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South Carolina Maternal and Infant Health Data Snapshot

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South Carolina Institute of Medicine & Public Health
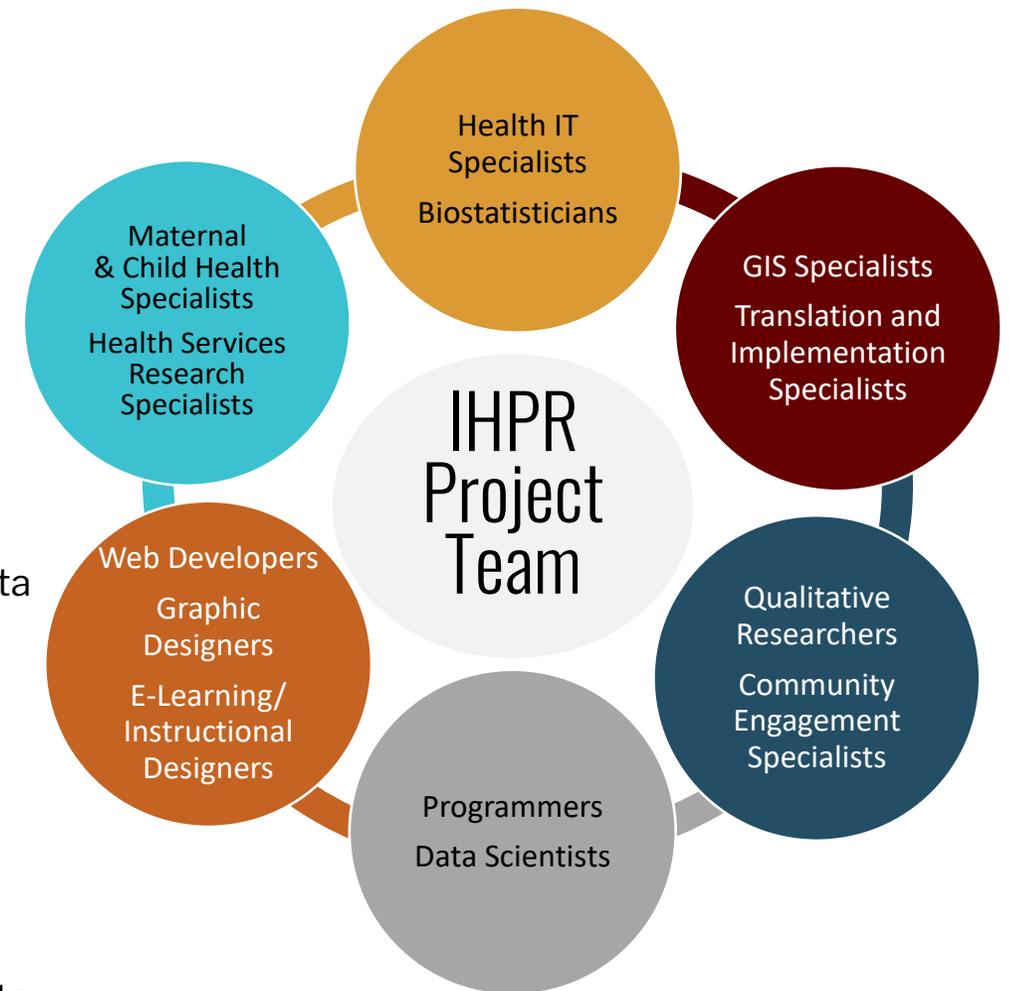2025 Health Policy Summit
January 13, 2025

ACKNOWLEDGEMENTS

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- Health IT Specialists / Biostatisticians
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CONTENTS

❖ SC Maternal and Infant Health Data Snapshot

- Maternal & Infant Health Landscape

- SMM Outcomes

- South Carolina Maternal Morbidity and Mortality Review Committee (SCMMMRC)

- Access to Care

- Takeaways

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MATERNAL & INFANT HEALTH LANDSCAPE

DATA FROM CY 2023

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SC MATERNAL & INFANT HEALTH LANDSCAPE

- Since 2012, **13** labor and delivery units have closed with **1 in 4** hospitals (25%) currently not a birthing facility.

- Over half of counties in SC represent a medically underserved area (MUA).

    - Nearly 2 in 5 counties in SC had low access to maternity care or were a **maternity care desert** (March of Dimes, 2023).

- SC has one of the **top 5 highest maternal vulnerability** rates in the nation driven by high physical health and SES needs. Many high MVI areas have no birthing facility.

- Among publicly reported states, SC **ranks 8th nationally** in maternal mortality.

- Results of a recent SC AIM survey administered by IFS with the support of SCDHHS, in which 76% of birthing facilities responded (January-February 2024), report lack of **ED provider training, low staffing, limited resources, and physician buy-in** as barriers to care.

Maternal Vulnerability Index by ZCTA with Birthing Hospitals

Upstate

Midlands

Pee Dee

Lowcountry

August 2024

Source: Maternal Vulnerability Index by ZCTA2020, Surgo Ventures

Legend

- ▫ Birthing hospital

Maternal Vulnerability Index
- ▢ Low
- ▨ Moderate
- ▨ High
- ▧ ZCTA with no deliveries
- ▨ Region not a ZCTA, no population
- ▭ Perinatal Regions

Note: Class breaks are represented by natural breaks.

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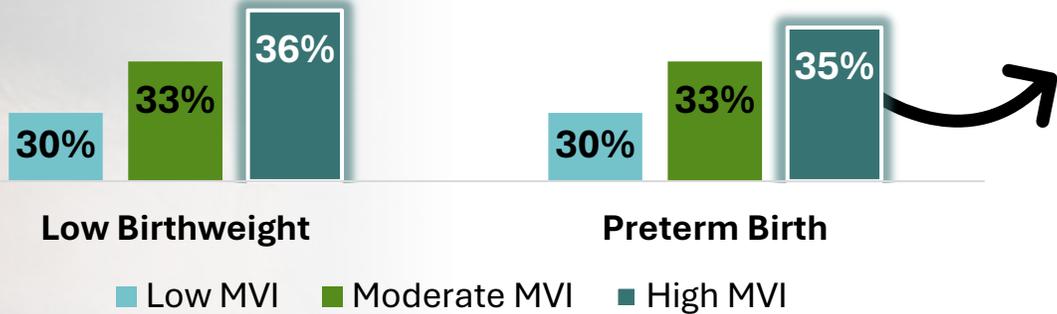Institute for Families in Society at the University of South Carolina

MATERNAL VULNERABILITY INDEX SNAPSHOT

What is the Maternal Vulnerability Index?

The US Maternal Vulnerability Index (MVI) measures vulnerability for adverse maternal health outcomes across reproductive, physical, mental health/substance abuse, and general healthcare, socioeconomic determinants, and physical environment.

Low Birthweight and Preterm Birth by MVI (CY 2023)

Low Birthweight
- Low MVI: 30%
- Moderate MVI: 33%
- High MVI: 36%

Preterm Birth
- Low MVI: 30%
- Moderate MVI: 33%
- High MVI: 35%

■ Low MVI ■ Moderate MVI ■ High MVI

High MVI had **23%** higher odds of **preterm birth** (aOR=1.23), and **31%** higher odds of **low birthweight** (aOR=1.31) compared to low MVI.

Top Three Factors with a High Distribution among the High MVI Group

- Residing in a rural area (63%)
- Having less than a high school education (42%)
- Being younger <20 (46%)

SMM at Delivery or Postpartum by MVI (CY 2022)

- High Vulnerability: 2.4%
- Moderate Vulnerability: 2.0%
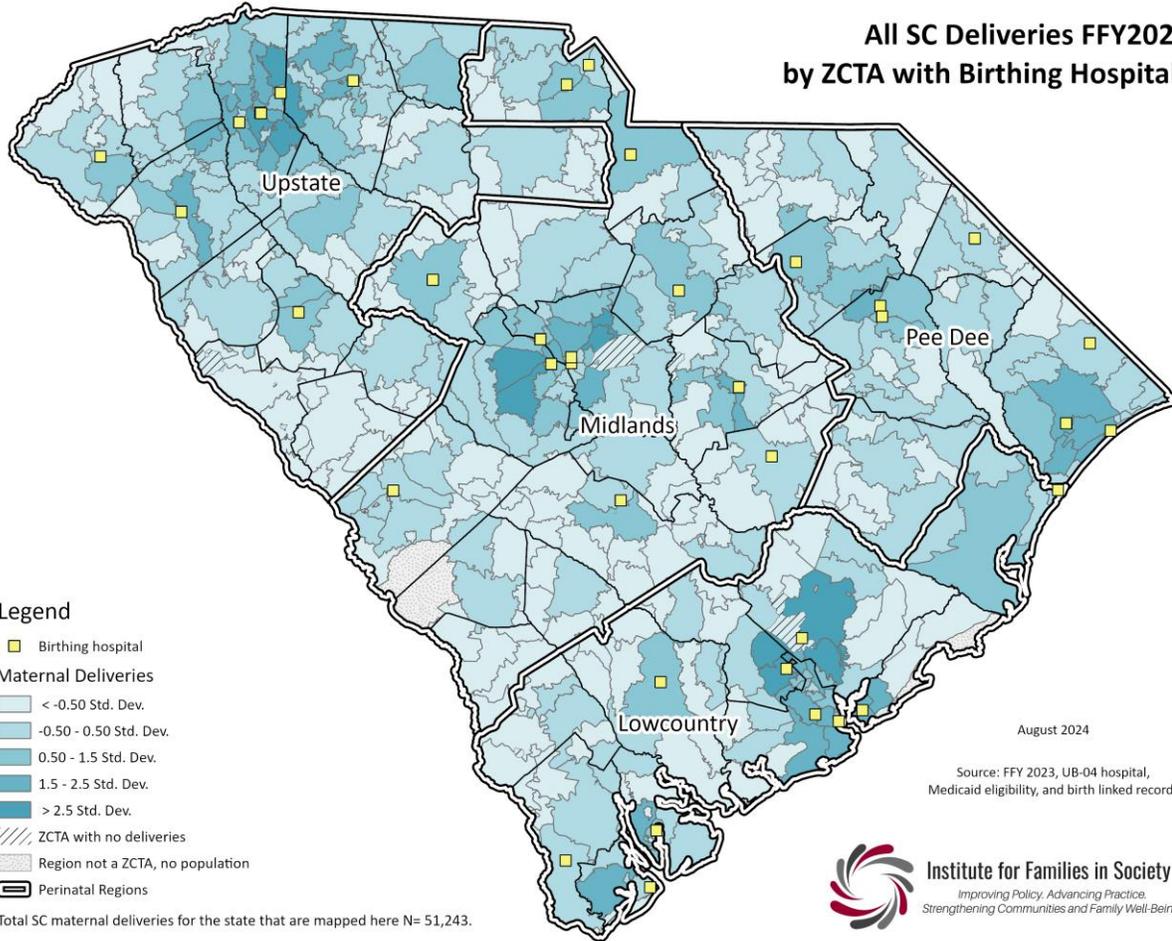- Low Vulnerability: 1.7%

When assessing maternal outcomes by vulnerability, **those with high MVI had higher rates of SMM** during delivery or postpartum. This trend was **also seen when observing rates of ICU** (N=109 for high MVI vs. N=64 for low MVI) **and postpartum inpatient stays** (5.1% for high MVI vs. 3.8% for low MVI).

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DELIVERIES ACROSS COMMUNITIES IN SOUTH CAROLINA

All SC Deliveries FFY2023 by ZCTA with Birthing Hospitals

Upstate

Pee Dee

Midlands

Lowcountry

August 2024

Source: FFY 2023, UB-04 hospital, Medicaid eligibility, and birth linked records

Legend

- Birthing hospital

Maternal Deliveries
- < -0.50 Std. Dev.
- -0.50 - 0.50 Std. Dev.
- 0.50 - 1.5 Std. Dev.
- 1.5 - 2.5 Std. Dev.
- > 2.5 Std. Dev.
- ZCTA with no deliveries
- Region not a ZCTA, no population
- Perinatal Regions

Total SC maternal deliveries for the state that are mapped here N= 51,243.

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RURAL HEALTH TAKEAWAY

Urban areas and higher designation hospitals see the greatest volume of deliveries. Key facts regarding delivery patients residing in rural areas include:

Residence

Urban: 73%

Rural: 26%
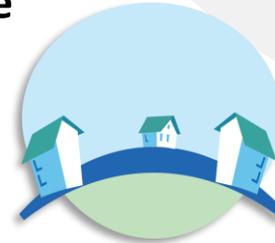
Women of color comprised roughly **41%** of deliveries among rural residents.

Represented 1 in 4 severe maternal morbidity events.

1,787
Babies born prematurely to mothers in rural areas.

Medicaid paid **71%** of rural deliveries (vs. 60% statewide).

19% had a perinatal mental health diagnosis.

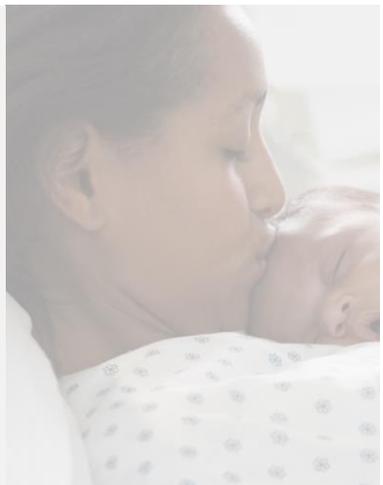# DELIVERY CHARACTERISTICS
(CY 2023)

SC QUICK FACTS

- 3 out of every 5 deliveries was paid for by Medicaid.
- 1 in 5 women received inadequate prenatal care.
- Approximately 1 in 10 delivered premature or had a low birthweight baby.
- Roughly 1 in 4 had a potentially avoidable cesarean.
- Nearly 1 in 5 were ages 35 or older.

~37% High School/ GED or less

Race/Ethnicity

55% White-NH
29% Black-NH
14% Hispanic
3% Other-NH

■ White-NH   ■ Black-NH   ■ Hispanic   ■ Other-NH

Premature Delivery

12% % Medicaid
14% % Black-NH
9% % Hispanic
11% % Rural

Low Birthweight Delivery

11% % Medicaid
15% % Black-NH
7% % Hispanic
10% % Rural
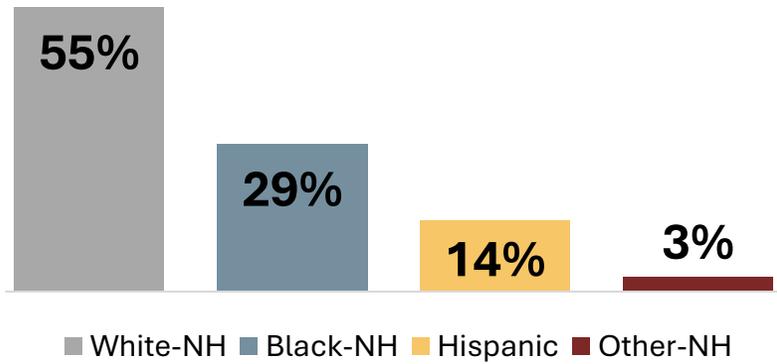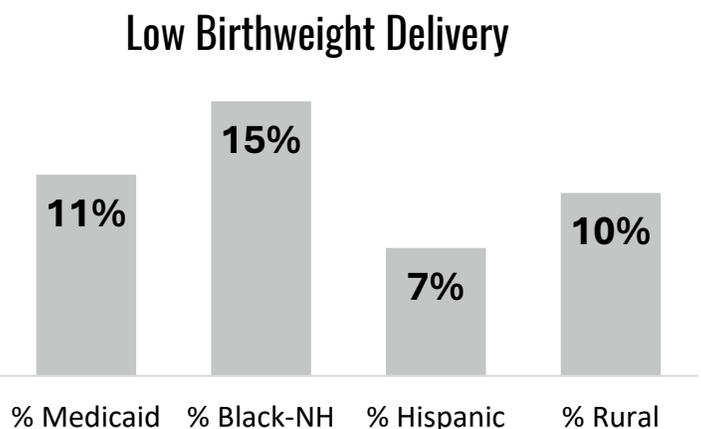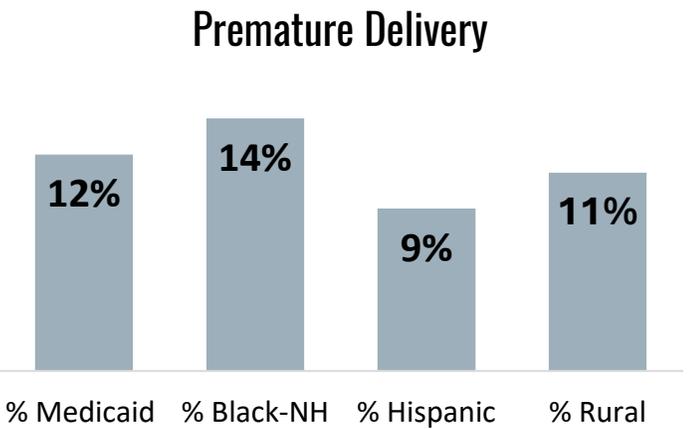
Disparities in premature and low birthweight deliveries were predominantly seen among Black-NH patient and Medicaid beneficiaries.

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NEWBORN OUTCOMES

Statewide Rate (CY 2023)

- Low Birthweight: 10%
- Preterm Birth: 11%
- Preterm Births Among Cardiac Conditions: 20%

Disparities were present for all newborn outcomes, with the highest rates seen for **preterm births among cardiac conditions**.

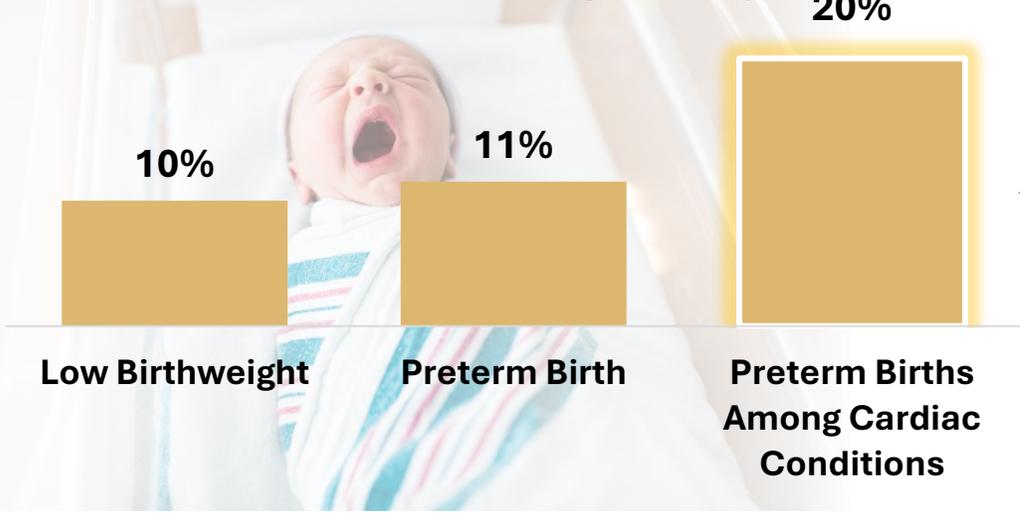|	
High Maternal Vulnerability Index (MVI)	22%
Inadequate prenatal care	31%
Co-occurring PH/BH health condition	24%
Medicaid	25%
Black, NH	35%
> 35 years	24%
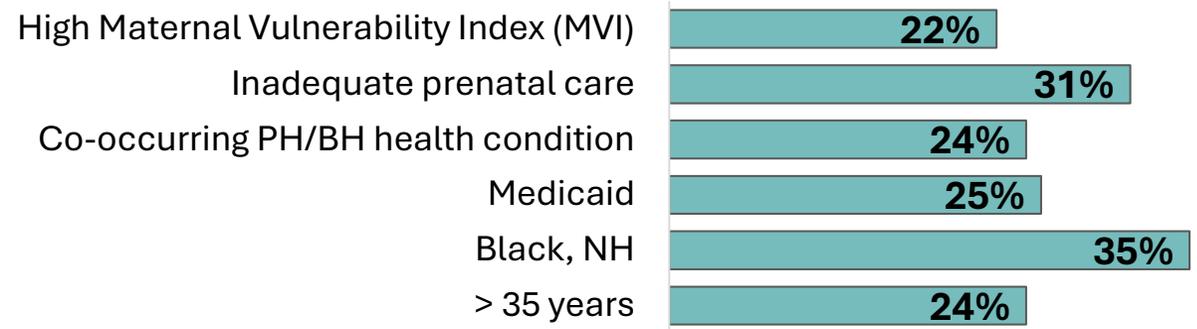
PC-06 Unexpected Newborn Complications

1 in 7 SC newborns have unexpected complications (89.6% moderate, 1.5% severe, 8.8% both).

TOP 3 CONDITIONS	%
Moderate Respiratory Complications with Length of Stay (LOS)	45%
Moderate Respiratory Complications with LOS procedures	25%
Moderate Birth Trauma with LOS	22%

Compared to the CY 2023 statewide rate (14%), **disparities** were seen among those:

- >35 years of age (15%)
- who delivered via cesarean (18%)
- with perinatal obesity (16%)
- with co-occurring PH/BH health conditions (17%)

SMM OUTCOMES
DATA FROM CY 2023

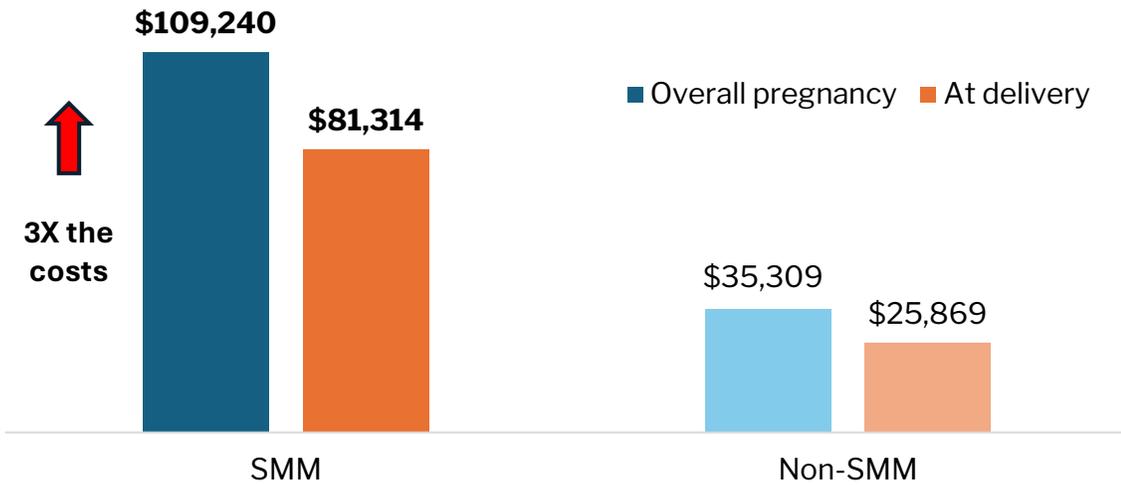Severe Maternal Morbidity (SMM) represents unexpected outcomes of labor and delivery that can result in short or long-term consequences. It reflects 20 conditions of severity and near missed events as defined by the Alliance for Innovation on Maternal Health (AIM).

SMM VS. NON-SMM CHARACTERISTICS
(CY 2023)

Mean Charges

$109,240 — SMM, Overall pregnancy
$81,314 — SMM, At delivery

■ Overall pregnancy ■ At delivery

3X the costs

$35,309 — Non-SMM, Overall pregnancy
$25,869 — Non-SMM, At delivery

SMM | Non-SMM

SMM Trend

1.0% — CY 2021
0.9% — CY 2022
1.1% — CY 2023

7% ↑

- *36%* increase among SMM/Perinatal Mental Health Conditions*
- *52%* increase among SMM/Severe Hypertension*
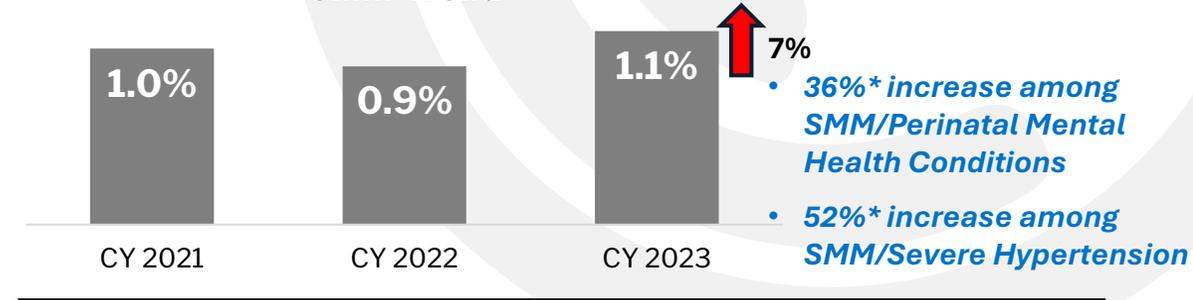
SMM Delivery Disparities

63% — Medicaid Deliveries
39% — Black - NH
14% — Hispanic
24% — Rural

Rates are **higher** than the delivery make-up for:
Medicaid = 60%
Black-NH = 29%
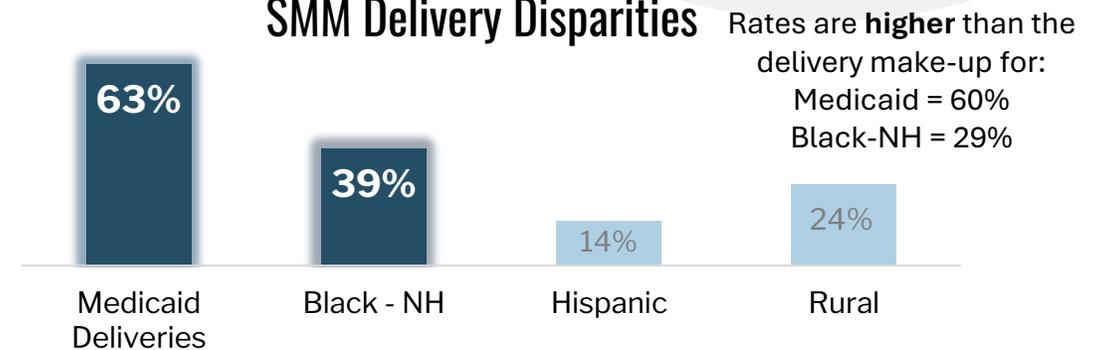
In a 2023 study, SC ranked 6th in the nation for SMM among individuals with Medicaid insurance.

(Admon et al.)

SMM deliveries are seen at a higher rate among Black-NH patients, those 35-54 years old, Medicaid beneficiaries, and those with co-existing physical and behavioral health conditions.

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CLINICAL DRIVERS OF SMM
(CY 2023)

Co-occurring Conditions among SMM Deliveries

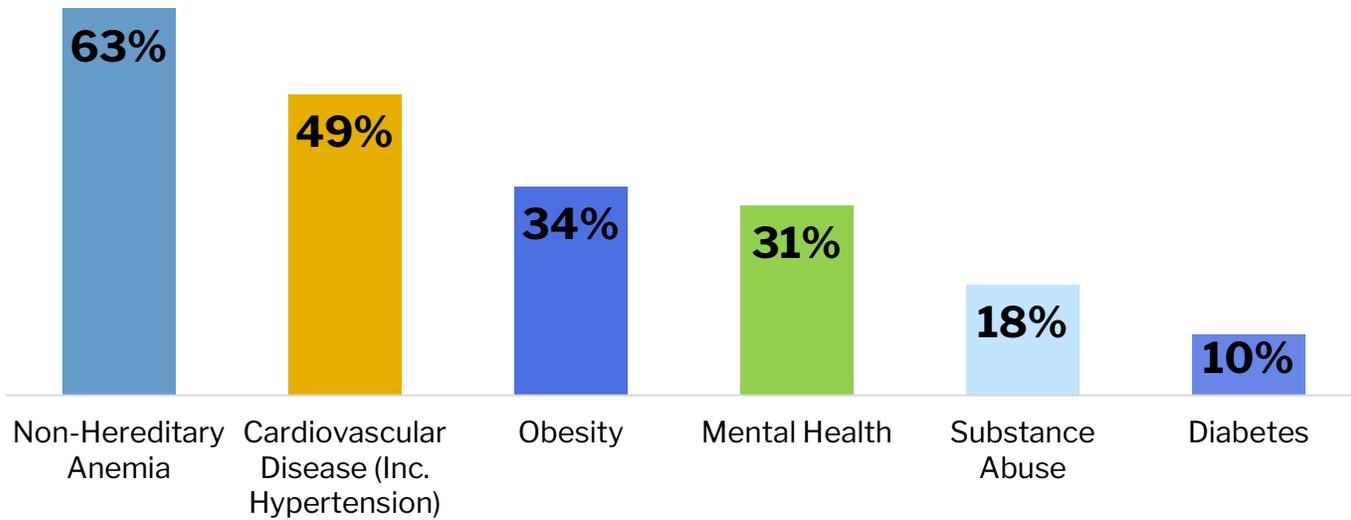|					
63%					
	49%				
		34%	**31%**		
				18%	
					10%
Non-Hereditary Anemia	Cardiovascular Disease (Inc. Hypertension)	Obesity	Mental Health	Substance Abuse	Diabetes

Even though the statewide SMM rate was 1%, the rate among CVD patients was 5%, among diabetics was 3%, and among anemia patients was 2%.

AMONG SMM DELIVERIES:

About 3 in 5 had **non-hereditary anemia.**
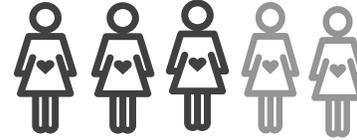
Nearly 1 in 2 had **cardiovascular disease.**

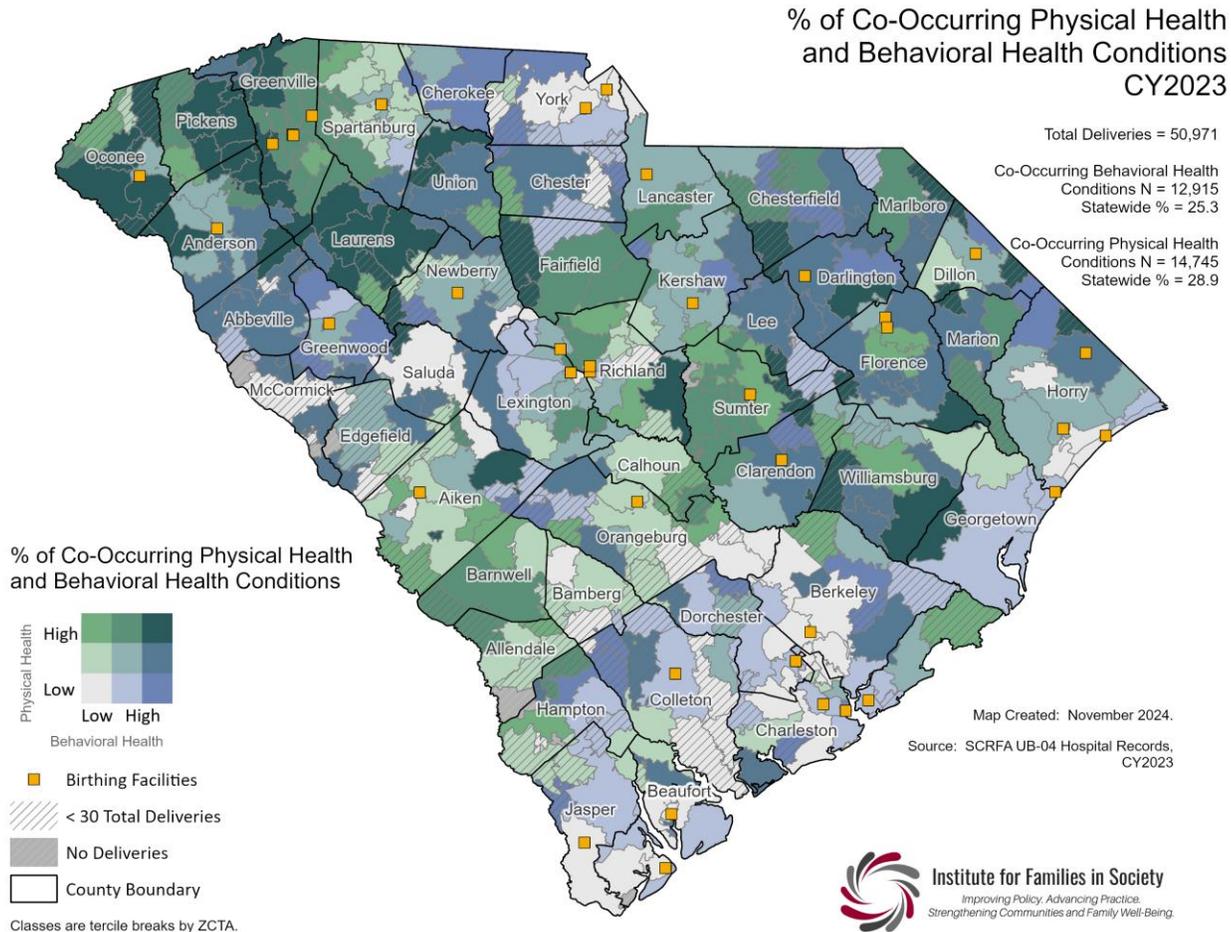About 1 in 3 had **obesity** or a **mental health condition.**

About 1 in 5 had **substance use disorder.**

Just over 1 in 10 had **diabetes**.

CO-OCCURRING CONDITIONS

% of Co-Occurring Physical Health and Behavioral Health Conditions CY2023

Total Deliveries = 50,971

Co-Occurring Behavioral Health Conditions N = 12,915
Statewide % = 25.3

Co-Occurring Physical Health Conditions N = 14,745
Statewide % = 28.9

% of Co-Occurring Physical Health and Behavioral Health Conditions

Physical Health: High / Low
Behavioral Health: Low / High

■ Birthing Facilities
▨ < 30 Total Deliveries
▨ No Deliveries
☐ County Boundary

Classes are tercile breaks by ZCTA.

Map Created: November 2024.

Source: SCRFA UB-04 Hospital Records, CY2023

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Interpreting the map: The **bright green** is high for physical health only, the **bright blue** is high for behavioral health only, and the **dark green-blue** counties are high for both.

TAKEAWAY
This map identifies within each county the areas with greatest need. **Overall, rates of co-occurring behavioral health (BH) and physical health (PH) conditions were highest in six SC counties;** four in the Upstate (Oconee, Pickens, Anderson, Laurens) and two in the Pee Dee (Chesterfield and Darlington). Of these, half (Pickens, Laurens, and Chesterfield) did not have a birthing facility within their county, indicating greater potential need for care coordination.

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SC MATERNAL MORBIDITY AND MORTALITY REVIEW COMMITTEE (SCMMRC)
DATA FROM CY 2018-2020

The following is a summarized view of the 2024 SCMMMRC Legislative Brief. For the full brief, click here.

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PREGNANCY-RELATED DEATHS *(CY 18-20)*

Pregnancy-Related Mortality Ratio (PRMR)

	2018	2019	2020
SC	35.5	38.6	32.3
US	17.4	20.1	23.8

Legend: ■ SC — US
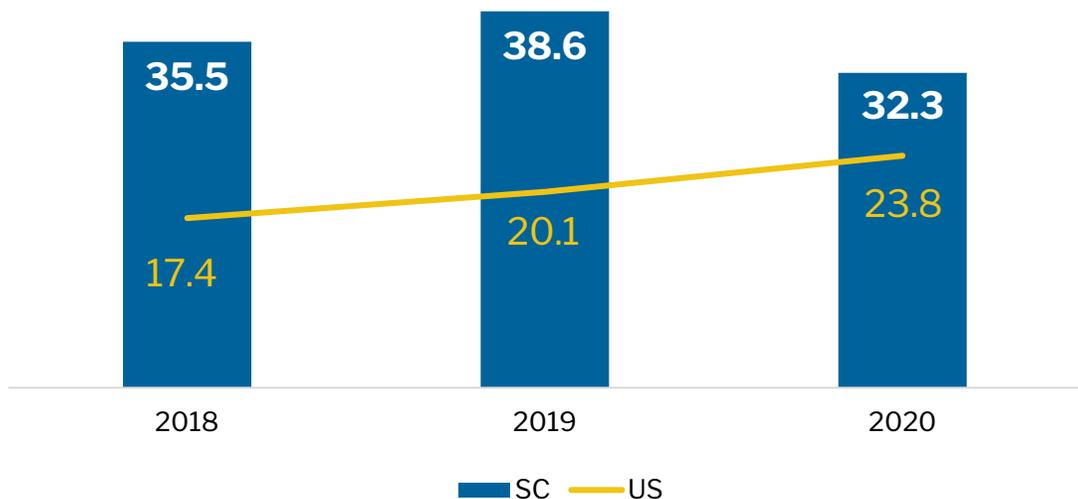
Top 3 Leading Causes of Death

White
- Mental Health Conditions (100% Preventable)
- Hemorrhage (86% Preventable)
- Infections (86% Preventable)

Black-NH
- Thrombotic Embolism (88% Preventable)
- Cardiomyopathy (75% Preventable)
- Hemorrhage

Improve access in rural areas.

Increase care coordination for mental health and SUD.

Regular training on recognition and readiness to clinical causes of death.

Education for postpartum individuals and their families on maternal urgent warning signs.

Scheduling and attendance at postpartum appointments.

Mandated cultural competency training.

Facility deep vein thrombosis (DVT) prevention protocol.

Primary care provider referrals.

Compliant autopsies.

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ACCESS TO CARE

"*Access has everything to do with can you take time off from your work or your family obligations? Do you have transportation? At this point, do you have connection to internet, do you have a device? Like, there's so many layers of things where you could see the inequities start happening more and more.*"

- Voices/Voces MCH Leader Participant

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HIGH MVI, MATERNITY CARE DESERTS, AND OB ADEQUACY

Number of OB/GYN Practioners per Deliveries with Safety Net OB/GYN Services, Maternity Care Deserts & Maternal Vulnerability

Ring Key:
- FQHC or RHC OB/GYN
- Maternity Care Desert
- Maternal Vulnerability Index (MVI)

Ring Classifications:

FQHC or RHC OB/GYN
- No OB/GYN present
- OB/GYN present

Maternity Care Desert
- Maternity Care Desert
- Low Access to Maternity Care
- Full Access to Maternity Care

Maternal Vulnerability Index (MVI)
- High Vulnerability
- Moderate Vulnerability
- Low Vulnerability

Basemap:
Number of OB/GYN providers per number of deliveries for CY2023
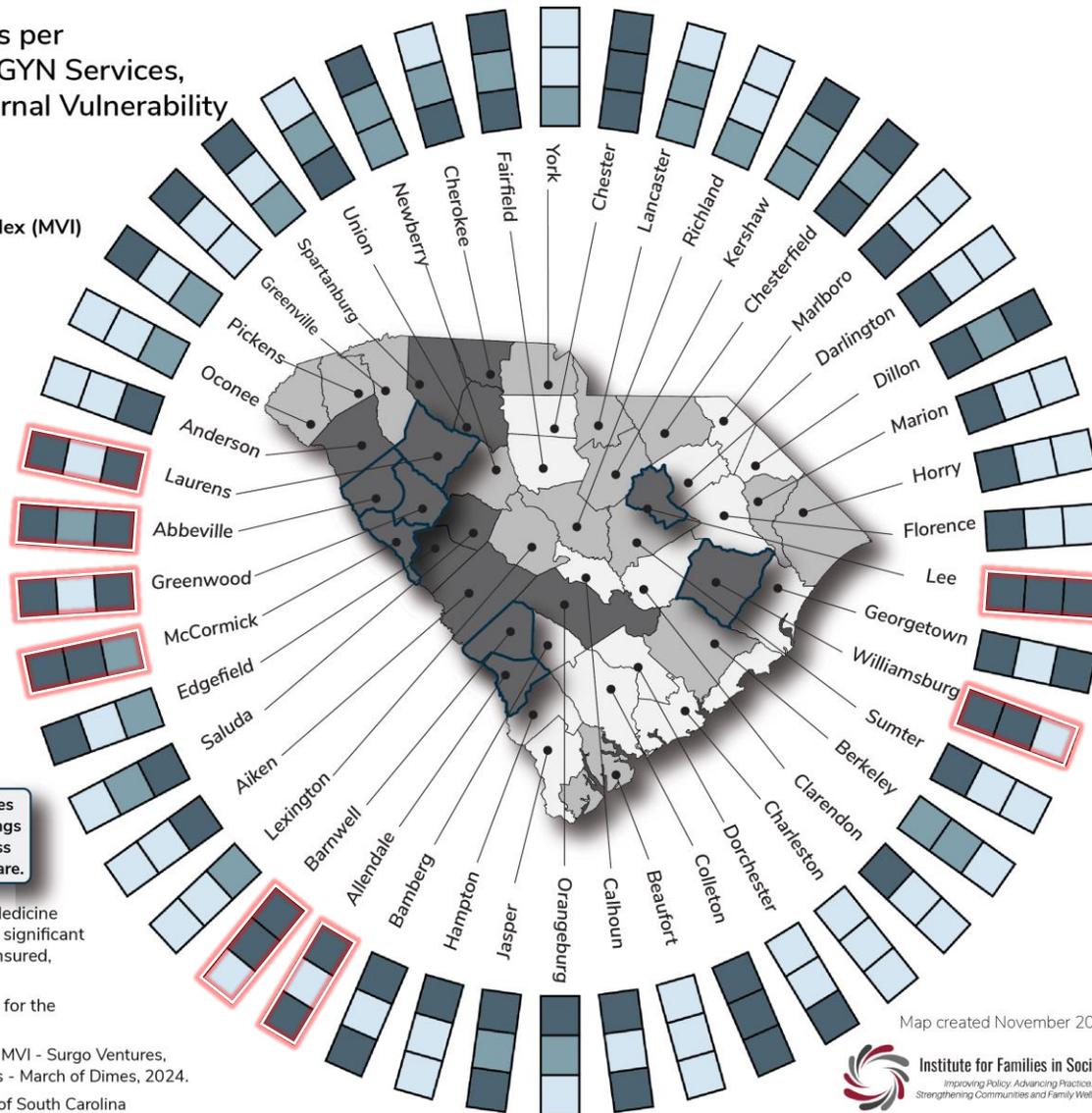- Lowest tertile*
- Moderate tertile
- Highest tertile

*Highlighted counties have at least two rings indicating less access to maternal healthcare.

Safety-Net practices are defined by the Institute of Medicine (IOM) as "those providers that organize and deliver a significant level of health care and other needed services to uninsured, Medicaid and other vulnerable patients."

Note: There are no "Moderate Access" class counties for the Maternity Care Desert in South Carolina.

Source: US Dept. of Health and Human Services, 2024. MVI - Surgo Ventures, data accessed September 2023. Maternity Care Deserts - March of Dimes, 2024.

USC Institute for Families in Society © 2024 University of South Carolina

Map created November 2024

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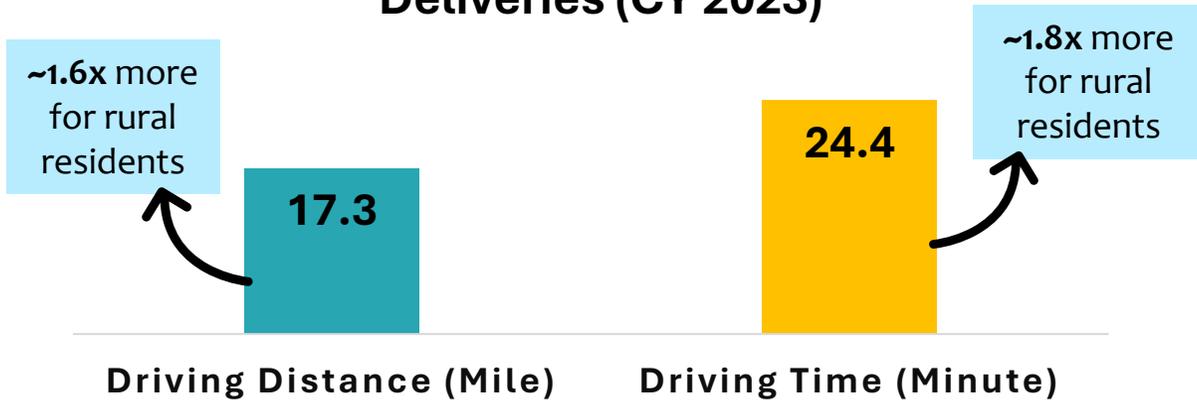| Lowest Tertile (Highest Need) Counties |
| --- |
| Abbeville |
| Allendale |
| Barnwell |
| Greenwood |
| Laurens |
| **Lee** |
| McCormick |
| Williamsburg |

NOTE: These findings might underestimate the true access to OB adequacy. A more in-depth analysis is essential to accurately assess the number of physicians delivering both OB and GYN services.

DRIVE DISTANCE ANALYSIS

Drive distance is defined as the distance from the center of the zip code tabulation area (ZCTA) where the birthing person resides to the birthing facility they attended.

Average Driving Distance and Time for Deliveries (CY 2023)

~1.6x more for rural residents

17.3

~1.8x more for rural residents

24.4

Driving Distance (Mile)   Driving Time (Minute)

TAKEAWAY:

Both adjusting for co-occurring conditions and not, in CY 2023, drive time was associated with poor outcomes. **The farther a woman travels to their birthing hospital, the greater the risk of maternal morbidity outcomes,** including increasing rates of SMM, avoidable C-section, low birthweight and prematurity ($p<0.5$).

DRIVE DISTANCE ANALYSIS (CONT.)

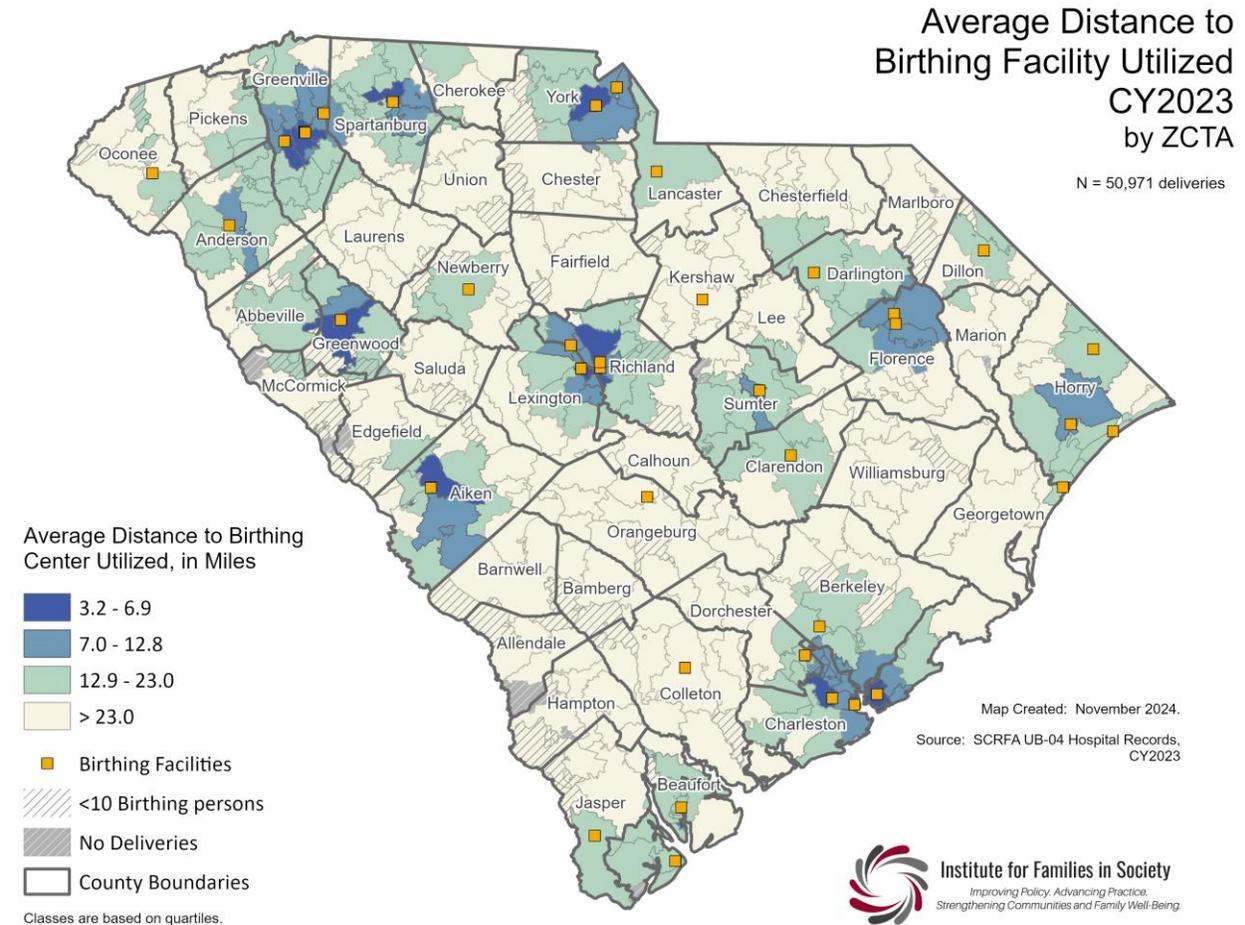**Additional analysis shows that in CY 2023:**

2 out of 5
Women traveled outside of their residential county for their delivery.

Of those who traveled 60 miles or more for care (1,242) over **80%** continued to seek care outside of their residential county, even though a birthing facility was available within their county.
Further investigation of **commuting patterns and realized access** are needed.

Compared to those who traveled the shortest distance to their birthing facility, those who traveled the furthest had a higher likelihood of being Medicaid beneficiaries, having a co-occurring PH/BH health condition, residing in a rural area, or having high MVI.

Average Distance to Birthing Facility Utilized CY2023 by ZCTA
N = 50,971 deliveries

Average Distance to Birthing Center Utilized, in Miles
- 3.2 - 6.9
- 7.0 - 12.8
- 12.9 - 23.0
- > 23.0
- Birthing Facilities
- <10 Birthing persons
- No Deliveries
- County Boundaries

Classes are based on quartiles.

Map Created: November 2024.
Source: SCRFA UB-04 Hospital Records, CY2023

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DRIVE DISTANCE ANALYSIS (CONT.)

Number of Deliveries Where
Birthing Facility Was >60 Miles Away
CY2023
by ZCTA

N = 1,242 pregnancies
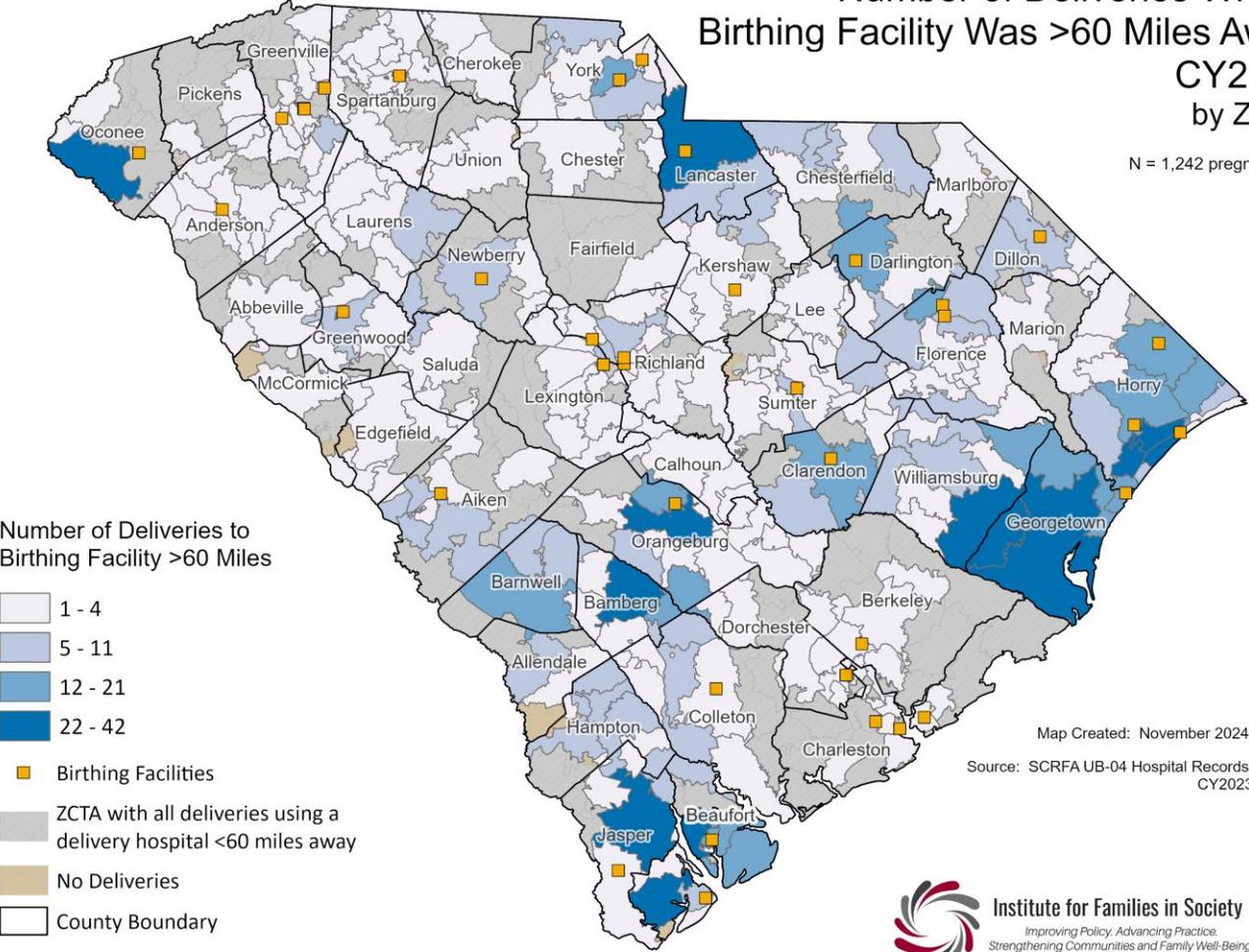
Number of Deliveries to
Birthing Facility >60 Miles

- 1 - 4
- 5 - 11
- 12 - 21
- 22 - 42
- ■ Birthing Facilities
- ▨ ZCTA with all deliveries using a delivery hospital <60 miles away
- No Deliveries
- County Boundary

Classes are based on natural breaks.

Map Created: November 2024.

Source: SCRFA UB-04 Hospital Records, CY2023

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TAKEAWAY
In this map, county areas in **dark blue** represent the greatest number of deliveries which traveled over 60 miles to their birthing facility. Those who traveled the furthest resided in Jasper/Beaufort, Georgetown/Horry, Orangeburg, Lancaster, Williamsburg, Bamberg, and Oconee.

TAKEAWAYS

MATERNAL AND INFANT HEALTH DATA TAKEAWAYS

- There is a need for care coordination for early identification and treatment of chronic physical and behavioral health conditions and follow-up regarding attendance at prenatal, postpartum, and specialty care visits.

- As demonstrated by the maternal vulnerability index results, addressing the social determinants of health may improve outcomes.

- Training of non-obstetric ED and family medicine providers to recognize early maternal warning signs and provide obstetric care is a priority.

- Mothers who drove further to deliver their babies were at greater risk of poor outcomes. Priority counties for rural outreach include Abbeville, Allendale, Barnwell, Greenwood, Laurens, Lee, McCormick, and Williamsburg.

- Medicaid plays a pivotal role in service delivery as the payer of 60% of deliveries.

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