

# Leveraging Technology to Improve Maternal Health and Substance Use Disorder and Screening and Treatment



# Leveraging Telehealth

- Background
  - Moms IMPACTT
    - Improving Access to Maternal Mental Health & Substance Use Disorder Care Through Telemedicine and Tele-mentoring
  - Listening to Women & Pregnant & Postpartum People
- Questions & Discussion



# Maternal Mortality in the US is higher than any other developed country

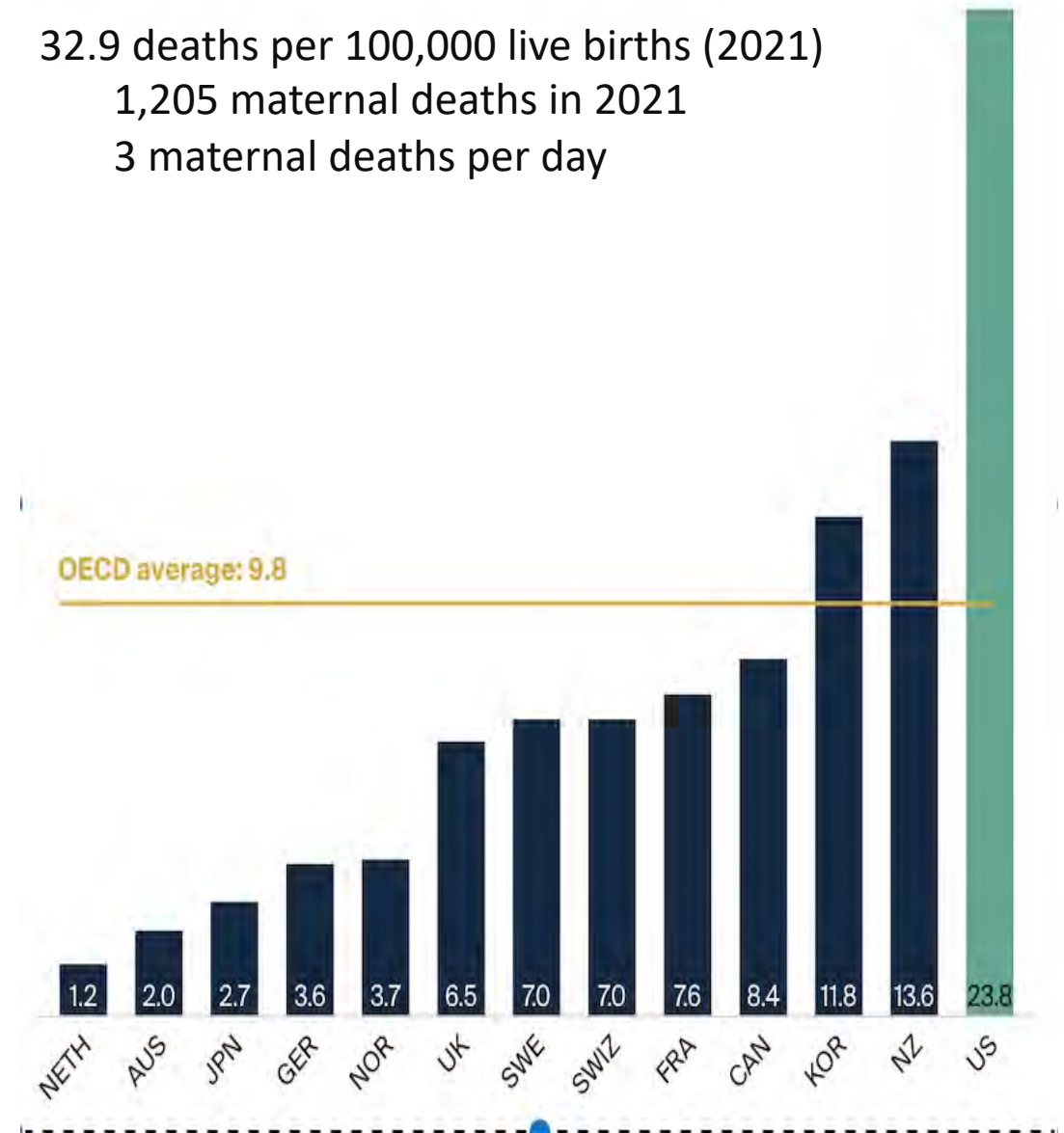
High Income Countries 2020:  
12 per 100,000 live births

United States 2020:  
23.8 per 100,000 live births

United States 2021:  
32.9 per 100,000 live births

Maternal mortality, deaths per 100,000 live births

32.9 deaths per 100,000 live births (2021)  
1,205 maternal deaths in 2021  
3 maternal deaths per day



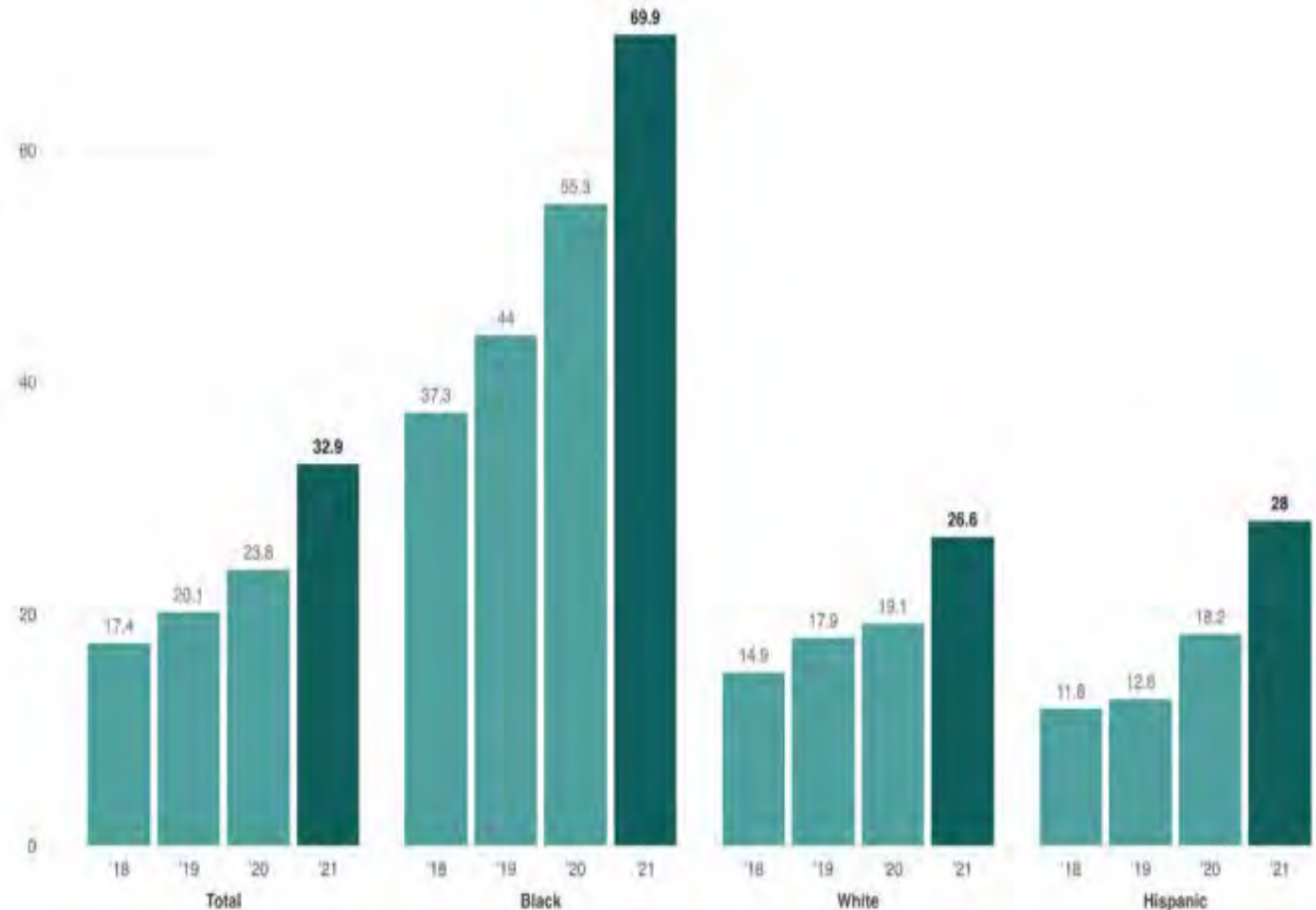
# Maternal Mortality By Race 2018-2021

## Racial Disparities in Maternal Mortality

White 2021:  
26.6 per 100,000 live births

Black 2021:  
69.9 per 100,000 live birth

American Indian 2021:  
49.2 per 100,000 live births



### Notes

The World Health Organization defines a maternal death as the death of a woman "from any cause related to or aggravated by pregnancy or its management (excluding accidental or incidental causes) during pregnancy and childbirth or within 42 days of termination of pregnancy."

Source: National Center for Health Statistics, Centers for Disease Control and Prevention

# Pregnancy-Related Deaths: Data from Maternal Mortality Review Committees in 36 US States, 2017–2019

Most frequent underlying causes of pregnancy-related death:

- Mental health conditions (22.7%)
- Hemorrhage (13.7%)
- Cardiac and coronary conditions (12.8%)
- Infection (9.2%)
- Thrombotic embolism (8.7%)
- Cardiomyopathy (8.5%)

**84.2% deaths  
determined  
to be preventable**

# Maternal Maternal Mental Health and Substance Use Disorders are...

...the Most Common  
Complication of  
Pregnancy &  
Childbirth

**1 in 5**

women around the world will suffer from a  
maternal mental health complication



# Maternal Maternal Mental Health and Substance Use Disorders are...

**...Most Common Contributor to Other Causes of Maternal Death**



# Maternal Mental Health Affects Women, Children and Families

Low Birth Weight  
Preterm Birth  
NICU Admissions  
C-sections

Cognitive, Motor, Growth Delays.  
Behavioral, Academic, Mental  
Health Problems



Poor Prenatal Care  
Smoking  
Substance Use

Difficulty Bonding  
Less Breastfeeding  
More Divorce



**100% of Maternal Deaths  
due to Mental Health  
Conditions are  
Preventable**

## MATERNAL HEALTH

By Susanna L. Trost, Jennifer L. Bearegard, Ashley N. Smoots, Jean Y. Ko, Sarah C. Haight, Tiffany A. Moore Simas, Nancy Byatt, Sabrina A. Madni, and David Goodman

# Preventing Pregnancy-Related Mental Health Deaths: Insights From 14 US Maternal Mortality Review Committees, 2008-17

Trost, SL, Beaurard, JL, Smoots, AN, Ko, JY, Haight SC, Moore Simas AS, Byatt N, Madni SA, Goodman, D. Preventing Pregnancy-Related Mental Health Deaths: Insights From 14 US Maternal Mortality Review Committees, 2008-17. Health Affairs Vo. 40, No. 10.

# Screen & Referral to Treatment [Standard of Care]

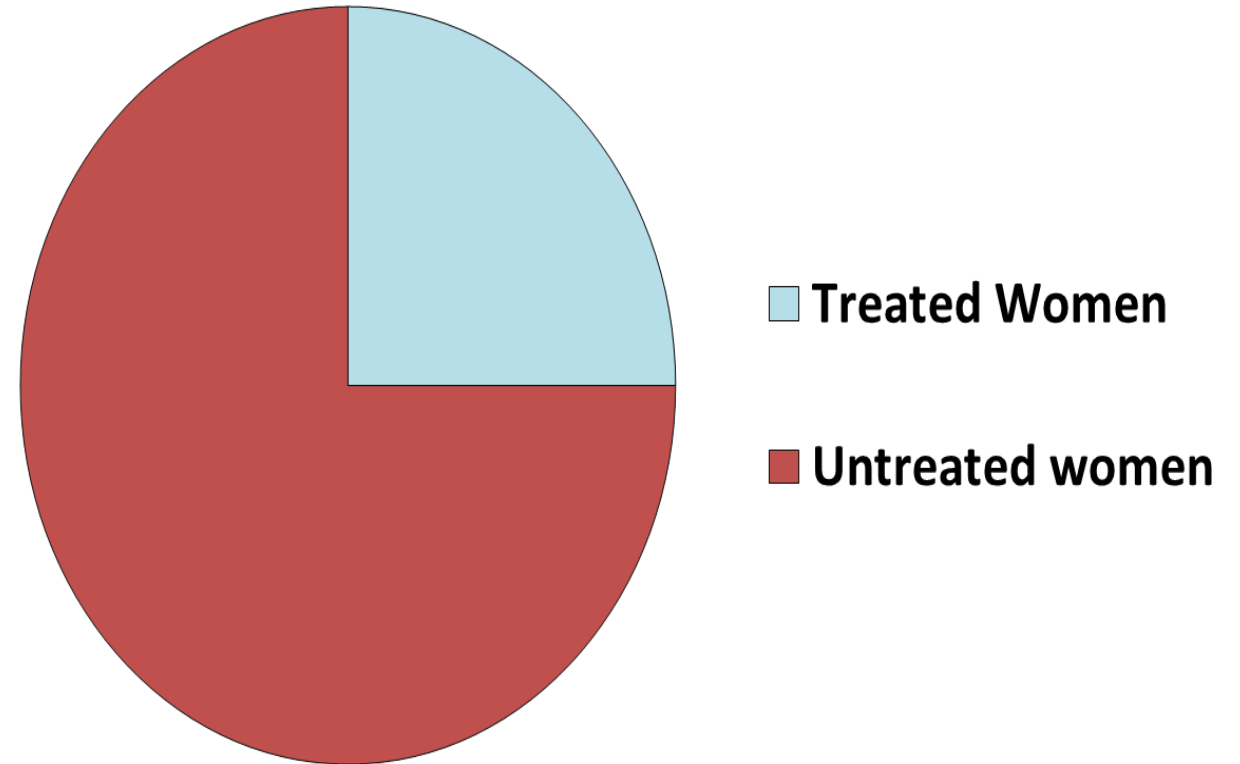
1 in 8 women  
will be screened



**The majority of mental health problems are unrecognized and untreated.**

**1 in 4 women receive treatment**

**Black women < receive treatment compared to White women**



Haight SC, Byatt N, Moore Simas TA, Robbins CL, Ko JY. Recorded Diagnoses of Depression During Delivery Hospitalizations in the United States, 2000-2015. *Obstet Gynecol.* 2019 Jun; 133(6):1216-1223.

Bauman BL, Ko JY, Cox S, et al. *Vital Signs: Postpartum Depressive Symptoms and Provider Discussions About Perinatal Depression — United States, 2018.* *MMWR Morb Mortal Wkly Rep* 2020;69:575–581.

# Barriers to Successful Screening & Effective Referral to Treatment



Patient	Provider	Healthcare System
Biases, Discrimination, Racism	Biases, Discrimination, Racism	Structural Racism
Stigma	Insufficient time	Cost: Time & Re/Training
Fear of social/legal consequences	Lack of MH/SUD knowledge	Separation of MH/SUD care
Lack of available or accessible *MH/SUD treatment providers	Lack of available or accessible *MH/SUD treatment providers	Lack of available or accessible *MH/SUD treatment providers

\*MH: Mental Health; SUD: Substance Use Disorder

# Mom's IMPACTT

IMProving Access to Maternal Mental Health and Substance Use Disorder Care Through Telemedicine and Tele-Mentoring



## Provider

### **Building Frontline Provider Capacity**

- Screening, Assess, Manage Mild-Moderate Mental Health Concerns

## Patient

### **Access to MH/SUD Care**

- Therapy
- Medication
- Peer Support
- Resources SDoH

# How Mom's **IMPACTT** Works [Building Provider Capacity: Training & Consultation]

843-792-MOMS  
(843)-792-6667



Doulas  
Midwives  
Obstetricians  
Pediatricians  
Psychiatrists

Community Health Workers  
Advance Practice Providers  
Primary Care/Family Practice



- Assessment
- Referrals & Resources
- Care Coordination
- Referrals & Resources



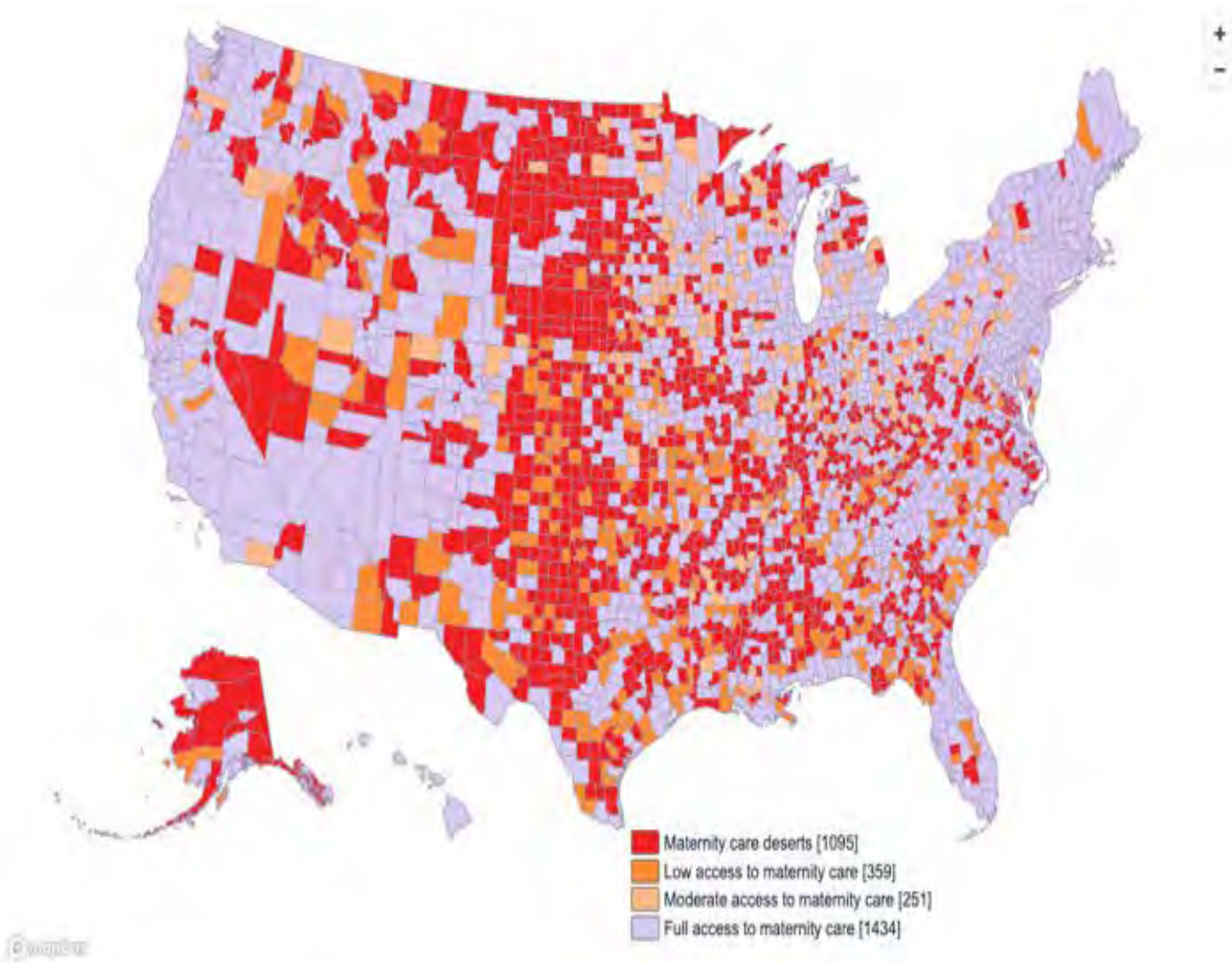
Provider-Provider Consultation



Provider Trainings

# Maternity Care Deserts

**47.8% of SC counties are a Maternity Care Desert or Low Maternity Care Access.**



Source: U.S. Health Resources and Services Administration (HRSA), Area Health Resources Files, 2019

# How Mom's **IMPACTT** Works [Patients]



Pregnant



0-12 Months Postpartum



Patient-Provider Treatment

- Assessment
- Referrals to Resources
- Permission to Communicate with Provider for Care Coordination



# Partnership

## Key Partners

- SC Birth Outcomes Initiative
  - Behavioral Health & Birth Equity Work Groups
- SC Office of Rural Health- Family Solutions
- Nurse Family Partnership
- Healthy Start
- Federally Qualified Health Centers
- SC Department of Mental Health
- SC Department of Alcohol and Other Drug Abuse Services
- Department of Social Services
- Regional Perinatal Directors
- Bureau of Maternal and Child Health, DHEC
- Center for Community Health Alignment, USC School of Public Health
- Department of Health and Human Services
- Blue Cross Blue Shield
- 3 State Project ECHOs
- Maternal and Child Health Local and Regional Professional Conferences
- Ob/Gyn, Pediatric Practices
- Peer Organizations
- Social Media (SC Mom's Group)



**Pre-Launch:**  
**41 Stakeholder Meetings**  
**390 Stakeholders Reached**

# Mom's IMPACTT

IMProving Access to Maternal Mental Health and Substance Use Disorder Care Through Telemedicine and Tele-Mentoring



**Every  
Mother  
Deserves  
Support.**



## Moms IMPACTT

### Outcomes: May 2022- August, 2023

- MH/SUD trainings for 1,005 front-line OB providers
- Access to care for 1,173 pregnancy and postpartum people from 100% of Counties in SC
  - Race/Ethnicity
    - 65% White
    - 28.4% Black
    - 2% American Indian
    - 9.5% Hispanic
  - Insurance
    - 52% with Medicaid
  - Location
    - 91.3% Fully Medically Underserved Areas
    - 32.2% Rural Counties

# Case examples

## Perinatal Opioid Use Disorder

### OB/GYN Referral to Moms IMPACTT

*Concern: medication questions*

- 35 y/o, white woman
- G1PO, 14 weeks
- Birth control failure
- 5 years sustained recovery with MOUD
- MOUD provider stopped prescribing in pregnancy
- Experiencing withdrawal with craving
- No longer connected to recovery community support

### IMPACTT Intervention

*OB Provider-to-Provider Consultation*

- Assessment
- Risk/Risk and Restart Suboxone
- Home-based telemedicine services

*Suboxone Provider-to-Provider Consultation*

- Provider with adequate POUD training
  - Training & Education

*Care Coordinator*

- Delivery hospital with NOWS experience
- Coordination across health care systems
  - Training and education
- Linkage to community & recovery support services

Every  
Mother  
Deserves  
Support.



*James B. Duke*  
THE DUKE ENDOWMENT

# Mom's IMPACTT

On-demand mental health treatment for pregnant and postpartum people.

Get connected to resources and treatment  
Monday - Friday | 8 am - 5 pm

- Substance Use
- Anxiety
- Trauma
- Depression
- Grief & Loss
- Stressful Life Events

For more information visit our website:

[mushealth.org/momsimpactt](https://mushealth.org/momsimpactt)

For a confidential consultation:

Scan this QR code or call

843-792-MOMS (843-792-6667)



# Mom's IMPACTT

IMProving Access to Maternal Mental Health and Substance  
UseDisorder Care Through Telemedicine and Tele-Mentoring



Mom's IMPACTT provides real-time perinatal psychiatric consultation to obstetric, pediatric, primary care, psychiatric and community health providers to effectively identify and manage maternal mental health and substance use concerns among pregnant and postpartum people living in South Carolina.

## Mom's IMPACTT has 4 components:

- Real-time psychiatric consultation for providers serving pregnant and postpartum people.
- Linkage to community-based resources, treatment, and support groups.
- Trainings for providers and staff on mental health and substance use screening, discussion of screening results, treatment options and referral, risks and benefits of medications.
- Psychiatric consultation for pregnant and postpartum people with mental health and substance use concerns.

For more information visit our website:

[muschealth.org/momsimpactt](https://muschealth.org/momsimpactt)

For a confidential consultation:

Scan this QR code or call

843-792-MOMS (843-792-6667)



*James R. Burke*

THE DUKE ENDOWMENT

 **MUSC Health**  
Medical University of South Carolina



[Health](#) › [...](#) › [Women's Health](#) › [Reproductive Behavioral Health](#) › Mom's IMPACTT

## Reproductive Behavioral Health

**Mom's IMPACTT** ▶

Disorders ▶

Home Video Visits

Resources

Testimonials

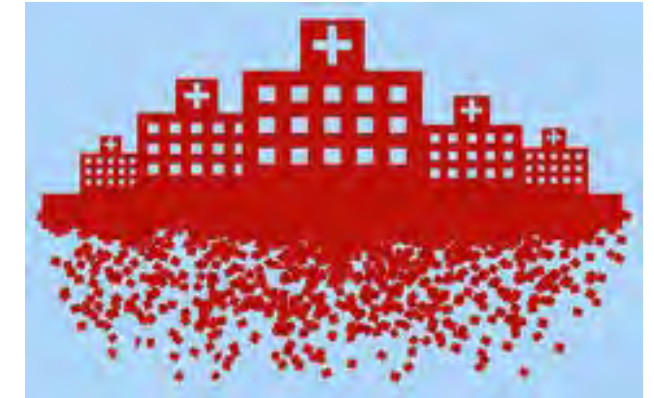
# Mom's IMPACTT

## Get Care Now

Mom's IMPACTT provides on-demand mental health treatment and resources for pregnant and postpartum people and real-time psychiatric consultations for providers.

**Connect to  
Coordinator**

# Barriers to Successful Screening & Effective Referral to Treatment



Patient	Provider	Healthcare System
Biases, Discrimination, Racism	Biases, Discrimination, Racism	Structural Racism
Stigma	Insufficient time	Cost: Time & Re/Training
Fear of social/legal consequences	Lack of MH/SUD knowledge	Separation of MH/SUD care
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# Listening to Women & Pregnant & Postpartum People



**Text Message Based Screening**



**Brief Intervention**  
Remote Care Coordinator (MSW)



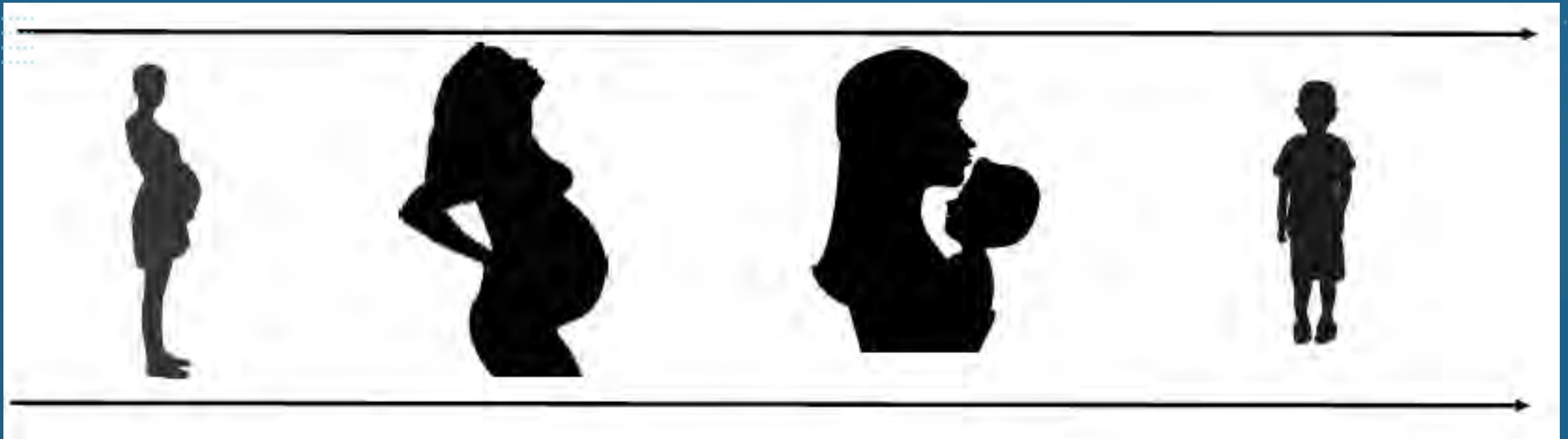
**Referral to Treatment**  
Telemedicine/ Office or Home  
Follow up



**Communicate with Ob/Peds  
Team**  
Screening information  
Referral and Tx Progress







# Screening During Pregnancy and the Year Postpartum

- Pregnancy Screens:
  - 1<sup>st</sup> Prenatal Care Visit or Anytime After
  - Each Trimester of Pregnancy
- Postpartum Screens:
  - 1 Month Postpartum
  - Every 3 Months After Delivery Until 12 Months Postpartum

## Design for Dissemination

LTWP



97% of patients have a cell phone



**Text Message Based Screening**



**Brief Intervention**

Remote Care Coordinator (MSW)



**Referral to Treatment**

Telemedicine/ Office or Home

Follow up



**Communicate with Ob/Peds Team**

Screening information

Referral and Tx Progress

**Clinical Efficiency**

- Enrollment Existing Staff
- Automated feedback
- Prioritize patients in need

**Care Coordinator, MSW**

- Least expensive, most qualified
- Bill for screening, case management
- Work remotely with multiple practices



**Pilot:  
Routine Prenatal Care**

**Listening to Women  
(LTW)**

**Vs.**

**Standard of Care (SOC)  
[In-Person Screening &  
Referral]**



THE DUKE ENDOWMENT

**RNs Enrolled Peripartum Women in  
Listening to Women (LTW)**

- N = 98.9% [547/553]
- Jan. 2020-April, 2021

**In-Person Screening & Referral  
(SOC)**

- N=2,988
- Jan, 2017- Dec. 2019

**Determined Rates of Women:**

- Screened
- Screened positive
- Referred to treatment
- Received treatment

Compared to SOC, LTW were significantly more likely:

1) Screened

[71.8% vs. 65.2%,  $p < 0.0024^*$ ]

RR 1.09 (95% CI 1.0287, 1.1608)  $p = 0.004$

2) Screened Positive

[65.4% vs. 33.3%,  $p < 0.0001^{**}$ ]

RR 1.89 (95% CI 1.7137, 2.1007)  $p < 0.0001$

3) Referred to Treatment

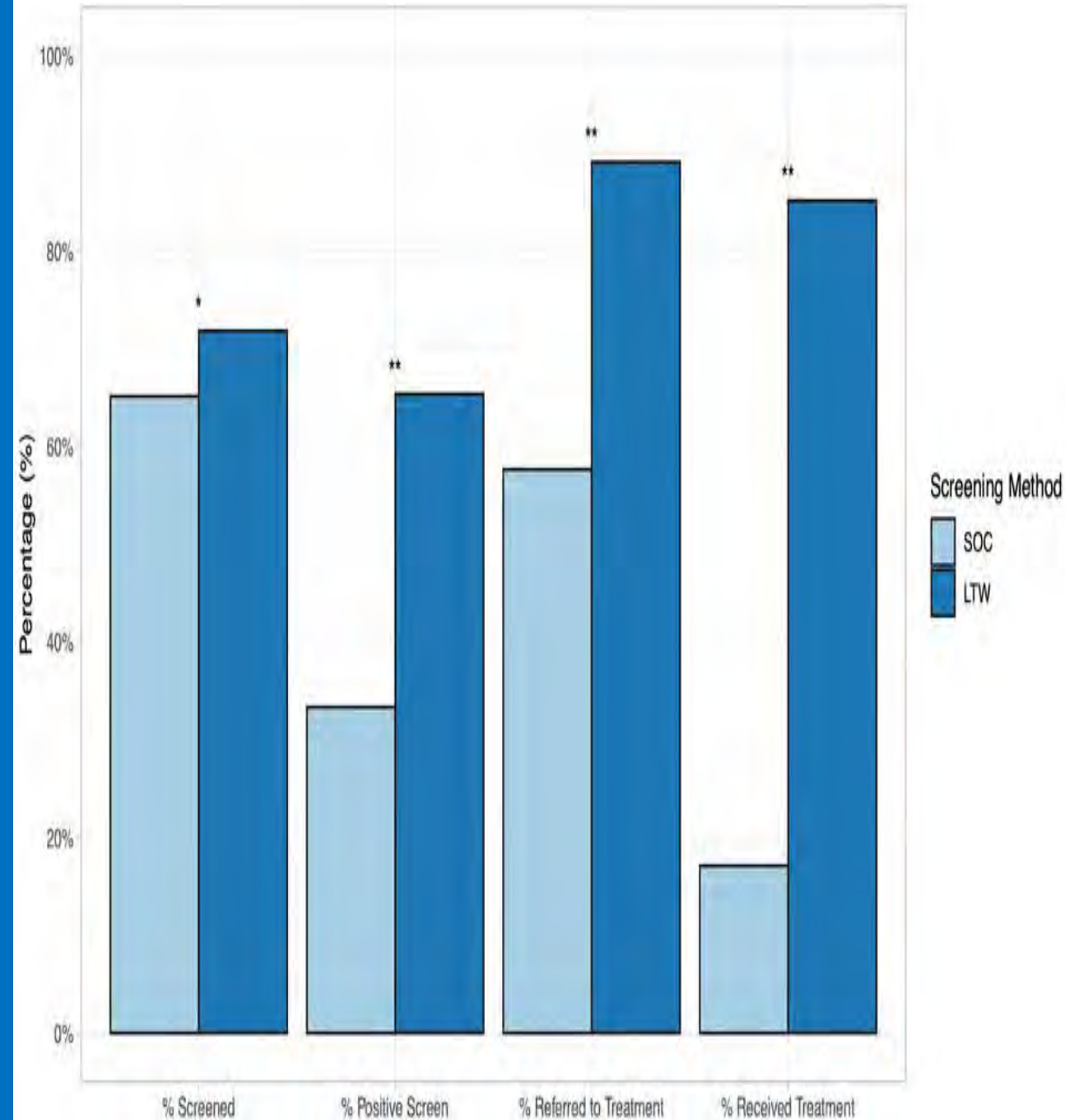
[89.1% vs. 57.6%,  $p < 0.0001^{**}$ ]

RR 1.55 (95% CI 1.4264, 1.6932)  $p < 0.0001$

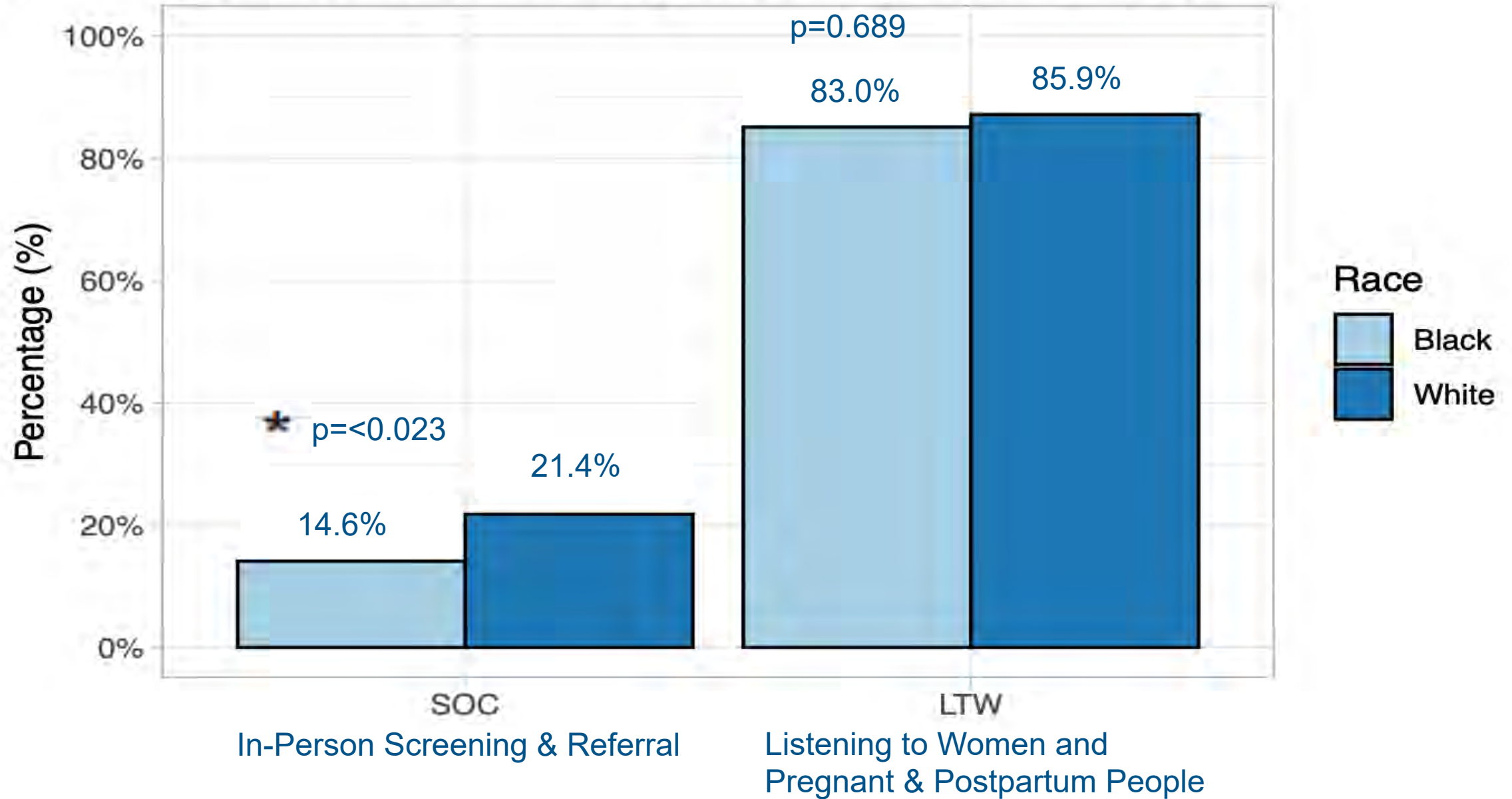
4) Received Treatment

[85.2% vs. 17.1%,  $p < 0.0001^{**}$ ]

RR 5.00 (95% CI 3.9806, 6.3027)  $p < 0.0001$



# D % Received Treatment by Screening Method and Race



# Case examples

## Perinatal Mood and Anxiety

### Screening Information

*What we knew*

- Moderate to severe depressive symptoms
- 28 y/o, Black woman
- G2P2: 30 days postpartum
- Rural location
- Preterm birth, baby in NICU
- Needs assessment: transportation and formula

### Care Coordinator Intervention

*What we learned*

- Sx started in pregnancy
- Disclosed distress to OB Provider
- Mentioned symptoms to family
- Minimal support while baby was in the NICU
- Shame, guilt and fear of social consequences
- Shared transportation, prioritizing pediatric appointments

### Shared Decision Making

*Creating a care plan together*

- Validation of symptoms
- Home-based telemedicine services
- Race concordance
- Linkage to resources

# PCORI 1: Study Overview

**Study Goals:** To improve screening, and attendance and retention in Perinatal Mental Health and Substance Use Disorder treatment among pregnant and postpartum women.

**Study Aims:** Compare LTWP Vs. In-person screening & referral to determine differences in rates of:

- Treatment attendance and treatment retention [Primary Outcomes]
- Patient Reported Outcomes (PROs) (e.g., depression, substance use, maternal functioning)

## Mixed Methods Evaluation

- Implementation processes and outcomes in trial and non-trial clinics

## Exploratory Analyses

- Determine sub-group characteristics and mediators of effectiveness on primary outcomes

# Listening to Women

## Broader Applications to Maternal Health

Alliance for Innovation on Maternal Health (AIM)

### Safety Bundles

Postpartum Discharge Transitions

- Summary of birth events
- Emergent/Urgent warning signs/symptoms & who to call
- Attending postpartum care visit
- Birth spacing & contraception
- Breastfeeding
- Well-being, mental health, substance use
- Social determinants of health
- Physical recovery, sleep/fatigue, sexual health, activity
- Medications & chronic conditions

Reduction in Racial and Ethnicity Disparities





# Listening to Women & Pregnant and Postpartum People



**Text Message Screening & Education**



**Brief Evaluation**

Remote Advanced Practice Provider



**Education, Treatment & Referrals  
to Treatment & Resources**



**Communicate with Ob/Peds  
Team**

Screening, Tx information  
Referral and Tx Progress



## **AIMs Safety Bundles**

- Emergent/Urgent warning signs/symptoms & who to call
- Postpartum care visit
- Birth spacing, contraception
- Breastfeeding
- Well-being, mental health, SUD
- Social determinants of health
- Physical recovery, sleep/fatigue, sexual health, activity
- Medications & chronic conditions
- Racial and Ethnicity Disparities



# She Matters

Digital health platform designed to support Black mothers who experience postpartum comorbidities by providing access to community, culturally competent healthcare providers, and culturally relevant resources.

Train healthcare providers on culturally appropriate healthcare via our *culturally competent certification* program.



# PCORI 2: Study Overview

**Intervention:** LTWP + AIM Safety Bundles (*Postpartum Discharge Transition, Reduction of Peripartum Racial and Ethnic Disparities*)

**Study Goals:** To improve identification of early warning signs of postpartum complications during first 6 weeks postpartum and transitions of care during the postpartum year.

**Study Aims:** Compare LTWP+AIM Vs. In-person AIM to determine differences

- Primary Outcome: Reduce rates of avoidable postpartum ED visits
- Secondary Outcome: Patient Reported Outcomes (PROs)
  - Postpartum: Maternal functioning & well-being, discrimination
- Process Evaluation
  - Barriers & Facilitators to Implementation of LTWP in delivery hospitals

# Listening to Women

## Broader Applications to Newborn & Maternal Health

### Newborn Visitations Program

In-Person Home Visiting Program for Moms and Newborns  
Nurses Deliver Screening and Education

- Infant Feeding and Breastfeeding
- Infant Home and Safety
- Safe Sleep
- Crying, Colic, Soothing
- Bonding, Child Development
- Pediatric Visits
- Early Intervention
- Health Insurance
- Immunizations
- SDoH, MH/SUD/IPV concerns



# Listening to Women: Connecting Mom's & Baby's To Resources



**Text Message Screening & Education**



**Brief Evaluation**

Remote Nurse Navigator (RN)



**Education, Referral to Treatment  
& Resources**



**Communicate with Ob/Peds  
Team**

Screening information  
Referral and Tx Progress

**Newborn Visitation Program**

- Infant Feeding and Breastfeeding
- Infant Home and Safety
- Safe Sleep
- Crying, Colic, Soothing
- Bonding, Child Development
- Pediatric Visits
- Early Intervention
- Health Insurance
- Immunizations
- SDoH, MH/SUD/IPV concerns



# Listening to Women: Connecting Moms & Baby's to Resources



## Enrollment 4.5 Months

- 97% of New Moms Agreeing to Take Part in Program
- 823 Participants Enrolled
- 243 Participating
  - Video Visits
  - Texting Messaging
  - Referral to SC Thrive
  - Referral to MH/SUD Treatment

# Acknowledgments

## **Peripartum Participants**

### **Women's Reproductive Behavioral Health Division**

Rubin Aujla, MD  
Kerry Blome, LISW  
Dawn Boender, MD  
Victoria Bowen, LPC  
Tychia Brown, BA  
Edie Douglas, MPH  
Marie Hayes, PhD  
Courtney King, PhD  
Abbie Lee-Rodgers, DO  
Liz Monter, DO  
Liz Parker, LPC, LPC-S  
Amanda Sandford, MSW  
Claire Smith, MD

## **Telehealth Center of Excellence**

Dee Ford, MD  
Katie King, MD, MPH  
Ryan Kruis, LISW  
Annie Simpson, PhD  
Lizmarie Maldonado, MSPH  
Rebecca Beeks, BA

## **MUSC Biomedical Informatics Center**

John Clark, MA  
Erin Quigley, BA  
Tomoko Gaddard, BA  
Katie Kirchoff, MA

## **DAODAS, Duke Endowment**

**PCORI, HRSA, NIH (NIDA/ORWH/NICHD)**

# TELEHEALTH AND MATERNAL MORTALITY

EUGENE CHANG, MD  
MATERNAL FETAL MEDICINE





# OBJECTIVES

- REVIEW THE SCOPE OF MATERNAL MORTALITY IN SC
- IDENTIFY THE IMPACT OF MATERNAL FETAL MEDICINE
- ROLE OF TELEMEDICINE

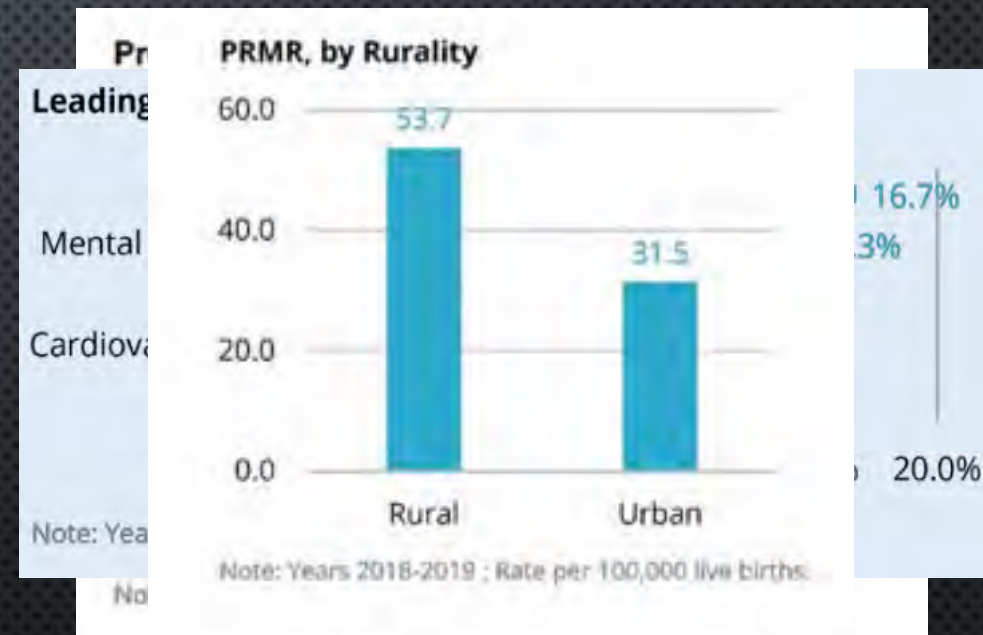
## Scope of Case Review for the South Carolina Maternal Morbidity and Mortality Review Committee

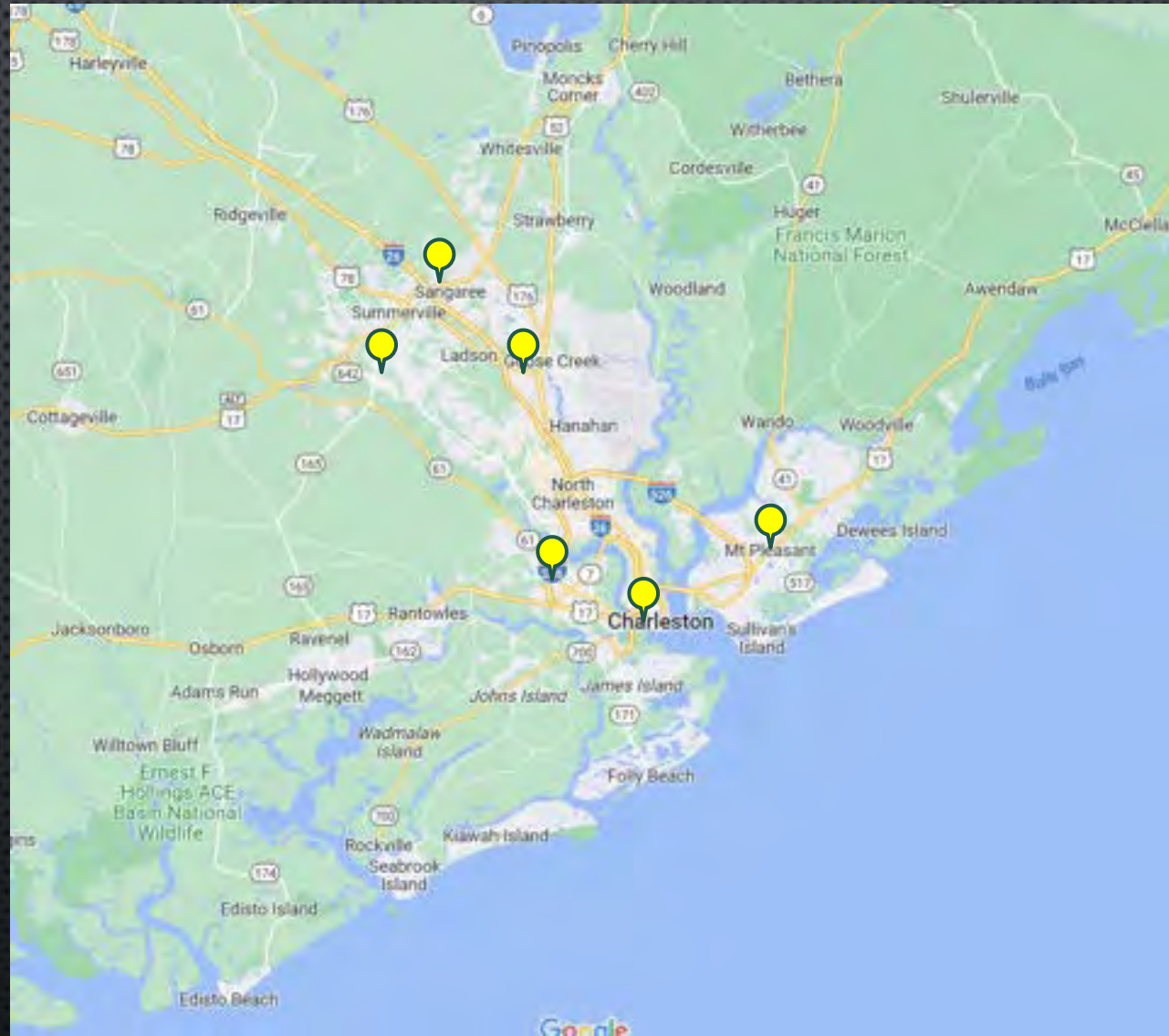


**Primary Focus**  
preventable pregnancy-related deaths

# 2019 MATERNAL MORTALITY

- 66 DEATHS
  - 22 PREGNANCY RELATED (30%)
  - 38.6/100,000 (INCREASE FROM 35.3 FROM 2018)
- 81.8% DEEMED PREVENTABLE
  - NATIONALLY ABOUT 80%





# South Carolina Perinatal Regions

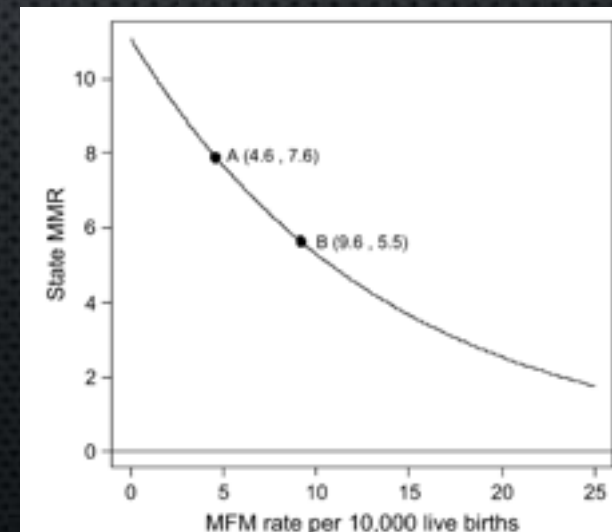
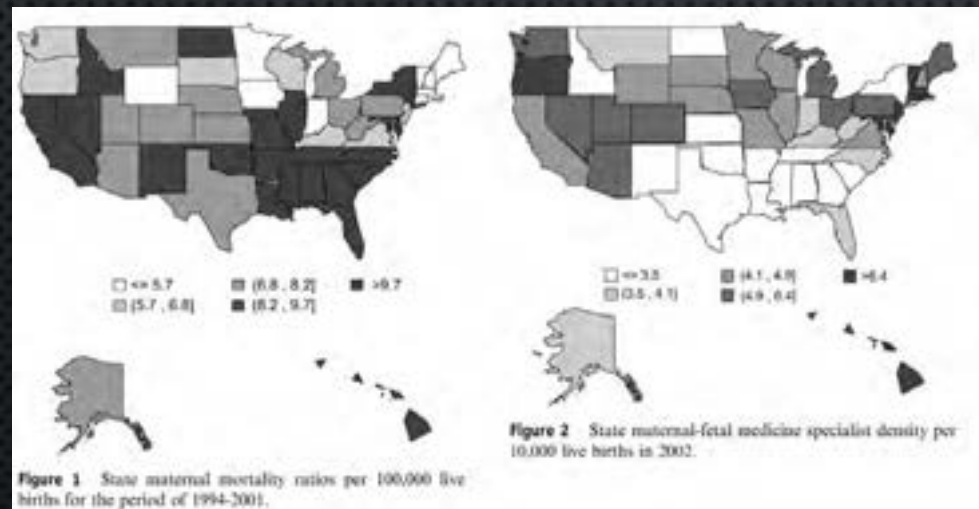


Savannah

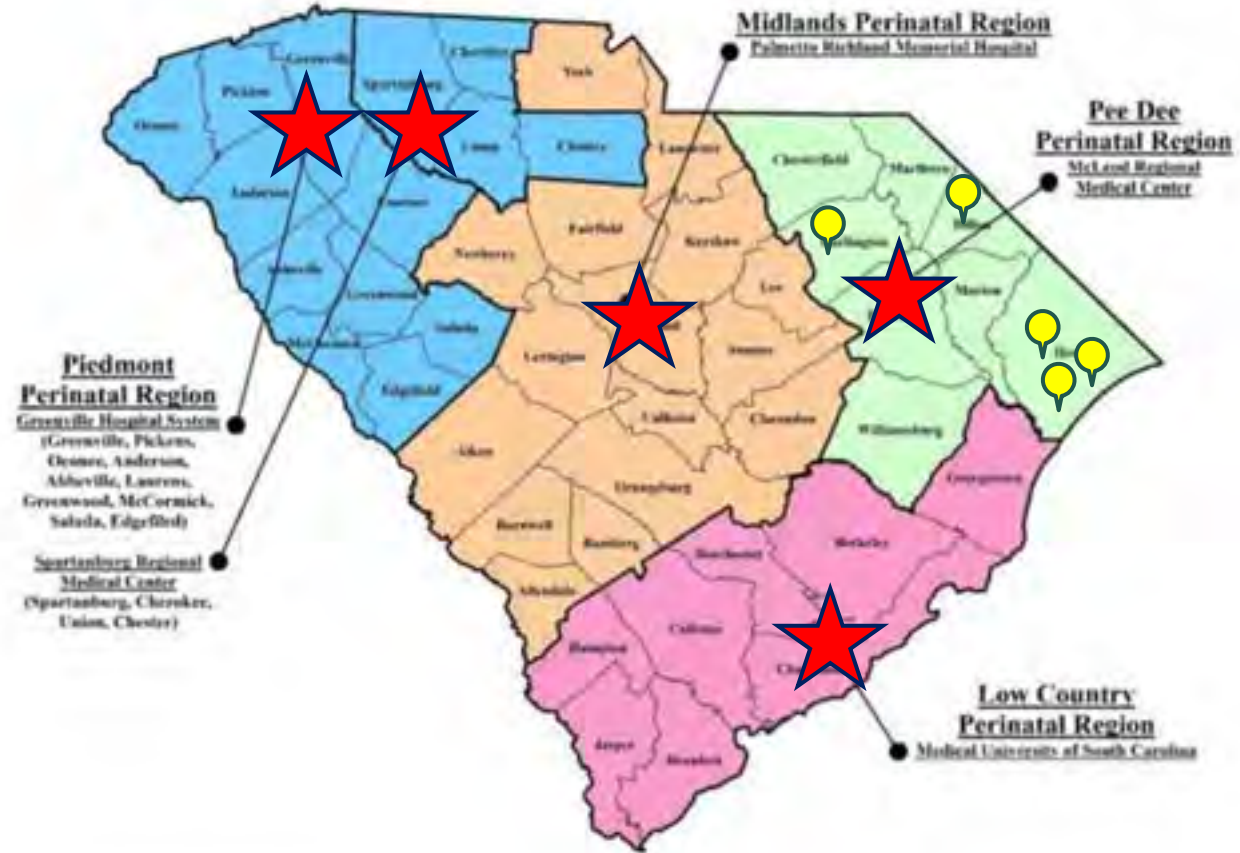


## Maternal-fetal medicine specialist density is inversely associated with maternal mortality ratios

Scott A. Sullivan, MD,<sup>a</sup> Elizabeth G. Hill, PhD,<sup>b</sup> Roger B. Newman, MD,<sup>a</sup>  
M. Kathryn Menard, MD<sup>a</sup>



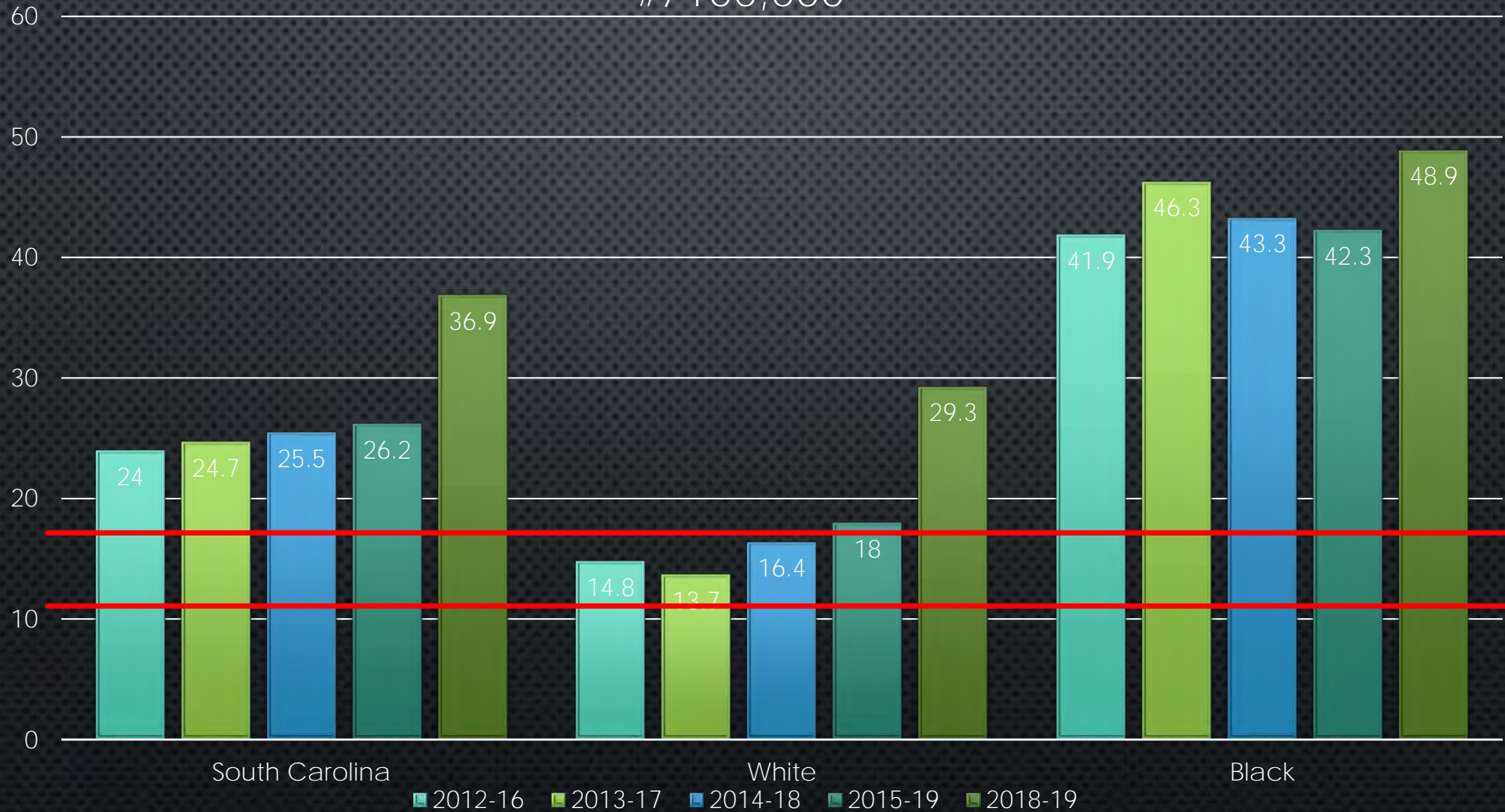
# South Carolina Perinatal Regions



Savannah



# SC Maternal Mortality #/100,000

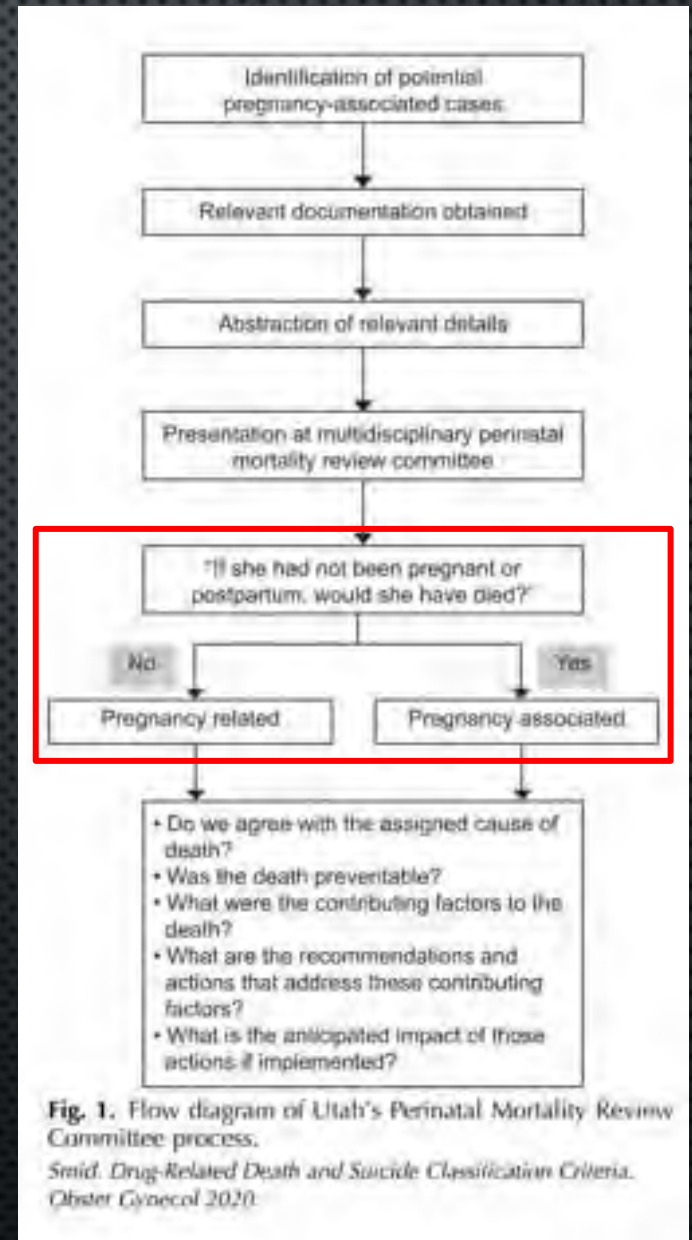


# WHAT'S GOING ON?

Original Research

## Standardized Criteria for Review of Perinatal Suicides and Accidental Drug-Related Deaths

Marcela C. Smid, MD, MS, Jewel Maeda, CNM, MPH, Nicole M. Stone, MPH, Heidi Sylvester, CIM, Laurie Baksh, MPH, Michelle P. Debbink, MD, PhD, Michael W. Varner, MD, and Torri D. Metz, MD, MS



**Fig. 1.** Flow diagram of Utah's Perinatal Mortality Review Committee process.

Smid. Drug-Related Death and Suicide Classification Criteria. *Obster Gynecol* 2020.

# WHAT'S GOING ON?

American Journal of Obstetrics and Gynecology (2005) 193, 1083-8



ELSEVIER

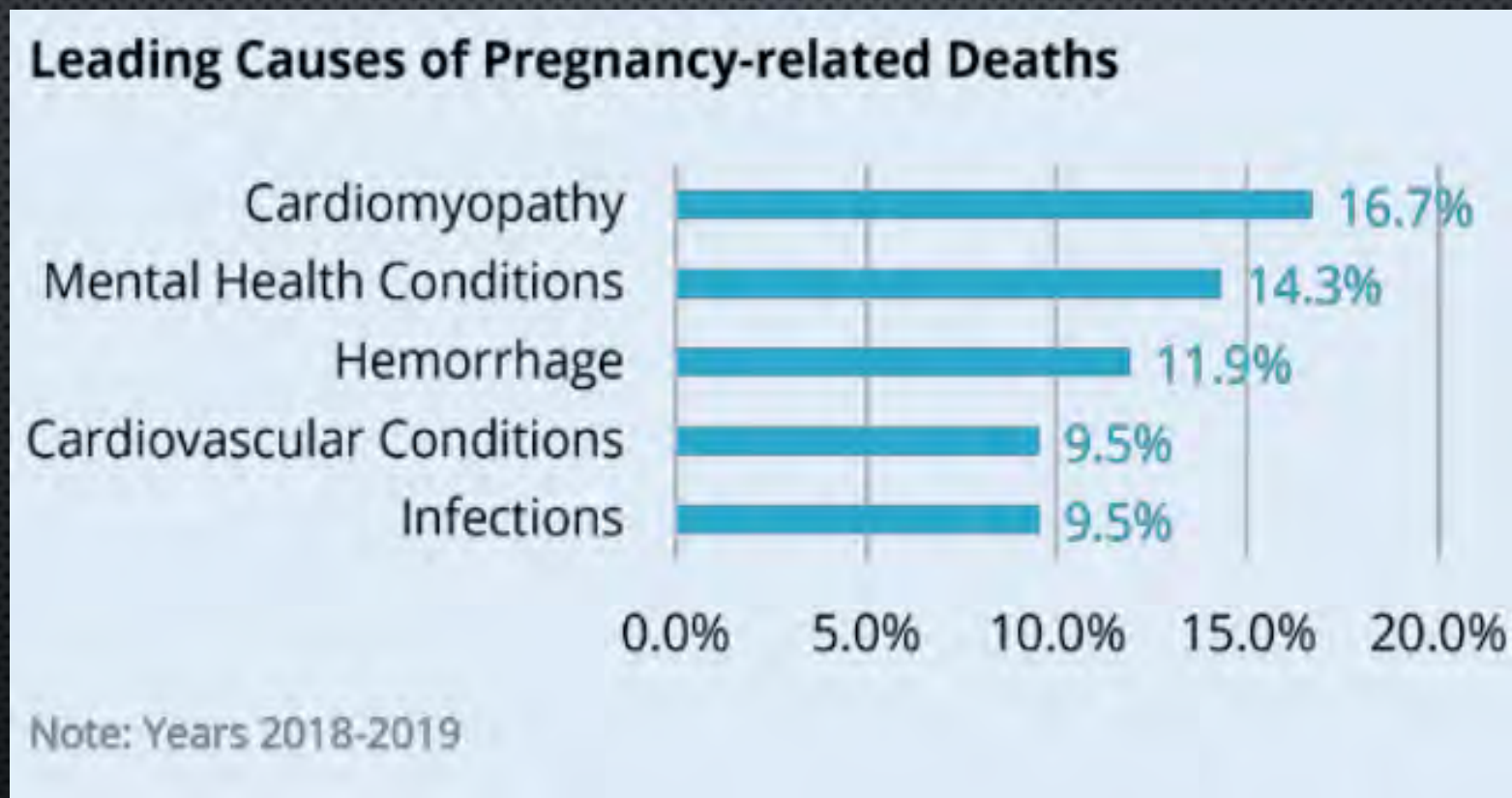
American Journal of  
**Obstetrics &  
Gynecology**

[www.ajog.org](http://www.ajog.org)

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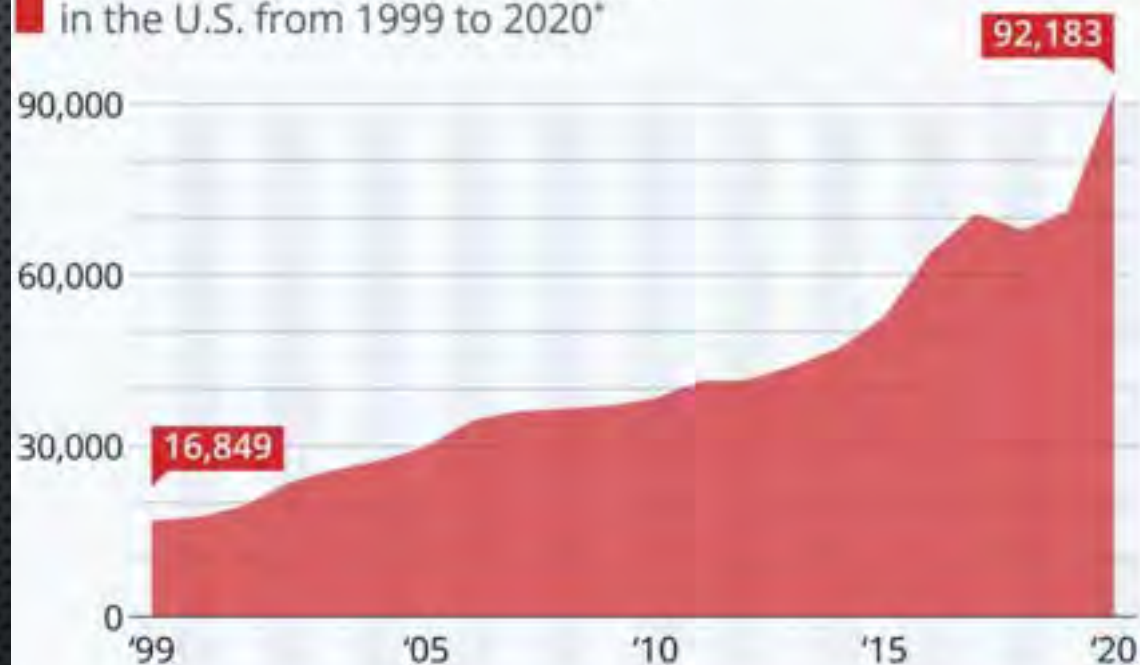
Scott A. Sullivan, MD,<sup>a</sup> Elizabeth G. Hill, PhD,<sup>b</sup> Roger B. Newman, MD,<sup>a</sup>  
M. Kathryn Menard, MD<sup>a</sup>

# WHAT'S GOING ON?



# Historic Spike In U.S. Drug Overdose Deaths

Number of drug overdose deaths in the U.S. from 1999 to 2020\*



\* Historical data from 1999 to 2019, Provisional figures for 2020

Source: Centers for Disease Control and Prevention



# WHAT'S GOING ON?

Figure 2. Evidence map.



# THE WAY FORWARD



## Telehealth services

Expanding coverage of  
behavioral health  
Health Care Deserts  
Social services



## Education

Non-OB providers  
Pregnancy



## Anticipate worse numbers

COVID-19

THANKS!