



Division of Public Health

Severe Maternal Morbidity Report

2020-2024

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Executive Summary

Severe maternal morbidity (SMM) refers to unexpected complications during labor and delivery that can result in significant short- or long-term health consequences. Using linked birth certificate and hospital discharge claims data, this report summarizes SMM among Nebraska resident delivery hospitalizations during 2020–2024 and highlights recent trends, population differences, maternal clinical characteristics, hospital utilization, and the most common SMM indicators and complication groups. The findings support ongoing maternal health surveillance and provide information to inform maternal health efforts across Nebraska.

From 2020-2024, there were 109,767 delivery hospitalizations among Nebraska residents, including 684 SMM events, corresponding to an overall SMM rate of 62.3 per 10,000 delivery hospitalizations. Although annual rates varied over the five-year period, no statistically significant trend was observed. Nebraska's overall SMM rate was lower than the most recently available national estimate of 98.8 per 10,000 in-hospital deliveries (2023). Despite this, severe maternal morbidity remains an important public health concern in Nebraska.

Differences in SMM were observed across maternal demographic and clinical characteristics. Higher SMM rates were identified among individuals aged 35 years and older, those covered by public insurance, and non-Hispanic Black individuals. Individuals with chronic hypertension, pre-pregnancy diabetes, gestational hypertension, gestational diabetes, a previous preterm birth, or a previous cesarean delivery also experienced substantially higher SMM rates than those without these conditions.

Acute renal failure, disseminated intravascular coagulation, hysterectomy, and acute respiratory distress syndrome were the most frequently identified SMM indicators. Hemorrhage complications were the most common SMM complication group, followed by renal and respiratory complications. Delivery hospitalizations involving SMM were also associated with substantially greater hospital utilization, including longer hospital stays and higher hospital charges than hospitalizations without SMM.

Continued surveillance of SMM remains essential to understanding maternal health in Nebraska and informing future public health efforts.



Acknowledgments

We acknowledge the women in Nebraska who experienced severe maternal morbidity (SMM), their families and loved ones, and the healthcare professionals who cared for them.

We also thank the Nebraska Hospital Association (NHA) for providing the hospital discharge data used in this report and recognize the contributions of the following Office of Maternal and Child Health Epidemiology staff: Haley Li, Erika Fuchs, and Celeste Illian.

Suggested Citation

Nebraska Department of Health and Human Services, Division of Public Health, Office of Maternal and Child Health Epidemiology. (2026). Severe Maternal Morbidity Report: Nebraska, 2020–2024.

Introduction

Pregnancy and childbirth are associated with a wide range of maternal outcomes, varying from uncomplicated delivery and postpartum period to severe maternal morbidity (SMM) and maternal death. SMM refers to “unexpected outcomes of labor and delivery that can result in significant short- or long-term health consequences” (Centers for Disease Control and Prevention, 2024b). Although maternal deaths are relatively uncommon, SMM remains a substantial burden on maternal health in the United States. Nationally, the SMM rate increased from 69.8 per 10,000 in-hospital deliveries in 2010 to 98.8 per 10,000 in-hospital deliveries in 2023 (Agency for Healthcare Research and Quality [AHRQ], 2026).

In addition to immediate pregnancy complications, emerging evidence suggests that SMM is associated with adverse long-term maternal health outcomes, including cardiovascular disease, mental health conditions, and premature mortality, as well as increased risks of complications in subsequent pregnancies and adverse neonatal outcomes (Ukah et al., 2021; Ukah et al., 2022; Wolfson et al., 2025; Tsamantioti et al., 2026).

Reducing maternal mortality and morbidity was selected as a priority need for Nebraska’s Title V Maternal and Child Health Block Grant for 2025–2030 (Nebraska Department of Health and Human Services, 2025b). Monitoring SMM provides opportunities to better understand severe maternal complications, identify population-level differences, evaluate healthcare utilization, and support prevention efforts.

This report presents data on SMM outcomes among Nebraska resident delivery hospitalizations, including analyses of temporal trends, population characteristics, geographic variation, healthcare utilization, maternal clinical characteristics, and SMM indicators and groups.

Methods

Data Sources

Hospital discharge data (HDD) for residents, occurrent Nebraska delivery hospitalizations among women aged 12-55 years occurring from 2017–2024 were obtained from the Nebraska Hospital Association (NHA). Delivery hospitalizations were identified using ICD-10-CM diagnosis codes, ICD-10-PCS procedure codes, and Medicare Severity Diagnosis Related Group (MS-DRG) codes. Records with abortion-related diagnosis or procedure codes were excluded. Analyses of population characteristics, SMM indicators and groups, healthcare utilization, race and ethnicity, and maternal clinical characteristics were restricted to delivery hospitalizations occurring from 2020–2024 to provide more current estimates while maintaining consistency with the rolling multi-year estimates used in previous reports. The annual trend analysis includes all available years of comparable data (2017–2024) to provide historical context.

HDD were linked to birth records from the Nebraska Vital Records Office to obtain maternal demographic, clinical, and pregnancy-related characteristics not available in hospital discharge data alone.

Counties of maternal residence were classified according to the 2020 Census population and Office of Management and Budget (OMB) classifications as metropolitan ($\geq 50,000$ population), micropolitan (10,000–49,999 population), and rural ($< 10,000$ population) (Health Resources and Services Administration [HRSA], 2025). Maternal county of residence was also used to assign delivery hospitalizations to local health department (LHD) regions for geographic analyses.

Severe Maternal Morbidity Definition

Severe maternal morbidity (SMM) was identified using the Centers for Disease Control and Prevention (CDC) SMM indicators based on ICD-10-CM diagnosis and procedure codes (CDC, 2024a). Blood transfusion-only cases were excluded from SMM estimates.

SMM indicators were grouped into seven complication categories: hemorrhage, renal, respiratory, cardiac, sepsis, other obstetric, and other medical complications (HRSA 2023). Definitions of SMM groups and indicators are presented in Table 1. A complete list of SMM indicators and corresponding ICD-10-CM diagnosis and procedure codes is provided in the Appendix Table A1.

Table 1. Severe maternal morbidity complication groups and indicators.

Severe Maternal Morbidity Complication Groups	Severe Maternal Morbidity Indicator
Cardiac Complications	Acute Myocardial Infarction Aneurysm Cardiac Arrest / Ventricular Fibrillation Conversion of Cardiac Rhythm Heart Failure / Arrest During Surgery or Procedure Pulmonary Edema / Acute Heart Failure
Hemorrhage Complications	Disseminated Intravascular Coagulation Hysterectomy Shock
Renal Complications	Acute Renal Failure
Respiratory Complications	Acute Respiratory Distress Syndrome Temporary Tracheostomy Ventilation
Sepsis Complications	Sepsis
Other Obstetric Complications	Air and Thrombotic Embolism Amniotic Fluid Embolism Eclampsia Severe Anesthesia Complications
Other Medical Complications	Puerperal Cerebrovascular Disorders Sickle Cell Disease with Crisis

Note: Blood transfusion not included

Source: Health Resources and Services Administration (HRSA), Maternal and Child Health Bureau. Federally Available Data (FAD) Resource Document, FY2026/FY2024.

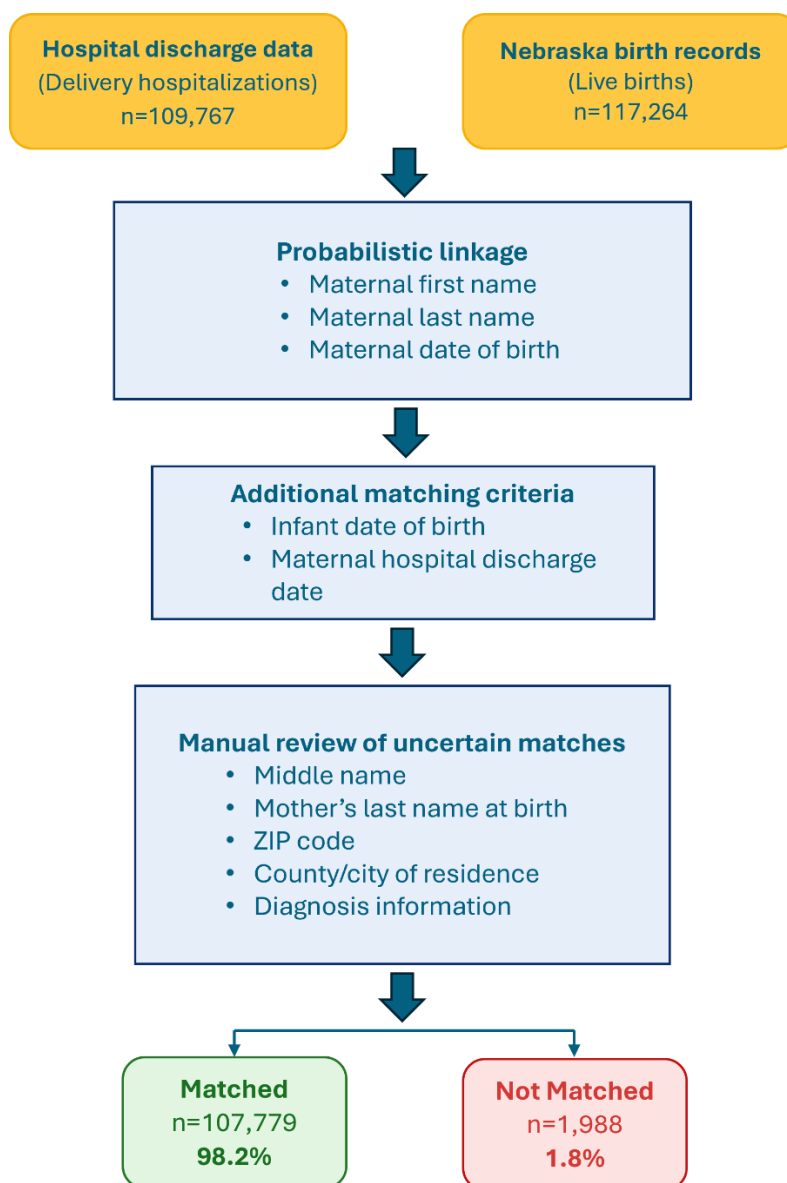
HDD Linkage to Birth Records and Race/Ethnicity Data

Probabilistic linkage of HDD delivery hospitalization records and Nebraska birth records was conducted for delivery hospitalizations occurring from 2020–2024 using Match*Pro v3.1. Linkage was performed using maternal identifiers and delivery information, including maternal first and last names, date of birth, maternal hospital discharge date, and infant date of birth.

Initial linkage was based on agreement between maternal first name, last name, and date of birth. Additional linkage criteria included agreement between infant date of birth and maternal hospital discharge date. Records requiring additional review were manually evaluated using supplementary information such as ZIP code of residence,

middle name, mother's last name at birth, and diagnosis information. Figure 1 presents the linkage process.

Figure 1. Probabilistic linkage of hospital discharge data and birth records, Nebraska, 2020–2024



Source: Office of Maternal and Child Health Epidemiology, Nebraska Department of Health and Human Services.

A total of 107,779 of 109,767 delivery hospitalizations were successfully linked to birth records, corresponding to an overall linkage rate of 98.2% (Table 2). Linkage rates were consistently high across years, ranging from 97.8% to 98.4%.

Table 2. Linkage of hospital discharge data to birth records, Nebraska, 2020–2024

Year	Delivery Hospitalizations	Linked Records	Linkage Percentage (%)
2020	21,495	21,025	97.8
2021	21,497	21,155	98.4
2022	22,092	21,713	98.3
2023	22,239	21,796	98.0
2024	22,444	22,090	98.4
Total	109,767	107,779	98.2

Linkage percentage: number of delivery hospitalizations successfully linked to birth record divided by total delivery hospitalizations.

Data source: Hospital discharge data, Nebraska Hospital Association; birth records, Nebraska Vital Records Office.

Linked birth records were used to obtain race and ethnicity data, maternal clinical characteristics, and pregnancy-related conditions not available in HDD alone. Birth records were the primary source of race and ethnicity information. When race and/or ethnicity were missing from the birth record, corresponding information from HDD was used to improve completeness.

Maternal clinical and pregnancy-related characteristics obtained from linked birth records included pre-pregnancy hypertension, pre-pregnancy diabetes, gestational hypertension, gestational diabetes, previous preterm birth, and previous cesarean delivery. Analyses of previous preterm birth and previous cesarean delivery were restricted to individuals with at least one previous live birth.

Statistical Analysis

SMM rates were calculated per 10,000 delivery hospitalizations. Ninety-five percent confidence intervals (CIs) for rates were calculated using the exact method for the Poisson distribution (Ulm, 1990). Poisson regression models were used to assess year-to-year differences in annual SMM rates. Chi-squared tests were used to assess differences in categorical variables. For linkage quality assessment, the distribution of race and ethnicity in the linked dataset was compared with that of all live births, and Cramer's V was used to assess the magnitude of the difference (Kim et al., 2024). Median length of stay and median hospital charges were compared using the Wilcoxon rank-sum test. Statistical significance was assessed at $p < 0.05$.

Rates based on counts of 1–5 were not reported, corresponding counts were retained.

Data management and statistical analyses were conducted using SAS v9.4 and Microsoft Excel.

Results

Temporal Trends

Delivery hospitalizations from 2020-2024 were examined to provide more current estimates and maintain consistency with rolling estimates from previous reports. During this period, a total of 109,767 delivery hospitalizations were identified, including 684 delivery hospitalizations with SMM events, corresponding to an overall SMM rate of 62.3 per 10,000 delivery hospitalizations (Table 3).

For comparison, the national SMM rate was 98.8 events per 10,000 in-hospital deliveries in 2023 (Agency for Healthcare Research and Quality [AHRQ], 2025).

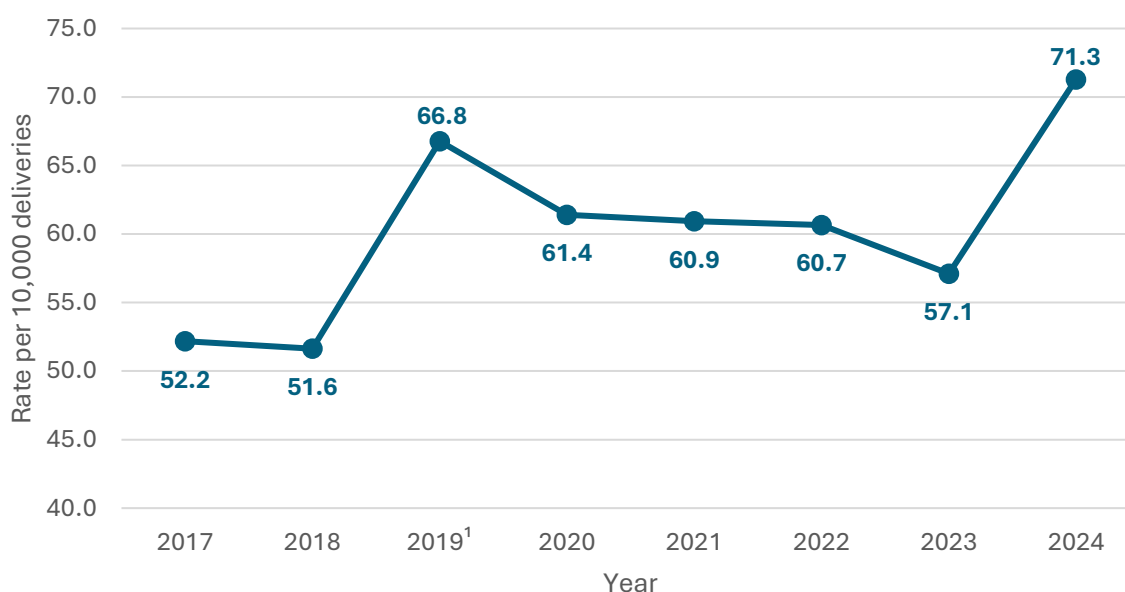
Table 3. Severe maternal morbidity (SMM) by year, Nebraska, 2020–2024

Year	Number of SMM Events	Total Delivery Hospitalizations	Rate per 10,000 Delivery Hospitalizations	95% Confidence Interval (CI)
2020	132	21,495	61.4	51.4-72.8
2021	131	21,497	60.9	51.0-72.3
2022	134	22,092	60.7	50.8-71.8
2023	127	22,239	57.1	47.6-67.9
2024	160	22,444	71.3	60.7-83.2
Total	684	109,767	62.3	57.7-67.2

Data source: Hospital discharge data, Nebraska Hospital Association.

As shown in Figure 2, the SMM rate ranged from a low of 51.6 in 2018 to a high of 71.3 per 10,000 delivery hospitalizations between 2017 and 2024. The SMM rate significantly increased over time from 2017-2024 ($p=0.03$). When assessing the years 2020-2024 alone, there was no significant trend ($p=0.34$). Compared with the previous year, the SMM rate in 2019 was significantly higher than in 2018 ($p<0.05$). No other year-to-year differences were statistically significant.

Figure 2. Severe maternal morbidity rate per 10,000 deliveries by year, Nebraska, 2017-2024

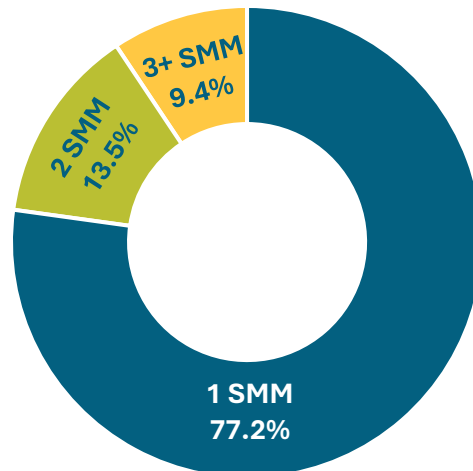


¹Statistically significant difference from previous year ($p<0.05$).

Trend data includes all available years of comparable data (2017–2024) to provide historical context. Earlier years were not included because the transition from ICD-9-CM to ICD-10-CM limits comparability with more recent data. Data source: Hospital discharge data, Nebraska Hospital Association.

Among delivery hospitalizations with SMM from 2020-2024, the number of SMM indicators per hospitalization ranged from one to six. Most SMM hospitalizations involved a single indicator (77.2%), while 13.5% involved two indicators and 9.4% involved three or more indicators (Figure 3).

Figure 3. Distribution of delivery hospitalizations with severe maternal morbidity (SMM) by number of indicators, Nebraska, 2020–2024



SMM indicators are not mutually exclusive; a delivery hospitalization may include more than one indicator. Percentages may not sum to 100 due to rounding.
Data source: Hospital discharge data, Nebraska Hospital Association.

Population Characteristics

SMM rates differed significantly by maternal age ($p < 0.001$), with the highest rate observed among individuals aged 35 years and older (103.9 per 10,000 deliveries), substantially higher than all younger age groups (Table 4).

SMM rates also differed significantly by source of payment ($p < 0.01$). Individuals with public insurance had a higher SMM rate (72.3 per 10,000 deliveries) compared to those with private insurance (56.6 per 10,000 deliveries).

SMM rates did not differ significantly by urbanicity of maternal county of residence ($p > 0.05$).

Geographic variation in SMM rates by local health department (LHD) of residence is shown in Figure 4. SMM rates ranged from 35.4 to 81.6 per 10,000 delivery hospitalizations across Nebraska LHD regions during 2020-2024. SMM rates across LHD regions were not statistically different ($p = 0.08$).

Table 4. Population characteristics and severe maternal morbidity (SMM) among delivery hospitalizations, Nebraska, 2020–2024

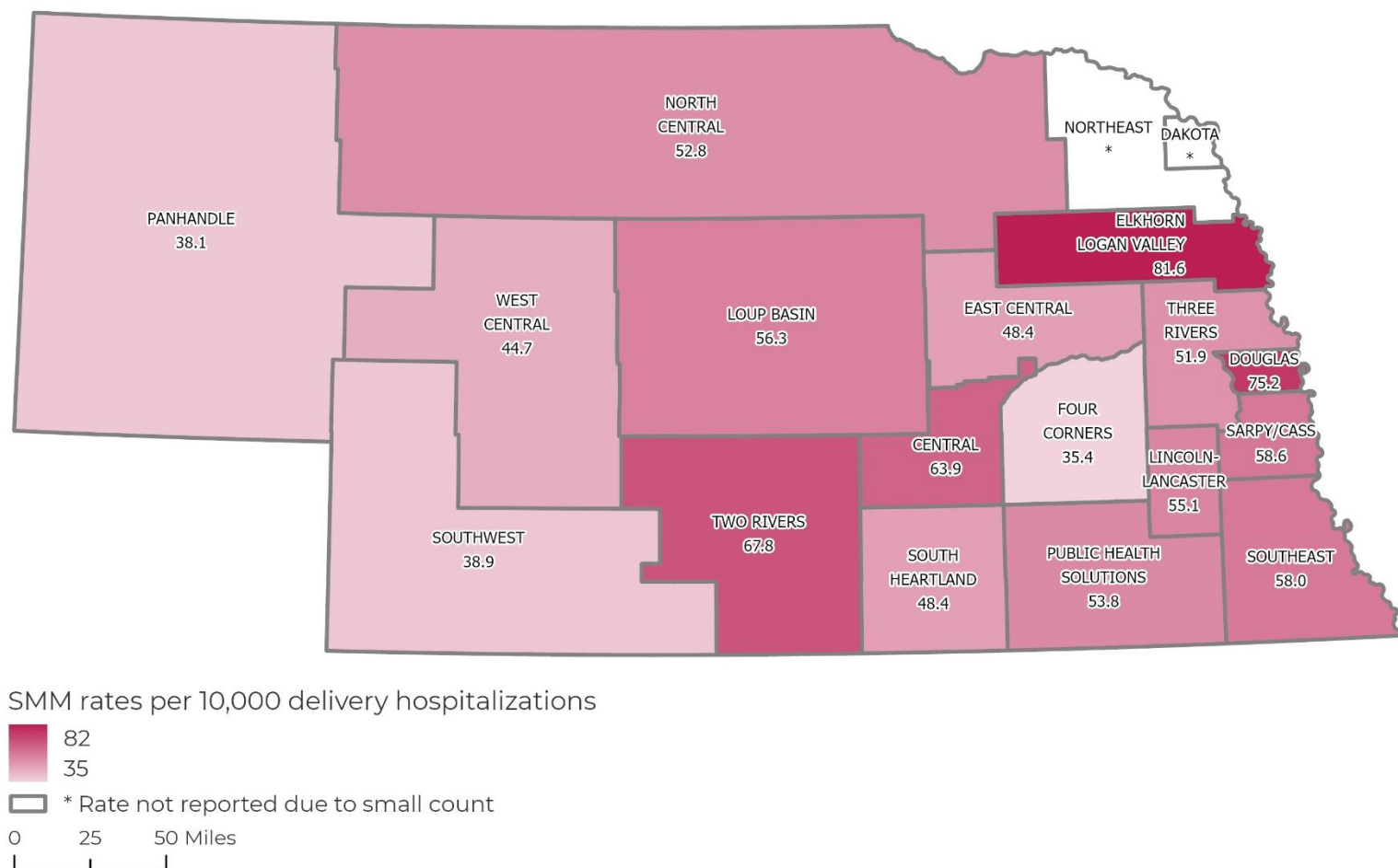
Characteristic	Delivery Hospitalizations N (%)	SMM Events N (%)	SMM Rate per 10,000 Delivery Hospitalizations	95% CI
Maternal Age				
<20	4,303 (3.9)	21 (3.1)	48.8	30.2–74.6
20–24	18,762 (17.1)	90 (13.2)	48.0	38.6–59.0
25–29	34,488 (31.4)	179 (26.2)	51.9	44.6–60.1
30–34	33,742 (30.7)	202 (29.5)	59.9	51.9–68.7
35+	18,472 (16.8)	192 (28.1)	103.9	89.8–119.7
Source of Payment				
Private Insurance	68,349 (62.3)	387 (56.6)	56.6	51.1–62.6
Public Insurance	39,307 (35.8)	284 (41.5)	72.3	64.1–81.2
Other or Uninsured	2,111 (1.9)	13 (1.9)	61.6	32.8–105.3
Maternal County of Residence, Urbanicity				
Metropolitan	72,951 (66.5)	484 (70.8)	66.3	60.6–72.5
Micropolitan	24,138 (22.0)	130 (19.0)	53.9	45.0–64.0
Rural	12,678 (11.5)	70 (10.2)	55.2	43.0–69.8
Total	109,767	684	62.3	57.7–67.2

Percentages may not sum to 100 due to rounding.

Public Insurance includes Medicaid, Medicare, CHAMPUS/CHAMPVA, and other federal, state, and non-federal programs. Other or Uninsured includes Self Pay, Workers' Compensation, and Other.

Data source: Hospital discharge data, Nebraska Hospital Association.

Figure 4. Severe maternal morbidity (SMM) rate by local health department of maternal residence, Nebraska, 2020–2024



Rates are presented per 10,000 delivery hospitalizations.

Rates based on counts of 1–5 are not reported.

Data source: Hospital discharge data, Nebraska Hospital Association. Map created by Nebraska Department of Health and Human Services GIS Team.

Severe Maternal Morbidity Indicators

The most common SMM indicators among delivery hospitalizations included acute renal failure (14.3 per 10,000 deliveries), disseminated intravascular coagulation (13.4), and hysterectomy (10.8) (Table 5). Other frequently observed indicators included acute respiratory distress syndrome (10.3) and shock (6.7).

Severe Maternal Morbidity Groups

SMM indicators were further grouped into seven complication groups (Table 6). Hemorrhage complications were the most common SMM group, with 41.2% of the delivery hospitalizations with SMM including hemorrhage complications, followed by renal complications (23.0%) and respiratory complications (17.8%). Because complication groups were not mutually exclusive, a delivery hospitalization could be classified into more than one complication group.

Table 5. Frequency and rates of severe maternal morbidity (SMM) indicators among delivery hospitalizations, Nebraska, 2020–2024

SMM Indicators	Frequency	Rate per 10,000 Delivery Hospitalizations	95% CI
Acute Renal Failure	157	14.3	12.2-16.7
Disseminated Intravascular Coagulation	147	13.4	11.3-15.7
Hysterectomy	118	10.8	8.9-12.9
Acute Respiratory Distress Syndrome	113	10.3	8.5-12.4
Shock	73	6.7	5.2-8.4
Pulmonary Edema / Acute Heart Failure	67	6.1	4.7-7.8
Sepsis	65	5.9	4.6-7.5
Eclampsia	54	4.9	3.7-6.4
Ventilation	38	3.5	2.4-4.8
Air and Thrombotic Embolism	38	3.5	2.4-4.8
Puerperal Cerebrovascular Disorders	32	2.9	2.0-4.1
Severe Anesthesia Complications	13	1.2	0.6-2.0
Cardiac Arrest / Ventricular Fibrillation	4	–	–
Sickle Cell Disease with Crisis	4	–	–
Acute Myocardial Infarction	4	–	–
Aneurysm	4	–	–
Temporary Tracheostomy	4	–	–
Conversion of Cardiac Rhythm	3	–	–
Amniotic Fluid Embolism	2	–	–
Heart Failure / Arrest During Surgery or Procedure	2	–	–

SMM indicators are not mutually exclusive; a delivery hospitalization may include more than one indicator.

Rates and 95% CIs based on counts of 1–5 are not reported.

Analyses included 109,767 delivery hospitalizations, including 684 delivery hospitalizations with SMM.

Data source: Hospital discharge data, Nebraska Hospital Association.

Table 6. Frequency, percentage, and rates of severe maternal morbidity (SMM) groups among delivery hospitalizations, Nebraska, 2020–2024

SMM Groups	Frequency	% of SMM Hospitalizations	Rate per 10,000 Delivery Hospitalizations	95% CI
Hemorrhage Complications	282	41.2	25.7	22.8-28.9
Renal Complications	157	23.0	14.3	12.2-16.7
Respiratory Complications	122	17.8	11.1	9.2-13.3
Other Obstetric Complications	107	15.6	9.7	8.0-11.8
Cardiac Complications	80	11.7	7.3	5.8-9.1
Sepsis Complications	65	9.5	5.9	4.6-7.5
Other Medical Complications	36	5.3	3.3	2.3-4.5

SMM groups are not mutually exclusive; a delivery hospitalization may be classified into more than one complication group.

Percentages represent the proportion of delivery hospitalizations with SMM (N=684) that were classified into each complication group.

Other obstetric complications include air and thrombotic embolism, amniotic fluid embolism, eclampsia, and severe anesthesia complications.

Other medical complications include puerperal cerebrovascular disorders and sickle cell disease with crisis.

Analyses included 109,767 delivery hospitalizations, including 684 delivery hospitalizations with SMM.

Data source: Hospital discharge data, Nebraska Hospital Association.

Healthcare Utilization

Delivery hospitalizations with SMM were associated with greater healthcare utilization and cost compared to those without SMM (Table 7).

Table 7. Healthcare utilization among delivery hospitalizations with and without severe maternal morbidity (SMM), Nebraska, 2020–2024

Measure	No SMM	SMM	p-value
Length of Stay (days), Median	2	4	<0.001
Total Hospital Charges (\$), Median	12,465	39,178	<0.001

Analyses included 109,767 delivery hospitalizations, including 684 delivery hospitalizations with SMM.

P-values were calculated using Wilcoxon rank-sum tests.

Data source: Hospital discharge data, Nebraska Hospital Association.

Race and Ethnicity Analyses

The distribution of race and ethnicity in the linked dataset was nearly identical to that of all live births as assessed using Cramer's V, indicating minimal practical differences introduced through the linkage process (Table 8). Race and ethnicity were unknown for 58 delivery hospitalizations (0.1%) and were excluded from subsequent analyses.

Table 8. Distribution of race and ethnicity in linked hospital discharge data and live births, Nebraska, 2020–2024

Race and Ethnicity	Linked Data (%)	Live Births (%)
Non-Hispanic White	67.1	67.3
Hispanic	19.4	19.5
Non-Hispanic Black	7.6	7.5
Non-Hispanic Asian/Pacific Islander	4.3	4.2
Non-Hispanic American Indian/Alaska Native	1.2	1.2
Non-Hispanic Other*	0.4	0.4

* Non-Hispanic Other race includes individuals whose race was not classified as non-Hispanic White, non-Hispanic Black, non-Hispanic Asian/Pacific Islander, or non-Hispanic American Indian/Alaska Native.

Percentages may not sum to 100 due to rounding.

Race and ethnicity were unknown for n=58 individuals in linked data and n=178 in live births; these were excluded from percentage calculations.

Data source: Hospital discharge data, Nebraska Hospital Association; birth records, Nebraska Vital Records Office.

The overall SMM rate in the linked dataset was 57.8 per 10,000 delivery hospitalizations. This was slightly lower than the rate observed in the full hospital discharge dataset (62.3 per 10,000), although the difference was not statistically significant ($p=0.18$).

SMM rates differed significantly by race and ethnicity ($p<0.001$). Compared with non-Hispanic White individuals (49.4 per 10,000 delivery hospitalizations), rates were significantly higher among non-Hispanic Black (97.3), non-Hispanic Asian/Pacific Islander (80.3), and Hispanic individuals (65.5). The SMM rate among non-Hispanic Black individuals was nearly twice that of non-Hispanic White individuals, while rates among non-Hispanic Asian/Pacific Islander and Hispanic individuals were approximately 1.6 and 1.3 times higher, respectively (Table 9).

Table 9. Severe maternal morbidity (SMM) by race and ethnicity, Nebraska, 2020–2024

Race and Ethnicity	Delivery Hospitalizations N (%)	SMM Events N (%)	Rate per 10,000 Delivery Hospitalizations	95% CI
Non-Hispanic White	72,245 (67.1)	357 (57.3)	49.4	44.4–54.8
Hispanic	20,909 (19.4)	137 (22.0)	65.5	55.0–77.5
Non-Hispanic Black	8,225 (7.6)	80 (12.8)	97.3	77.1–121.1
Non-Hispanic Asian/Pacific Islander	4,607 (4.3)	37 (5.9)	80.3	56.5–110.7
Non-Hispanic American Indian/Alaska Native	1,291 (1.2)	8 (1.3)	62.0	26.8–122.1
Non-Hispanic Other*	444 (0.4)	4 (0.6)	–	–
Total	107,721	623	57.8	53.4–62.6

* Non-Hispanic Other race includes individuals whose race was not classified as non-Hispanic White, non-Hispanic Black, non-Hispanic Asian/Pacific Islander, or non-Hispanic American Indian/Alaska Native.

Rates and 95% CIs based on counts of 1–5 are not reported.

Race and ethnicity were unknown for $n=58$ delivery hospitalizations and were excluded from analyses (final $N=107,721$).

Data source: Hospital discharge data, Nebraska Hospital Association; birth records, Nebraska Vital Records Office.



SMM indicator rates also varied by race and ethnicity during 2020–2024 (Table 10). Significant differences were observed for acute renal failure, hysterectomy, acute respiratory distress syndrome, shock, ventilation, and puerperal cerebrovascular disorders. Compared with non-Hispanic White individuals, non-Hispanic Black individuals had higher rates of acute renal failure, acute respiratory distress syndrome, shock, and ventilation. Hispanic individuals had higher rates of acute renal failure, shock, and ventilation, while non-Hispanic Asian/Pacific Islander individuals had higher rates of hysterectomy and shock.

Similar racial and ethnic differences were observed across several SMM complication groups during 2020–2024 (Table 11). Compared with non-Hispanic White individuals, non-Hispanic Black individuals had significantly higher rates of hemorrhage, renal, respiratory, and other medical complications. Non-Hispanic Asian/Pacific Islander individuals had significantly higher rates of hemorrhage, while Hispanic individuals had a significantly higher rate of renal complications.

Table 10. Rates and frequencies of the most common severe maternal morbidity (SMM) indicators by race and ethnicity among delivery hospitalizations, Nebraska, 2020–2024

SMM Indicators	Non-Hispanic White Rate (n)	Hispanic Rate (n)	Non-Hispanic Black Rate (n)	Non-Hispanic Asian/Pacific Islander Rate (n)	Non-Hispanic American Indian/Alaska Native Rate (n)	Non-Hispanic Other Rate (n)	p-value
Acute renal failure	9.8 (71)	15.8 (33)	30.4 (25)	15.2 (7)	– (3)	– (1)	<0.0001
Disseminated intravascular coagulation	10.7 (77)	12.0 (25)	20.7 (17)	19.5 (9)	– (2)	– (1)	0.1163
Hysterectomy	10.0 (72)	9.1 (19)	10.9 (9)	21.7 (10)	– (1)	– (2)	0.0461
Acute respiratory distress syndrome	7.3 (53)	10.5 (22)	17.0 (14)	15.2 (7)	0.0 (0)	0.0 (0)	0.0311
Shock	3.7 (27)	9.6 (20)	9.7 (8)	13.0 (6)	0.0 (0)	– (1)	0.0014
Sepsis	4.2 (30)	6.7 (14)	7.3 (6)	– (4)	– (1)	0.0 (0)	0.4597
Ventilation	1.4 (10)	3.8 (8)	12.2 (10)	0.0 (0)	0.0 (0)	0.0 (0)	<0.0001
Pulmonary edema/acute heart failure	4.8 (35)	6.2 (13)	13.4 (11)	– (3)	– (1)	0.0 (0)	0.0862
Eclampsia	3.9 (28)	8.1 (17)	– (3)	– (1)	– (1)	– (1)	0.0676
Puerperal cerebrovascular disorders	1.7 (12)	– (5)	– (5)	– (5)	0.0 (0)	0.0 (0)	0.0015

Rates are presented per 10,000 delivery hospitalizations.

The 10 most frequently observed SMM indicators were included.

SMM indicators are not mutually exclusive; a delivery hospitalization may include more than one indicator.

Rates based on counts of 1–5 are not reported.

Race and ethnicity were unknown for n=58 delivery hospitalizations and were excluded from analyses.

P-values were calculated using chi-squared tests.

Data source: Hospital discharge data, Nebraska Hospital Association; birth records, Nebraska Vital Records Office.

Table 11. Rates and frequencies of severe maternal morbidity (SMM) groups by race and ethnicity among delivery hospitalizations, Nebraska, 2020–2024

SMM Groups	Non-Hispanic White Rate (n)	Hispanic Rate (n)	Non-Hispanic Black Rate (n)	Non-Hispanic Asian/Pacific Islander Rate (n)	Non-Hispanic American Indian/Alaska Native Rate (n)	Non-Hispanic Other Rate (n)	p-value
Hemorrhage Complications	20.6 (149)	24.9 (52)	32.8 (27)	45.6 (21)	– (3)	– (3)	0.002
Renal Complications	9.8 (71)	15.8 (33)	30.4 (25)	15.2 (7)	– (3)	– (1)	<0.0001
Respiratory Complications	7.8 (56)	11.0 (23)	19.5 (16)	15.2 (7)	0.0 (0)	0.0 (0)	0.0118
Other Obstetric Complications	8.3 (60)	12.0 (25)	10.9 (9)	– (2)	– (2)	– (1)	0.3883
Cardiac Complications	5.5 (40)	7.7 (16)	14.6 (12)	– (3)	– (1)	0.0 (0)	0.0831
Sepsis Complications	4.2 (30)	6.7 (14)	7.3 (6)	– (4)	– (1)	0.0 (0)	0.4597
Other Medical Complications	1.7 (12)	– (5)	10.9 (9)	– (5)	0.0 (0)	0.0 (0)	<0.0001

Rates are presented per 10,000 delivery hospitalizations.

SMM groups are not mutually exclusive; a delivery hospitalization may include more than one indicator.

Rates based on counts of 1–5 are not reported.

Race and ethnicity were unknown for n=58 delivery hospitalizations and were excluded from analyses.

P-values were calculated using chi-squared tests.

Data source: Hospital discharge data, Nebraska Hospital Association; birth records, Nebraska Vital Records Office

Maternal Clinical Characteristics

Maternal clinical characteristics differed significantly by SMM status (Table 12). Individuals with chronic hypertension, pre-pregnancy diabetes, a history of preterm birth, or a previous cesarean delivery had higher SMM rates than those without these conditions. Higher SMM rates were also observed among individuals with gestational hypertension and gestational diabetes.

Table 12. Maternal clinical characteristics and severe maternal morbidity (SMM), Nebraska, 2020–2024

Characteristic	Delivery Hospitalizations N (%)	SMM Events N (%)	Rate per 10,000 Delivery Hospitalizations	95% CI	p-value
Pre-pregnancy Conditions					
Chronic Hypertension					
Yes	3,306 (3.1)	65 (10.5)	196.6	151.7–250.6	<0.001
No	104,326 (96.9)	557 (89.6)	53.4	49.0–58.0	
Pre-pregnancy Diabetes					
Yes	1,450 (1.4)	31 (5.0)	213.8	145.3–303.5	<0.001
No	106,191 (98.7)	591 (95.0)	55.7	51.3–60.3	
Previous Preterm Birth					
Yes	5,145 (7.4)	66 (17.1)	128.3	99.2–163.2	<0.001
No	64,330 (92.6)	320 (82.9)	49.7	44.4–55.5	
Previous Cesarean Delivery					
Yes	17,000 (24.5)	178 (46.1)	104.7	89.9–121.3	<0.001
No	52,475 (75.5)	208 (53.9)	39.6	34.4–45.4	
Pregnancy-related Conditions					
Gestational Hypertension					
Yes	10,655 (9.9)	152 (24.4)	142.7	120.9–167.2	<0.001
No	96,977 (90.1)	470 (75.6)	48.5	44.2–53.1	
Gestational Diabetes					
Yes	9,446 (8.8)	77 (12.4)	81.5	64.3–101.9	<0.01
No	98,195 (91.2)	545 (87.6)	55.5	50.9–60.4	

Analyses of previous preterm birth and previous cesarean delivery were restricted to individuals with at least one previous live birth.

Percentages may not sum to 100 due to rounding.

Unknown values were excluded from analyses.

P-values were calculated using chi-squared tests.

Data source: Hospital discharge data, Nebraska Hospital Association; birth records, Nebraska Vital Records Office.

Conclusion

SMM remains an important public health concern in Nebraska. From 2020-2024, the overall SMM rate was 62.3 per 10,000 delivery hospitalizations, with variation observed across maternal demographic, clinical, and geographical characteristics. Higher SMM rates were observed among older maternal age, public insurance covered delivery hospitalizations, non-Hispanic Black individuals, and individuals with pre-pregnancy or pregnancy-related medical conditions.

Delivery hospitalizations involving SMM were also associated with substantially greater healthcare utilization, including longer hospital stays and higher hospital charges. In addition, racial and ethnic differences were observed across several individual SMM indicators and complication groups.

While this report focuses on severe maternal morbidity in Nebraska, the findings may help inform ongoing maternal health improvement efforts across the state. The Nebraska Maternal Mortality Review Committee (MMRC) developed recommendations based on multidisciplinary reviews of maternal deaths. Many of these recommendations—including improving medical care access, strengthening care continuity, and promoting healthcare best practice adoption—address factors that may also contribute to severe maternal morbidity (Nebraska Department of Health and Human Services, 2025a).

Continued monitoring of SMM provides opportunities to support maternal health improvement efforts in Nebraska.

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Appendix Table A1. ICD-10-CM/PCS diagnosis and procedure codes used to define severe maternal morbidity indicators

Severe Maternal Morbidity Indicator	Diagnosis (DX) or Procedure (PR) Code	ICD-10
Acute Myocardial Infarction	DX	I21.xx, I22.x
Aneurysm	DX	I71.xx, I79.0
Acute Renal Failure	DX	N17.x, O90.4
Acute Respiratory Distress Syndrome	DX	J80, J95.1, J95.2, J95.3, J95.82x, J96.0x, J96.2x, J96.9x, R06.03, R09.2
Amniotic Fluid Embolism	DX	O88.112, O88.113, O88.119, O88.12, O88.13
Cardiac Arrest / Ventricular Fibrillation	DX	I46.x, I49.0x
Conversion of Cardiac Rhythm	PR	5A12012, 5A2204Z
Disseminated Intravascular Coagulation	DX	D65, D68.8, D68.9, O45.002, O45.003, O45.009, O45.012, O45.013, O45.019, O45.022, O45.023, O45.029, O45.092, O45.093, O45.099, O46.002, O46.003, O46.009, O46.012, O46.013, O46.019, O46.022, O46.023, O46.029, O46.092, O46.093, O46.099, O67.0, O72.3
Blood Transfusion*	PR	30230H0, 30230K0, 30230L0, 30230M0, 30230N0, 30230P0, 30230R0, 30230T0, 30230H1, 30230K1, 30230L1, 30230M1, 30230N1, 30230P1, 30230R1, 30230T1, 30233H0, 30233K0, 30233L0, 30233M0, 30233N0, 30233P0, 30233R0, 30233T0, 30233H1, 30233K1, 30233L1, 30233M1, 30233N1, 30233P1, 30233R1, 30233T1, 30240H0, 30240K0, 30240L0, 30240M0, 30240N0, 30240P0, 30240R0, 30240T0, 30240H1, 30240K1, 30240L1, 30240M1, 30240N1, 30240P1, 30240R1, 30240T1, 30243H0, 30243K0, 30243L0, 30243M0, 30243N0, 30243P0, 30243R0, 30243T0, 30243H1, 30243K1, 30243L1, 30243M1, 30243N1, 30243P1, 30243R1, 30243T1
Eclampsia	DX	O15. X

Heart Failure / Arrest During Surgery or Procedure	DX	I97.120, I97.121, I97.130, I97.131, I97.710, I97.711
Puerperal Cerebrovascular Disorders	DX	A81.2, G45.x, G46.x, G93.49, H34.0x, I60.xx, I61.xx, I62.xx, I63.00, I63.01x, I63.1xx, I63.2xx, I63.3xx, I63.4xx, I63.5xx, I63.6, I63.8x, I63.9, I65.xx, I66.xx, I67.xx, I68.xx, O22.50, O22.52, O22.53, I97.810, I97.811, I97.820, I97.821, O87.3
Pulmonary Edema / Acute Heart Failure	DX	I50.1, I50.20, I50.21, I50.23, I50.30, I50.31, I50.33, I50.40, I50.41, I50.43, I50.810, I50.811, I50.813, I50.814, I50.82, I50.83, I50.84, I50.89, I50.9, J81.0
Severe Anesthesia Complications	DX	O29.112–O29.119, O29.122–O29.129, O29.192–O29.199, O29.212–O29.219, O29.292–O29.299, O74.0, O74.1, O74.2, O74.3, O89.0x, O89.1, O89.2, T88.2XXA, T88.3XXA
Sepsis	DX	A32.7, A40.x, A41.x, I76, O85, O86.04, R65.20, R65.21, T81.12XA, T81.44XA
Shock	DX	O75.1, R57.x, T78.2XXA, T81.10XA, T81.11XA, T81.19XA, T88.6XXA
Sickle Cell Disease With Crisis	DX	D57.00, D57.01, D57.02, D57.211, D57.212, D57.219, D57.411, D57.412, D57.419, D57.811, D57.812, D57.819
Air and Thrombotic Embolism	DX	I26.x, O88.012–O88.03, O88.212–O88.23, O88.312–O88.33, O88.812–O88.83, T80.0XXA
Hysterectomy	PR	0UT90ZL, 0UT90ZZ, 0UT97ZL, 0UT97ZZ
Temporary Tracheostomy	PR	0B110F4, 0B113F4, 0B114F4
Ventilation	PR	5A1935Z, 5A1945Z, 5A1955Z

*Excluded but could be examined separately.

Source: Centers for Disease Control and Prevention (2024a).