

MATERNAL AND NEWBORN HEALTH QUALITY
2018-2020

Annual Results

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Institute for Families in Society

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Developed under contract to the SC Department of Health and Human Services

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About this report

This work would not have been possible without the contributions of the following UofSC IFS staff:

- **MCH Team** – Hoa Nguyen, Murthy Kotagiri, Robert Chen, Sabrina Karim, Ashton Pearson, and Carol Reed for their analytical and data management contributions.
- **GIS/Data Visualization Team** – Becky Wilkerson, Rachel Passer, and Angela Kneece for their support in providing geographical context.

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About this report (cont'd.)

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DISCLAIMER:

This work was prepared under contract to the South Carolina Department of Health and Human Services with Lòpez-De Fede, A. and Mayfield-Smith, K. as Principal Investigators, 2022. The views and opinions expressed in this presentation are those of the authors and do not necessarily reflect the official policy or position of any agency or organization.



Data Sources Disclosure

**All-payer
UB-04
(IP & ED)**

SC Revenue
and Fiscal
Affairs Office—
Health and
Demographics

Birth records

SC Department
of Health and
Environmental Control—
Division of Biostatistics
Vital Statistics

**Medicaid
recipient,
claims, and
provider
licensing
information**

SC Department
of Health &
Human Services;
SC Licensing

**Geospatial
contextual
data**

Centers for
Disease Control
and Prevention
and U.S. Census
Bureau



DISCLOSURE

In accordance with guidelines established by HIPAA and related data use agreements between agencies, the data behind the visualizations and products presented within this presentation are not publicly available.

Access to this data for research or other purposes is handled under other mechanisms, i.e., South Carolina Department of Health and Human Services (SCDHHS) or Revenue and Fiscal Affairs (RFA).

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CELEBRATION

Key Findings



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Delivery Summary

- Access to perinatal level care continued to decrease in CY2020. Two labor and delivery units permanently closed, and one was diverted due to COVID-19.
- 1 out of 3 deliveries were cesareans and 2 out of every 5 were induced. Early elective deliveries and severe maternal morbidity have decreased; potentially avoidable primary cesareans rates held steady.
- Women delivering in SC experienced high rates of behavioral health and chronic conditions.
- Nearly half of SC babies were delivered prior to term, and 1 out of 10 were low birthweight. Both prematurity and low birthweight (LBW) are increasing.

The Medicaid program is instrumental in responding to the obstetric care needs of SC.



Communities of Opportunity

- Identifying as Black, Non-Hispanic race, receiving Medicaid benefits, and delivering after age 30 were consistent characteristics associated with higher comparative rates.
- Having an ED visit or inpatient stay with a diagnosis related to chronic disease or **both** chronic disease and behavioral health is associated with both poor maternal and infant outcomes and higher utilization patterns.
- Hospitals treated 1,653 pregnant COVID-19 patients in the first year of the pandemic.

Note: Logistic regression models were used to examine CY 2020 between-group rate differences adjusting for age, race, gender, payer, perinatal level, and residence.

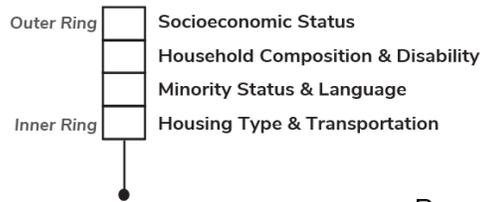
Community & System-Level Contextual Factors





Social Vulnerability Index (SVI) Themes and 2020 County Births

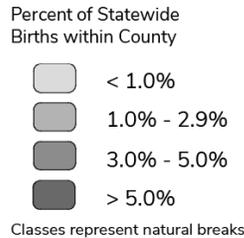
Ring Key: SVI Themes



Ring Classification:

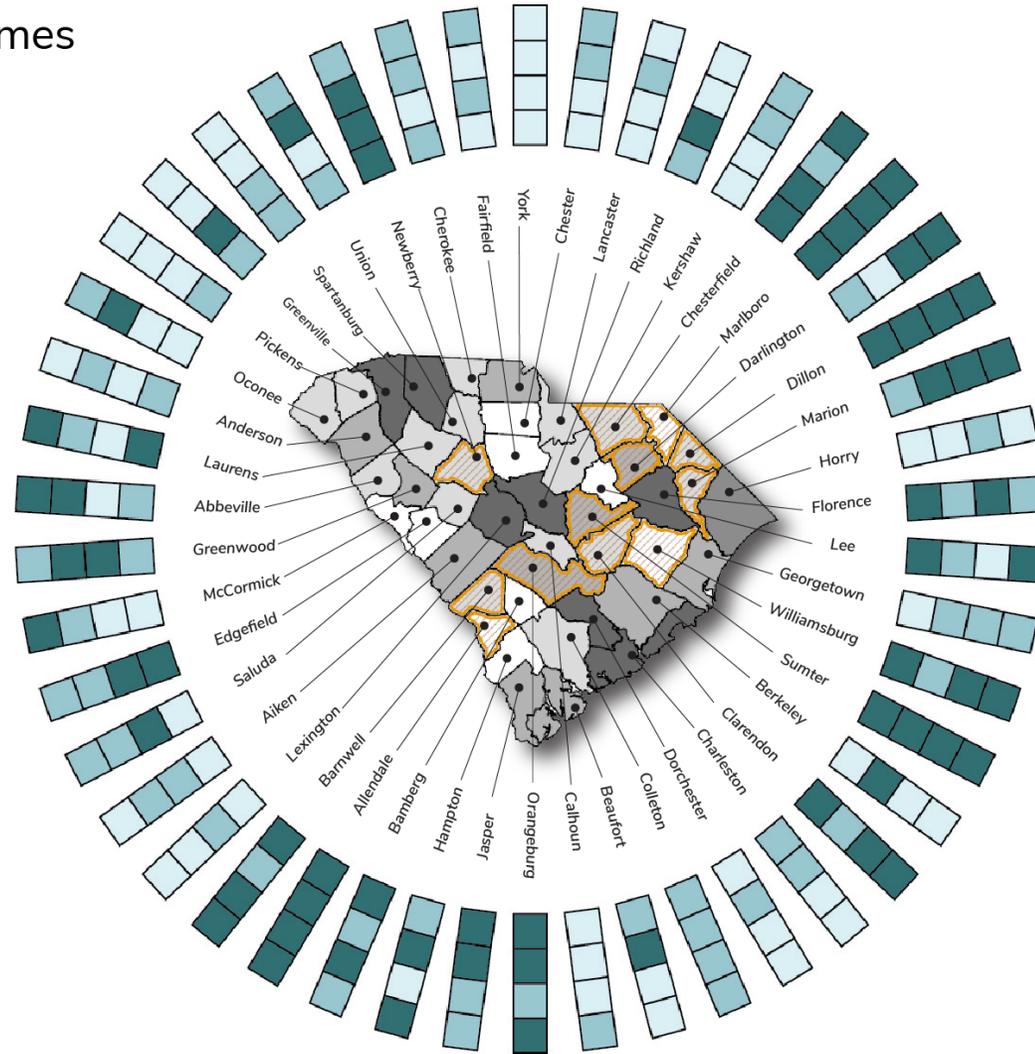
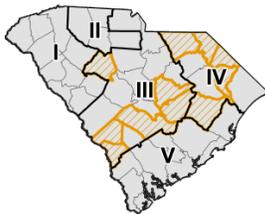


Basemap:



Births by Perinatal Region

| Perinatal Region | Number of Births | % of Births |
|------------------|------------------|-------------|
| I | 11,750 | 23.5 |
| II | 4,820 | 9.6 |
| III | 14,542 | 29.0 |
| IV | 6,592 | 13.2 |
| V | 12,352 | 24.7 |
| Statewide | 50,064 | |



Geographical Context of CY2020 Deliveries



Counties shaded in yellow are the highest for 3 or more domains of social vulnerability.

Marlboro, Dillon, Sumter, and Allendale were high in all categories.

The darker counties have a greater percentage of births.



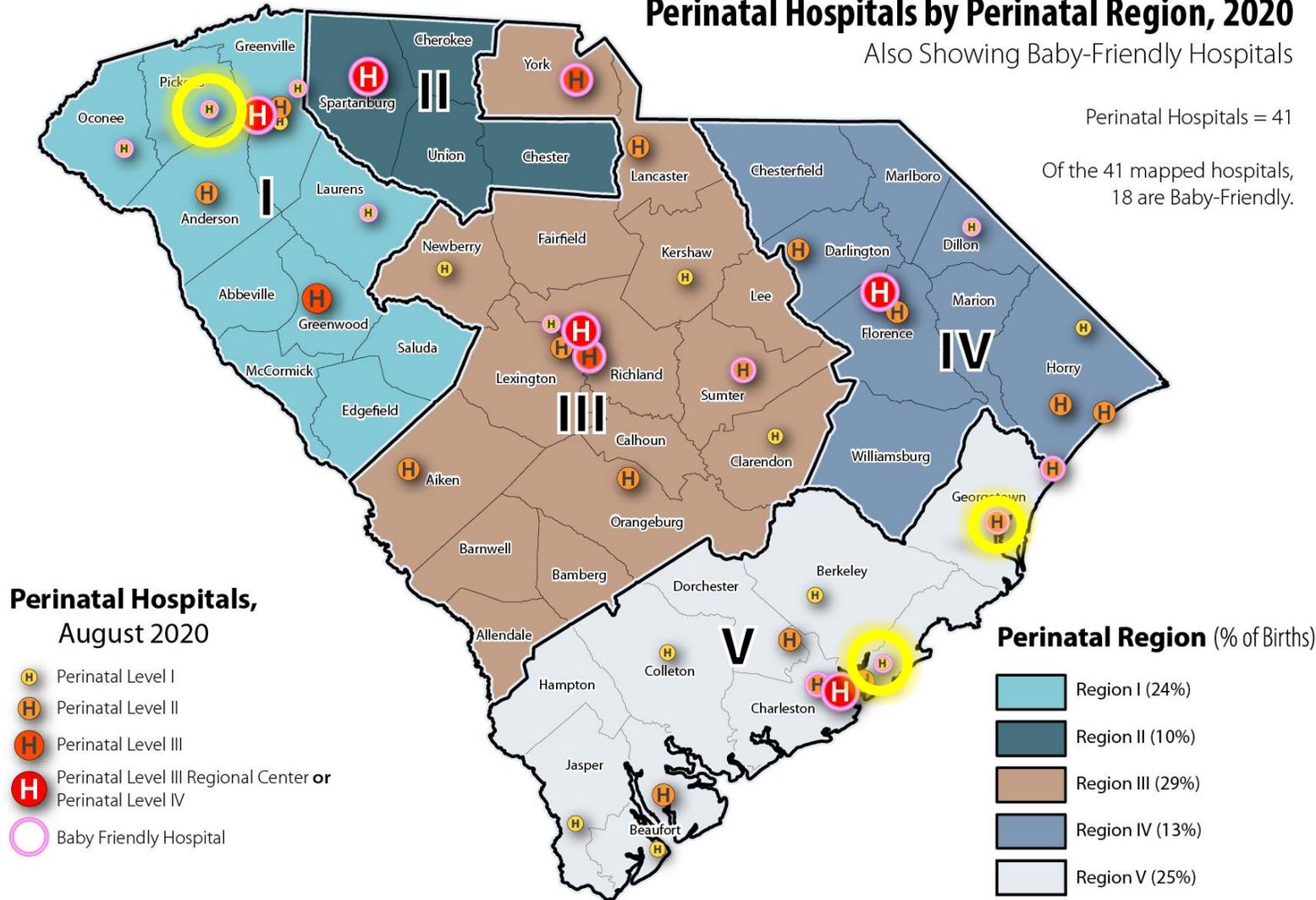
Community & System-Level Contextual Factors

Perinatal Hospitals by Perinatal Region, 2020

Also Showing Baby-Friendly Hospitals

Perinatal Hospitals = 41

Of the 41 mapped hospitals, 18 are Baby-Friendly.



Facility Context of CY2020 Deliveries



There are currently **8 counties in SC that are considered maternity care deserts** defined in CY20 by March of Dimes using HRSA data.

In total, 11 OB units have closed since SCBOI started with only 4 new units opening.

At the start of SCBOI in 2011, SC had 47 hospitals delivering babies. By the end of 2020, this had decreased to 38.



Notes: Georgetown Memorial stopped delivering in September 2020 and Roper St. Francis Mount Pleasant in December 2020. Baptist Easley was on COVID-19 diversion as of April 2020.

CY2020 Delivery & Newborn Snapshots



This section summarizes maternal demographics and delivery and newborn outcomes to provide greater context regarding the characteristics of obstetric and neonatology patients in order to better identify needs for service delivery.

For consideration when interpreting these data:

Additional UB records may be processed for up to 18 months.

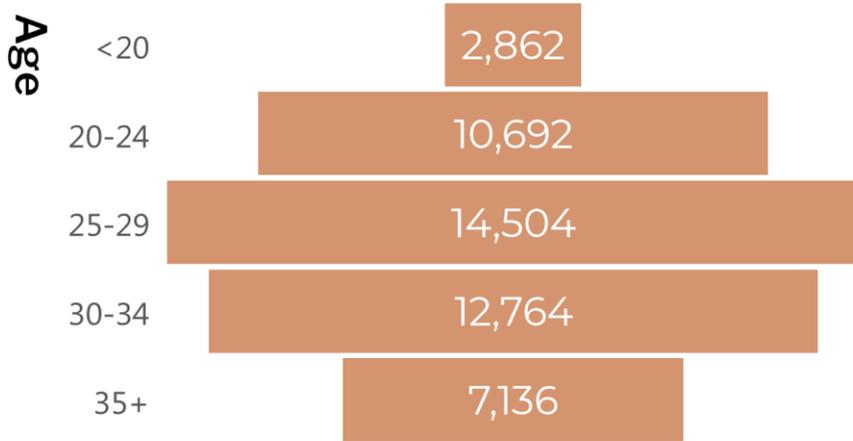
These results reflect SC hospital data and do not include data from freestanding birth centers, home births, or out-of-state hospital births.



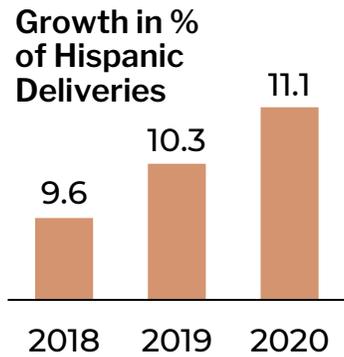
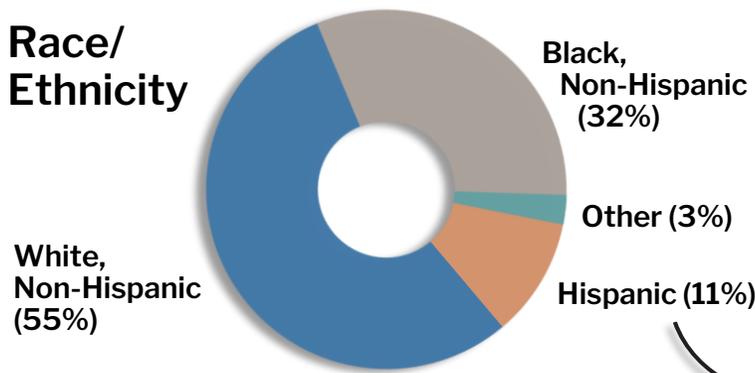


CY2020 Maternal Demographics Snapshot

NOTE: Percentages may not total to 100% due to rounding.



Race/Ethnicity



Residence: Urban vs. Rural



Disease Profile Summary

| | | | |
|--------------------------------------|----------------------------|-------------------|--------------------|
| BEHAVIORAL HEALTH ONLY 16% | CHRONIC ONLY 17% | BOTH 8% | NONE 59% |
|--------------------------------------|----------------------------|-------------------|--------------------|

% With

| | |
|--------------------------|-----|
| Mental Health Conditions | 23% |
| Substance Abuse | 13% |
| Obesity | 17% |
| Cardiovascular Disease | 10% |
| Hypertension | 8% |
| Diabetes | 3% |

Defined by pre-12 months, delivery, and available postpartum ED visits & inpatient stays. Pregnancy-specific conditions are not included in these definitions.



CY2020 Facility & Payer Snapshot

NOTE: Percentages may not total to 100% due to rounding.

PAYER



| | # | % |
|-------------------|--------|----|
| Private | 15,146 | 32 |
| Medicaid | 28,959 | 60 |
| Other | 3,094 | 7 |
| Self-Pay/Indigent | 760 | 2 |

Hospitals PERINATAL LEVEL

| | # | % |
|--------------|--------|----|
| No Level | 492 | 1 |
| Level I | 4,061 | 8 |
| Level II | 25,106 | 52 |
| Level III/IV | 18,299 | 38 |

Hospitals PERINATAL REGION

| | # | % |
|---------------|--------|----|
| Piedmont I | 12,014 | 25 |
| Piedmont II | 3,503 | 7 |
| Midlands III | 13,952 | 29 |
| Pee Dee IV | 5,892 | 12 |
| Low Country V | 12,597 | 26 |





CY2020 Delivery Snapshot

NOTE: Percentages may not total to 100% due to rounding.



Mode of Delivery

| | |
|------------|------------|
| Vaginal | Cesarean |
| 31,925 | 16,033 |
| 67% | 33% |

% Potentially Avoidable Primary Cesareans
 [Among all singleton, non-breech/transverse, non-premature, first-time moms]
27%

Severe Maternal Morbidity
<2%

Induced & Early Elective Deliveries



Induced: **42%**
 Early Elective Induced: **24%**
 Early Elective Delivery: **42%**

Parity

| | | |
|----------------------|--------|-----|
| No prior live births | 18,989 | 40% |
| 1 prior live birth | 15,149 | 32% |
| 2 prior live births | 8,163 | 17% |
| 3+ prior live births | 5,642 | 12% |



CY2020 Newborn Snapshot

NOTE: Percentages may not total to 100% due to rounding.



Gestation



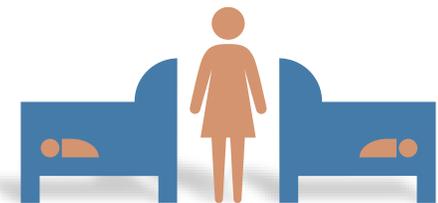
10%



PLURALITY



97%
Singleton



3%
Multiple

Annual Trends



This section's summary results for CY18 to CY20 trend tests are provided to identify both strengths and areas for potential improvement related to SCBOI primary maternal and newborn outcomes.



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Maternal health quality trends

| Measure | 2018-2020 Trend |
|---|--|
| Early Elective Deliveries & Inductions (TJC, PC-01) | |
| Primary C-Section (TJC, PC-02) | |
| Severe Maternal Morbidity | Mixed result: CA Trend test not significant, but adjusted Chi-square test was. |

Note: 3-year trend analysis was conducted using the Cochran-Armitage and adjusted Chi-square tests.

Arrows that are filled denote statistical significance at P<.05.



TAKEAWAY

Early elective deliveries were trending down. More data are needed to see whether this reflects the impact of the pandemic which stopped elective procedures.

Renewed focus on supporting vaginal birth may be needed.

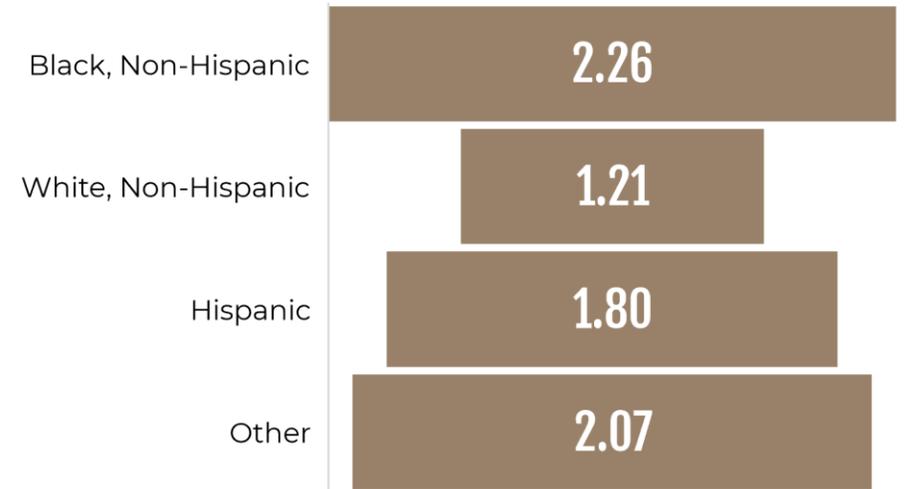
The rate of severe maternal morbidity in CY20 was 1.67%, a decrease from 1.82% in CY18 (8% relative improvement). This may correspond with the state's engagement in AIM.



Select Communities of Opportunity: Maternal Health

- Women experiencing **both** chronic disease and behavioral health had nearly 3x the rate of severe maternal morbidity in CY2020 compared to those with no diagnosis (3.24% v. 1.16%, AOR = 2.67, $p < .0001$).
- Being over the age of 35 was a statistically significant risk factor across several outcomes. For instance, their rate of potentially avoidable primary cesareans was 47% compared to 28% for women ages 25-29 (AOR = 2.30, $p < .0001$).

Severe Maternal Morbidity by Race, %



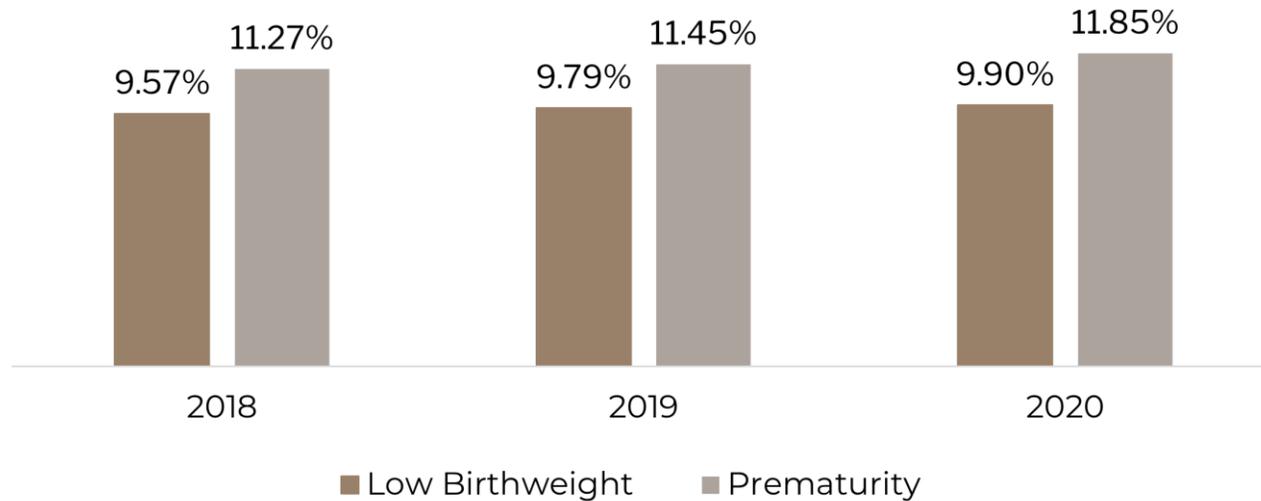
Notes:

Logistic regression models were used to examine CY 2020 between-group rate differences adjusting for age, race, gender, payer, perinatal level, and residence.

Women identifying as Black, Non-Hispanic: AOR = 1.402 $p = 0.0002$; women identifying as Hispanic: AOR = 1.567, $p = 0.0083$)



Newborn Health Quality Trends



Notes: 3-year trend analysis was conducted using the Cochran–Armitage and adjusted Chi-square tests. Logistic regression models were used to examine CY 2020 between-group rate differences adjusting for age, race, gender, payer, perinatal level, and residence.

Arrows that are filled denote statistical significance at P<.05.

| Measure | 2018-2020 Trend |
|-----------|-----------------|
| LBW | ↑ |
| Premature | ↑ |



TAKEAWAY

Both low birthweight and prematurity increased each year from CY2018 to CY2020. The increase in premature births was statistically significant.

Select Communities of Opportunity:

Women identifying as Black, Non-Hispanic race also had 2x the odds of having a low birthweight baby than women identifying as White in CY2020 (AOR = 2.06, p<.0001).

Women residing in rural areas had slightly higher rates of LBW as well (AOR = 1.12, p = 0.0032).

The rate of premature births paid for by Medicaid was 14% compared to 9% for private insurance (AOR = 1.32, p<.0001).



SCBOI Data Portal

- Preliminary data through March 2021 are now live on the SCBOI Data portal.
- **New enhancements:**
Adding residence filter to the newborn dashboard and direct access to the VOICES/VOCES project and SCBOI GeoEScan[®].

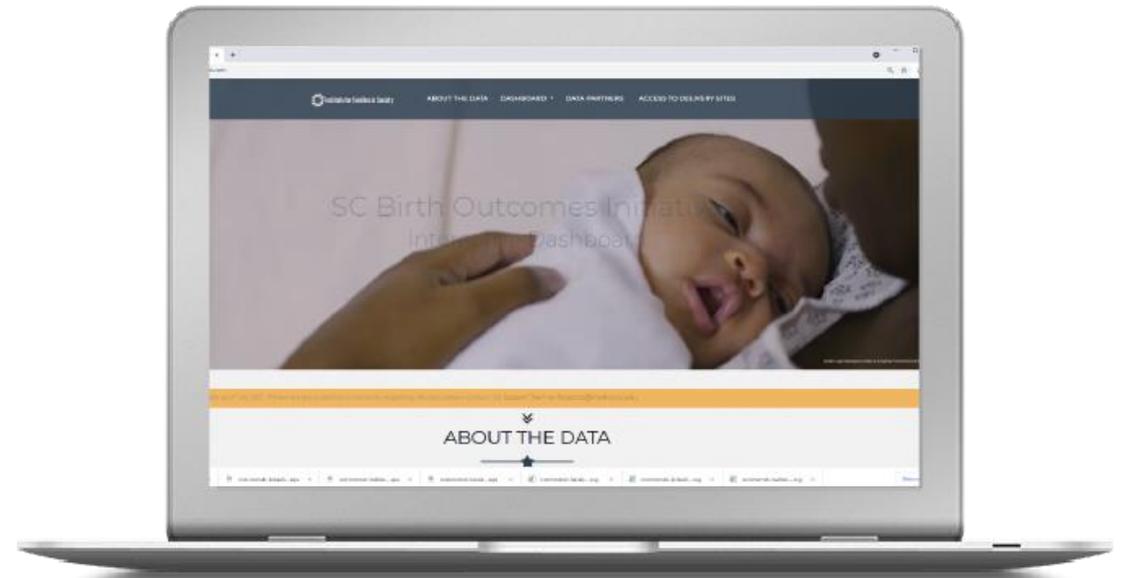
To view additional data through March 2021, visit <https://boi.ifsreports.com>.

To gain hospital access to the SCBOI portal:

Aunyika Moonan, PhD, CPHQ

Executive Director, Data & Measurement
South Carolina Hospital Association

AMoonan@scha.org



Condition Profile



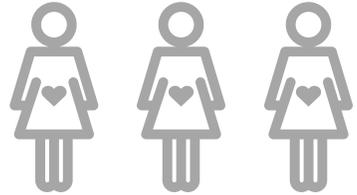
For consideration when interpreting these data:

Outpatient and drug prescription data are not included in the definition for chronic disease and behavioral health.

In the CY2020 snapshot, the chronic disease and behavioral health rates reflect postpartum data that will not fully close until CY2021 data are complete. For this reason, we have chosen to highlight complete outcomes for CY2019 deliveries in this section.

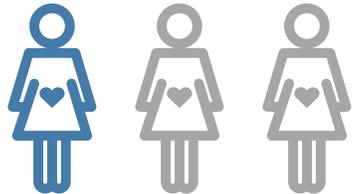


Chronic Disease & Behavioral Health



About **1 in every 4** pregnancies had at **least 1** hospitalization with chronic conditions (CC) or behavioral health diagnoses (BH).

About **1 in every 3** pregnancies with Medicaid had **at least 1 hospitalization** with these same conditions.



1 in 6 had either **CC OR BH**.



1 in 13 had **both**.

Those with comorbidities (both CC & BH) had the highest number of hospitalizations (ED visits & IP stays).



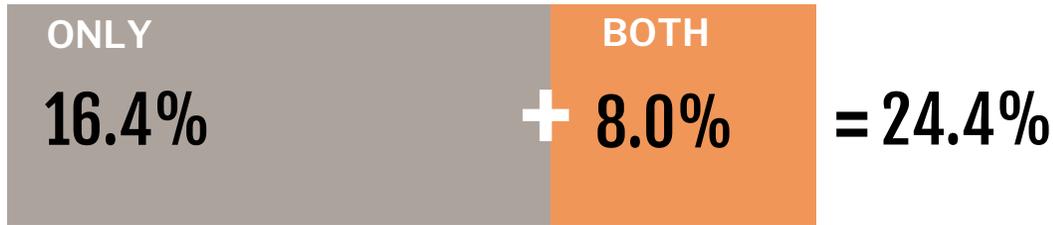


Chronic Disease & Behavioral Health (cont'd.)

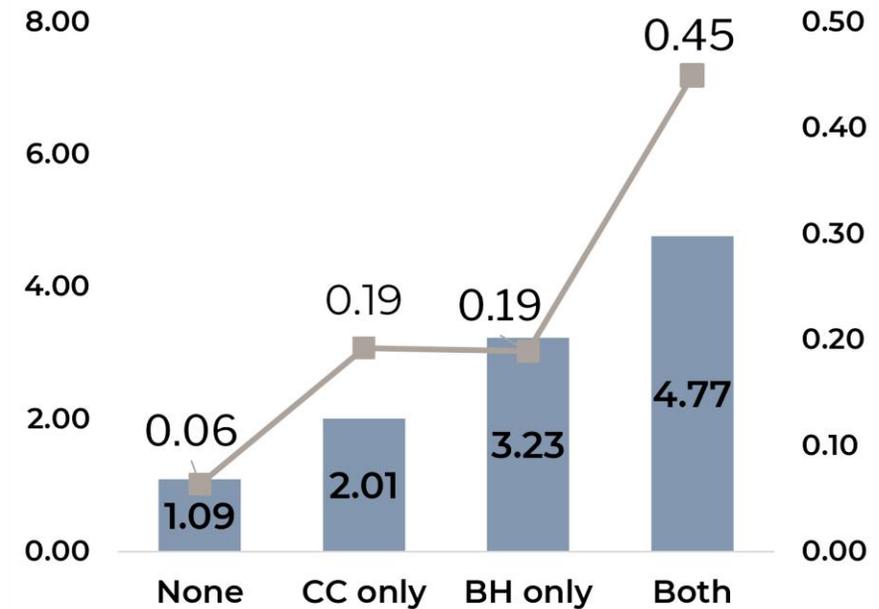
CHRONIC CONDITION



BEHAVIORAL HEALTH



Mean Hospitalizations ALL PAYERS



ED Visits

IP Stays
(Excluding Delivery)



Chronic Disease & Behavioral Health & Birth Outcomes

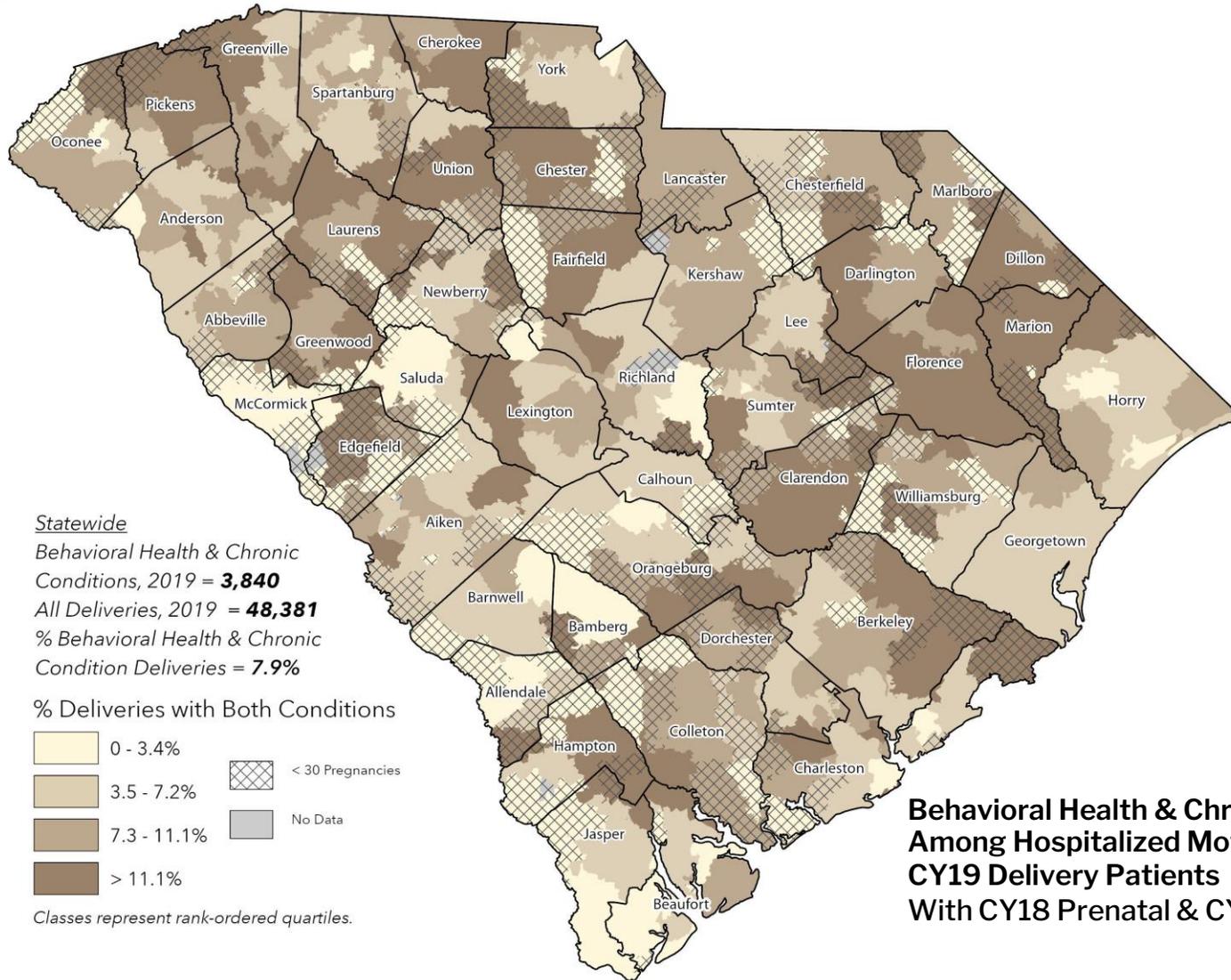


The adjusted odds of having a low birthweight baby in the **both group** were 1.9x that of the none group ($p < .0001$).

For prematurity, they were 2.4x.



Residence for Pregnancies With ED Visits or Inpatient Stays for Both Chronic Disease & Behavioral Health



Behavioral Health & Chronic Conditions Among Hospitalized Mothers By ZCTA, CY19 Delivery Patients With CY18 Prenatal & CY20 Postpartum Claims

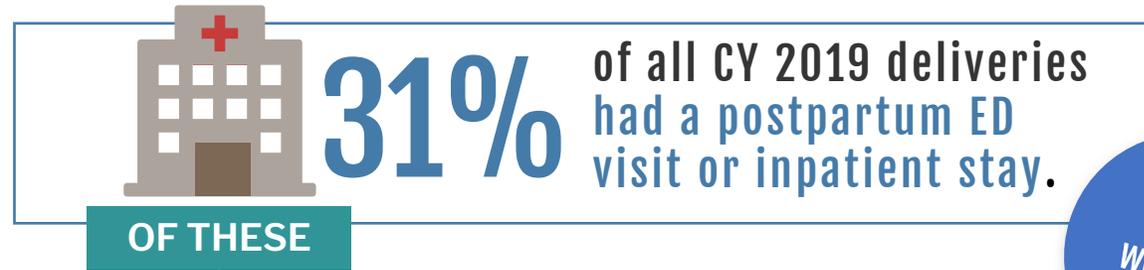


TAKEAWAY

Based on maternal residence, areas shaded in the darkest brown had greater than 11.1% of their deliveries with an ED visit or inpatient stay with primary or secondary codes for both chronic disease and behavioral health.



Postpartum Depression & Anxiety



>80% of claims were >56 days pp.

About 1 in 13 had postpartum anxiety.



1 in 14 had postpartum depression.



1 in every 5 hospitalizations with postpartum depression had **suicide ideation or attempt**.



1 in 2 deliveries with postpartum depression had **postpartum anxiety**.



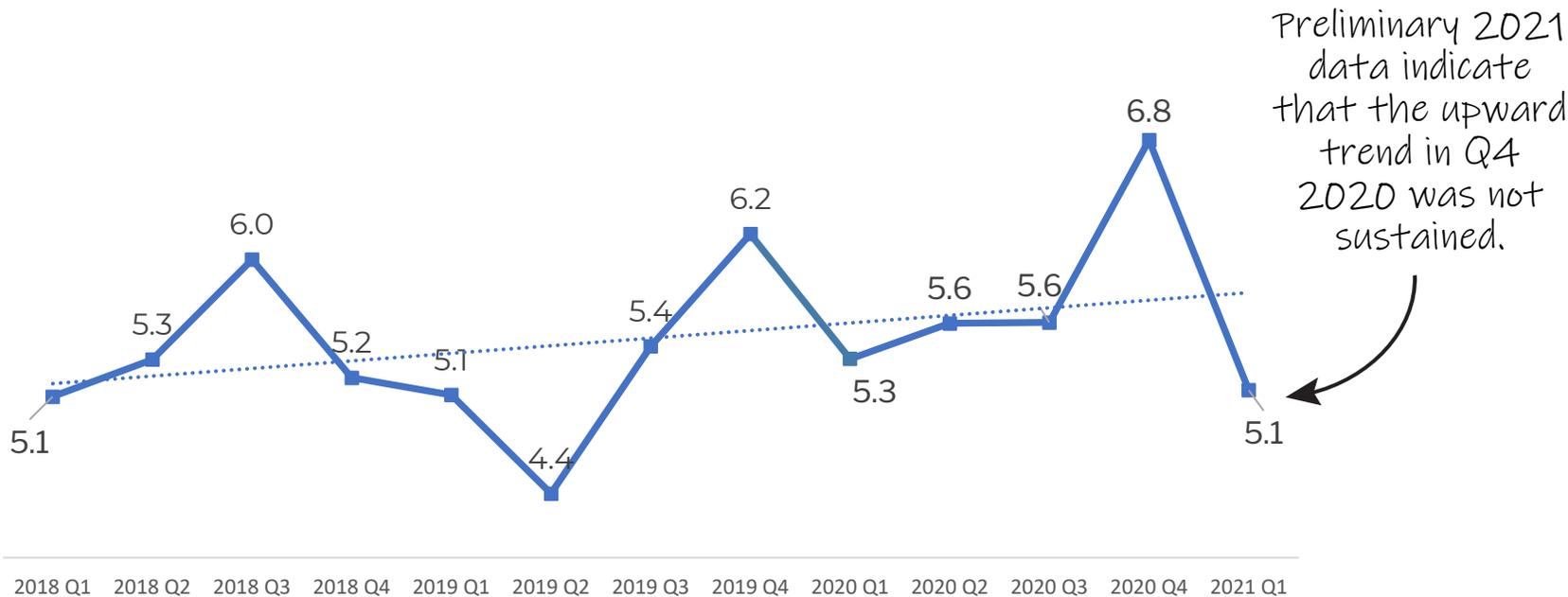
Note: Clinical condition defined by having a primary or secondary diagnosis or DRG on a UB record.



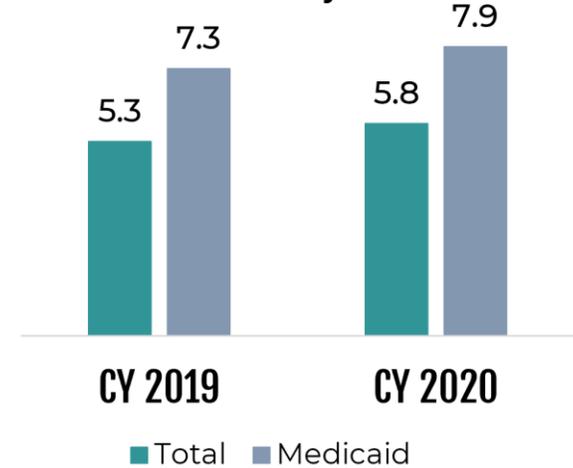
Neonatal Abstinence Syndrome

Incidence per 1,000 newborns

ANY PRIMARY OR SECONDARY DX CODE WITHIN 7 DAYS OF P96.1 – NEONATAL WITHDRAWAL SYMPTOMS FROM MATERNAL USE OF DRUGS OF ADDICTION



NAS Incidence by Year



TAKEAWAY

Trends pre- and post-COVID were not statistically significant.

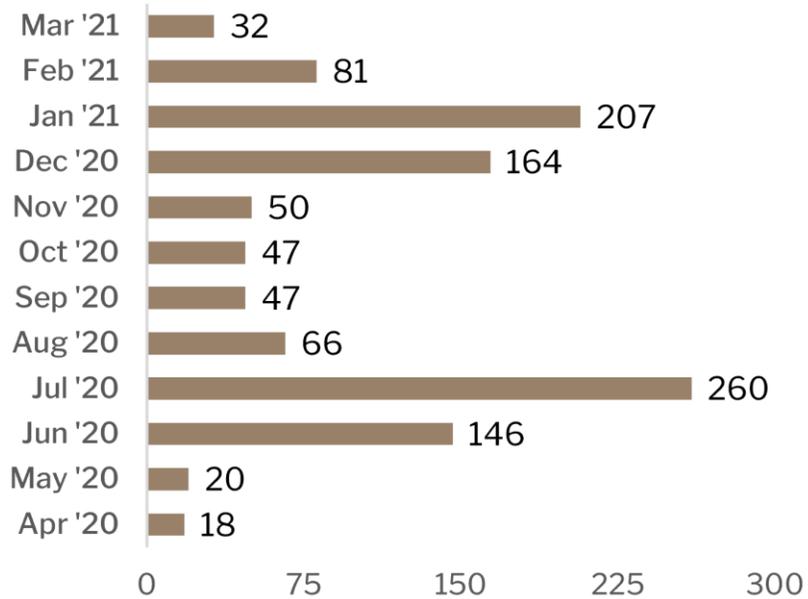
Medicaid recipients' rates were 2% higher, which may reflect targeted efforts to treat NAS infants within the Medicaid program.



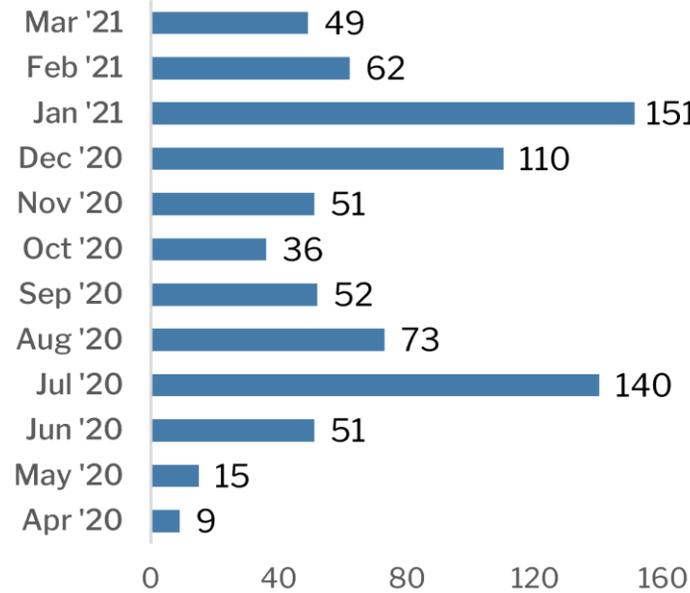
COVID-19: First Year of the Pandemic

Total number of ED Visits or IP Stays = 1,937
Total number of patients = 1,653

ED Visits



Inpatient Stays



Total ED + IP



TAKEAWAY

The number of visits was highest in July 2020 (N = 400), followed by January 2021 (N=358) and December 2020 (274).

OF THESE VISITS:

- 27% of the obstetric patients were prenatal;
- 31% were at the time of delivery;
- 37% were postpartum visits; and
- 5% were in 2+ time periods.

Medicaid paid for 75% of the visits.

30% of inpatient stays were 4+ days.

Medicaid Initiatives



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Screening, Brief Intervention, and Referral to Treatment (SBIRT) CY2020

- A cohort of 7,969 pregnant SBIRT patients qualifying for Medicaid was pulled.
 - Of these, **16%** of screened patients screened positive (1 in 6 screened women).
 - Of those who also had a brief intervention, **nearly half were referred** for treatment (48%).
 - However, the number of patients who had both a positive screen and brief intervention was **very low** (N = 424).





Hospital Initiatives

Centering

Currently, there are 19 practices (14 accredited). This is a decrease from 24 in CY2019.

The number of patients served during CY2020 was lower due to the impact of the pandemic on in-person gatherings.

Baby-Friendly

Currently there are 18 compared to 14 in 2019.

Of these, 4 were re-designated and 1 has a designation pending.



Access to Contraceptive Care: Any Mostly or Moderate Method CY2019 & CY2020 Medicaid Beneficiaries

Note: These HHS Office of Population Affairs Contraceptive Care Performance Measures were run for two populations: *All women of reproductive age* (continuously enrolled and family planning waiver recipients) and *postpartum women*, defined as 3-days or 60-days postpartum, regardless of enrollment status.

Any Mostly or Moderately Method (CY19)

| Measure | 3 Days PP | 60 Days PP | All Women |
|------------|-----------|------------|-----------|
| Ages 15-20 | 13.0% | 48.7% | 35.3% |
| Ages 21-44 | 19.2% | 47.7% | 37.5% |

Any Mostly or Moderately Method (CY20)

| Measure | 3 Days PP | 60 Days PP | All Women |
|------------|------------------|------------------|------------------|
| Ages 15-20 | 13.0% (-0.0%) | 46.8% (-1.9%) | 31.1% (-4.2%) |
| Ages 21-44 | 18.3% (-0.9%) | 45.7% (-2.0%) | 32.8% (-4.7%) |

Family planning counseling is a key component of interconception care. More than half of postpartum patients did not have a claim for any reliable method within 60 days postpartum.



Access to Contraceptive Care: Long-Acting Reversible Contraception (LARC)

CY2019 and CY2020 Medicaid Beneficiaries

| LARC (CY19) | | | | LARC (CY20) | | | |
|-------------|-----------|------------|-----------|-------------|-----------------|------------------|-----------------|
| Measure | 3 Days PP | 60 Days PP | All Women | Measure | 3 Days PP | 60 Days PP | All Women |
| Ages 15-20 | 9.4% | 18.7% | 4.4% | Ages 15-20 | 9.1% (-0.3%) | 17.2% (-1.5%) | 3.4% (-1.0%) |
| Ages 21-44 | 6.4% | 14.1% | 5.6% | Ages 21-44 | 5.9% (-0.5%) | 13.1% (1.0%) | 4.4% (-1.2%) |

In all categories, CY20 LARC rates decreased compared to CY19 likely due to the pandemic. The decrease was greater for all beneficiaries versus postpartum patients.



Obstetric Hemorrhage AIM Patient Safety Bundle Survey



All 31

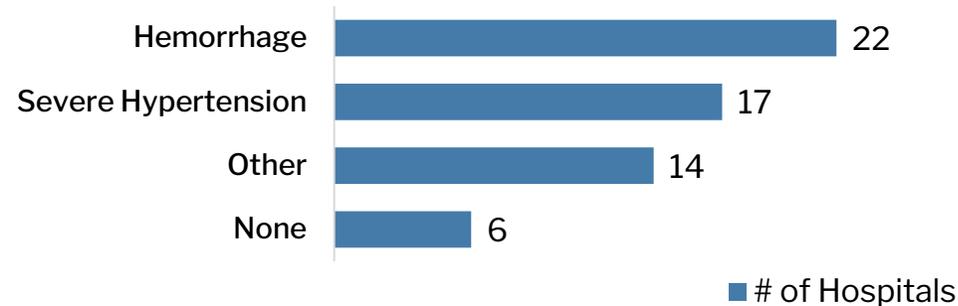
respondents answered that their hospitals have OB hemorrhage supplies readily available, typically in a cart or mobile box.

**Almost
1/2**

of respondents said **that 100% of patients had a hemorrhage risk assessment performed at least once** between admission and birth.



Topics Covered in OB Drills



The survey was administered August–September 2021 as part of data collection for AIM process and structural measures.

There was an 82% completion rate out of 38 hospitals surveyed.

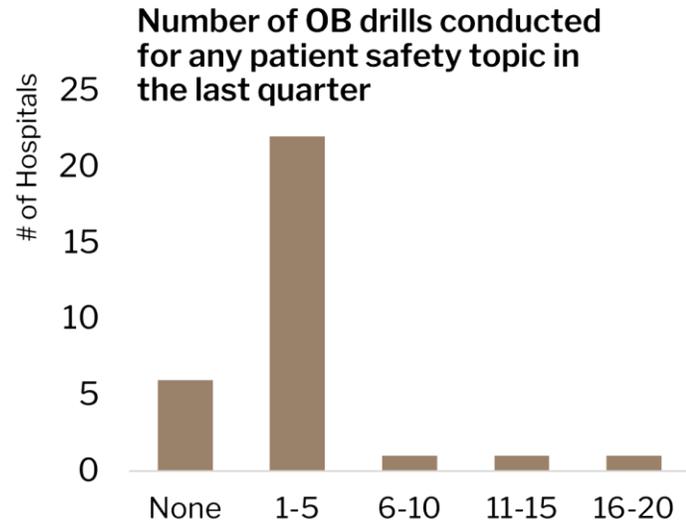
Results were successfully uploaded to AIM Data in October.



Obstetric Hemorrhage AIM Patient Safety Bundle Survey

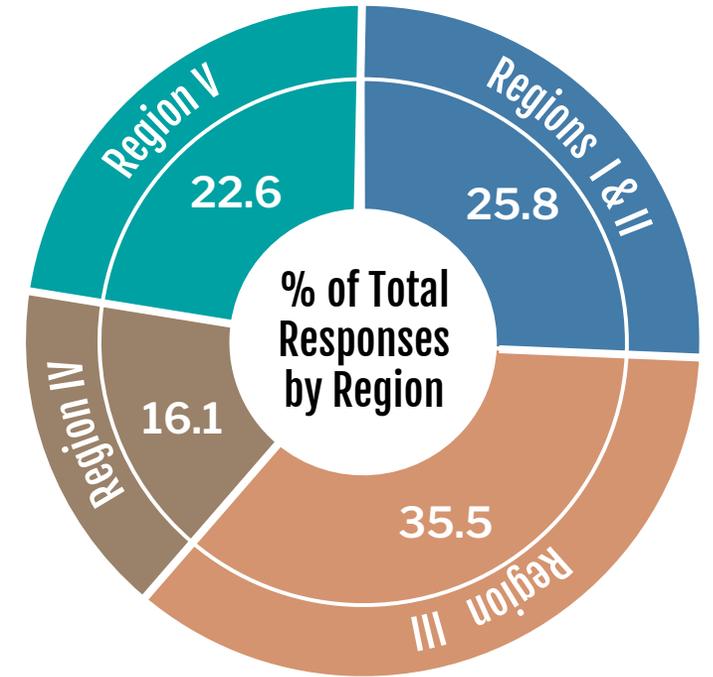
1 in 5

respondents said their hospital **did not** develop OB specific resources and protocols to support patients, family and staff through major OB complications



30%

of respondents were unsure what cumulative proportion of OB physicians and midwives completed an education program on Obstetric Hemorrhage within the last two years



Of the 7 hospitals that **did not** respond, 14% were Perinatal Level I, 57% were Perinatal Level II, and 29% were Perinatal Levels III/IV.

Regions IV & V had the lowest response rates with 71% and 70%, respectively.



MEDICAID INITIATIVES

Postpartum Care HEDIS Rates, CY2020

Statewide Reported Rate: 64.1%
(15,192 / 23,687) * 100

ZCTA
Count Rates

| | | |
|-----|--------------------------|------------|
| 168 | 0.00 - 63.34 | P10 |
| 18 | 63.35 - 64.14 | SC Average |
| 106 | 64.15 - 71.30 | P25 |
| 49 | 71.31 - 76.40 | P50 |
| 18 | 76.41 - 80.89 | P75 |
| 28 | 80.90 - 100.00 | |
| 39 | No Data | |
| 184 | < 30 Eligible Population | |

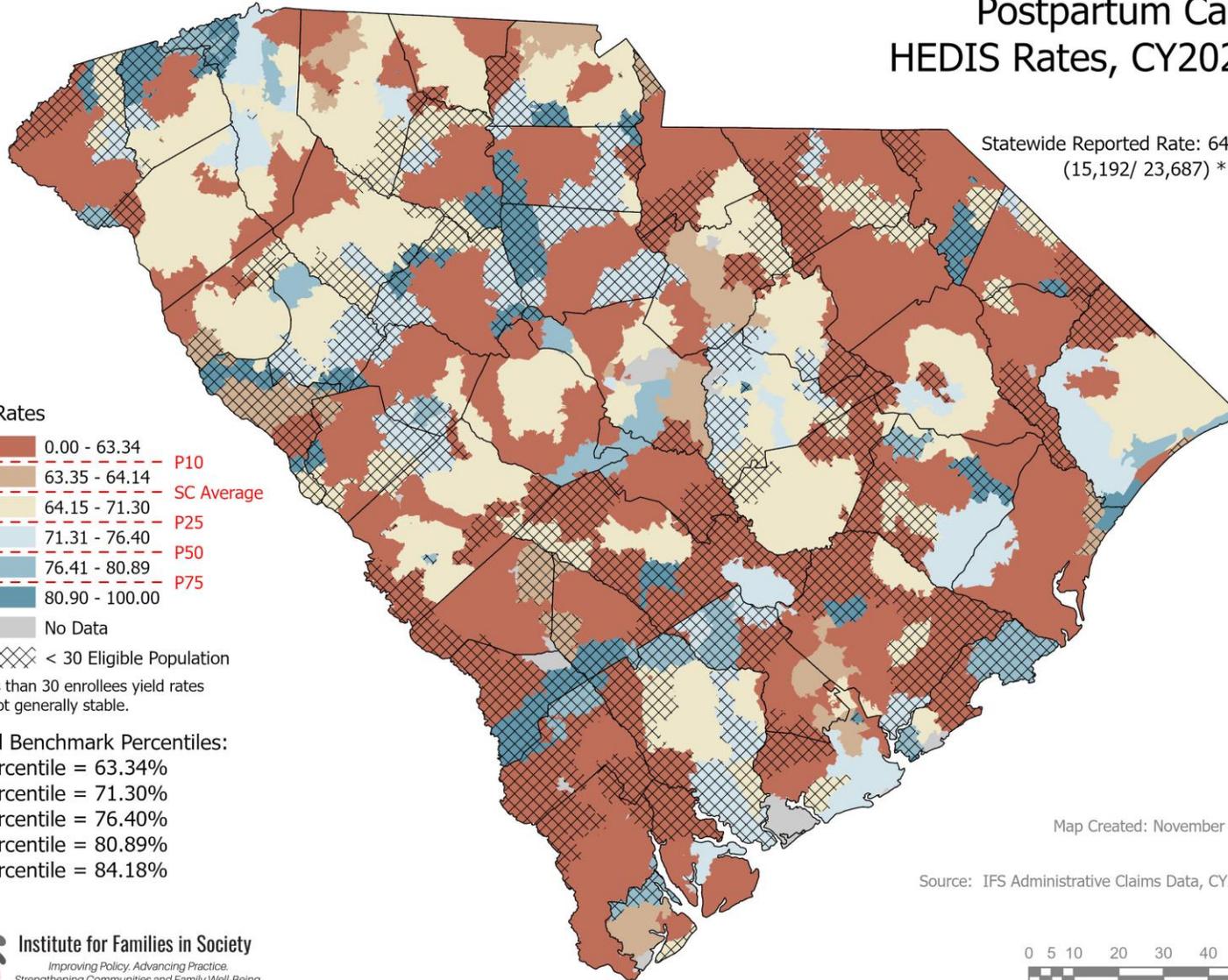
Note: Less than 30 enrollees yield rates that are not generally stable.

National Benchmark Percentiles:

- 10th Percentile = 63.34%
- 25th Percentile = 71.30%
- 50th Percentile = 76.40%
- 75th Percentile = 80.89%
- 90th Percentile = 84.18%



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Map Created: November 2021

Source: IFS Administrative Claims Data, CY2020

SC Postpartum Care Learning Collaborative



TAKEAWAY

As of July 1, 2021, Medicaid beneficiaries qualifying due to their pregnancy are eligible for an extension of coverage from 60 days to 12 months postpartum.

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More information regarding this measure, may be read here:

<https://www.ncqa.org/hedis/measures/prenatal-and-postpartum-care-ppc>.

Celebration



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10
YEAR SCBOI
Anniversary!



Celebrating 10 Years of the South Carolina Birth Outcomes Initiative



- 20 milk depots are in SC as of 2021. In 2011, there were zero.
- Fewer babies are being born too soon. There was a 7% relative decrease in early elective deliveries from 2018 to 2020.
- 18 hospitals are now certified as Baby-Friendly[®]. In 2011, there were zero.



Celebrating SCBOI...



- CenteringPregnancy group prenatal care sites have increased from 2 to 19.
- Moms enrolled in SC Medicaid and opting for immediate postpartum implantation of a long-acting removable contraceptive (LARC) has seen a nearly 4X increase.



Celebrating SCBOI...



- Nearly 8,000 women in SC Medicaid received Screening, Brief Intervention, and Referral to Treatment (SBIRT) assessments in 2020.
- There has been an 8% relative improvement in the rate of severe maternal morbidity in SC from 2018 to 2020.



Celebrating SCBOI...



- Despite SC hospitals serving more than 1,600 COVID-19 perinatal patients during the first year of the pandemic, **SCBOI continued to thrive virtually and launched two new initiatives:** SC Alliance for Innovation on Maternal Health (SC AIM) and the SC Postpartum Care Learning Collaborative (SCPCLC).

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