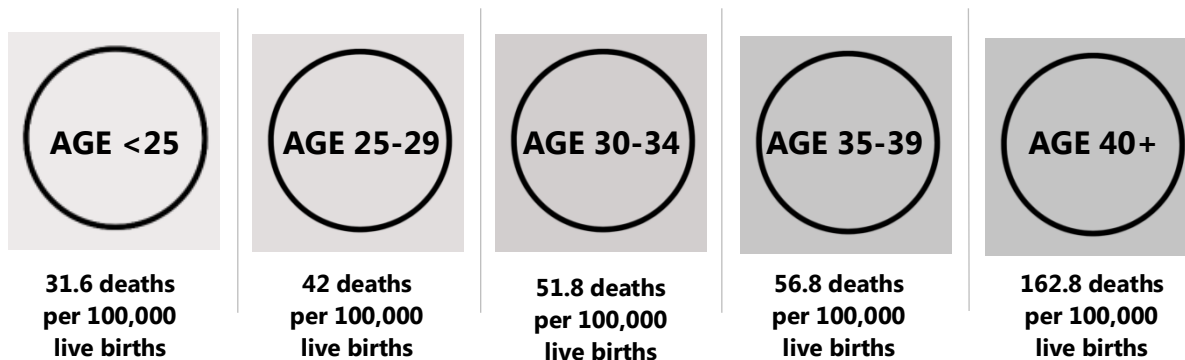
In 2021, women age 40 and older comprised only 3% of births but 12% of pregnancy-related deaths. Women age 40 and older were five times as likely as women younger than 25 years of age to die from pregnancy-related causes.

Table 5 Pregnancy-Related Deaths by Age, Georgia, 2021

AGE AT DEATH	2021 PREGNANCY-RELATED DEATHS (% OF TOTAL)	2021 BIRTHS (% OF ALL BIRTHS)	2021 PREGNANCY-RELATED MORTALITY RATIO ¹
<25	10 (17%)	31,607 (25%)	31.6
25-29	15 (25%)	35,727 (29%)	42.0
30-34	18 (30%)	34,728 (28%)	51.8
35-39	10 (17%)	17,609 (14%)	56.8
40+	7 (12%)	4,300 (3%)	162.8
All ages	60 (100%)	123,971 (100%)	48.4

¹ Pregnancy-related mortality ratio per 100,000 live births.

Figure 8 Pregnancy-Related Mortality Ratio by Age, Georgia, 2021



2019-2021 PREGNANCY-RELATED DEATHS BY AGE

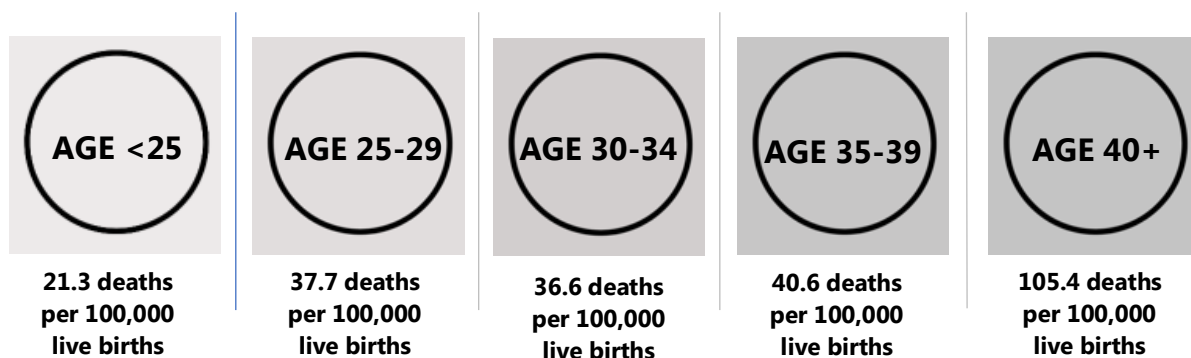
Between 2019-2021, women age 40 and older comprised only 3% of births but 10% of pregnancy-related deaths. Women age 40 and older were five times as likely as women younger than 25 years of age to die from pregnancy-related causes.

Table 6 Pregnancy-Related Deaths by Age, Georgia, 2019-2021

AGE AT DEATH	2019-2021 PREGNANCY-RELATED DEATHS (% OF TOTAL)	2019-2021 BIRTHS (% OF ALL BIRTHS)	2019-2021 PREGNANCY-RELATED MORTALITY RATIO ¹
<25	21 (16%)	98,695 (26%)	21.3
25-29	41 (31%)	108,681 (29%)	37.7
30-34	37 (28%)	101,212 (27%)	36.6
35-39	21 (16%)	51,674 (14%)	40.6
40+	13 (10%)	12,338 (3%)	105.4
All ages	133 (100%)	372,600 (100%)	35.7

¹ Pregnancy-related mortality ratio per 100,000 live births.

Figure 9 Pregnancy-Related Mortality Ratio by Age, Georgia, 2019-2021



2021 PREGNANCY-RELATED DEATHS BY RACE/ETHNICITY

In 2021, the majority (34, 57%) of pregnancy-related deaths were among non-Hispanic Black women. Among all Georgia women who gave birth in 2021, only 34% were non-Hispanic Black women. Non-Hispanic Black women were almost three times as likely as non-Hispanic White women to die from pregnancy-related causes.

Table 7 Pregnancy-Related Deaths by Race/Ethnicity, Georgia, 2021

RACE/ETHNICITY	2021 PREGNANCY-RELATED DEATHS (% OF TOTAL DEATHS)	2021 BIRTHS (% OF ALL BIRTHS)	2021 PREGNANCY-RELATED MORTALITY RATIO ¹
Non-Hispanic Black	34 (57%)	41,752 (34%)	81.4
Non-Hispanic White	15 (25%)	53,685 (43%)	27.9
Hispanic	6 (10%)	19,448 (16%)	30.9
Other	5 (8%)	9,086 (7%)	55.0
All races/ethnicities	60 (100%)	123,971 (100%)	48.4

¹ Pregnancy-related mortality ratio per 100,000 live births.

Figure 10 Pregnancy-Related Deaths by Race/Ethnicity, Georgia, 2021 (n=60)

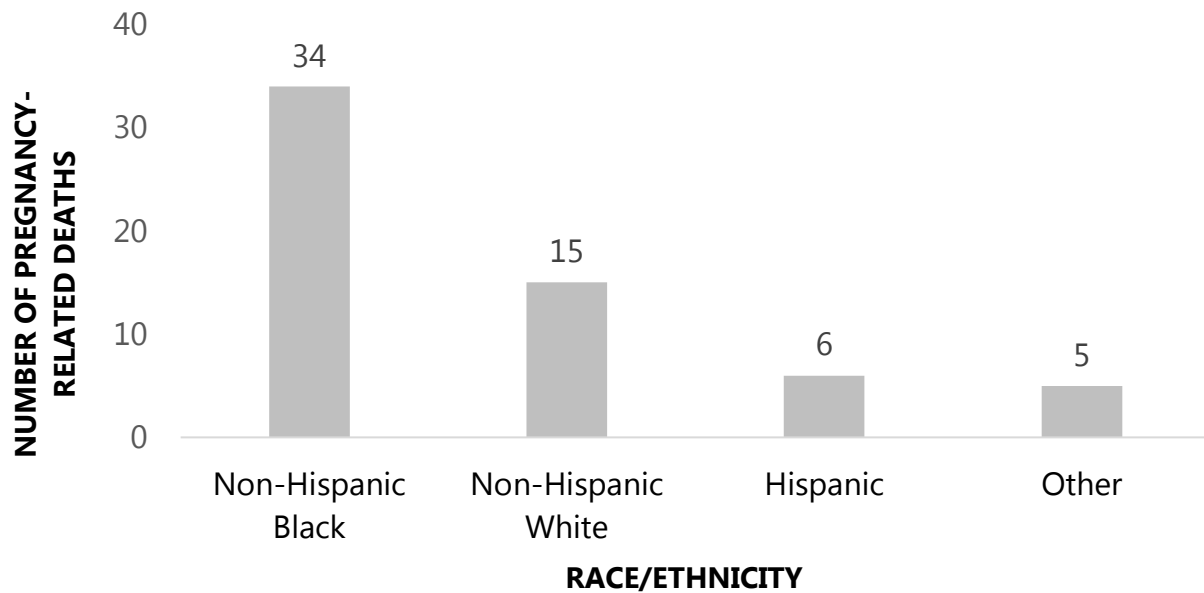
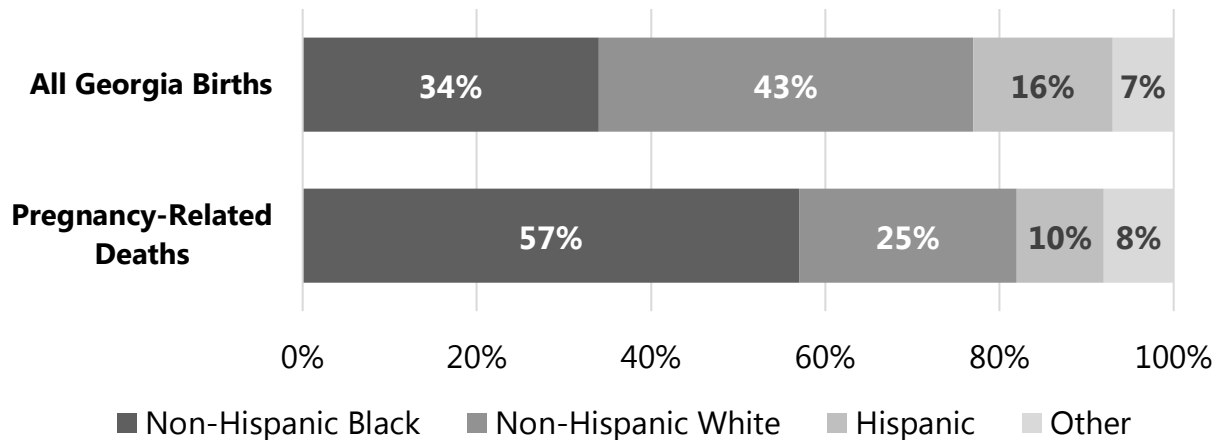


Figure 11 Proportion of All Georgia Births by Race/Ethnicity Compared to Pregnancy-Related Deaths, Georgia, 2021



2019-2021 PREGNANCY-RELATED DEATHS BY RACE/ETHNICITY

Between 2019-2021, the majority (76, 57%) of pregnancy-related deaths were among non-Hispanic Black women. Among all Georgia women who gave birth between 2019-2021, only 34% were non-Hispanic Black women. Non-Hispanic Black women were more than twice as likely as non-Hispanic White women to die from pregnancy-related causes.

Table 8 Pregnancy-Related Deaths by Race/Ethnicity, Georgia, 2019-2021

RACE/ETHNICITY	2019-2021 PREGNANCY-RELATED DEATHS (% OF TOTAL)	2019-2021 BIRTHS (% OF ALL BIRTHS)	2019-2021 PREGNANCY-RELATED MORTALITY RATIO ¹
Non-Hispanic Black	76 (57%)	127,760 (34%)	59.5
Non-Hispanic White	39 (29%)	160,976 (43%)	24.2
Hispanic	11 (8%)	56,242 (15%)	19.6
Other	7 (5%)	27,622 (7%)	25.3
All races/ethnicities	133 (100%)	372,600 (100%)	35.7

¹ Pregnancy-related mortality ratio per 100,000 live births.

Figure 12 Pregnancy-Related Deaths by Race/Ethnicity, Georgia, 2019-2021 (n=133)

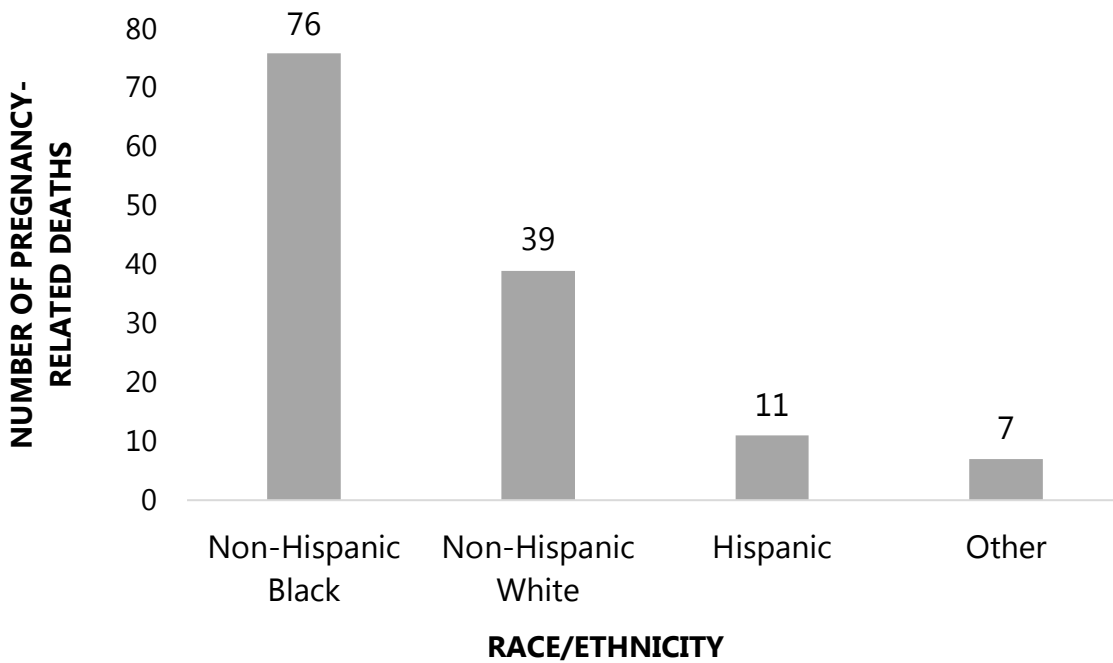
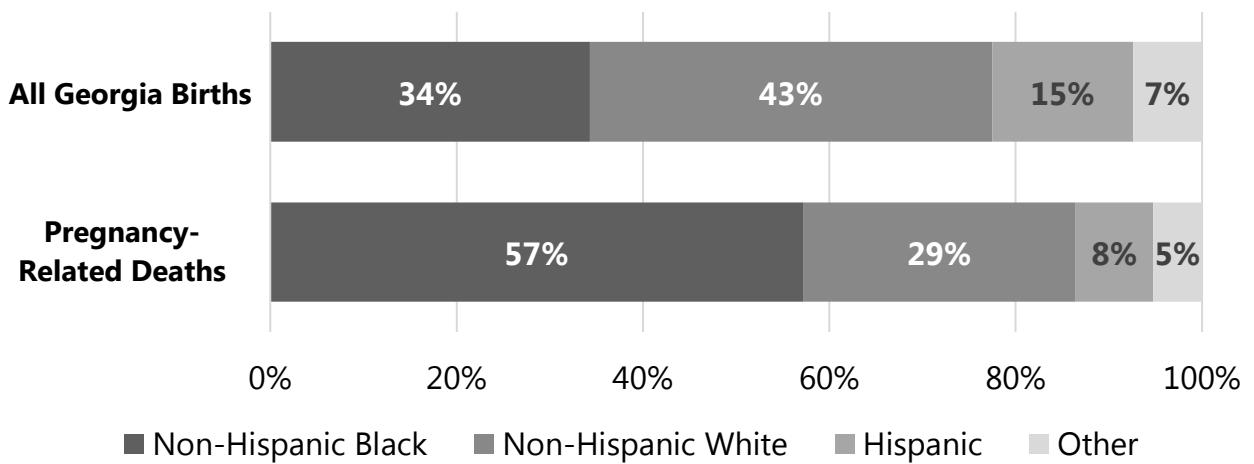


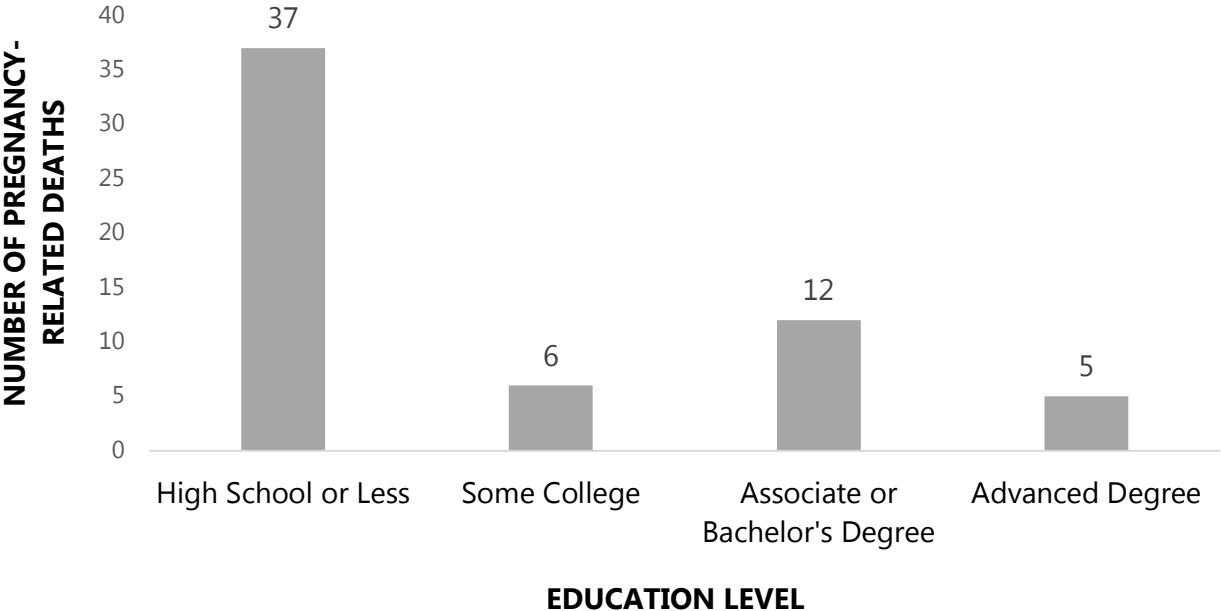
Figure 13 Proportion of All Georgia Births by Race/Ethnicity Compared to Pregnancy-Related Deaths, Georgia, 2019-2021



2021 PREGNANCY-RELATED DEATHS BY EDUCATION LEVEL

In 2021, the majority (37; 62%) of pregnancy-related deaths were among women with a high school degree or less. Twelve (20%) had associate or bachelor's degrees.

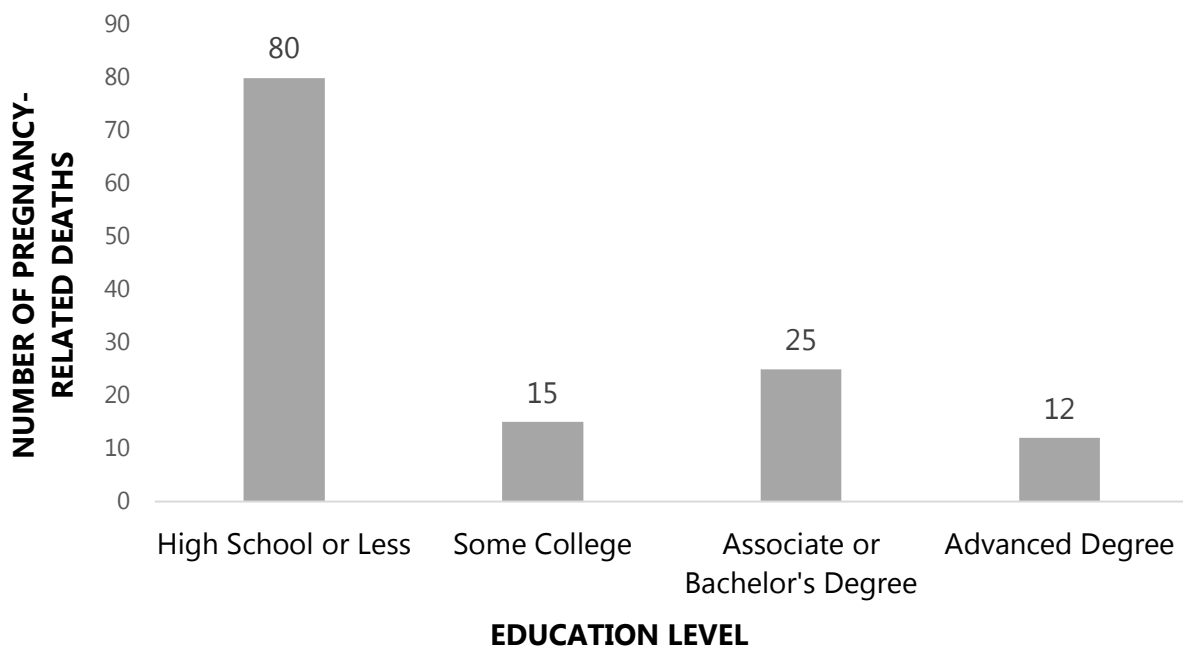
Figure 14 Pregnancy-Related Deaths by Education Level, Georgia, 2021 (n=60)



2019-2021 PREGNANCY-RELATED DEATHS BY EDUCATION LEVEL

Between 2019-2021, the majority (80; 61%) of pregnancy-related deaths were among women with a high school degree or less. Twenty-five (19%) pregnancy-related deaths had associate or bachelor's degrees.

Figure 15 Pregnancy-Related Deaths by Education Level, Georgia, 2019-2021 (n=132[†])



[†] Education Level information was unknown for one pregnancy-related death.

2021 PREGNANCY-RELATED DEATHS BY INSURANCE PROVIDER

In 2021, a majority (37; 62%) of pregnancy-related deaths were insured by Medicaid. Sixty-two percent of pregnancy-related deaths were insured by Medicaid, but only 46% of mothers who gave birth in 2021 were insured by Medicaid.

Figure 16 Pregnancy-Related Deaths by Insurance Provider, Georgia 2021 (n=60)

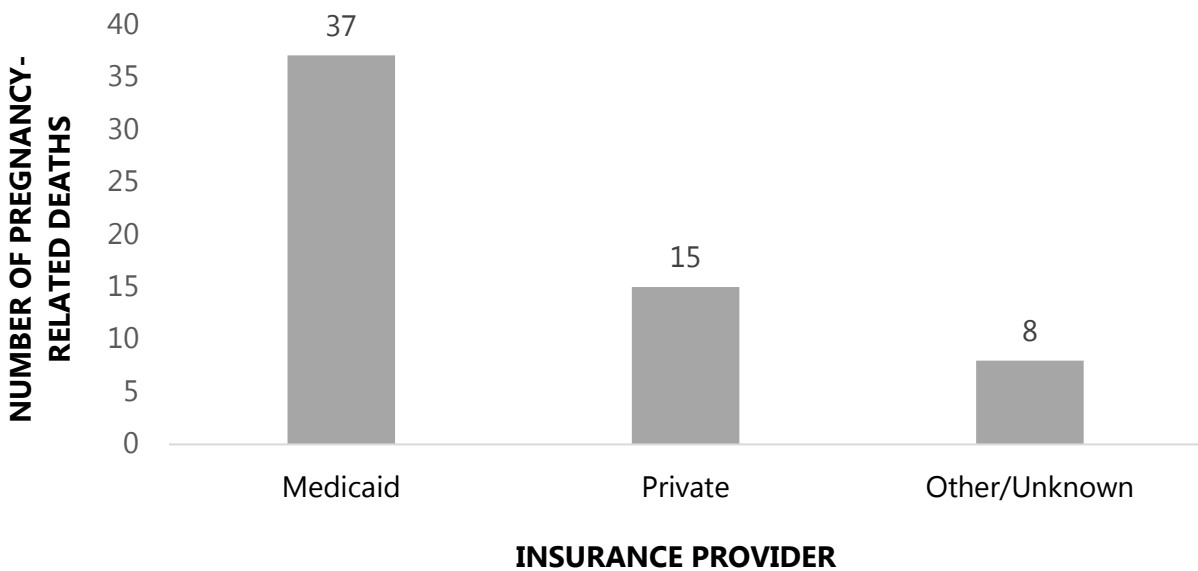
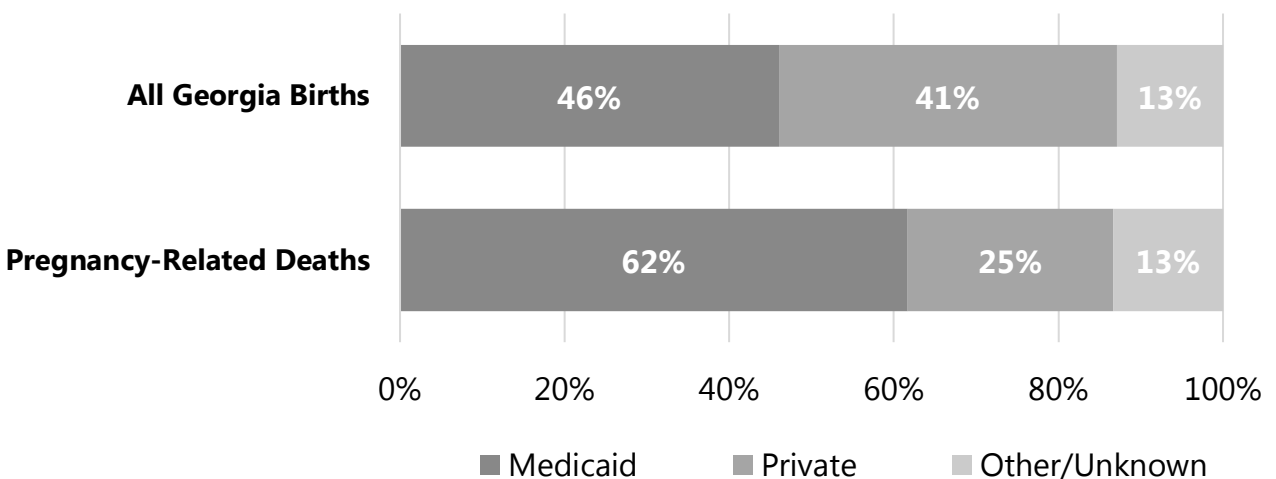


Figure 17 Proportion of All Georgia Births Compared to Pregnancy-Related Deaths, by Insurance Provider, Georgia, 2021



2019-2021 PREGNANCY-RELATED DEATHS BY INSURANCE PROVIDER

Between 2019-2021, most (79; 59%) pregnancy-related deaths were insured by Medicaid. Fifty-nine percent of pregnancy-related deaths were insured by Medicaid, but only 46% of mothers who gave birth were insured by Medicaid.

Figure 18 Pregnancy-Related Deaths by Insurance Provider, Georgia, 2019-2021 (n=133)

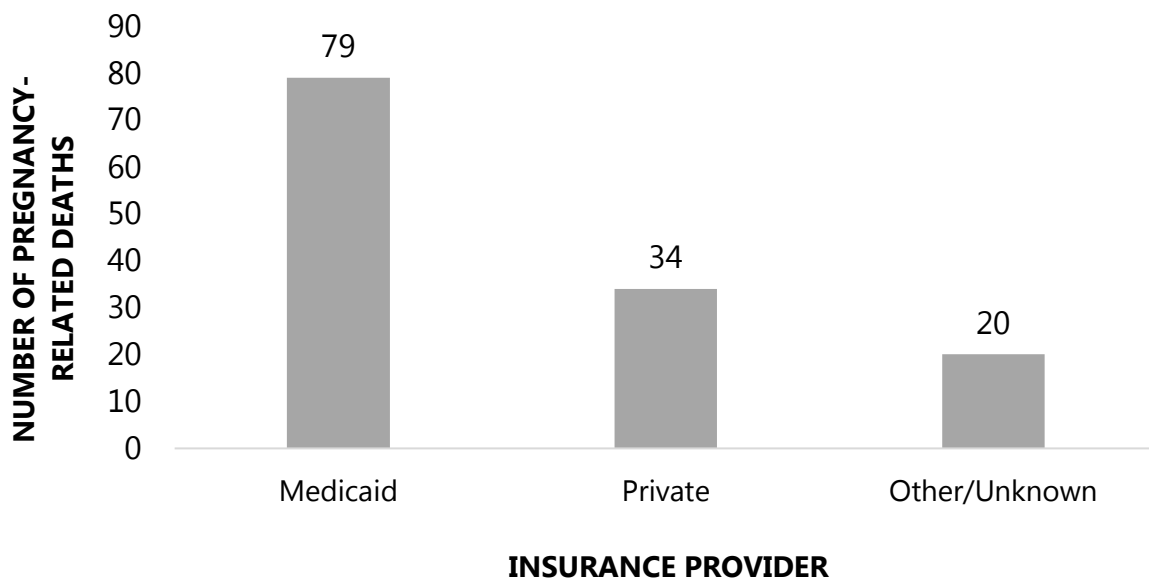
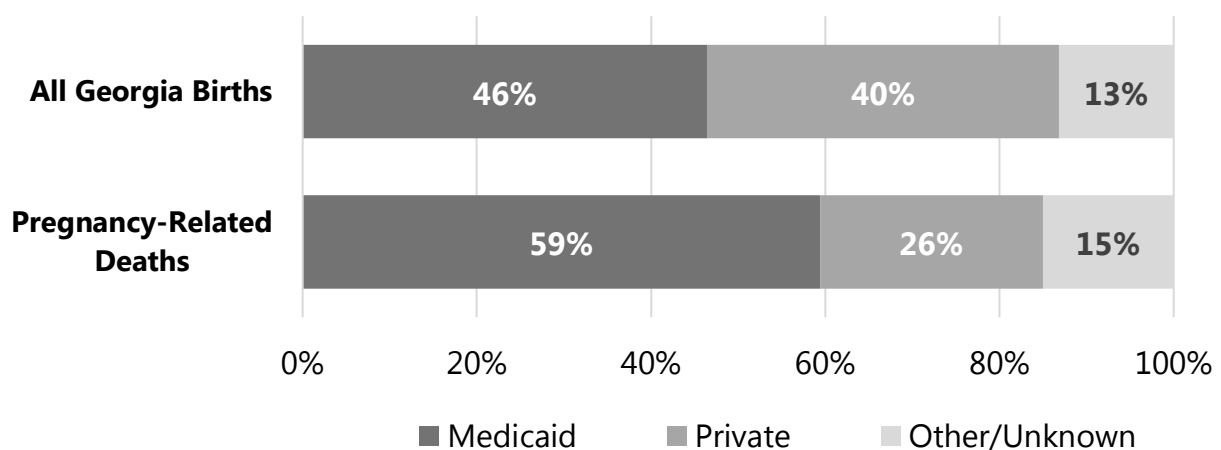


Figure 19 Proportion of All Georgia Births Compared to Pregnancy-Related Deaths, by Insurance Provider, Georgia, 2019-2021

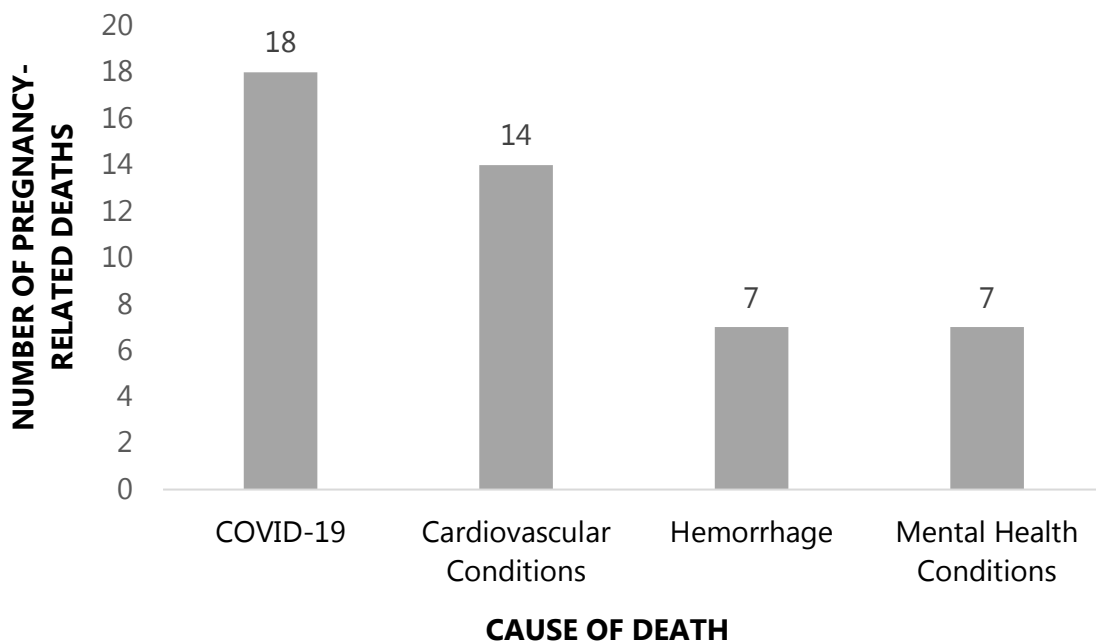


2021 LEADING CAUSES OF PREGNANCY-RELATED DEATHS

In 2021, 46 (77%) of the 60 pregnancy-related deaths were due to one of the leading causes of death: COVID-19 (18; 30%), cardiovascular conditions (14; 23%), hemorrhage (7; 12%), and mental health conditions (7; 12%). The remaining pregnancy-related deaths were due to amniotic fluid embolism, anesthesia complications, cerebrovascular accidents, collagen vascular/autoimmune diseases, embolism, hypertensive disorders of pregnancy, and injury.

For this report, “cardiovascular conditions” refers to cardiomyopathies and other cardiovascular conditions (including coronary artery disease, pulmonary hypertension, acquired and congenital valvular heart disease, vascular aneurysm, hypertensive cardiovascular disease, Marfan syndrome, conduction defects, vascular malformations, and other cardiovascular disease, excluding hypertensive disorders of pregnancy and cerebrovascular accident).

Figure 20 Leading Causes of Pregnancy-Related Deaths, Georgia, 2021

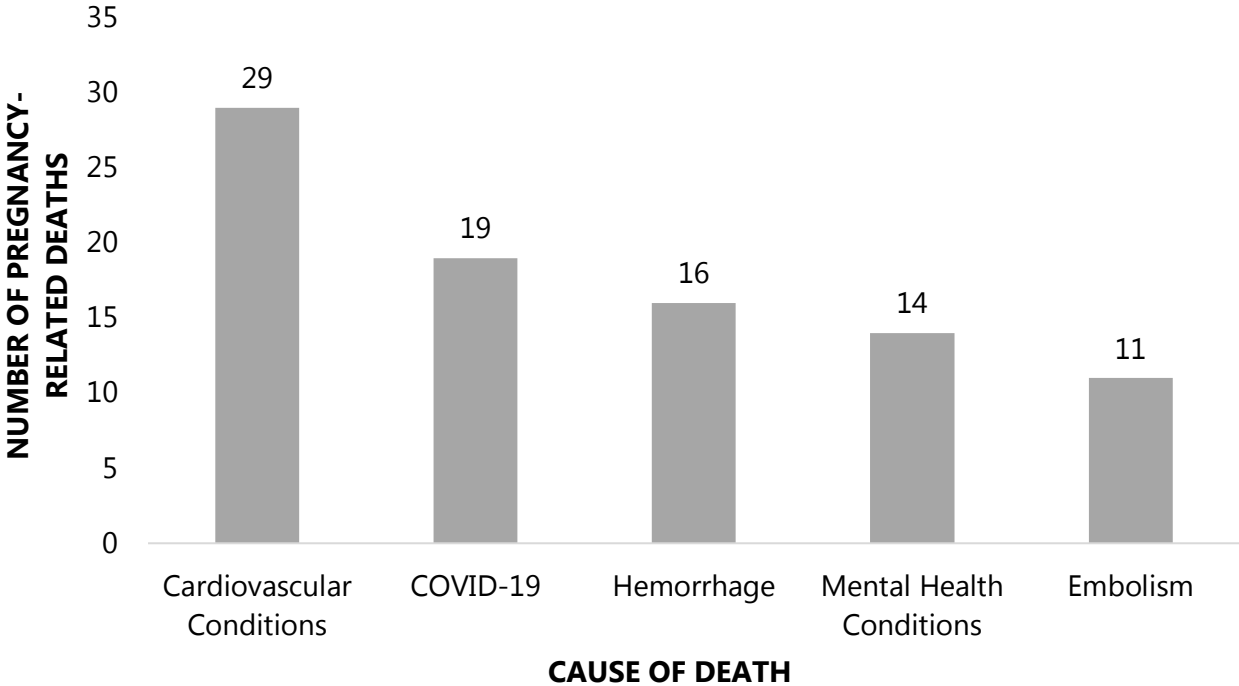


2019-2021 LEADING CAUSES OF PREGNANCY-RELATED DEATHS

Between 2019-2021, 89 (67%) of the 133 pregnancy-related deaths were due to one of the leading causes of death: cardiovascular conditions (29; 22%), COVID-19 (19; 14%), hemorrhage (16; 12%), mental health conditions (14; 11%) and embolism (11, 8%). The remaining pregnancy-related deaths were due to metabolic/endocrine conditions, amniotic fluid embolism, anesthesia complications, cerebrovascular accidents, collagen vascular/autoimmune diseases, hypertensive disorders of pregnancy, injury, cancer, hematologic conditions, neurovascular conditions, and unknown cause of death.

For this report, “cardiovascular conditions” refers to cardiomyopathies and other cardiovascular conditions (including coronary artery disease, pulmonary hypertension, acquired and congenital valvular heart disease, vascular aneurysm, hypertensive cardiovascular disease, Marfan syndrome, conduction defects, vascular malformations, and other cardiovascular disease, excluding hypertensive disorders of pregnancy and cerebrovascular accident).

Figure 21 **Leading Causes of Pregnancy-Related Deaths, Georgia, 2019-2021**



2021 LEADING CAUSES OF PREGNANCY-RELATED DEATHS WITHIN RACE/ETHNICITY SUBGROUPS

In 2021, among non-Hispanic Black women, the leading causes of death were cardiovascular conditions (11; 32%) and COVID-19 (7; 21%). For non-Hispanic White women, the leading causes of death were COVID-19 (7; 47%) and mental health conditions (4; 27%).

Table 9 **Leading Causes of Death Within Race/Ethnicity Subgroups, Georgia 2021**

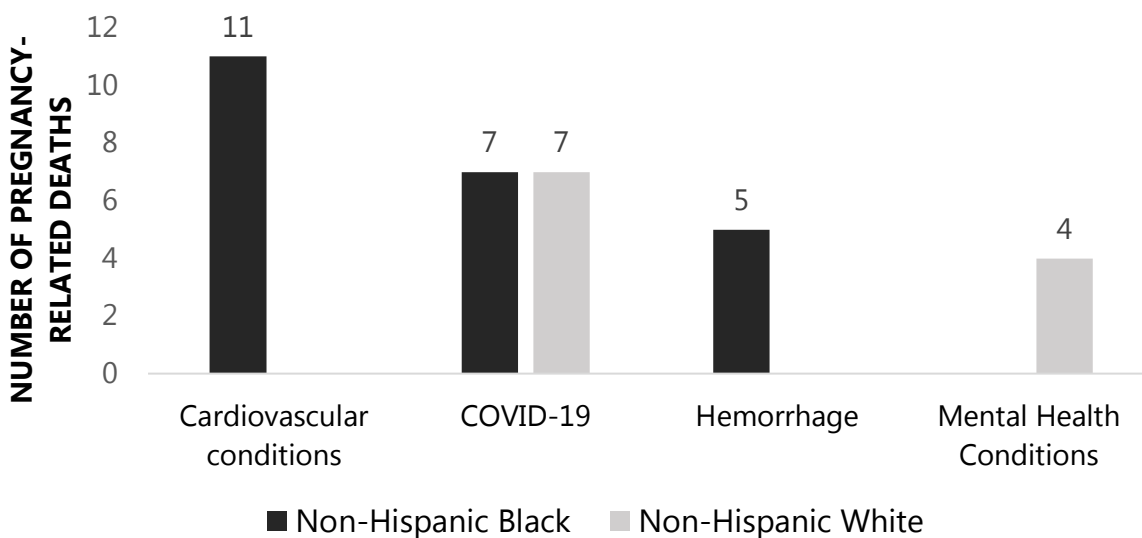
CAUSE OF DEATH	2021 NON-HISPANIC BLACK NUMBER OF PREGNANCY- RELATED DEATHS (% OF TOTAL)	2021 NON-HISPANIC WHITE NUMBER OF PREGNANCY- RELATED DEATHS (% OF TOTAL)
Cardiovascular conditions	11 (32%)	*
COVID-19	7 (21%)	7 (47%)
Hemorrhage	5 (15%)	*
Mental Health Conditions	*	4 (27%)

* Data are suppressed to maintain confidentiality.

Leading causes of death for Hispanic and Other race/ethnicity are not included due to low counts.

This table does not represent all underlying causes of death among race/ethnicity subgroups.

Figure 22 **Leading Causes of Pregnancy-Related Death Within Race/Ethnicity Subgroups, Georgia, 2021**



Leading causes of death for Other race/ethnicity are not included due to low counts.

This chart does not represent all underlying causes of death among race/ethnicity subgroups.

2019-2021 LEADING CAUSES OF PREGNANCY-RELATED DEATHS WITHIN RACE/ETHNICITY SUBGROUPS

Between 2019-2021, among non-Hispanic Black women, the leading causes of death were cardiovascular conditions (21; 28%) and embolism (10; 13%). For non-Hispanic White women, the leading causes of death were mental health conditions (8; 21%) and COVID-19 (7; 18%).

Table 10 **Leading Causes of Pregnancy-Related Death Within Race/Ethnicity Subgroups, Georgia, 2019-2021**

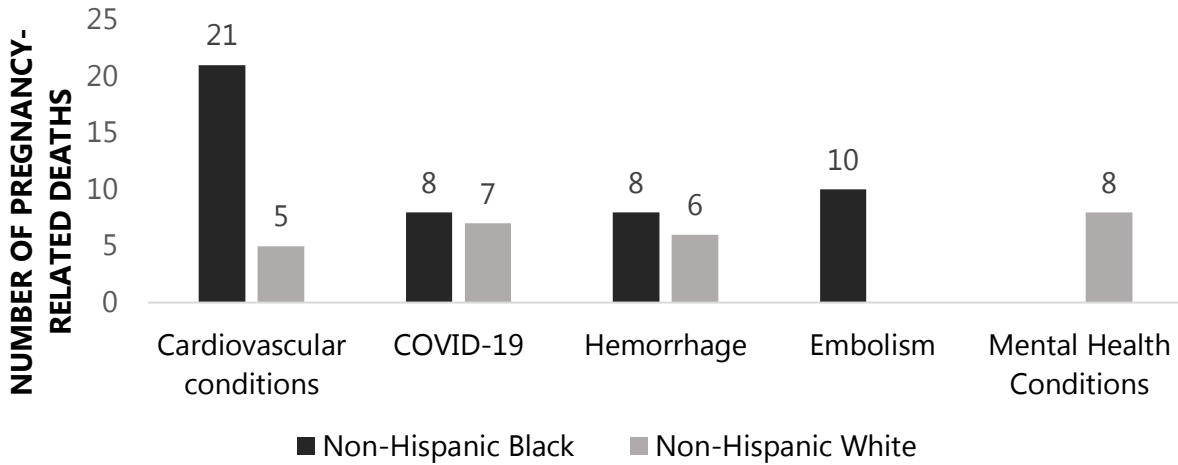
CAUSE OF DEATH	2019-2021 NON-HISPANIC BLACK NUMBER OF PREGNANCY-RELATED DEATHS (% OF TOTAL)	2019-2021 NON-HISPANIC WHITE NUMBER OF PREGNANCY-RELATED DEATHS (% OF TOTAL)
Cardiovascular Conditions	21 (28%)	5 (13%)
COVID-19	8 (11%)	7 (18%)
Hemorrhage	8 (11%)	6 (15%)
Embolism	10 (13%)	*
Mental Health Conditions	*	8 (21%)

* Data are suppressed to maintain confidentiality.

Leading causes of death for Hispanic and Other race/ethnicity are not included due to low counts.

This table does not represent all underlying causes of death among race/ethnicity subgroups.

Figure 23 **Leading Causes of Death Within Race/Ethnicity Subgroups, Georgia, 2019-2021**



Leading causes of death for Hispanic and Other race/ethnicity are not included due to low counts. This chart does not represent all underlying causes of death among race/ethnicity subgroups.

2021 MATERNAL MORTALITY REVIEW COMMITTEE DECISIONS

2021 FACTORS CONTRIBUTING TO PREGNANCY-RELATED DEATHS

Georgia's MMRC determined whether obesity, discrimination*, substance use disorder, and mental health conditions other than substance use disorders contributed to each pregnancy-related death. The committee relies primarily on reports from family members to determine whether discrimination contributed to the death. Deaths where a circumstance probably contributed were defined as those where the committee selected "yes" or "probably" for whether each of these circumstances contributed to the death.

Obesity

Obesity contributed to 25 (42%) pregnancy-related deaths.

Discrimination*

Discrimination contributed to 10 (17%) pregnancy-related deaths.

Substance Use Disorders

Substance use disorders contributed to 5 (8%) pregnancy-related deaths.

Mental Health Conditions

Mental health conditions contributed to 13 (22%) pregnancy-related deaths.

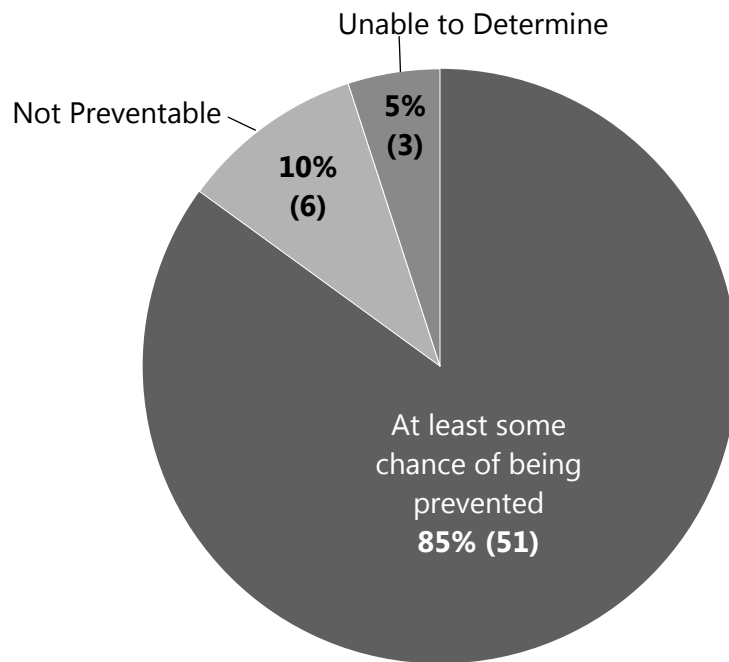
* CDC: Discrimination - treating someone less or more favorably based on the group, class, or category they belong to, resulting from biases, prejudices, and stereotyping. It can manifest as differences in care, clinical communication, and shared decision-making. (Smedley et al, 2003 and Dr. Rachel Hardeman).

2021 PREVENTABILITY

A death is considered preventable if the MMRC determines that there was at least some chance of the death being averted by one or more reasonable changes to patient, family, provider, facility, system, and/or community factors. For example, a death might be determined to be preventable if it was determined there was a need for education on chronic condition management prior to pregnancy or if an individual would have benefited from home visiting services. In 2021, 85% (51) of pregnancy-related deaths had at least some chance of being prevented. For deaths determined by the MMRC to

be preventable, the MMRC makes recommendations for specific, feasible actions that, if implemented or altered, might have changed the course of events.

Figure 24 Preventability of Pregnancy-Related Deaths, Georgia, 2021



2021 CONTRIBUTING FACTORS AND RECOMMENDATIONS FOR LEADING CAUSES OF PREGNANCY-RELATED DEATHS

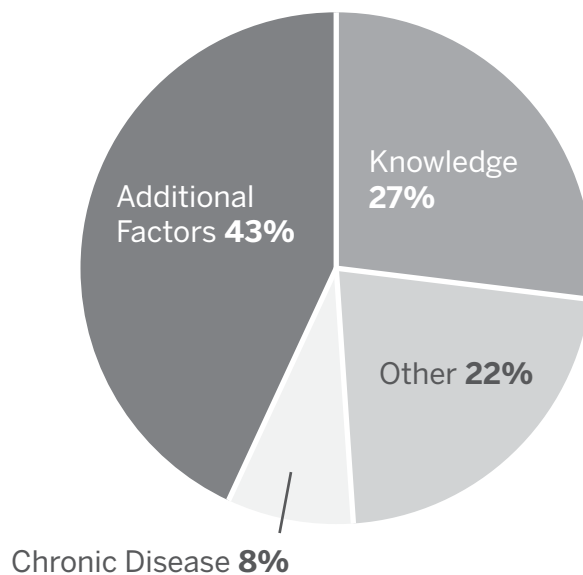
COVID-19

COVID-19, which caused more severe illness in pregnant and recently pregnant women, was the leading cause of pregnancy-related deaths. In 2021, eighteen (30%) of the 60 pregnancy-related deaths were due to COVID-19. Most (14; 78%) deaths due to COVID-19 occurred 7 to 42 days postpartum. A majority (17; 94%) of deaths due to COVID-19 were determined to have at least some chance of being prevented. Pregnant and recently pregnant women with underlying health conditions may have had an even higher risk of severe illness with COVID-19. Obesity was identified as a contributor to 14 (78%) deaths due to COVID-19.

DESCRIPTION OF FACTORS CONTRIBUTING TO PREGNANCY-RELATED COVID-19 DEATHS

The MMRC identifies factors that contributed to each death and assigns a category to each factor.

Figure 25 Factors Contributing to Pregnancy-Related COVID-19 Deaths, Georgia, 2021



Knowledge (lack of knowledge regarding the importance of the event or treatment or follow-up) factors contributing to COVID-19 deaths:

- Communities received misinformation and unclear information on the safety of the COVID-19 vaccine.
- Individuals did not receive the COVID-19 vaccine during pregnancy because it was not formally recommended until August 2021.
- Individuals lacked a clear understanding of the safety of the COVID-19 vaccine during pregnancy.
- Individuals lacked a clear understanding of their risk of severe illness from COVID-19 infection due to comorbidities.
- Providers did not document counseling patients on the COVID-19 vaccine during prenatal care.

Other (“Contributing factor not otherwise mentioned” OR contributing factor not applicable to other categories) factors contributing to COVID-19 deaths:

- Communities did not adhere to mask and social distancing recommendations.

Chronic Disease (occurrence of one or more significant pre-existing medical conditions) factors contributing to COVID-19 deaths:

- Individuals had comorbidities, including obesity, that increased the risk of severe illness due to COVID-19 infection.

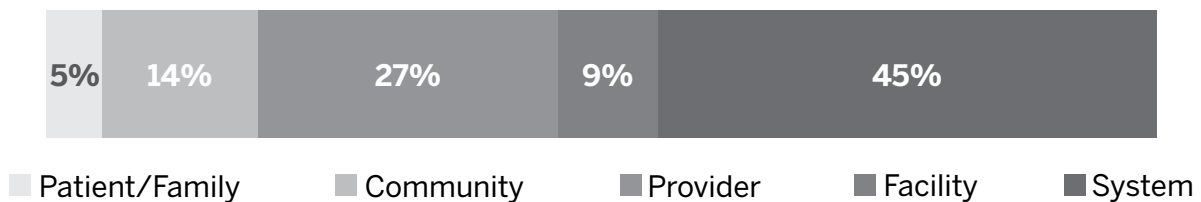
Additional factors contributing to COVID-19 deaths include **Delay** (provider or patient was delayed in referring or accessing care, treatment, or follow-up care/action), **Outreach** (lack of coordination between the healthcare system and other outside agencies/organizations in the geographic/cultural area that work with maternal health issues), and **Discrimination** (treating someone less or more favorably based on the group, class or category they belong to resulting from biases, prejudices, and stereotyping):

- Providers delayed initiation of recommended emergency-use treatments because patients were lactating.
- Individuals did not have access to home monitoring equipment to facilitate earlier identification of low oxygen levels.
- Patients experienced long waits in the Emergency Department and would have benefited from expedited care in a dedicated Obstetric Emergency Department.
- The care system did not provide community-coordinated care or outreach to community resources.
- Patients did not have access to doulas and nurse home visitors during pregnancy and postpartum.
- Patients were discharged before symptoms were resolved.
- Families experienced unequal treatment and poor communication with clinical teams.

MMRC RECOMMENDATIONS FOR PREGNANCY-RELATED COVID-19 DEATHS

For deaths that the MMRC determined to be preventable, the MMRC makes recommendations for specific, feasible actions that, if implemented or altered, might have changed the course of events. Recommendations are made for all contributing factors and are actions that could be taken by the patient/family, community, provider, facility, and/or system.

Figure 26 MMRC Recommendations for Pregnancy-Related COVID-19 Deaths, Georgia 2021



MMRC recommendations for **Patients/Families** (individuals before, during, or after a pregnancy, and their family, internal or external to the household, with influence on the individual):

- Individuals should wear masks and social distance to prevent COVID-19 infection when recommended.

MMRC recommendations for **Communities** (groupings based on a shared sense of place or identity - ranges from physical neighborhoods to a community based on common interests and shared circumstances):

- Communities should increase access to support services, including doulas, community health workers, home visitors, patient navigators, and case managers, for pregnant and postpartum individuals.
- Communities should utilize doulas, community health workers, and home visitors to educate patients on home monitoring methods during pandemics.

MMRC recommendations for **Providers** (individuals with training and expertise who provide care, treatment, and/or advice):

- Providers should counsel patients on the COVID-19 vaccination in an evidence-based manner, using shared decision-making and considering patient-specific risk factors from comorbidities at each encounter.
- Providers should consider options for emergency use treatments appropriate for the severity of the patient's condition during pandemics.

MMRC recommendations for **Facilities** (physical locations where direct care is provided - ranges from small clinics and urgent care centers to hospitals with trauma centers):

- Hospitals and insurance providers should utilize patient advocates for individuals during pregnancy and postpartum.
- Hospitals should provide training to address staff competency to provide equitable treatment and care.
- Hospitals should implement the Alliance for Innovation on Maternal Health (AIM) sepsis bundle on an ongoing basis.
- Hospitals should implement policies and procedures to ensure patients are ready for discharge and initiate referrals or transfers when indicated.
- Hospitals and home health care should coordinate care on an ongoing basis.
- Hospitals should implement policies and procedures to utilize an interpreter during each medical encounter.

MMRC recommendations for **Systems** (interacting entities that support services before, during, or after pregnancy - ranges from healthcare systems and payors to public services and programs):

- Emergency planning and hospitals should coordinate and create plans to ensure appropriate extracorporeal membrane oxygenation (ECMO) availability during pandemics.
- Insurance providers should increase access to support services, including doulas, community health workers, home visitors, patient navigators, and case managers, for pregnant and postpartum individuals.
- The health care system should implement patient-reported experience measures during pregnancy and postpartum.
- The health care system should improve access to affordable care prior to pregnancy.
- Medicaid should develop risk stratification for pregnant individuals and provide case management for individuals through pregnancy and postpartum.

- Medicaid should reimburse for doula care provision during pregnancy and postpartum.
- Public health and medical associations should use clear, consistent messaging about vaccines on an ongoing basis.
- Public health and medical associations should use peer counseling, respected community leaders, or another trusted messenger to share public health messaging on an ongoing basis.
- Public health and researchers should ensure more timely research and guidelines for vaccine safety in pregnant people during pandemics.
- Public health should implement community-based programs and public health programs to prevent and address obesity.

SUMMARY OF INITIATIVES

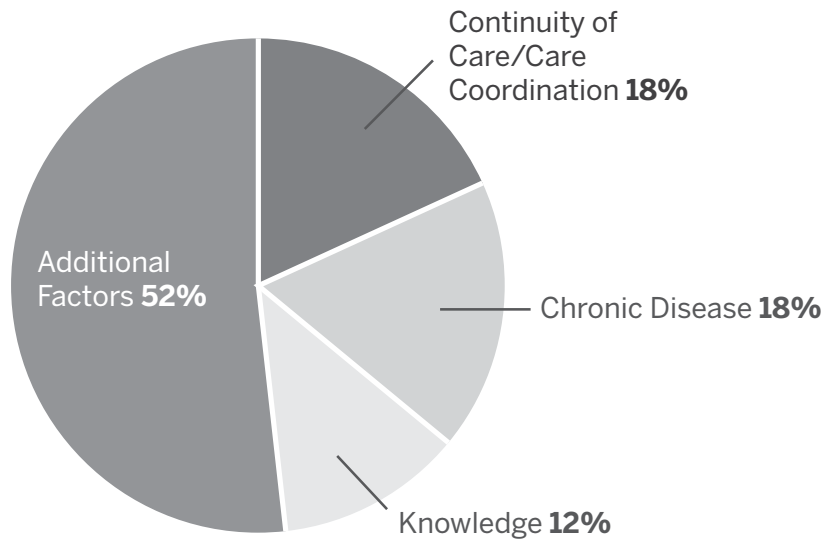
COVID-19 vaccination is now part of the Centers for Disease Control and Prevention (CDC), the American College of Obstetricians and Gynecologists (ACOG), and the Society for Maternal-Fetal Medicine (SMFM) recommendations for pregnant women. A formal recommendation was made on July 30, 2021, by ACOG and SMFM and on August 11, 2021, by the CDC.

ALL CARDIOVASCULAR CONDITIONS

Fourteen (23%) of the 60 pregnancy-related deaths were due to cardiovascular conditions. For cardiovascular conditions, 6 (43%) deaths occurred 7 to 42 days postpartum, and 6 (43%) deaths occurred 43 days to 1 year postpartum. The majority (10; 71%) of pregnancy-related deaths due to cardiovascular conditions were determined to have at least some chance of being prevented. Obesity was identified as a contributor to 8 (57%) pregnancy-related deaths from cardiovascular conditions.

MMRC DESCRIPTION OF FACTORS CONTRIBUTING TO PREGNANCY-RELATED CARDIOVASCULAR CONDITIONS DEATHS

Figure 27 Factors Contributing to Pregnancy-Related Cardiovascular Conditions Deaths, Georgia, 2021



Continuity of Care/Care Coordination (care providers did not have access to individual's complete records or did not communicate their status sufficiently) factors contributing to cardiovascular conditions deaths:

- The obstetric care system did not adequately provide case management services.
- The obstetric care system did not provide adequate follow-up between delivery and postpartum appointment.
- The obstetric care system did not provide community-coordinated care or outreach to community resources.
- Emergency department providers did not refer or consult with obstetricians.
- Cardiologists, obstetricians, and maternal-fetal medicine specialists did not coordinate care during pregnancy.
- Individuals with risk factors did not receive case management services during pregnancy and postpartum.

Chronic Disease (occurrence of one or more significant pre-existing medical conditions) factors contributing to cardiovascular conditions deaths:

- Individuals who had chronic conditions prior to pregnancy.

Knowledge (lack of knowledge regarding the importance of the event or treatment or follow-up) factors contributing to cardiovascular conditions deaths:

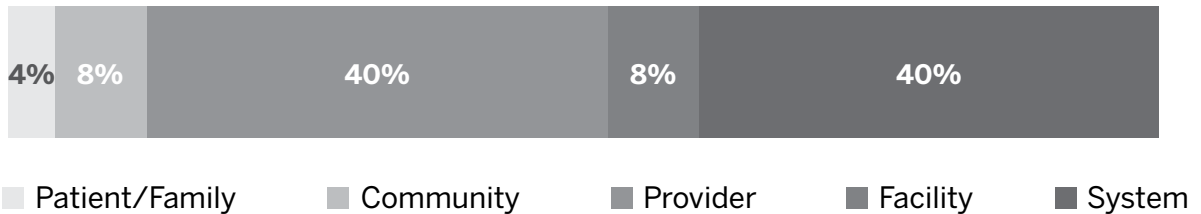
- Patients and families did not receive enough information on managing chronic conditions.
- Providers were not adequately trained on recent treatment guidelines.
- Patients and families did not receive enough information on post-birth warning signs.

Additional factors contributing to cardiovascular conditions deaths include **Adherence** (provider or patient did not follow protocol or failed to comply with standard procedures), **Policies/Procedures** (facility lacked basic policies or infrastructure germane to the individual's needs), **Outreach** (lack of coordination between the healthcare system and other outside agencies/organizations in the geographic/cultural area that work with maternal health issues), **Referral** (specialists were not consulted or did not provide care; referrals to specialists were not made), and **Other**:

- Providers did not make referrals to cardiology.
- Individuals did not have the resources and support to manage chronic conditions and address social determinants of health prior to pregnancy.
- Individuals experienced limited social support during the COVID-19 pandemic.
- Providers did not make referrals to behavioral health providers when indicated.
- Patients struggled to adhere to medications and keep medical appointments due to mental health conditions.
- Patients did not receive medical care due to lack of childcare.
- The COVID-19 pandemic impacted the ability of patients and families to participate in medical care.
- Community-based organizations and community resources were not included in the care plan.

MMRC RECOMMENDATIONS FOR PREGNANCY-RELATED CARDIOVASCULAR CONDITIONS DEATHS

Figure 28 MMRC Recommendations for Pregnancy-Related Cardiovascular Conditions Deaths, Georgia, 2021



MMRC recommendations for **Patients/Families** (individuals before, during, or after a pregnancy, and their family, internal or external to the household, with influence on the individual):

- Individuals should call emergency medical services (EMS) and initiate cardiopulmonary resuscitation (CPR) in the event of an emergency.

MMRC recommendations for **Communities** (groupings based on a shared sense of place or identity - ranges from physical neighborhoods to a community based on common interests and shared circumstances):

- Communities should offer cardiopulmonary resuscitation (CPR) courses on an ongoing basis.
- Communities should provide affordable options for nutritious food on an ongoing basis.

MMRC recommendations for **Providers** (individuals with training and expertise who provide care, treatment, and/or advice):

- Providers should initiate pre-pregnancy counseling on all individuals of reproductive age according to the American College of Obstetricians and Gynecologists recommendations to maximize health, address modifiable risk factors, provide education about healthy pregnancy and family planning counseling.

- Providers should educate patients on implementing lifestyle modifications, including proper nutrition and exercise, to improve health before, during, and after pregnancy.
- Obstetric providers should implement a standardized cardiovascular disease assessment tool during pregnancy.
- Providers should coordinate care during pregnancy and postpartum.
- Providers should discuss maternal early warning signs with patients and families and provide educational materials during pregnancy and postpartum.
- Providers should offer a family-centered approach to care during the perinatal period.
- Providers should coordinate with nurse home visiting programs and case management programs to support patients during the perinatal period.

MMRC recommendations for **Facilities** (physical locations where direct care is provided - ranges from small clinics and urgent care centers to hospitals with trauma centers):

- Hospitals should educate patients and their support persons on post-birth warning signs at discharge.
- Hospitals and providers should have policies and procedures for referring patients to behavioral health services upon discharge.
- Emergency department providers should consult with obstetricians when patients are pregnant or postpartum.

MMRC recommendations for **Systems** (interacting entities that support services before, during, or after pregnancy - ranges from healthcare systems and payors to public services and programs):

- State agencies should create processes and educate providers on how to enroll patients in case management services.
- Hospitals should implement the Alliance for Innovation on Maternal Health (AIM) Cardiac Conditions in Obstetrical Care (CCOC) bundle on an ongoing basis.
- Health systems should use health information exchanges to coordinate care continuously.
- Insurance providers, including Medicaid, should ensure patients with chronic conditions and mental health conditions are enrolled in case management services during pregnancy and postpartum.

- Medicaid Care Management Organizations (CMOs) should provide care coordination for each high-risk patient during pregnancy and postpartum.
- Insurance providers should increase access to support services, including doulas, community health workers, home visitors, patient navigators, and case managers, for pregnant and postpartum individuals.
- Medicaid should reimburse for doula services during pregnancy and postpartum.
- Public health should implement evidence-based programs and public health programs to prevent and address obesity.
- The obstetric care system should reform postpartum care to include follow-up prior to six weeks postpartum and throughout the first year postpartum for individuals with risk factors.
- Public health should implement educational campaigns on post-birth warning signs on an ongoing basis.

SUMMARY OF INITIATIVES UNDERWAY IN GEORGIA

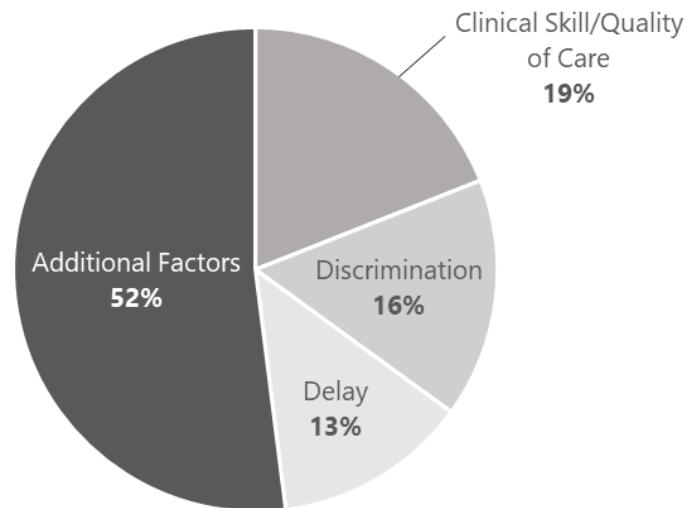
- The Georgia Perinatal Quality Collaborative (GaPQC) is implementing the Alliance for Innovation on Maternal Health (AIM) Cardiac Conditions in Obstetrical Care (CCOC) Patient Safety Bundle. Georgia is the first state in the country to implement this bundle. The second cohort began in January 2024.
- The Georgia General Assembly allocated \$3,441,000 to expand a home visiting pilot program into additional rural counties.
- The Maternal Health ECHO has conducted educational sessions on cardiovascular conditions for providers and community resources.
- Augusta University is currently implementing a Cardio Obstetrics program and a care management program to address social determinants of health.
- Northeast Georgia Health System integrated a standardized cardiovascular disease assessment into the inpatient setting.

HEMORRHAGE

Seven (12%) of the 60 pregnancy-related deaths were due to hemorrhage. The majority (4; 57%) of pregnancy-related deaths due to hemorrhage occurred 1 to 6 days postpartum. The majority (6; 86%) of pregnancy-related deaths due to hemorrhage were determined to have at least some chance of being prevented. Discrimination was identified as a contributor to 2 (29%) pregnancy-related deaths due to hemorrhage.

DESCRIPTION OF FACTORS CONTRIBUTING TO PREGNANCY-RELATED HEMORRHAGE DEATHS

Figure 29 Factors Contributing to Pregnancy-Related Hemorrhage Deaths, Georgia, 2021



Clinical Skill/Quality of Care (personnel were not appropriately skilled for the situation or did not exercise clinical judgment consistent with standards of care) factors contributing to hemorrhage deaths:

- Providers did not intervene despite abnormal labs and vitals.
- Providers delayed initiation of aspirin during pregnancy to help prevent preeclampsia, a risk factor for severe hemorrhage.
- Providers did not respond to hemorrhage promptly.
- Providers did not adequately assess for pregnancy, and providers were delayed in recognizing a ruptured ectopic pregnancy.

Discrimination (treating someone less or more favorably based on the group, class or category they belong to resulting from biases, prejudices, and stereotyping) factors contributing to hemorrhage deaths. The committee relies primarily on reports from family members to determine whether discrimination contributed to the death, including:

- Patient experienced poor quality of care.
- Patient's symptoms were not acknowledged or addressed.

Delay (provider or patient was delayed in referring or accessing care, treatment, or follow-up care/action) factors contributing to hemorrhage deaths:

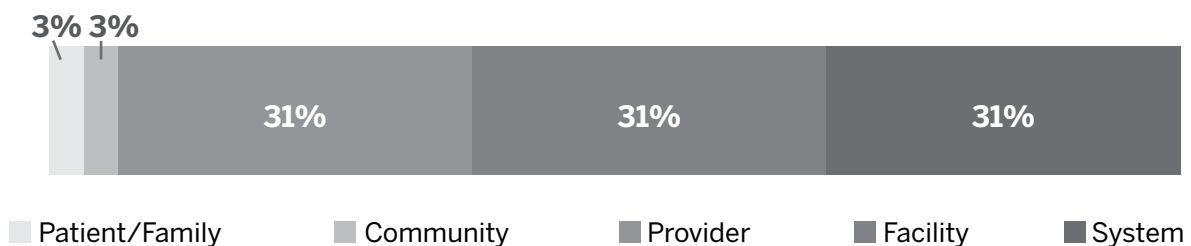
- Delay in implementing Massive Transfusion Protocol (MTP).
- Delay in hemorrhage response, possibly due to discrimination.
- Delay in seeking care; likely did not know the possibility of ectopic pregnancy.

Additional factors contributing to hemorrhage deaths include **Knowledge** (lack of knowledge regarding the importance of an event or treatment or follow-up), **Assessment** (factors placing the individual at risk for a poor clinical outcome recognized, and they were not transferred/transported to a provider able to give a higher level of care), **Discrimination** (treating someone less or more favorably based on the group, class or category they belong to resulting from biases, prejudices, and stereotyping), and **Other**:

- Providers delayed implementing Massive Transfusion Protocol.
- Patients delayed seeking care due to unplanned pregnancy and lack of knowledge regarding the risk of ectopic pregnancy.

MMRC RECOMMENDATIONS FOR PREGNANCY-RELATED HEMORRHAGE DEATHS

Figure 30 MMRC Recommendations for Pregnancy-Related Hemorrhage Deaths, Georgia, 2021



MMRC recommendations for **Communities** (groupings based on a shared sense of place or identity - ranges from physical neighborhoods to a community based on common interests and shared circumstances):

- Communities should implement education on being informed healthcare consumers on an ongoing basis.

MMRC recommendations for **Providers** (individuals with training and expertise who provide care, treatment, and/or advice):

- Providers should use surgical exploration and call a general surgeon for assistance to identify the source of bleeding when it is unknown.
- Providers should order appropriate diagnostic tests consistent with presenting complaints at each encounter.
- Medical associations should educate family physicians on treating pregnant patients on an ongoing basis.
- Providers should admit individuals with abnormal labs and vital signs when indicated.
- Providers should follow clinical guidelines for starting aspirin at 12 weeks to prevent preeclampsia during pregnancy for patients who fall within the guidelines.
- Obstetricians and maternal-fetal medicine providers should refer patients to cardiology when indicated during pregnancy and postpartum.
- Providers should educate patients on the signs or symptoms of ectopic pregnancies.
- Providers should conduct contraception counseling with patients of reproductive age on an ongoing basis.

MMRC recommendations for **Facilities** (physical locations where direct care is provided - ranges from small clinics and urgent care centers to hospitals with trauma centers):

- Hospitals should implement the Alliance for Innovation on Maternal Health (AIM) Hemorrhage patient safety bundle on an ongoing basis.
- Hospitals should require providers to complete bias training and cultural competency (religion and racial) training on an ongoing basis.
- Obstetric offices should have policies and procedures to follow up with patients after a visit is missed.
- Obstetric offices should have policies and procedures to ensure patients who would not accept blood products manage anemia and attend blood or iron transfusion appointments during pregnancy and postpartum.

- Hospital systems should extend peer review processes to include review of discrimination and racism on an ongoing basis.
- The obstetric care system should implement tools to assess for racism and discrimination.

MMRC recommendations for **Systems** (interacting entities that support services before, during, or after pregnancy - ranges from healthcare systems and payors to public services and programs):

- Hospitals and insurance providers should make patient advocates and doulas available for obstetric patients during hospitalization.
- Medicaid should provide reimbursement for doula care during the perinatal period.
- Hospitals should implement a mechanism to make payers aware of complaints against providers on an ongoing basis.
- Hospitals and insurance providers should ensure patient advocates are available to help report racism, discrimination, and poor quality of care to the Georgia Composite Medical Board on an ongoing basis.
- Hospitals should implement the Alliance for Innovation on Maternal Health (AIM) Hemorrhage bundle on an ongoing basis.
- Legislators should expand access to interconception care on an ongoing basis.
- Legislators should increase access to affordable healthcare and prescriptions on an ongoing basis.

SUMMARY OF INITIATIVES UNDERWAY IN GEORGIA

- Between 2018 and 2022, the Georgia Perinatal Quality Collaborative (GaPQC) implemented the Alliance for Innovation on Maternal Health (AIM) Maternal Hemorrhage and Severe Hypertension Patient Safety Bundles in over 78% of the state's birthing facilities.
- The Maternal Health ECHO has conducted educational sessions for providers on recognizing and responding to obstetric hemorrhage.

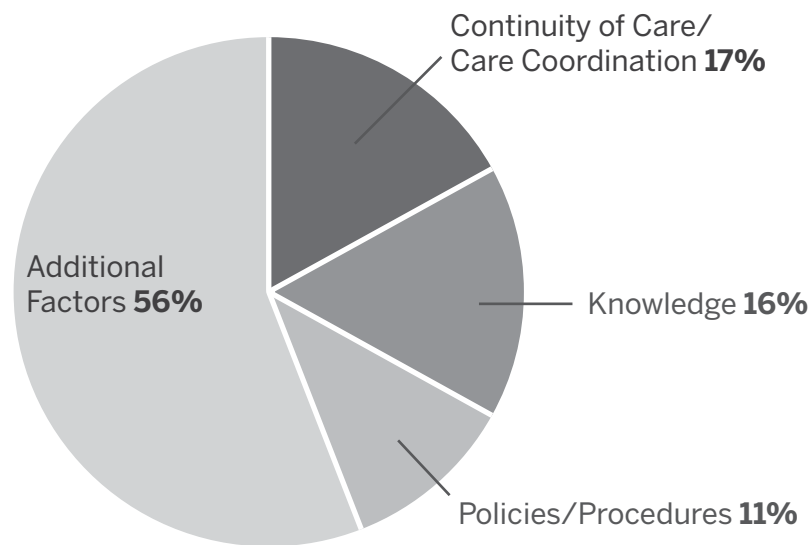
MENTAL HEALTH CONDITIONS

Seven (12%) of the 60 pregnancy-related deaths were due to mental health conditions. The majority (5; 71%) of pregnancy-related deaths due to mental health conditions occurred 43 days to 1 year postpartum. All (7; 100%) pregnancy-related deaths due to

mental health conditions were determined to have at least some chance of being prevented. Substance use disorder contributed to 2 (29%) pregnancy-related deaths due to mental health conditions.

DESCRIPTION OF FACTORS CONTRIBUTING TO PREGNANCY-RELATED MENTAL HEALTH DEATHS

Figure 31 Factors Contributing to Pregnancy-Related Mental Health Deaths, Georgia, 2021



Continuity of Care/Care Coordination (care providers did not have access to individual's complete records or did not communicate their status sufficiently) factors contributing to mental health deaths:

- There was a lack of care coordination between all providers.
- Patients needed regular care throughout the first year postpartum.
- The correctional system did not have medical care immediately available.
- Behavioral health care was not integrated into obstetric care.
- Providers did not consult with psychiatry when indicated.

Knowledge (lack of knowledge regarding the importance of an event or treatment or follow-up) factors contributing to mental health deaths:

- Families needed more education on postpartum depression signs and symptoms.
- Families were not involved in safety plan development to educate the family and ensure the home environment was safe.
- Providers did not thoroughly address substance use disorders during pregnancy.
- Patients and families needed more education on mental health resources.

Policies/Procedures (facility lacked basic policies or infrastructure germane to the individual's needs) factors contributing to mental health deaths:

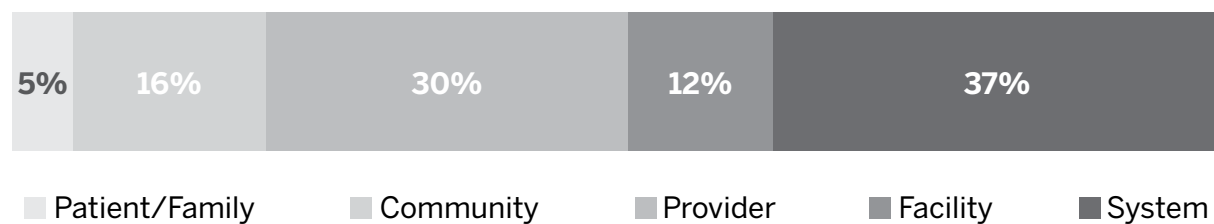
- Individuals were easily able to obtain firearms.
- Providers assessed for intimate partner violence with the partner in the room.
- There were no policies and procedures in place to refer individuals with a positive score on depression screenings to treatment.
- Hospitals discharged patients prior to stabilization.

Additional factors contributing to mental health deaths include **Access/Financial** (systemic barriers impacting their ability to care for themselves), **Outreach** (lack of coordination between the healthcare system and other outside agencies/organizations in the geographic/cultural area that work with maternal health issues), **Violence** (physical or emotional abuse perpetrated by a current or former intimate partner, family member, friend, acquaintance, or stranger), and **Mental Health Conditions** (patient had a documented diagnosis of a psychiatric disorder):

- Patients lacked grief support services after infant loss.
- Intimate partner violence contributed to an individual's mental health challenges.
- Patients needed community programs and resources, including peer support groups and home visiting services.
- Patients were not prescribed psychotropic medication.
- Patients lacked access to mental health treatment during pregnancy.
- Individuals who had a history of mental health conditions prior to pregnancy.
- Georgia does not have an inpatient perinatal psychiatry program.
- Individuals were not able to see a therapist due to financial barriers.
- Individuals experienced barriers to accessing mental health care while incarcerated.

MMRC RECOMMENDATIONS FOR PREGNANCY-RELATED MENTAL HEALTH DEATHS

Figure 32 MMRC Recommendations for Pregnancy-Related Mental Health Deaths, Georgia, 2021



MMRC recommendations for **Patients/Families** (individuals before, during, or after a pregnancy, and their family, internal or external to the household, with influence on the individual):

- Individuals should ensure guns are secured on an ongoing basis.
- Providers and hospital staff should screen and provide referrals to domestic violence resources and education during pregnancy and postpartum.

MMRC recommendations for **Communities** (groupings based on a shared sense of place or identity - ranges from physical neighborhoods to a community based on common interests and shared circumstances):

- Community-based organizations and care settings should offer peer support groups for individuals with mental health conditions during the perinatal period and coordinate with providers to ensure patients are referred to peer support groups.
- Communities should ensure access to culturally responsive services and support resources for survivors of intimate partner violence.
- Communities should offer community education on awareness of perinatal mental health conditions, including suicide awareness and prevention education, on an ongoing basis.

MMRC recommendations for **Providers** (individuals with training and expertise who provide care, treatment, and/or advice):

- Providers should provide education on postpartum depression to patients and families prior to discharge.

- Providers should closely follow patients who have mental health conditions and substance use disorders during pregnancy and up to one year postpartum.
- Obstetric providers and mental health providers should consult with a perinatal psychiatrist or access the PEACE for Moms Perinatal Psychiatry Access Program to help manage mental health conditions during pregnancy and up to one year postpartum.
- Obstetric providers and mental health providers should coordinate care during the perinatal period.
- Provider associations and expert organizations should train providers on trauma-informed assessment and care.
- Providers should create safety plans with families to support individuals with suicidal ideation on an ongoing basis.
- Providers should conduct screenings for intimate partner violence using standardized protocols, including ensuring the partner is not present, at each visit during pregnancy and postpartum.
- Obstetric providers, mental health providers, and primary care providers should collaboratively develop a safety plan with individuals experiencing suicidal ideation and their families or support system on an ongoing basis.
- Providers should refer patients with mental health conditions to mental health and behavioral health services, including psychiatry and psychotherapy.
- Obstetric providers, mental health providers, and emergency department staff should conduct a suicide risk assessment when individuals have mental health conditions and admit patients who meet the criteria for involuntary hospitalization to a psychiatric facility.
- Providers should conduct close follow-up after a pregnancy loss, including using validated screening tools to detect mental health conditions and provide referrals to grief therapy and bereavement support services.
- Providers should use a standardized mental health screening tool for perinatal populations on all perinatal patients within 12 months of delivery and make appropriate referrals and treatment.

MMRC recommendations for **Facilities** (physical locations where direct care is provided - ranges from small clinics and urgent care centers to hospitals with trauma centers):

- Behavioral health hospitals should perform a risk assessment on every patient and conduct a safety planning meeting with the family prior to discharge.

- Healthcare provider institutions and organizations should develop and implement institution-wide, survivor-centered, trauma-informed protocols for assessing and responding to intimate partner violence.
- Health systems should ensure policies, procedures, and resources are in place that allow patients to access mental health services during pregnancy.

MMRC recommendations for **Systems** (interacting entities that support services before, during, or after pregnancy - range from healthcare systems and payors to public services and programs):

- The obstetric care system, including providers, insurers, and hospitals, should offer case management during pregnancy and up to one year postpartum, particularly for individuals experiencing mental health conditions, substance use disorders, and those negatively impacted by social determinants of health (economic stability, education access and quality, healthcare access and quality, neighborhood, social and community interactions).
- Care teams should coordinate care throughout pregnancy and postpartum.
- Emergency Department providers should coordinate care with obstetricians during pregnancy and postpartum.
- Providers and Division of Family and Children Services (DFCS) workers should coordinate care and services during the perinatal period.
- Insurance providers, including Medicaid, should ensure patients with chronic conditions and mental health conditions are enrolled in case management services during pregnancy and postpartum.
- Medicaid Care Management Organizations (CMOs) should coordinate care for each high-risk patient during pregnancy and postpartum.
- Insurance providers should increase access to support services, including doulas, community health workers, home visitors, patient navigators, and case managers, for pregnant and postpartum individuals.
- Legislators should fund a perinatal psychiatry inpatient program at the next legislative session.
- Legislators should implement laws to have a waiting period between the time of firearm purchase and transfer of a firearm at the next legislative session.
- Legislators should require a physician evaluation prior to gun purchase for individuals who have a prior hospitalization for mental health at the next legislative session.
- Medicaid should increase coverage amounts for psychotherapy for adults.

- Providers should offer warm referrals to community-based mental health and domestic violence services that are culturally and linguistically appropriate after a positive screening.
- The correctional system should ensure adequate medical care for pregnant and postpartum patients, including obstetric care and behavioral health services.

SUMMARY OF INITIATIVES UNDERWAY IN GEORGIA

- PEACE for Moms provides perinatal psychiatrists who consult with primary care providers and obstetricians on medication management during the perinatal period. The program also offers skills groups to prevent perinatal depression.
- Postpartum Support International, Georgia Chapter launched a program in 2024 to fund therapy sessions for individuals with mental health conditions during pregnancy and postpartum.

SEVERE MATERNAL MORBIDITY

Severe maternal morbidity (SMM) includes unexpected outcomes of labor and delivery that result in significant short- or long-term consequences to a woman's health. SMM is often considered a near miss for maternal mortality because, in some cases, these conditions could lead to death. To reduce SMM, it is essential to monitor trends and implement interventions to improve the quality of maternal care.

While pregnancy-related deaths are determined by examining records during pregnancy and up to one year postpartum, SMM can be measured in different ways and for different timeframes. For this report, SMM is measured by applying methods used by most jurisdictions, which involve examining delivery hospitalization discharge data for 20 SMM indicators (excluding blood transfusions), which are listed in Table 7. Non-fatal outcomes, as well as deaths that occurred during the delivery hospitalization, are included in SMM counts and rates. Data for SMM in this report are included for 2019-2021 and 2021 to match the timeframes reported for maternal mortality.

Blood transfusions can sometimes be an indicator of SMM. Many experts now agree that transfusions alone are not a reliable indicator because smaller blood transfusions (e.g., transfusion of less than four units of blood) are sometimes given for non-severe conditions. Data on the number of transfused blood units are not readily available, and

thus, a blood transfusion procedure alone, without other SMM indicators, may not indicate severity. Blood transfusions are therefore excluded from SMM calculations for this report.

Table 11 Severe Maternal Morbidity Indicators Used in the Algorithm Developed by the Alliance for Innovation on Maternal Health (AIM), Excluding Blood Transfusions

Diagnosis-Based Indicators	Procedure-Based Indicators[†]
Acute Myocardial Infarction	Conversion of Cardiac Rhythm
Acute Renal Failure	Hysterectomy
Acute Respiratory Distress Syndrome	Temporary Tracheostomy
Amniotic Fluid Embolism	Ventilation
Aneurysm	
Cardiac Arrest / Ventricular Fibrillation	
Disseminated Intravascular Coagulation	
Eclampsia	
Heart Failure	
Puerperal Cerebrovascular Disorders	
Pulmonary Edema / Acute Heart Failure	
Sepsis	
Severe Anesthesia Complications	
Shock	
Sickle Cell Disease with Crisis	
Air and Thrombotic Embolism	

[†] For this report, SMM events based on blood transfusions alone are excluded.

2021 SEVERE MATERNAL MORBIDITY

For 2021, there were 116,091 delivery hospitalizations, with 1,251 SMM events and an SMM rate of 1,077.6 events per 100,000 delivery hospitalizations. Like pregnancy-related mortality ratios, SMM rates were highest among those 40 years and older, non-Hispanic Black women, and women with Medicaid insurance at the time of delivery.

For this report, SMM is reported among Georgia residents who delivered at Georgia hospitals. SMM rates are reported per 100,000 delivery hospitalizations for ease of comparison with mortality ratios. Other reports may use rates per 10,000 or 1,000. Comparison with other reports should be made with caution.

Table 12 Severe Maternal Morbidity (SMM), Georgia, 2021

CHARACTERISTIC	2021 SMM EVENTS (% OF TOTAL)	2021 DELIVERY HOSPITALIZATIONS (% OF TOTAL)	2021 SMM RATE per 100,000[†]
ALL CATEGORIES	1,251 (100%)	116,091 (100%)	1,077.6
AGE AT HOSPITAL DELIVERY DISCHARGE			
<25	259 (21%)	29,586 (25%)	875.4
25-29	293 (23%)	33,249 (29%)	881.2
30-34	373 (30%)	32,551 (28%)	1,145.9
35-39	239 (19%)	16,647 (14%)	1,435.7
40+	87 (7%)	4,058 (3%)	2,143.9
RACE/ETHNICITY			
Non-Hispanic Black	580 (46%)	39,433 (34%)	1,470.9
Non-Hispanic White	420 (34%)	48,549 (42%)	865.1
Hispanic	140 (11%)	14,610 (13%)	958.3
Other	111 (9%)	13,499 (12%)	822.3
INSURANCE			
Medicaid	628 (50%)	50,878 (44%)	1,234.3
Private	481 (38%)	51,976 (45%)	925.4
Other	142 (11%)	13,237 (11%)	1,072.8

[†] SMM rate per 100,000 delivery hospitalizations.

2019-2021 SEVERE MATERNAL MORBIDITY

Between 2019-2021, there were 349,580 delivery hospitalizations, with 3,344 SMM events and an SMM rate of 956.6 events per 100,000 delivery hospitalizations. Like pregnancy-related mortality ratios, SMM rates were highest among those 40 years and older, non-Hispanic Black women, and women with Medicaid insurance at the time of delivery.

Table 13 Severe Maternal Morbidity (SMM), Georgia 2019-2021

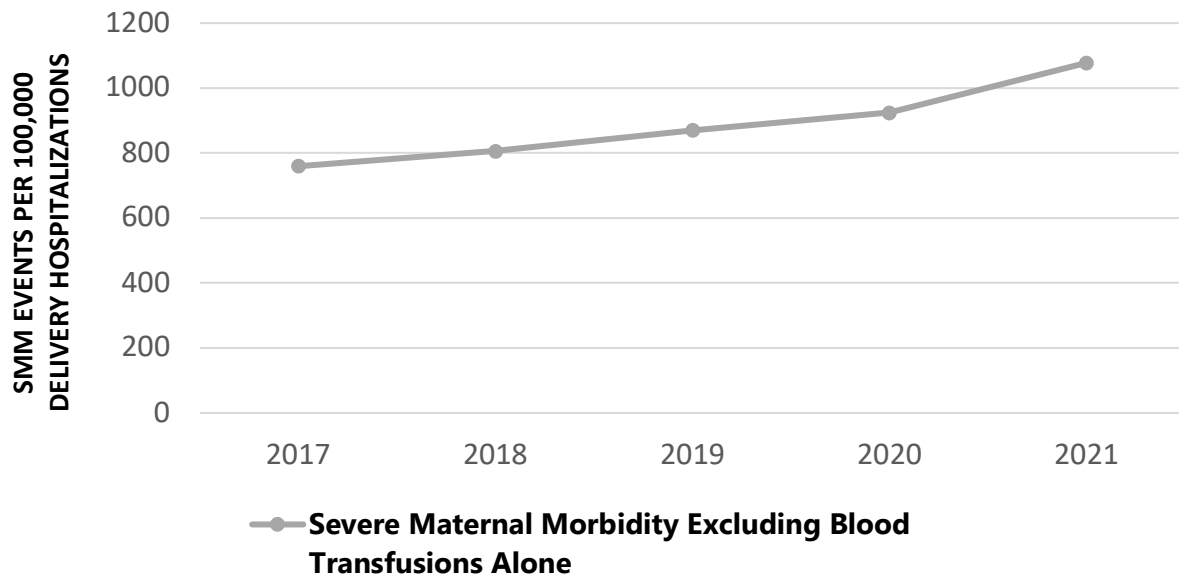
CHARACTERISTIC	2019-2021 SMM EVENTS (% OF TOTAL)	2019-2021 DELIVERY HOSPITALIZATIONS (% OF TOTAL)	2019-2021 SMM RATE per 100,000[†]
ALL CATEGORIES	3,344 (100%)	349,580 (100%)	956.6
AGE AT HOSPITAL DELIVERY DISCHARGE			
<25	754 (23%)	92,555 (26%)	814.7
25-29	817 (24%)	101,352 (29%)	806.1
30-34	898 (27%)	95,227 (27%)	943.0
35-39	648 (19%)	48,811 (14%)	1,327.6
40+	227 (7%)	11,635 (3%)	1,951.0
RACE/ETHNICITY			
Non-Hispanic Black	1,582 (47%)	120,112 (34%)	1,317.0
Non-Hispanic White	1,087 (33%)	143,536 (41%)	757.3
Hispanic	331 (10%)	42,370 (12%)	781.2
Other	344 (10%)	43,562 (12%)	789.7
INSURANCE			
Medicaid	1,699 (51%)	157,711 (45%)	1,077.3
Private	1,262 (38%)	152,885 (44%)	825.5
Other	383 (11%)	38,984 (11%)	982.5

[†]SMM rate per 100,000 delivery hospitalizations.

SEVERE MATERNAL MORBIDITY RATE, 2017-2021

Between 2017 and 2021, Georgia's overall SMM severe maternal morbidity (SMM) rate increased by 17%.

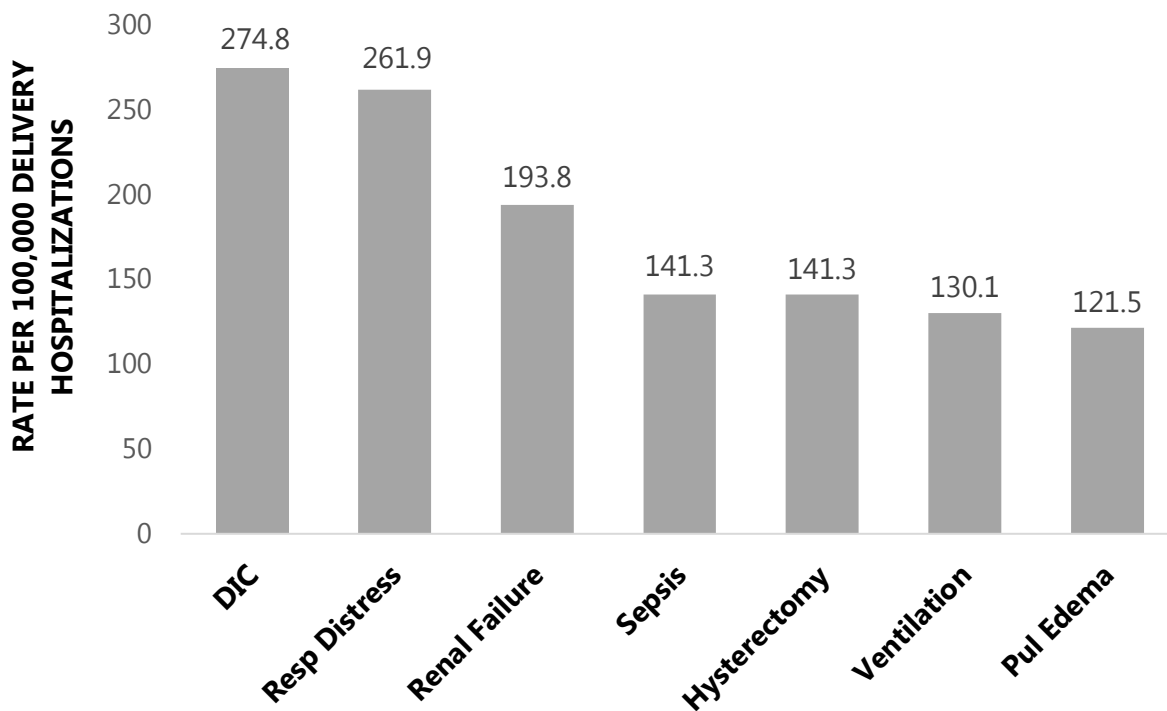
Figure 33 Severe Maternal Morbidity Rate, Georgia, 2017-2021
(n=589,619 delivery hospitalizations)



2021 LEADING INDICATORS OF SEVERE MATERNAL MORBIDITY

Georgia's leading SMM indicators in 2021 were disseminated intravascular coagulation, respiratory distress, renal failure, sepsis, hysterectomy, required ventilation, and pulmonary edema/acute heart failure.

Figure 34 Rates of Most Common Indicators of Severe Maternal Morbidity, Georgia, 2021 (n=116,091 delivery hospitalizations)



Resp Distress: Respiratory Distress

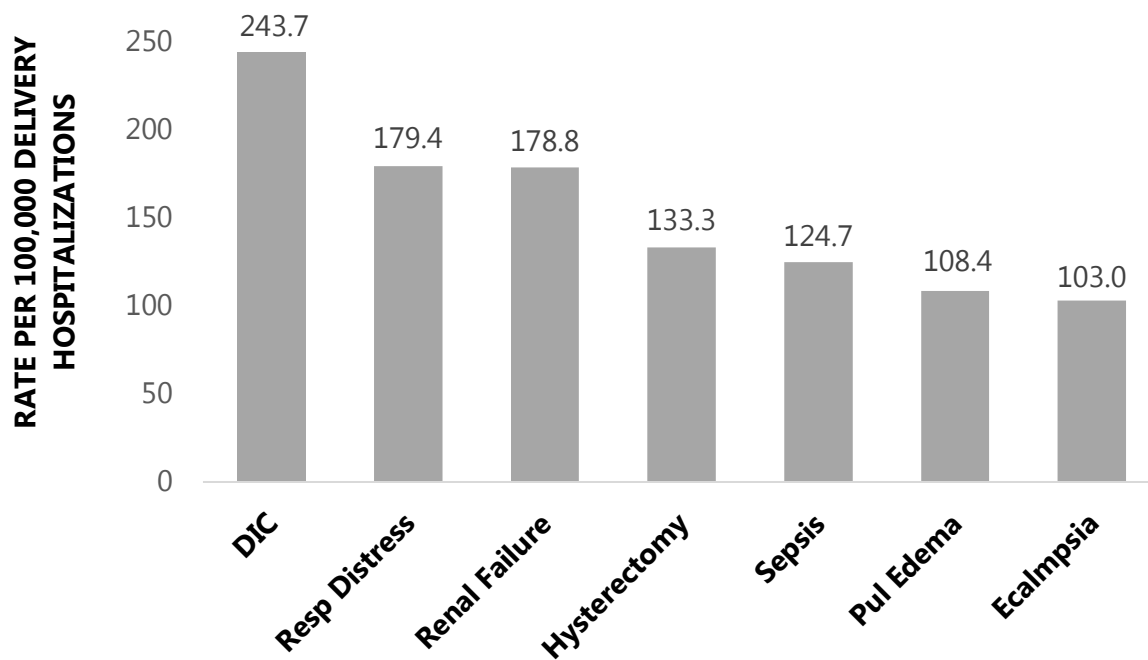
DIC: Disseminated Intravascular Coagulation

Pul Edema: Pulmonary Edema / Acute Heart Failure

2019-2021 LEADING INDICATORS OF SEVERE MATERNAL MORBIDITY

Georgia's leading SMM indicators from 2019-2021 were disseminated intravascular coagulation (DIC), respiratory distress, renal failure, hysterectomy, sepsis, pulmonary edema/acute heart failure, and eclampsia.

Figure 35 Rates of Most Common Indicators of Severe Maternal Morbidity, 2019-2021 (n=349,580 delivery hospitalizations)



Resp Distress: Respiratory Distress

DIC: Disseminated Intravascular Coagulation

Pul Edema: Pulmonary Edema / Acute Heart Failure

2021 SEVERE MATERNAL MORBIDITY BY RACE/ETHNICITY

Like Georgia’s 2021 pregnancy-related mortality ratio, Georgia’s 2021 SMM rate was highest among non-Hispanic Black women. Compared to all Georgia births in 2021, a greater percentage of those who experienced SMM were non-Hispanic Black women; 34% of all Georgia births were among non-Hispanic Black women, whereas 46% of SMM events were among non-Hispanic Black women.

Figure 36 Severe Maternal Morbidity Rate by Race/Ethnicity, Georgia, 2021
(n=116,091 delivery hospitalizations)

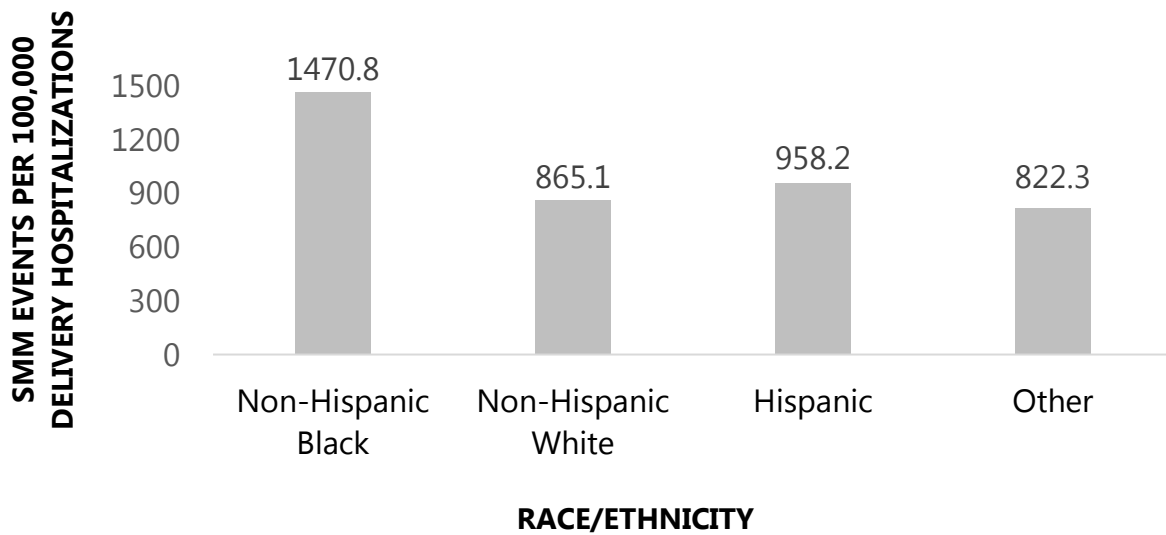
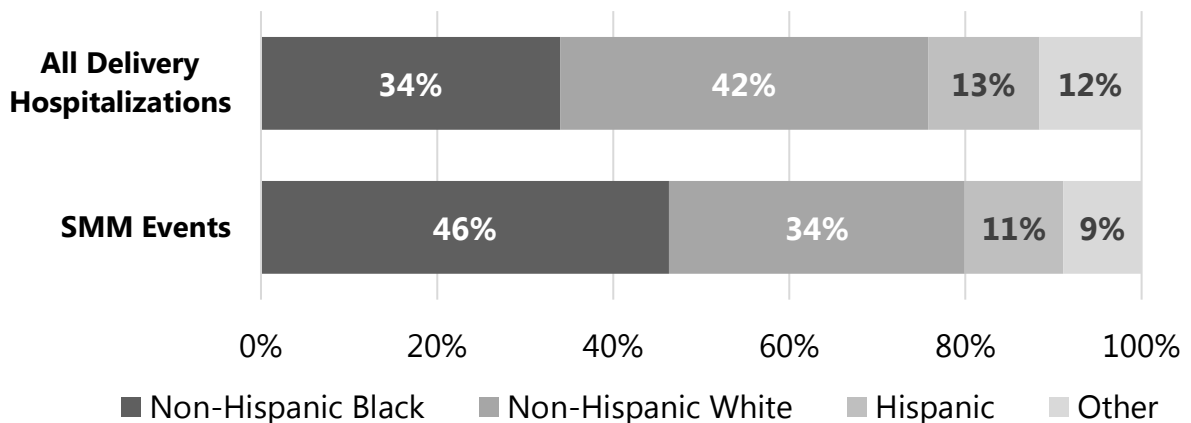


Figure 37 Proportion of All Delivery Hospitalizations by Race/Ethnicity Compared to SMM Events, Georgia, 2021



2019-2021 SEVERE MATERNAL MORBIDITY BY RACE/ETHNICITY

Like Georgia’s 2019-2021 pregnancy-related mortality ratio, Georgia’s 2019-2021 SMM rate was highest among non-Hispanic Black women. Compared to all Georgia births from 2019-2021, a greater percentage of those who experienced SMM were non-Hispanic Black women; 34% of all Georgia births were among non-Hispanic Black women, whereas 47% of SMM events were among non-Hispanic Black women.

Figure 38 Severe Maternal Morbidity Rate by Race/ Ethnicity, Georgia, 2019-2021 (n=349,580 delivery hospitalizations)

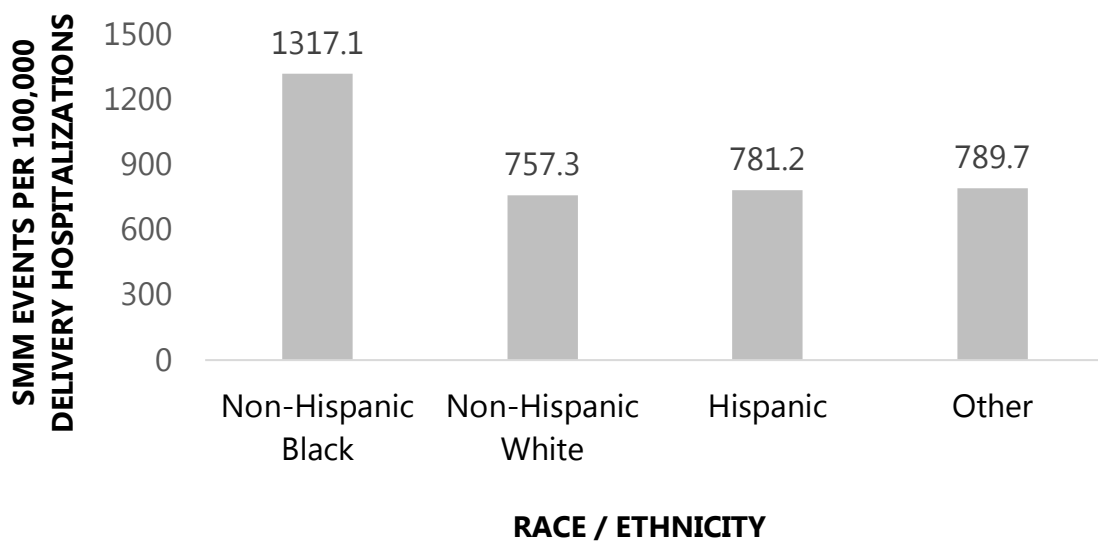
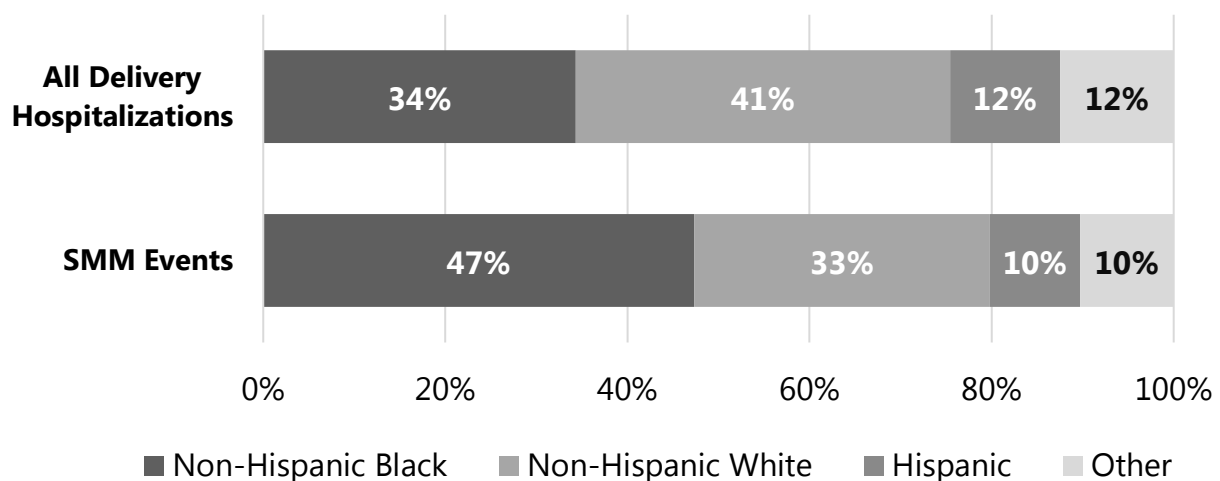


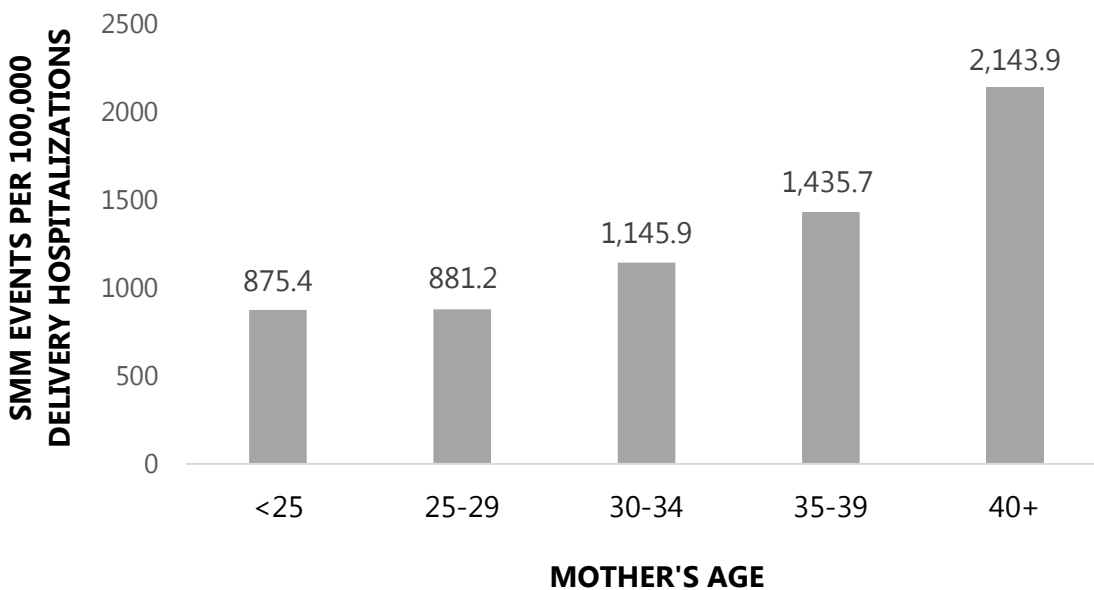
Figure 39 Proportion of All Georgia Births by Race/Ethnicity Compared to SMM Events, Georgia, 2019-2021



2021 SEVERE MATERNAL MORBIDITY BY AGE

Like pregnancy-related deaths, SMM is more likely among women ages 40 and older than among younger women. In 2021, Georgia's SMM rate among those ages 40 years and older were more than double the rate among those less than 25 years of age.

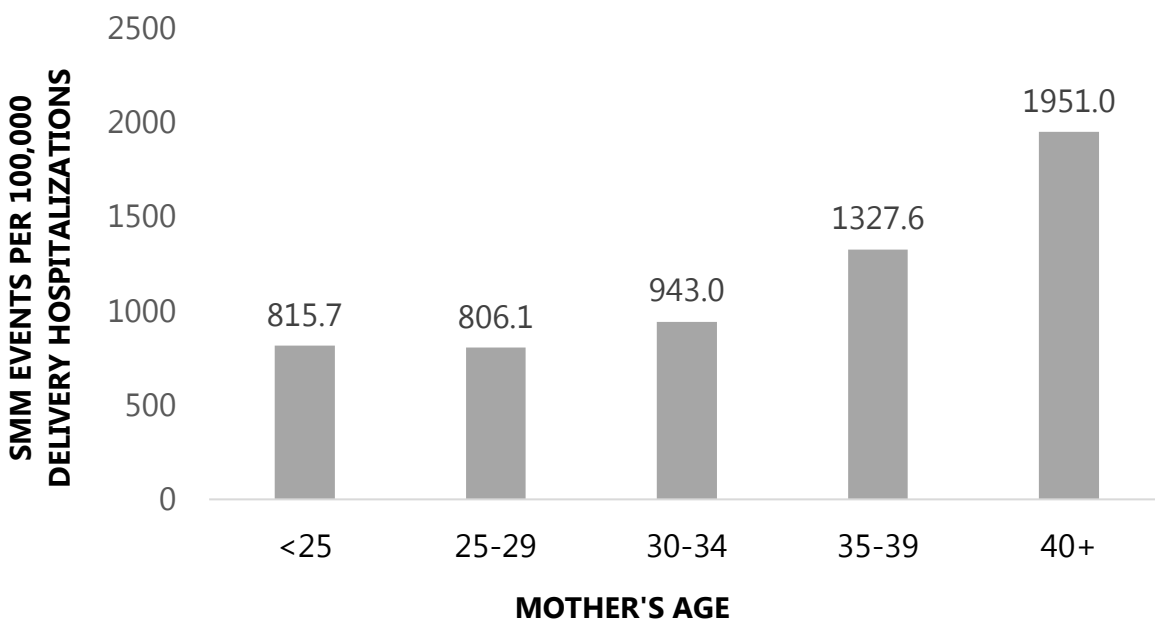
Figure 40 Severe Maternal Morbidity Rate by Age, Georgia, 2021 (n=116,091 delivery hospitalizations)



2019-2021 SEVERE MATERNAL MORBIDITY BY AGE

Like pregnancy-related deaths, SMM is more likely among women ages 40 and older than among younger women. From 2019-2021, Georgia's SMM rate among those ages 40 years and older was more than double the rate among those under 25 years of age.

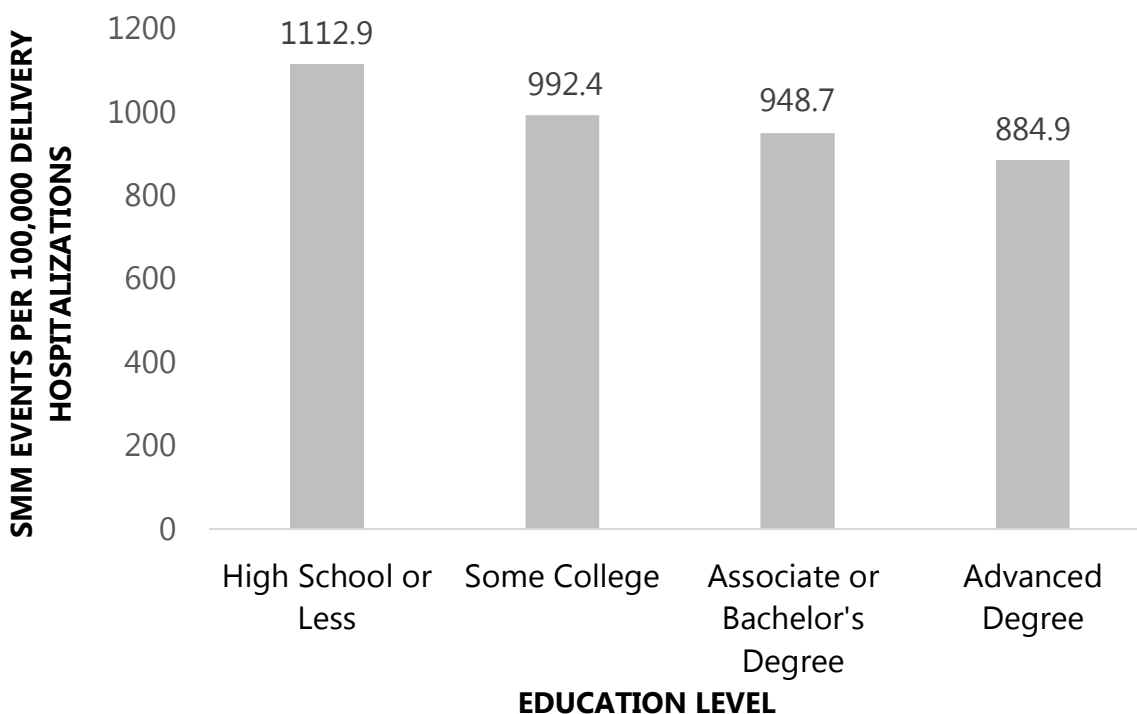
Figure 41 Severe Maternal Morbidity Rate by Age, Georgia, 2019-2021
(n=349,580 delivery hospitalizations)



2021 SEVERE MATERNAL MORBIDITY BY EDUCATION

Like pregnancy-related deaths among women with known education levels, SMM was highest among women with a high school education or less.

Figure 42 Severe Maternal Morbidity Rate by Education Level among Georgia Residents who Delivered at Georgia Hospitals, 2021 (n=104,611 delivery hospitalizations[†])

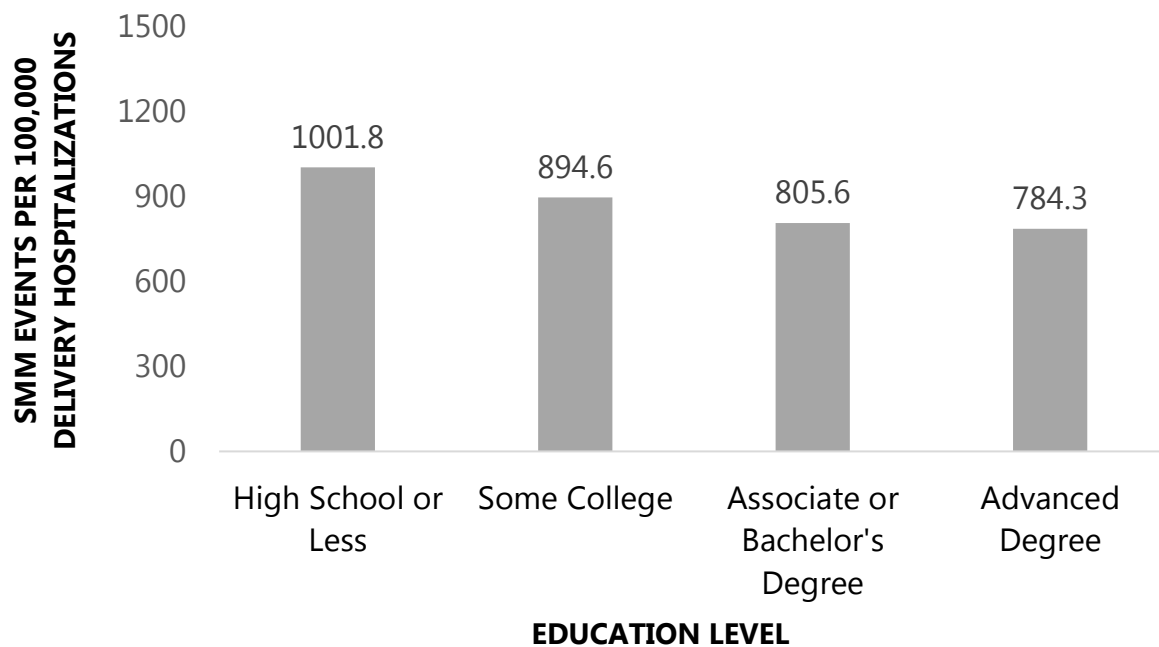


[†] Education level was unknown for 11,480 delivery hospitalizations.

2019-2021 SEVERE MATERNAL MORBIDITY BY EDUCATION

Like pregnancy-related deaths, among women with known education level, SMM was highest among women with a high school education or less.

Figure 43 Severe Maternal Morbidity Rate by Education Level, Georgia, 2019-2021 (n=314,473 delivery hospitalizations[†])



[†] Education level was unknown for 35,107 delivery hospitalizations.

2021 SEVERE MATERNAL MORBIDITY BY INSURANCE PROVIDER

Like pregnancy-related mortality ratios, SMM rates were highest among those with Medicaid as their insurance provider at the time of delivery. Compared to all Georgia births in 2021, a greater percentage of women with SMM had Medicaid as their insurance provider (44% and 50%, respectively).

Figure 44 Severe Maternal Morbidity by Insurance Provider at Time of Delivery Hospitalization, Georgia, 2021 (n=116,091 delivery hospitalizations)

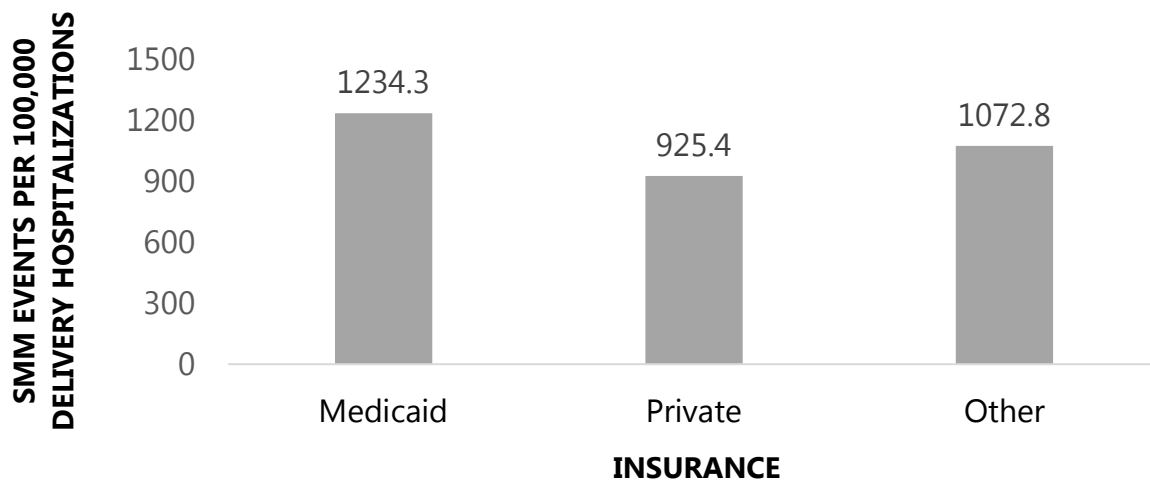
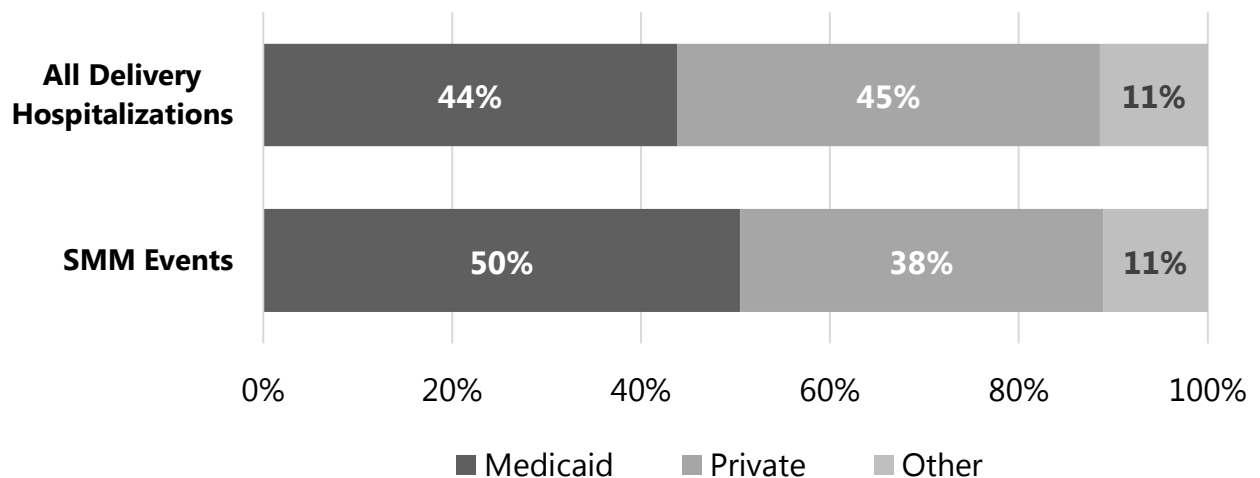


Figure 45 Proportion of All Delivery Hospitalizations Compared to SMM Events, by Insurance Provider at Time of Delivery, Georgia, 2021



2019-2021 SEVERE MATERNAL MORBIDITY BY INSURANCE PROVIDER

Like pregnancy-related mortality ratios, SMM rates were highest among those with Medicaid as their insurance provider at the time of delivery. Compared to all Georgia delivery hospitalizations from 2019-2021, more women with SMM had Medicaid as their insurance provider (45% and 51%, respectively).

Figure 46 SMM by Insurance Provider at Time of Delivery Hospitalization, Georgia, 2019-2021 (n=349,580 delivery hospitalizations)

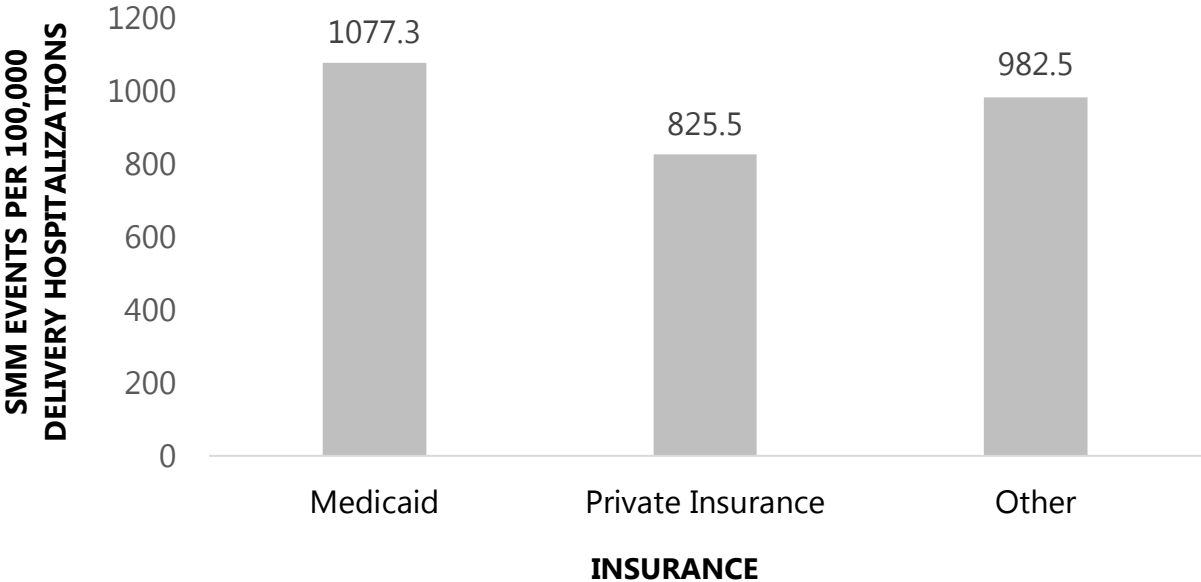
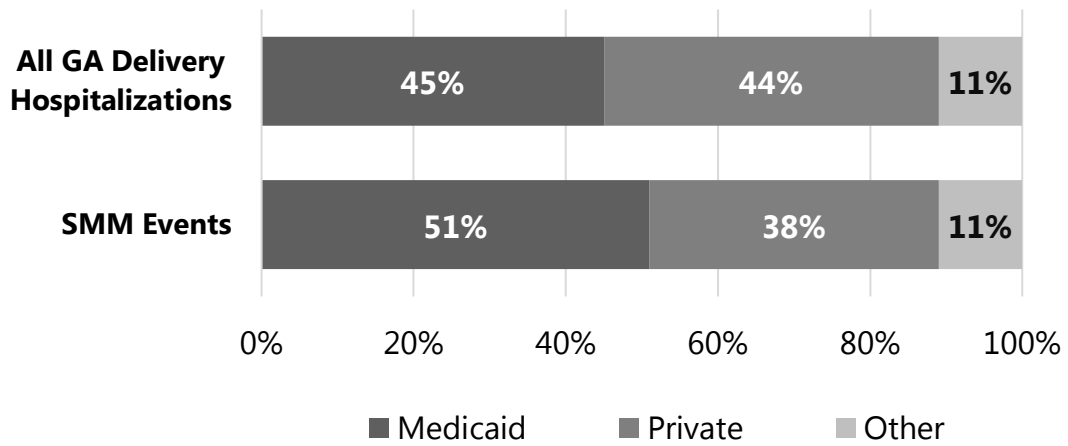


Figure 47 Proportion of All Delivery Hospitalizations Compared to SMM Events, by Insurance Provider at Time of Delivery, Georgia, 2019-2021



ADDITIONAL MATERNAL MORTALITY DATA RESOURCES

Data from the following resources cannot be directly compared with MMRC-determined pregnancy-related data in this report because they use different information sources. Because the MMRC uses information from multiple sources rather than only vital records, the MMRC process is the gold standard for identifying and describing pregnancy-related deaths and making data-informed recommendations. However, the following resources are useful for information at the national level.

CDC National Center for Health Statistics (NCHS)

- **Maternal death** data from the National Vital Statistics System (NVSS).
- Data based on death records.
- Provides information about national trends and aligns with the World Health Organization definition of a maternal death.
- <https://www.cdc.gov/nchs/maternal-mortality/index.htm>

CDC Pregnancy Mortality Surveillance System (PMSS)

- **Pregnancy-related** death data reviewed by CDC.
- Data based on death records and linked birth records or fetal death records.
- Provides information about national trends.
- <https://www.cdc.gov/maternal-mortality/php/pregnancy-mortality-surveillance/index.html>

CDC Maternal Mortality Reports and Articles - <https://www.cdc.gov/maternal-mortality/php/mmrc/reports-articles.html>

ADDITIONAL GEORGIA DATA RESOURCES

- Online Analytical Statistical Information System (OASIS) - <https://oasis.state.ga.us/>
- Healthy Mothers, Healthy Babies Coalition of Georgia Maternal & Child Health Data Hub - experience.arcgis.com/experience

APPENDIX A. PREGNANCY-RELATED DEATHS

2019-2021 PREGNANCY-RELATED DEATHS BY PUBLIC HEALTH DISTRICT

Data based on counts less than five are suppressed per standard epidemiological protocol regarding geographic location. Due to multiple counts less than 5, pregnancy-related death data for 2021 alone by public health district are not provided.

Table 14 Pregnancy-Related Deaths, Number of Births, and Mortality Ratio by Public Health District, Georgia, 2019-2021

Public Health District**	2019-2021 PREGNANCY- RELATED DEATHS	2019-2021 BIRTHS	2019-2021 PREGNANCY- RELATED MORTALITY RATIO ¹
1-1 Rome	6	23,365	25.7
1-2 Dalton	7	15,932	43.9
2-0 Gainesville	5	23,255	21.5
3-1 Cobb/Douglas	5	30,899	16.2
3-2 Fulton	11	34,409	32.0
3-3 Clayton	8	12,292	65.1
3-4 Gwinnett/Newton/Rockdale	13	40,251	32.3
3-5 DeKalb	6	30,482	19.7
4-0 LaGrange	14	28,899	48.4
5-1 Dublin	*	4,660	*
5-2 Macon	13	18,388	70.7
6-0 Augusta	8	18,181	44.0
7-0 Columbus	11	13,412	82.0
8-1 Valdosta	*	10,098	*
8-2 Albany	*	12,380	*
9-1 Savannah	9	24,913	36.1
9-2 Waycross	*	13,440	*
10-0 Athens	*	17,344	*
Statewide	133	372,600	35.7

¹ Pregnancy-related mortality ratio per 100,000 live births

* Data based on counts less than 5 are suppressed per standard epidemiological protocol regarding geographic location.

** Data for 2021 only are not provided due to multiple counts less than 5.

APPENDIX B. PREGNANCY-ASSOCIATED DEATHS

TABLE 15 Pregnancy-Associated Deaths, Georgia, 2021

CHARACTERISTICS	2021 PREGNANCY- ASSOCIATED DEATHS (% OF TOTAL)	2021 BIRTHS (% OF ALL BIRTHS)	2021 PREGNANCY- ASSOCIATED MORTALITY RATIO¹
ALL CATEGORIES	130 (100%)	123,971 (100%)	104.9
AGE AT DEATH			
<25	24 (18%)	31,607 (25%)	75.9
25-29	37 (28%)	35,727 (29%)	103.6
30-34	41 (32%)	34,728 (28%)	118.1
35-39	16 (12%)	17,609 (14%)	90.9
40+	12 (9%)	4,300 (3%)	279.1
RACE/ETHNICITY			
Non-Hispanic Black	64 (49%)	41,752 (34%)	153.3
Non-Hispanic White	49 (38%)	53,685 (43%)	91.3
Hispanic	11 (8%)	19,448 (16%)	56.6
Other	6 (5%)	9,086 (7%)	66.0
INSURANCE			
Medicaid	72 (55%)	57,049 (46%)	126.2
Private	30 (23%)	50,943 (41%)	58.9
Other/Unknown	28 (22%)	15,979 (13%)	175.2

¹ Pregnancy-associated mortality ratio per 100,000 live births.

Table 16 **Pregnancy-Associated Deaths, Georgia, 2019-2021**

CHARACTERISTICS	2019-2021 PREGNANCY- ASSOCIATED DEATHS (% OF TOTAL)	2019-2021 BIRTHS (% OF ALL BIRTHS)	2019-2021 PREGNANCY- ASSOCIATED MORTALITY RATIO¹
ALL CATEGORIES	303 (100%)	372,600 (100%)	81.3
AGE AT DEATH			
<25	59 (19%)	98,695 (26%)	59.8
25-29	85 (28%)	108,681 (29%)	78.2
30-34	85 (28%)	101,212 (27%)	84.0
35-39	46 (15%)	51,674 (14%)	89.0
40+	28 (9%)	12,338 (3%)	226.9
RACE/ETHNICITY			
Non-Hispanic Black	161 (53%)	127,760 (34%)	126.0
Non-Hispanic White	104 (34%)	160,976 (43%)	64.6
Hispanic	26 (9%)	56,242 (15%)	46.2
Other	12 (4%)	27,622 (7%)	43.4
INSURANCE			
Medicaid	179 (59%)	173,192 (46%)	103.4
Private	63 (21%)	150,354 (40%)	41.9
Other/Unknown	61 (20%)	49,054 (13%)	124.4

¹ Pregnancy-associated mortality ratio per 100,000 live births.

APPENDIX C. OTHER PREGNANCY-ASSOCIATED DEATHS

This section of the appendix describes “other pregnancy-associated deaths,” which include pregnancy-associated but not related deaths and pregnancy-associated but unable to determine pregnancy-relatedness deaths.

Pregnancy-associated deaths are the sum of pregnancy-related deaths, pregnancy-associated but not related deaths, and pregnancy-associated but unable to determine pregnancy-relatedness deaths.

Table 17 Other Pregnancy-Associated Deaths by Timing of Death in Relation to Pregnancy, Georgia, 2021

TIMING OF DEATH	2021	2021
	PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=51)	PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=19)
During Pregnancy	14 (27%)	4 (21%)
Within 24 Hours of Delivery	1 (2%)	1 (5%)
1-6 Days Postpartum	1 (2%)	0 (0%)
7-42 Days Postpartum	4 (8%)	1 (5%)
43-365 Days Postpartum	31 (61%)	13 (68%)

Table 18 Other Pregnancy-Associated Deaths by Timing of Death in Relation to Pregnancy, Georgia, 2019-2021

TIMING OF DEATH	2019-2021	2019-2021
	PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=144)	PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=26)
During Pregnancy	34 (24%)	8 (31%)
Within 24 Hours of Delivery	2 (1%)	1 (4%)
1-6 Days Postpartum	2 (1%)	0 (0%)
7-42 Days Postpartum	11 (8%)	1 (4%)
43-365 Days Postpartum	95 (66%)	16 (62%)

Table 19 Other Pregnancy-Associated Deaths by Race/Ethnicity, Georgia, 2021

RACE/ETHNICITY	2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=51)	2021 PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY RELATEDNESS (n=19)
Non-Hispanic Black	25 (49%)	5 (26%)
Non-Hispanic White	22 (43%)	12 (63%)
Hispanic	3 (6%)	2 (11%)
Other/Unknown	1 (2%)	0 (0%)

Table 20 Other Pregnancy-Associated Deaths by Race/Ethnicity, Georgia, 2019-2021

RACE/ETHNICITY	2019-2021 PREGNANCY ASSOCIATED, BUT NOT RELATED (n=144)	2019-2021 PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY RELATEDNESS (n=26)
Non-Hispanic Black	74 (51%)	11 (42%)
Non-Hispanic White	52 (36%)	13 (50%)
Hispanic	13 (9%)	2 (8%)
Other/Unknown	5 (3%)	0 (0%)

Table 21 Other Pregnancy-Associated Deaths by Age at Time of Death, Georgia, 2021

AGE	2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=51)	2021 PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=19)
<25	11 (22%)	3 (16%)
25-29	18 (35%)	4 (21%)
30-34	16 (31%)	7 (37%)
35-39	4 (8%)	2 (11%)
40+	2 (4%)	3 (16%)

Table 22 Other Pregnancy-Associated Deaths by Age at Time of Death, Georgia, 2019-2021

Age	2019-2021	
	PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=144)	PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY RELATEDNESS (n=26)
<25	34 (24%)	4 (15%)
25-29	39 (27%)	5 (19%)
30-34	38 (26%)	10 (38%)
35-39	22 (15%)	3 (12%)
40+	11 (8%)	4 (15%)

Table 23 Other Pregnancy-Associated Deaths by Education Level, Georgia, 2021

EDUCATION LEVEL	2021 PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=19)	
	2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=51)	2021 PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=19)
High School or Less	31 (61%)	11 (58%)
Some College	7 (14%)	2 (11%)
Associate or Bachelor's Degree	11 (22%)	4 (21%)
Advanced Degree	2 (4%)	1 (5%)
Unknown/Missing	0 (0%)	1 (5%)

Table 24 Other Pregnancy-Associated Deaths by Education Level, Georgia, 2019-2021

EDUCATION LEVEL	2019-2021	
	PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=144)	PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY RELATEDNESS (n=26)
High School or Less	93 (65%)	17 (65%)
Some College	19 (13%)	2 (8%)
Associate or Bachelor's Degree	26 (18%)	5 (19%)
Advanced Degree	4 (3%)	1 (4%)
Unknown/Missing	2 (1%)	1 (4%)

Table 25 Other Pregnancy-Associated Deaths by Insurance Provider, Georgia, 2021

INSURANCE	2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=51)	2021 PREGNANCY ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=19)
Medicaid	23 (45%)	10 (53%)
Private	7 (14%)	2 (11%)
Other/Unknown	21 (41%)	7 (37%)

Table 26 Other Pregnancy-Associated Deaths by Insurance Provider, Georgia, 2019-2021

INSURANCE PROVIDER	2019-2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=144)	2019-2021 PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY RELATEDNESS (n=26)
Medicaid	75 (52%)	12 (46%)
Private	17 (12%)	3 (12%)
Other/Unknown	52 (36%)	11 (42%)

Table 27 Other Pregnancy-Associated Deaths: Leading Causes of Death, Georgia, 2021

CAUSE OF DEATH	2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED	2021 PREGNANCY ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS
Motor Vehicle Accident	14 (28%)	*
Drug Toxicity	14 (28%)	8 (42%)
Homicide	8 (16%)	*
Cardiovascular-Related	5 (10%)	*

* Data are suppressed to maintain confidentiality.

This table does not represent all underlying causes of death among other pregnancy-associated deaths.

Table 28 Other Pregnancy-Associated Deaths: Leading Causes of Death, Georgia, 2019-2021

CAUSE OF DEATH	2019-2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED	2019-2021 PREGNANCY ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS
Motor Vehicle Accident	37 (26%)	*
Drug Toxicity	34 (24%)	8 (31%)
Homicide	24 (17%)	*
Cardiovascular-Related	12 (8%)	*

* Data are suppressed to maintain confidentiality.

This table does not represent all underlying causes of death among other pregnancy-associated deaths.

Table 29 Other Pregnancy-Associated Deaths by Preventability, Georgia, 2021

PREVENTABILITY	2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=51)	2021 PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY RELATEDNESS (n=19)
Not Preventable	6 (12%)	1 (5%)
Preventable	44 (86%)	17 (89%)
Unable to Determine	1 (2%)	1 (5%)

Table 30 Other Pregnancy-Associated Deaths: “Did Obesity Contribute to Death?” Georgia, 2021

	2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=51)	2021 PREGNANCY-ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=19)
No	43 (84%)	15 (79%)
Yes	5 (10%)	0 (0%)
Probably	2 (4%)	3 (16%)
Unknown/Missing	1 (2%)	1 (5%)

Table 31 Other Pregnancy-Associated Deaths: “Did Mental Health Conditions Other Than Substance Abuse Contribute to Death?” Georgia, 2021

	2021 PREGNANCY ASSOCIATED, BUT NOT RELATED (n=51)	2021 PREGNANCY ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=19)
No	32 (63%)	6 (32%)
Yes	8 (16%)	4 (21%)
Probably	7 (14%)	8 (42%)
Unknown/Missing	4 (8%)	1 (5%)

Table 32 Other Pregnancy-Associated Deaths: “Did Substance Use Disorder Contribute to Death?” Georgia, 2021

	2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=51)	2021 PREGNANCY ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=19)
No	33 (65%)	8 (42%)
Yes	14 (27%)	8 (42%)
Probably	3 (6%)	2 (11%)
Unknown/Missing	1 (2%)	1 (5%)

Table 33 Other Pregnancy-Associated Deaths: “Did Discrimination Contribute to Death?” Georgia, 2021

	2021 PREGNANCY-ASSOCIATED, BUT NOT RELATED (n=51)	2021 PREGNANCY ASSOCIATED BUT UNABLE TO DETERMINE PREGNANCY-RELATEDNESS (n=19)
No	41 (80%)	10 (53%)
Yes	3 (6%)	0 (0%)
Probably	4 (8%)	1 (5%)
Unknown/Missing	3 (6%)	8 (42%)

APPENDIX D. MATERNAL DEATHS

Maternal Death data in this report may differ slightly from other sources due to slight differences in methodologies.

Table 34 Maternal Deaths, Georgia, 2021

CHARACTERISTIC	2021 MATERNAL DEATHS (% OF TOTAL)	2021 BIRTHS (% OF ALL BIRTHS)	2021 MATERNAL DEATH MORTALITY RATIO ¹
ALL CATEGORIES	60 (100%)	123,971 (100%)	48.4
AGE AT DEATH			
<25	10 (17%)	31,607 (25%)	31.6
25-29	14 (23%)	35,727 (29%)	39.2
30-34	15 (25%)	34,728 (28%)	43.2
35-39	9 (15%)	17,609 (14%)	51.1
40+	12 (20%)	4,300 (3%)	279.1
RACE/ETHNICITY			
Non-Hispanic Black	35 (58%)	41,752 (34%)	83.8
Non-Hispanic White	19 (32%)	53,685 (43%)	35.4
Hispanic	5 (8%)	19,448 (16%)	25.7
Other	*	9,086 (7%)	*

Insurance is missing for 55% of maternal deaths so is not included.

¹ Maternal death mortality ratio per 100,000 live births.

* Data based on counts less than 5 are suppressed per standard epidemiological protocol.

Table 35 Maternal Deaths, Georgia, 2019-2021

CHARACTERISTIC	2019-2021 MATERNAL DEATHS (% OF TOTAL)	2019-2021 BIRTHS (% OF ALL BIRTHS)	2019-2021 MATERNAL DEATH MORTALITY RATIO¹
ALL CATEGORIES	139 (100%)	372,600 (100%)	37.3
AGE AT DEATH			
<25	18 (13%)	98,695 (26%)	18.2
25-29	34 (24%)	108,681 (29%)	31.3
30-34	30 (22%)	101,212 (27%)	29.6
35-39	23 (17%)	51,674 (14%)	44.5
40+	34 (24%)	12,338 (3%)	275.6
RACE/ETHNICITY			
Non-Hispanic Black	78 (56%)	127,760 (34%)	61.1
Non-Hispanic White	50 (36%)	160,976 (43%)	31.1
Hispanic	9 (6%)	56,242 (15%)	16.0
Other	*	27,622 (7%)	*

Insurance is missing for 55% of maternal deaths so is not included.

¹ Maternal death mortality ratio per 100,000 live births.

* Data based on counts less than 5 are suppressed per standard epidemiological protocol.

Table 36 Maternal Deaths by Education Level, Georgia, 2021

EDUCATION LEVEL	2021 MATERNAL DEATHS	2021 % OF ALL MATERNAL DEATHS
High School or Less	30	50%
Some College	7	12%
Associate or Bachelor's Degree	12	20%
Advanced Degree	10	17%
Unknown Education	1	2%
Total	60	100%

Table 37 Maternal Deaths by Education Level, Georgia, 2019-2021

EDUCATION LEVEL	2019-2021 MATERNAL DEATHS	2019-2021 % OF ALL MATERNAL DEATHS
High School or Less	72	52%
Some College	19	14%
Associate or Bachelor's Degree	25	18%
Advanced Degree	19	14%
Unknown Education	4	3%
Total	139	100%

APPENDIX E. SEVERE MATERNAL MORBIDITY

2021 SEVERE MATERNAL MORBIDITY BY PUBLIC HEALTH DISTRICT OF RESIDENCE

Death data based on counts less than five are suppressed per standard epidemiological protocol regarding geographic location. Because there are more SMM events than pregnancy-related deaths, SMM data for 2021 alone by public health district can be provided because there are sufficient counts.

Table 38 Severe Maternal Morbidity Rate by Public Health District of Residence, Georgia, 2021

PUBLIC HEALTH DISTRICT	2021 SMM EVENTS	2021 DELIVERY HOSPITALIZATIONS	2021 SMM RATE PER 100,000 DELIVERY HOSPITALIZATIONS[†]
1-1 Rome	57	6,079	937.7
1-2 Dalton	47	5,130	916.2
2-0 Gainesville	68	7,606	894.0
3-1 Cobb/Douglas	118	10,025	1,177.1
3-2 Fulton	156	11,227	1,389.5
3-3 Clayton	37	3,444	1,074.3
3-4 Gwinnett/ Newton/Rockdale	127	12,842	988.9
3-5 DeKalb	121	9,684	1,249.5
4-0 LaGrange	97	9,334	1,039.2
5-1 Dublin	16	1,496	1,069.5
5-2 Macon	73	5,851	1,247.6
6-0 Augusta	82	5,843	1,403.4
7-0 Columbus	26	3,681	706.3
8-1 Valdosta	19	3,224	589.3
8-2 Albany	41	3,785	1,083.2
9-1 Savannah	67	6,858	977.0
9-2 Waycross	42	4,217	996.0
10-0 Athens	57	5,765	988.7
Statewide	1,251	116,091	1,077.6

[†] SMM rate per 100,000 delivery hospitalizations.

2019-2021 SEVERE MATERNAL MORBIDITY BY PUBLIC HEALTH DISTRICT OF RESIDENCE

Table 39 Severe Maternal Morbidity Rate by Public Health District of Residence, Georgia, 2019-2021

PUBLIC HEALTH DISTRICT	2019-2021 SMM EVENTS	2019-2021 DELIVERY HOSPITALIZATIONS	2019-2021 SMM RATE PER 100,000 DELIVERY HOSPITALIZATIONS[†]
1-1 Rome	137	18,259	750.3
1-2 Dalton	128	15,119	846.6
2-0 Gainesville	178	22,455	792.7
3-1 Cobb/Douglas	303	29,896	1,013.5
3-2 Fulton	371	33,385	1,111.3
3-3 Clayton	134	10,757	1,245.7
3-4 Gwinnett/ Newton/Rockdale	355	38,891	912.8
3-5 DeKalb	338	29,665	1,139.4
4-0 LaGrange	268	27,656	969.0
5-1 Dublin	53	4,526	1,171.0
5-2 Macon	184	17,923	1,026.6
6-0 Augusta	218	17,751	1,228.1
7-0 Columbus	75	11,317	662.7
8-1 Valdosta	70	9,800	714.3
8-2 Albany	112	11,671	959.6
9-1 Savannah	181	20,714	873.8
9-2 Waycross	108	12,885	838.2
10-0 Athens	131	16,910	774.7
Statewide	3,344	349,580	956.6

[†] SMM rate per 100,000 delivery hospitalizations.



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