

SC BIRTH OUTCOMES INITIATIVE DASHBOARD

# About the Data

May 2025

**[boi.ifsreports.com](https://boi.ifsreports.com)**

Data from October 1, 2021 – September 30, 2024

All data reflects post-ICD-10 time periods and is reported using federal fiscal years and quarters (Q4, 2021 – Q3, 2024).

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**Institute for Families in Society**  
at the University of South Carolina

## NEW QI RESOURCES

How can the dashboard  
support quality improvement?

See the new factsheet and  
online interactive examples.





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## Acknowledgments

The South Carolina Birth Outcomes Initiative (SCBOI) Interactive Dashboard was developed under contract with the South Carolina Department of Health & Human Services. We wish to acknowledge the valuable contributions made by staff of the University of South Carolina, Institute for Families in Society in the development of this product.

We would also like to acknowledge Chris Finney, MS, Division Director- Data Integration & Analysis, South Carolina Revenue and Fiscal Affairs Office (SCRFA) for providing USC IFS with the data used to calculate the findings in this report and Aunyika Moonan, PhD, MSPH, CPHQ, Vice President, Innovations & State Director, CaroNova, for her support in communicating with birthing facilities.

## For Additional Information

Contact the support team at [ifsreports@mailbox.sc.edu](mailto:ifsreports@mailbox.sc.edu).



## Data Caveats (FAQs)

### What do these SCBOI data represent?

The data reflect point-in-time UB-04 data provided by individual hospitals to the SC Revenue and Fiscal Affairs Office (SCRFA) as of April 3, 2025. They may differ from a review of internal hospital medical records.

**Notes:** All data presented for Q3 2024 are preliminary. Outcomes presented from Q4 2021 to Q2 2023 occurred during the COVID-19 pandemic; caution should be taken when comparing these rates to later quarters. Due to missing data linkages, the percentage of Medicaid may be higher than reported.

### What accounts for differences in denominators?

The number of births and maternal deliveries used to calculate each maternal and newborn measure or characteristic may vary due to missing data and/or measure restrictions. Newborn measures were per neonate live birth from birth records with or without linkage to a UB-04 newborn hospitalization. The maternal delivery characteristics and labor and delivery measures were per UB-04 deliveries with linkage to a live birth from birth records. For the maternal safety measures, linkage to live birth from birth records was not required. One delivery was counted regardless of plurality.

### How were demographic data determined?

Maternal demographics, such as maternal age and residence, were as of the day of delivery.

### What does it mean when there is no data for a measure?

A value of 0.00% may indicate zero births in the quarter matching the measure criteria, or an actual value of zero for a specific table result. For additional interpretation, refer to the numerators and denominators.

### What measure definitions were used in this report?

The most recent definitions for newborn and maternal measures were used and applied across all time periods.

### How are unknown and missing data treated?

Unknown and missing values are not presented in the portal for visual presentation. These data are, however, included in statewide and hospital totals. Therefore, subtotals in charts may not add to 100%.

### What hospital information is presented in this report?

Hospital data in this report reflect naming, perinatal levels, mergers, and closures identified by SCDPH as of January 2025.

## Key Terms

### GENERAL

**Age** – Maternal age on the day of delivery as identified on the hospital UB-04 record and categorized as ages <20, 20-24, 25-29, 30-34, and 35+.

**Birthweight** – Newborn birthweight designated on the birth record and categorized as **very low** (<1,500 grams), **moderately low** (1,500-2,499 grams), and **not low birthweight** (2,500+ grams).



## Key Terms | GENERAL (continued)

**C-Sections** – Final route identified on the birth record as cesarean or vaginal and cesarean was used as the primary source of information for this measure. If mode of delivery was missing from the birth record, the following codes from the patient's hospital UB-04 delivery record were used to identify cesareans: APR-DRG code (540), MS-DRG codes (765, 766, 783, 784, 785, 786, 787, 788), or ICD-10-PCS codes (10D00Z0, 10D00Z1, 10D00Z2).

**Deliveries** – Obstetric deliveries were flagged if one of the below billing codes existed on the patient's hospital UB-04 record:

- ICD-10-CM: Z37.0, Z37.1, Z37.2, Z37.3, Z37.4, Z37.50, Z37.51, Z37.52, Z37.53, Z37.54, Z37.59, Z37.60, Z37.61, Z37.62, Z37.63, Z37.64, Z37.69, Z37.7, Z37.9, O75.82, O80, O82;
- ICD-10-PCS: 10D00Z0, 10D00Z1, 10D00Z2, 10D07Z3, 10D07Z4, 10D07Z5, 10D07Z6, 10D07Z7, 10D07Z8, 10E0XZZ;
- MS-DRG: 765, 766, 767, 768, 774, 775, 783, 784, 785, 786, 787, 788, 796, 797, 798, 805, 806, 807

The delivery hospitalization included the patient's UB-04 record with the delivery flag and any hospitalization records within 0-1 day.

**Delivery Exclusions** – Records with delivery codes were excluded if they had any of the following ICD-10 codes indicating ectopic pregnancies, miscarriage, or abortion:

- ICD-10-CM: O00, O01, O02, O03, O04, O07, O08
- ICD-10-PCS: 10A0

They were also not flagged as the unique delivery record if occurring less than 7 months away from the previous delivery record or having the below DRGs identifying false labor, threatened abortion, antepartum admission, or postpartum admission:

- MS-DRG: 778, 780, 781, 782, 817, 818, 819, 831, 832, 833, 769, 776
- APR-DRG: 563, 565, 566, 561.

**Maternal Diabetes** – Inclusive of any chronic or gestational diabetes identified during the 12 months prior to or at the time of delivery using ICD-10 codes or DRG codes from emergency department and/or inpatient hospital records or information provided from birth records.

- **Chronic diabetes** was identified by diagnosis or DRG codes if having any type 1 (O24.0 & E10), type 2 (O24.1, E11 & Z79.4), or other/unspecified diabetes (ICD10 - O24.3, O24.8, O24.9, E08, E09, E13; APRDRG -199, MSDRG-304,305) or by birth record if having any pre-pregnancy diabetes flag.
- **Gestational diabetes** was identified by the diagnosis code O244 or by birth record (flag).

**Maternal Educational Level** – The highest level of education a mother has completed at the time of giving birth, as reported on the birth record and categorized as:

- **Less than high school** (12th grade or less)
- **High school graduate** (includes GED)
- **Some college or associate degree**
- **Bachelor's degree**
- **Advanced degree** (includes a Master's or a Doctorate)

## Key Terms | GENERAL (continued)

**First-Time Delivery** – Identified when previous live births (now living or dead) from the birth record were zero.

**Gestational Age** – Identified by the gestation on the birth record as **Preterm**: <37 weeks, **Early-Term**: 37-38 weeks, **Term**: 39 weeks, and **Term+**: 40+ weeks. When gestation was missing, this field was populated using the Z3A codes from the maternal hospital UB-04 record.

**Maternal Hypertension** – Inclusive of any chronic or gestational hypertension identified during the 12 months prior to or at the time of delivery using ICD-10 codes or DRG codes from emergency department and/or inpatient hospital records or information provided from birth records.

- **Chronic hypertension** was identified by any ICD-CM-10 codes for hypertensive diseases (I10-I16), postprocedural hypertension (I97.3), pre-existing hypertension complicating pregnancy, childbirth, and the puerperium (O10), or any APR-DRG & MS-DRG codes for hypertension (APR-DRG: 199; MS-DRG: 304, 305) or by birth record if having any pre-pregnancy hypertension flag.
- **Gestational hypertension** was identified by any ICD-CM-10 codes for hypertension in pregnancy (O13, O16) or preeclampsia (O11, O14, O15) or by birth record (flag).

**Maternal** – Represents all deliveries and not unique delivery patients.

**Number of Babies (Births)** – Represents all newborn birth records.

**Parity** – Number of previous live births (now living or dead) as designated on the birth record and categorized as **Nulliparous** (zero), **One**, **Two**, or **Three+**.

**Payment Source** – Payor detailed on the hospital UB-04 record and categorized as **Private Insurance** (Commercial Insurance or Health Maintenance Organization); **Medicaid**, and **Other** (Self-pay, Indigent/Charitable Organization, Medicare, Worker's Compensation, Other Government, Not verified Medicaid, and Not Stated on hospital record). Medicaid delivery payment was verified through linkage with Medicaid recipient records.

**Perinatal Level** – SCDPH hospital designation as of January 2025. Hospitals with recent perinatal level changes may still be compared to hospitals with their prior perinatal level to allow time for transition. The level corresponds with the level of services provided:

**Level I** (basic care for normal uncomplicated pregnancies);

**Level II** (specialty care for both normal and selected high risk obstetrical and neonatal patients);

**Level III** (subspecialty care for mothers and infants at less than 32 weeks gestation, estimated fetal weight less than 1,500 grams, and anticipated complex medical or surgical conditions regardless of gestation age); and

**Level IV** (complex care for the most complex and critically ill newborn infants and have pediatric medical and surgical specialty consultants available 24 hours a day). It may vary from the level submitted with the hospital record, and for the protection of hospital-level data, Levels III and IV are presented as III\*.

**Note:** Hospitals that have recently experienced a perinatal level change can request a report comparing their current level to the previous one by sending an email to [ifsreports@mailbox.sc.edu](mailto:ifsreports@mailbox.sc.edu).



## Key Terms | GENERAL (continued)

**Perinatal Region** – SCDPH perinatal region designation based on maternal county of residence. Each region has a regional perinatal center (RPC), and all other perinatal hospitals in a respective region maintain a relationship with its designated RPC for consultation, transport, transfer when appropriate, and continuing education. The five regions are Regions I/II (**Upstate**), Region III (**Midlands**), Region IV (**Pee Dee**), and Region V (**Lowcountry**). **Note:** Perinatal regions for newborn and maternal care vary slightly from SCDPH regions designated for vital records and health offices.

**Plurality** – Obtained using the birth month, birth year, and delivery patient's identification number from the birth records as **Singleton** (1 newborn) and **Multiples** (> 1 newborn).

**Prenatal Care** – The Adequacy of Prenatal Care Utilization (APNCU) Index developed by Kotelchuck determines the adequacy of prenatal care utilization based on two parts: the month in which prenatal care was initiated and the number of visits from initiation of care until delivery. The level of adequacy is then grouped into four categories reported on the birth certificate: **Inadequate** (received less than 50% of expected visits), **Intermediate** (50%-79%), **Adequate** (80%-109%), and **Adequate Plus** (110% or more). Adequate prenatal care is defined as a score of 80% or greater on the Kotelchuck Index, or the sum of the Adequate and Adequate Plus categories. More detailed specifications may be reviewed at the following link: [https://apps.dhec.sc.gov/Health/SCAN\\_BDP/defn/birthtabledefn.aspx#kotelchuck](https://apps.dhec.sc.gov/Health/SCAN_BDP/defn/birthtabledefn.aspx#kotelchuck).

**Race** – Maternal race as identified on the birth record as **non-Hispanic Black**, **non-Hispanic White**, **Hispanic**, and **non-Hispanic Other** (which includes **Multiple Race** and **Unknown**). Maternal race was also extracted from the delivery patient's hospitalization data when the delivery was not linked to a birth record, or the birth record was missing race.

**Residence** – **Rural** or **urban** status identified by a crosswalk using the zip code provided on the delivery patient's hospital UB-04 record. The crosswalk is based on the US Census Bureau 2020 Decennial Census (Summary File 1: Table P2, Urban and Rural). Zip codes outside of SC, GA, and NC were classified into an Out-of-state/Unknown group and not reported.

**State** – Represents all deliveries occurring in SC birthing facilities. This excludes out-of-hospital births such as home births and those occurring in freestanding birthing facilities. It includes births for some out-of-state residents.

**Year, Quarter** – All data reflects post-ICD-10 time periods and is reported using federal fiscal years and quarters (**Q4, 2021 – Q3, 2024**).

## OUTCOMES

### Labor & Delivery

**Total C-Section** – Percent of total deliveries identified as cesarean on the birth record or via APR-DRG, MS-DRG, or ICD-10-PCS codes.

**Total Primary C-Section** – Percent of deliveries without a prior cesarean identified as cesarean on the birth record or via APR-DRG, MS-DRG, or ICD-10-PCS codes.

**Primary C-Section (TJC PC-02, NTSV)** – This Joint Commission PC-02 Cesarean Birth Measure reflects cesareans identified by ICD-10-PCS codes (Appendix A, Table 11.06, v2024B1) among deliveries limited to gestation at least 37 weeks, first-time delivery (nulliparous), singleton, ages 10 to 64, and excluding multiple gestations and other presentations (Appendix A, Table 11.09, v2024B1).

**Primary C-section (TJC PC-02, NTSV) among patients with Cardiac Conditions in Obstetric Care** – The rate of PC-02 Cesarean births among people with cardiac conditions at the time of delivery. Such cardiac conditions may include congenital heart disease, cardiac valve disorders, cardiomyopathies, arrhythmias, coronary artery disease, pulmonary hypertension, and aortic dissection.

### Newborn Outcomes

#### Birthweight

- Not Low Birthweight – 2,500+ grams
- Moderately Low Birthweight – 1,500-2,499 grams
- Very Low Birthweight – < 1,500 grams

#### Gestational Age

- Gestation < 37 Weeks – Preterm
- Gestation < 37 Weeks – Preterm among people with Cardiac Conditions in Obstetric Care (as defined in Maternal Safety)
- Gestation 37-38 Weeks – Early-Term
- Gestation 39 Weeks – Term
- Gestation 40+ Weeks – Term+

#### Unexpected Complications in Term Newborns (TJC PC-06, v2024B1) – Overall Rate

This measure reflects adverse outcomes in full-term newborns without pre-existing conditions. The Joint Commission uses PC-06 as a quality metric for obstetric care. The overall PC-06 rate consists of severe complications like neonatal death, birth injuries, neurological damage, and transfers to higher levels of care, as well as moderate complications or infections with longer stays. The measure is helpful to examine when interpreting rates of potentially avoidable primary cesarean (TJC PC-02).



## Maternal Safety

Severe maternal morbidity (SMM) refers to life-threatening outcomes of labor and delivery. UB-04 all-payer billing data were used to calculate delivery-related SMM using ICD-10 codes associated with 21 SMM conditions, such as heart failure, renal failure, sepsis, shock, embolism, and respiratory ventilation.

**This measure was then calculated for four delivery subpopulations:**

**Maternal Hemorrhage** was identified if any of the following were present at the time of delivery:

- Presence of an Abruption, Previa, or Antepartum hemorrhage diagnosis code
- Presence of transfusion procedure code without a sickle cell crisis diagnosis code
- Presence of a Postpartum hemorrhage diagnosis code

**Severe Hypertension/Preeclampsia** accounts for obstetric patients with a diagnosis code for:

- Severe Preeclampsia
- Eclampsia
- Preeclampsia superimposed on pre-existing hypertension

**Cardiac Conditions in Obstetric Care (CCOC)** were identified if any of the following diagnosis codes were present at the time of delivery:

- Congenital Heart Disease
- Cardiac Valve Disorders
- Cardiomyopathies
- Arrhythmias
- Coronary Artery Disease
- Pulmonary Hypertension
- Other/not specified cardiac conditions

**Perinatal Mental Health Conditions (PMHC)** refer to mood, anxiety, and anxiety-related disorders and may be inclusive of mental health conditions with onset that predates pregnancy.

**Note:** For the dashboard, PMHC diagnoses were captured from emergency department visits or inpatient stays from one year prior to through one year after delivery, which varies from other AIM measures captured only at the time of inpatient delivery. Postpartum records for deliveries occurring in the last year are incomplete. Final PMHC rates for these quarters will likely be higher. Excluded from the AIM definition were diagnoses for substance use disorder, suicidal ideation, disruptive and conduct disorders, personality disorders, or general mental health.

The 03/27/2024 AIM Data Collection Plan and 05/14/2024 AIM SMM Codes List were used to calculate these outcomes.

More information about the SC AIM initiative can be found here:

<https://www.schealthviz.sc.edu/aim>.

*Given inconsistent coding of transfusions at the hospital level after the implementation of ICD-10 and less risk of maternal mortality for transfusion-only patients, as of October 1, 2022, these measures are no longer reported for patients whose only indicator of SMM was a transfusion. This will result in a decrease of SMM rates statewide.*



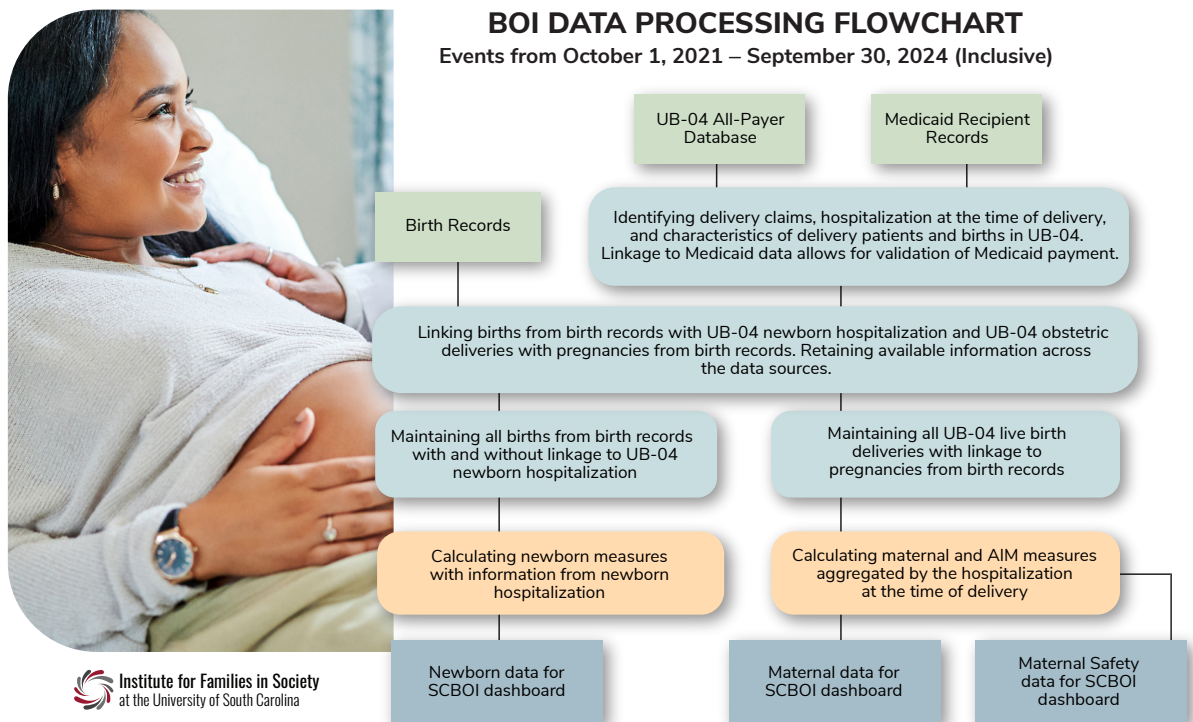
## Data Sources

Maternal and newborn data were inclusive of hospitalizations from October 1, 2021, to September 30, 2024. SCRFA pulled all data records as of April 3, 2025. These data were restricted to only deliveries and births occurring in SC birthing facilities (i.e., data for births and deliveries among SC residents occurring outside the state of SC, at home, or in a freestanding birthing center were not included). The maternal and newborn data were derived from three sources:

1. South Carolina Revenue and Fiscal Affairs Office, Health and Demographics, all-payer uniform billing data for inpatient discharges (UB-04)
  - Used as the base for maternal age, payment, residence, and measures of maternal quality as defined by billing codes submitted on the hospital record.
2. South Carolina Department of Public Health, Division of Biostatistics, Vital Statistics
  - Used to establish maternal race, gestation, birthweight, singleton, parity, and mode of delivery.
  - Based on birth records submitted to SCDPH by delivering hospitals in South Carolina.
3. South Carolina Department of Health & Human Services, Medicaid recipient records
  - Used to verify Medicaid as the payer.

To maximize information, this report links birth/pregnancy data from birth records to UB-04 delivery/newborn hospitalization records.

The Joint Commission PC-02 measure does not require this linkage of obstetric hospital events with vital statistics, as some states are not set up for this level of data sharing. Linking newborn and delivery patient's UB-04 hospital data with birth records allows maximum use of the available data for newborn and maternal measures with improved accuracy of results.





MAY 2025

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