



Driving Improvement in Maternal Health in Tennessee

TIPQC Data Institute

August 29, 2024

Agenda

- Background
- Maternal health landscape
- Driving data to action
 - Maternity Care Deserts
 - Rising Homebirths
 - Overdoses in the Postpartum Period
- Where do you fit in?

Background

- Assistant Commissioner of Division of Family Health and Wellness since September 2023
- Senior Maternal and Child Health Epidemiologist at CDC, Division of Reproductive Health, Field Support Branch
- Technical Advisor at Massachusetts Department of Public Health
- Dissertation work on severe maternal morbidity
- Mom of 2 kids



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<https://doi.org/10.1089/jwh.2017.6437>

Mary Ann Liebert, Inc.  publishers

Original Article

Severe Maternal Morbidity at Delivery and Risk of Hospital Encounters Within 6 Weeks and 1 Year Postpartum

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Abstract

Background: Little is known about the impact of severe maternal morbidity (SMM) after delivery. We examined the risk of rehospitalization in the first year postpartum among deliveries to women with and without SMM.

Materials and Methods: We used the Pregnancy to Early Life Longitudinal data system, in which vital birth/fetal death records were linked with hospital delivery discharge data and subsequent nondelivery hospitalization data, including observational stays (OSs) and in-patient stays (hospital discharge [HD]) for Massachusetts residents during 2002–2011. We excluded deliveries to women with preexisting chronic conditions: hypertension, diabetes, asthma, and autoimmune conditions for a final sample of 685,228 deliveries. Multivariable log binomial regression with generalized estimating equations modeled the relative risk (RR) of hospital encounters 6 weeks and 1 year postpartum.

Results: The rate of SMM was 99 per 10,000 deliveries. In the first year postpartum, 2.8% of deliveries to women without chronic medical conditions experienced at least one HD encounter and 1.0% at least one OS encounter. The adjusted relative risk (aRR) of any HD encounter for deliveries with SMM was 2.48 (95% confidence interval [CI]: 2.20–2.80) within 6 weeks postpartum and 2.04 (95% CI: 1.87–2.23) within 1 year. For OS encounters, aRRs among deliveries with SMM at delivery were 2.47 (95% CI: 1.94–3.14) in the first 6 weeks and 1.69 (95% CI: 1.43–2.01) in 1 year.

Conclusions: In Massachusetts, SMM increased the risk of rehospitalization in the first year postpartum among deliveries to women without chronic medical conditions.

Keywords: : morbidity, postpartum period, patient readmission

Personal Connection to Severe Maternal Morbidity





Maternal & Infant Health Data Landscape

Over 80,000 Tennesseans give birth annually



<https://www.gettyimages.com/detail/photo/smokey-mountain-sunset-royalty-free-image/1482698155>

Healthy People 2030

- Healthy People 2030 sets data-driven national objectives to improve health and well-being over the next decade
 - **Healthy People 2030 Goal: Prevent pregnancy complications and maternal deaths and improve women's health before, during, and after pregnancy**

358

Healthy People 2030 includes 358 core — or measurable — objectives as well as developmental and research objectives.

Women

[Reduce maternal deaths — MICH-04](#)

★ LHI

— Getting worse

[Reduce severe maternal complications identified during delivery hospitalizations — MICH-05](#)

— Getting worse

[Reduce cesarean births among low-risk women with no prior births — MICH-06](#)

— Getting worse

[Increase the proportion of women of childbearing age who get enough folic acid — MICH-12](#)

⋯ Baseline only

HP2030 Severe Maternal Morbidity (SMM) Goal

- **Reduce severe maternal complications identified during delivery hospitalizations – MICH-05**

Status: Getting worse 

[Learn more about our data release schedule](#)



Most Recent Data:
88.2 per 10,000 delivery hospitalizations (2020)



Target:
64.4 per 10,000¹



Desired Direction:
Decrease desired



Baseline:
71.5 per 10,000 delivery hospitalizations had severe maternal complications in 2017²

SMM is Not the Whole Story to Maternal Health

Sexually Transmitted Infections

[Reduce the rate of mother-to-child HIV transmission — HIV-06](#)



Target met or exceeded

exceeded

[Reduce congenital syphilis — STI-04](#)



Getting worse

exceeded

Tobacco Use

[Increase abstinence from cigarette smoking among pregnant women — MICH-10](#)



Target met or exceeded

detectable change

[Increase successful quit attempts in pregnant women who smoke — TU-15](#)



Getting worse

detectable change

Vaccination

[Increase the proportion of women who get the Tdap vaccine during pregnancy — IID-D01](#)



Developmental

getting worse



March of Dimes



2023 MARCH OF DIMES REPORT CARD TENNESSEE

The preterm birth rate in Tennessee was **11.0%** in 2022, lower than the rate in 2021

Percentage of live births born preterm

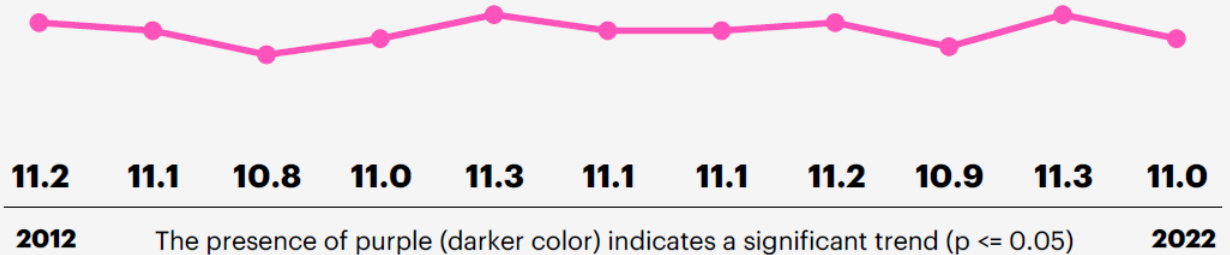
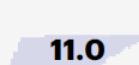
PRETERM
BIRTH
GRADE

D

U.S. RATE



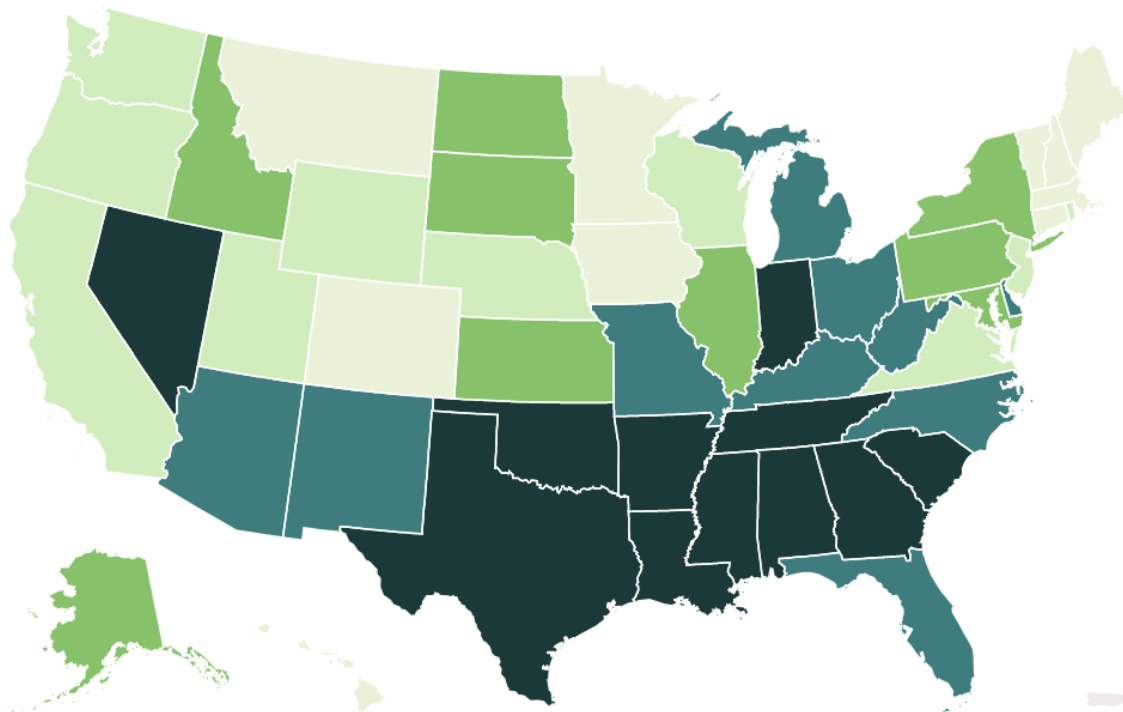
TN RATE



Maternal Vulnerability Index

6 Domains - 43 Indicators

States Counties



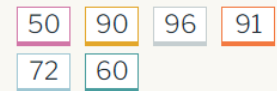
Maternal Vulnerability

- Very High
- High
- Moderate
- Low
- Very Low

State Comparison

Tennessee

86.0 **Very High**



+ add another state to compare

Reproductive healthcare

Physical health

Mental health & substance abuse

General healthcare

Socioeconomic determinants

Physical environment

TN

Maternal Mental Health State Report Card

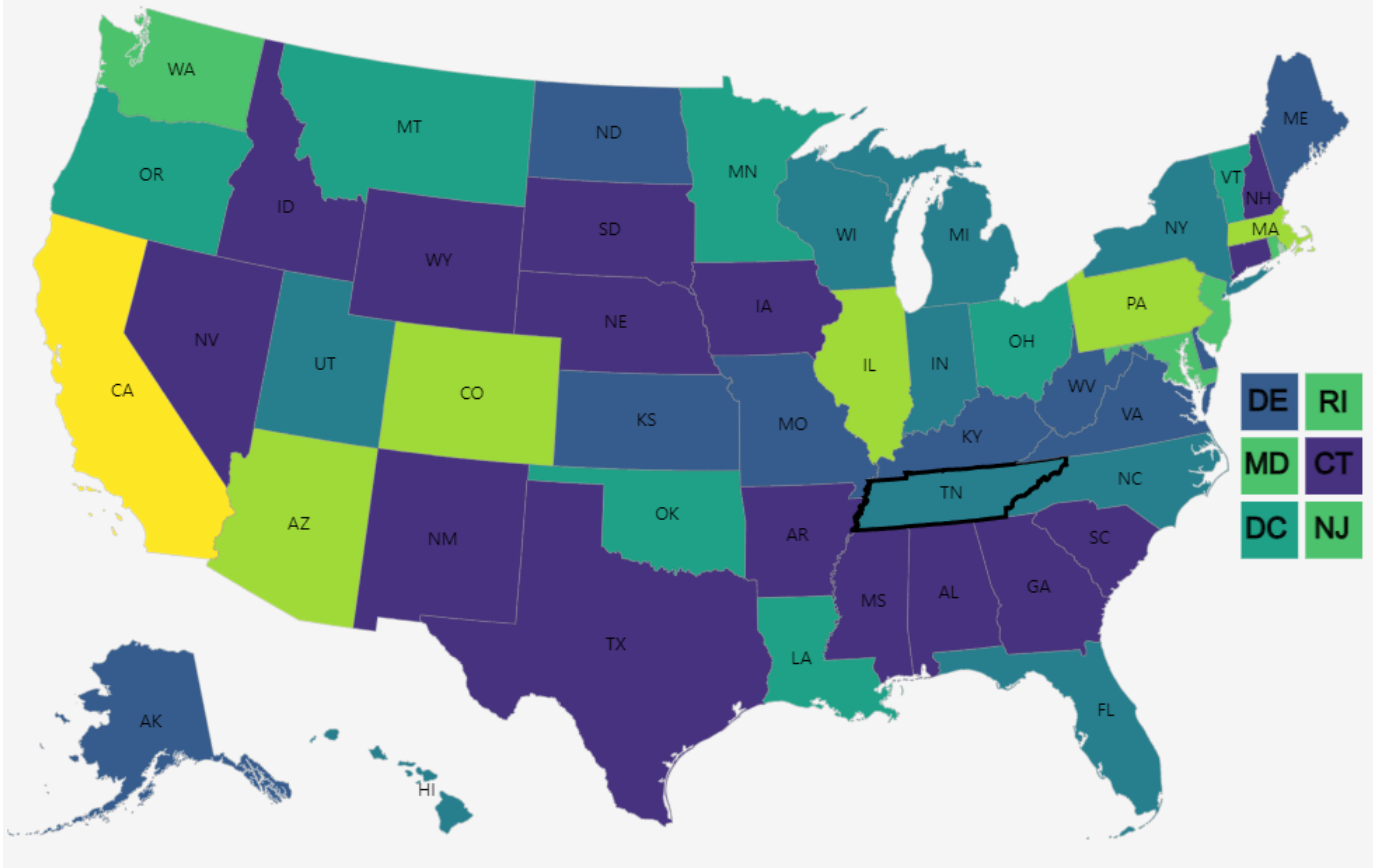


POLICY CENTER
FOR Maternal Mental Health™

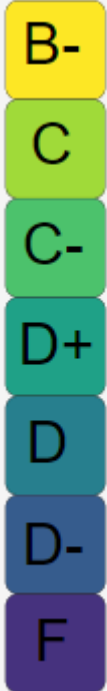
3 Domains - 18 Indicators

Click the Map to See Your State's Grade

[Learn more about the measures here](#)



TN



Commonwealth Fund Scorecard

2023 Scorecard on State Health System Performance

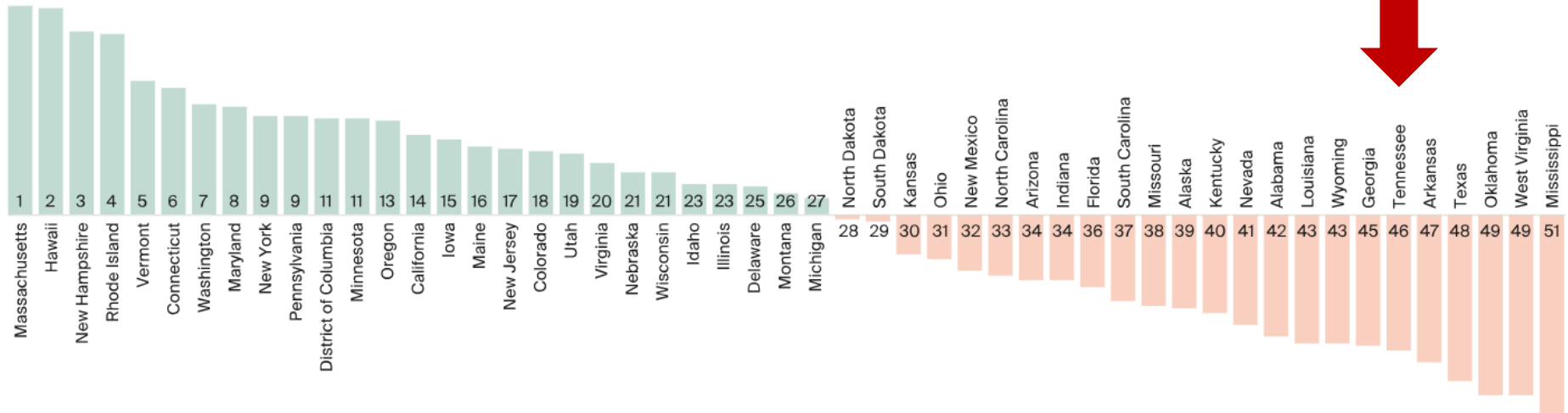
Americans' Health Declines and Access to Reproductive Care Shrinks, But States Have Options

7 Domains - 58 measures

Health care access, Quality, Use of services, Costs, Health disparities, Reproductive care and women's health, and Health outcomes

Massachusetts, Hawaii, and New Hampshire top the overall rankings on health system performance for 2023.

Overall Rankings for 2023 Scorecard on State Health System Performance

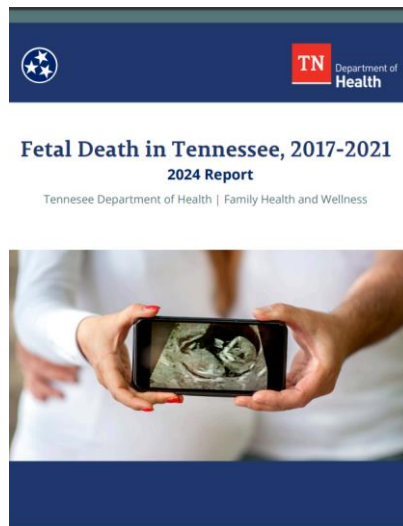
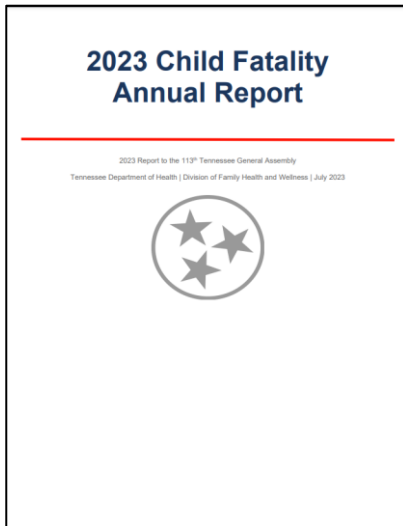
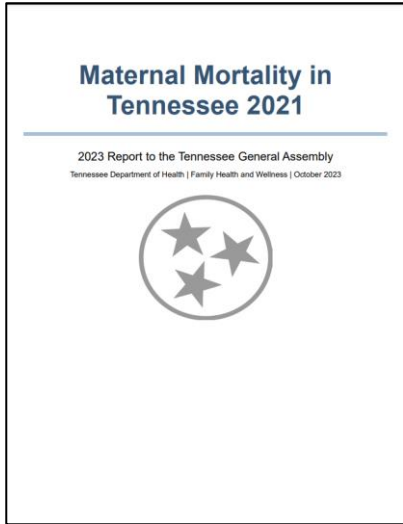


Notes: States arranged in rank order. Bar height corresponds to overall performance score. Green bars indicate better than average performance; orange bars indicate lower than average performance.

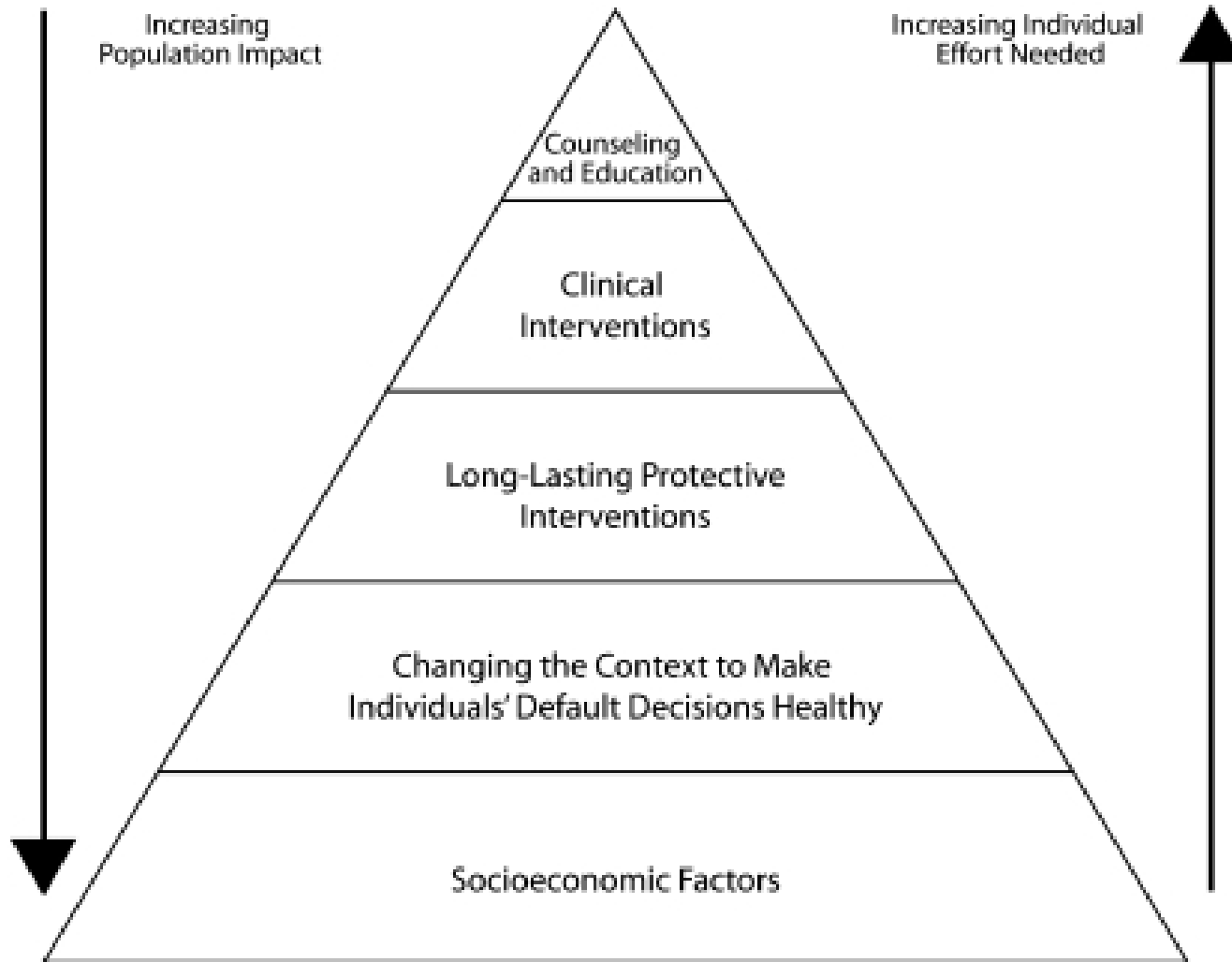
Source: David C. Radley et al., *The Commonwealth Fund 2023 Scorecard on State Health System Performance: Americans' Health Declines and Access to Reproductive Care Shrinks, But States Have Options* (Commonwealth Fund, June 2023). <https://doi.org/10.26099/fcas-cd24>



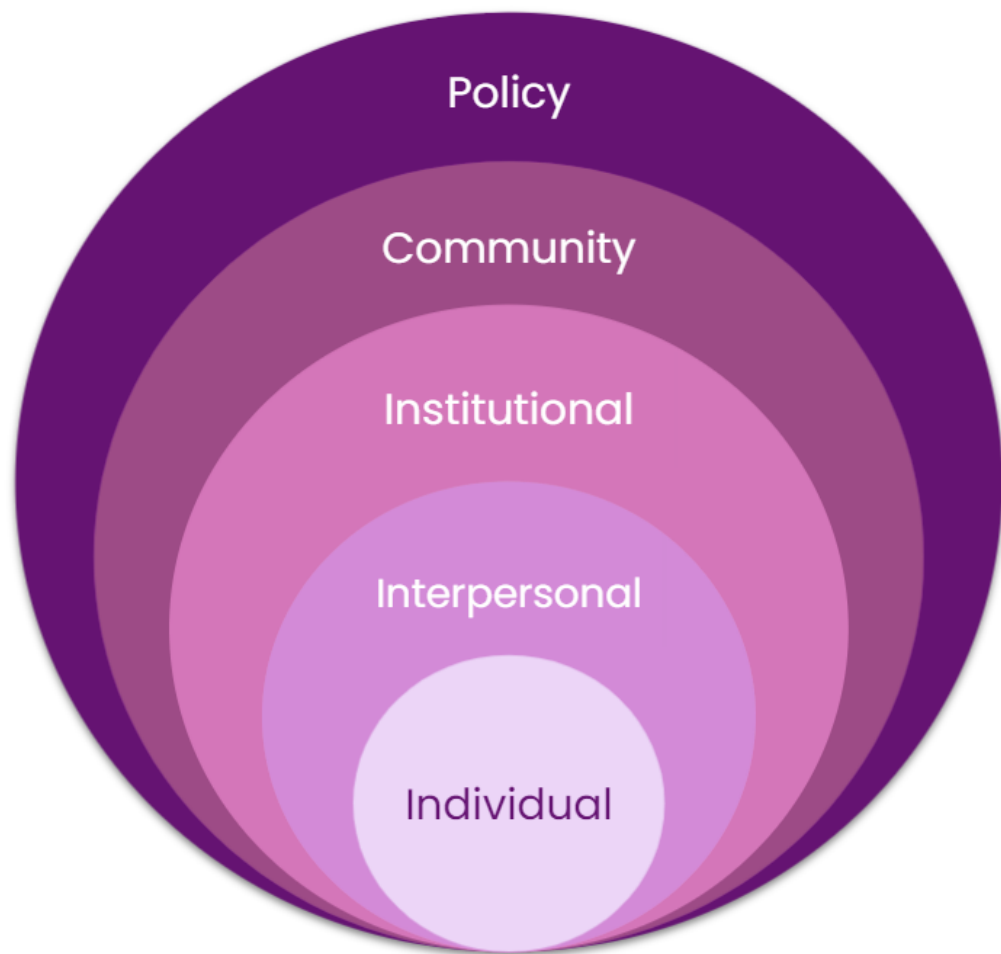
Tennessee Data and Surveillance Landscape



Driving Public Health Impact



Driving Public Health Impact



Federal, state, and local legislation

Cities, neighborhoods, resources, and norms

Organizations, schools, and workplaces

Friends, family, and social networks

Knowledge, attitudes, skills, and behaviors

Population-based Systems for Maternal & Infant Health

- **Maternal Mortality Review Committee**
- Maternal Health Task Force
- Family Planning Program
- Presumptive Eligibility
- **Perinatal Regionalization**
- **Newborn Screening Program**
- Statewide Child Fatality Review Program
 - Fetal Infant Mortality Review
- Community Health Access and Navigation in Tennessee (CHANT)
- Evidence-based Home Visiting
- Women, Infants, and Children (WIC)



<https://mchb.hrsa.gov/programs-impact/focus-areas/maternal-health/black-maternal-health>



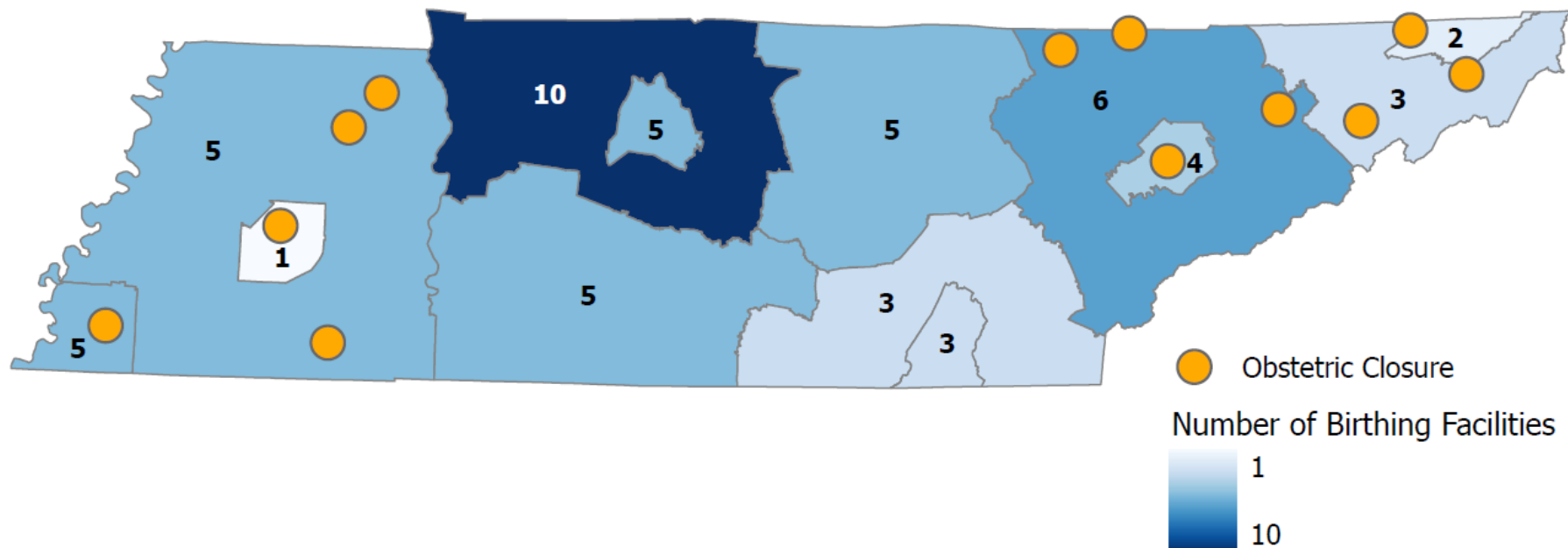
**Addressing Emerging Issues:
Moving Maternal and Infant
Data to Action**



#1: Maternity Care Deserts: Leveraging Perinatal Regionalization

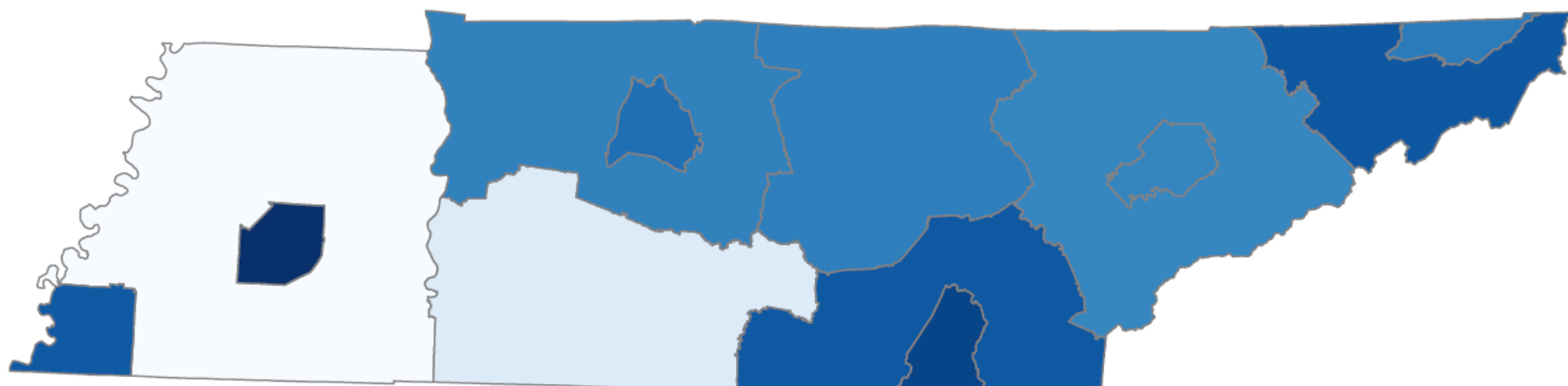
Changing Obstetric Landscape

There have been 12 obstetric closures since 2012

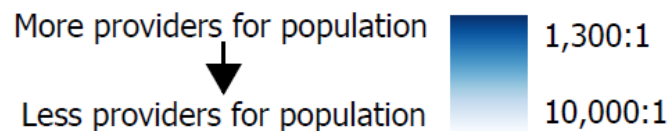


Obstetric Provider Shortage Areas

In 2023, 38% of Tennessee counties had no obstetric providers

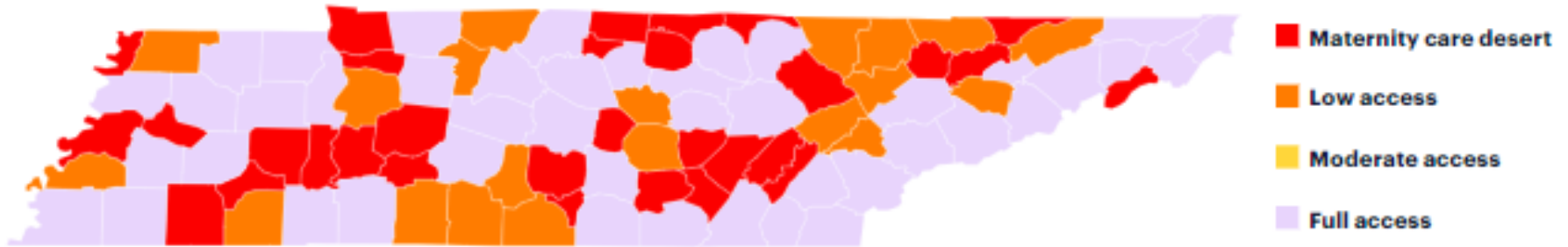


Obstetric Population to Provider Ratio



Maternity Care Deserts

**In 31 maternity care deserts in Tennessee:
5,651 TN babies born
(6.9% of all births)**



- Maternity Care Deserts
 - 0 hospitals and birth centers offering obstetric care
 - 0 obstetric providers (obstetrician, family physician, CNM/CM per 10,000 births)

March of Dimes

HEALTHY MOMS. STRONG BABIES.



WHERE YOU LIVE MATTERS: MATERNITY CARE IN TENNESSEE

INTRODUCTION

With over 3.5 million births in the United States annually, and rising rates of maternal mortality and morbidity, there is ample opportunity to improve maternal outcomes across the country.¹ More than 2 million women of childbearing age live in maternity care deserts, areas without access to birthing facilities or maternity care providers. Access to maternity care is essential for preventing poor health outcomes and eliminating health disparities. This report expands on the 2022 Nowhere to Go: Maternity Care Deserts Across the U.S. report² by taking a deeper dive into state level data and examining additional barriers that impact access to care. This data can be used to inform policies and practice recommendations in each state.

This report presents data on several important factors: levels of maternity care access and maternity care deserts by county; distance to birthing hospitals; availability of family planning services; community level factors associated with prenatal care usage as well as the burden and consequences of chronic health conditions across the state. While not an exhaustive list, each of these topics contribute to the complexity of maternity care access in each state. Working to improve access to maternity care by bringing awareness to maternity care deserts and other factors that limit access is one way in which March of Dimes strives to reduce preventable maternal mortality and morbidity for all pregnant people.

KEY FINDINGS

- In Tennessee, 32.6 percent of counties are defined as maternity care deserts compared to 32.6 percent in the U.S.
- 27.0 percent of women had no birthing hospital within 30 minutes compared to 9.7 percent in the U.S.
- Overall, women in Tennessee have a moderate vulnerability to adverse outcomes due to the availability of reproductive healthcare services.
- 17.0 percent of birthing people received no or inadequate prenatal care, greater than the U.S. rate of 14.8 percent.
- Women with chronic health conditions have a 50 percent increased likelihood of preterm birth compared to women with none.

ACCESS TO MATERNITY CARE IN TENNESSEE

Access to care during pregnancy and around the time of birth is not consistently available across the country. Hospital closures and a shortage of providers are driving changes in maternity care access, especially within rural areas and among Black, Indigenous, and people of color (BIPOC).³ The level of maternity care access within each county is classified across Tennessee by the availability of birthing facilities, maternity care providers, and the percent of uninsured women (see table). The map shows that in Tennessee, 32.6 percent of counties are defined as maternity care deserts compared to 32.6 percent of counties in the U.S. overall.

FINDINGS

- In Tennessee, there was a 6.3% decrease in the number of birthing hospitals between 2020 and 2019.
- In Tennessee, there were 5,651 babies born in maternity care deserts, 6.9% of all births.
- 4.7% of babies were born to women who live in rural counties, while 1.3% of maternity care providers practice in rural counties in Tennessee.



DEFINITIONS OF MATERNITY CARE DESERT AND LEVEL OF MATERNITY CARE ACCESS

Definitions	Maternity care deserts	Low access	Moderate access	Full access*
Hospitals and birth centers offering obstetric care	zero	<2	<2	≥2
Obstetric providers (obstetrician, family physician, CNM/CM per 10,000 births)	zero	<60	<60	≥60
Proportion of women 18-64 without health insurance	any	≥10%	<10%	any

Maternity care desert: Red square
 Low access: Orange square
 Moderate access: Yellow square
 Full access: Purple square

Sources: U.S. Health Resources and Services Administration (HRSA), Area Health Resources Files, 2022; American Board of Family Medicine, 2017-2020; National Center for Health Statistics, 2021 final natality data.

Note: CNM/CM = certified nurse midwives/certified midwives. *A county is full access if it meets one or more of the criteria. †Includes family physicians who provide obstetric care.

WHERE YOU LIVE MATTERS: MATERNITY CARE DESERTS AND THE CRISIS OF ACCESS AND EQUITY

March of Dimes recommends state policy actions that address access to care; see <https://marchofdimes.org/mcd-tn>. For details on data sources and calculations, see Technical Notes: <https://www.marchofdimes.org/peristats/maternitycaretechnotes>

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32.6% of counties

are defined as maternity care deserts compared to 32.6% in the U.S.

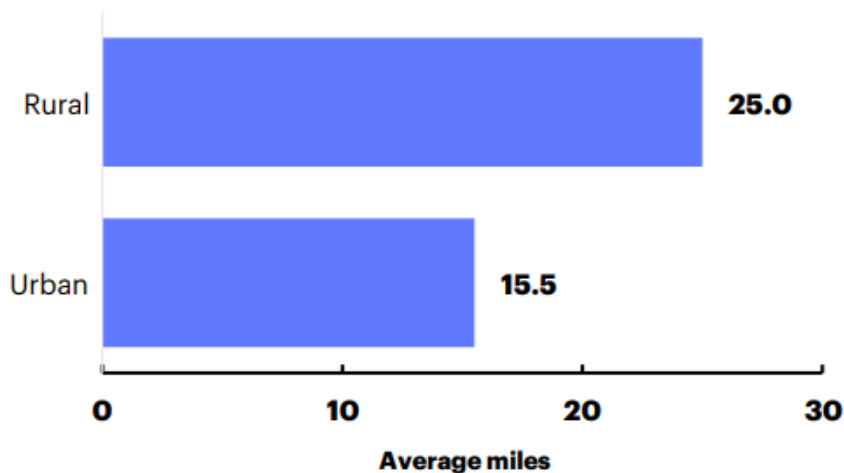
27% of women

had no birthing hospital within 30 minutes compared to 9.7% in the U.S.

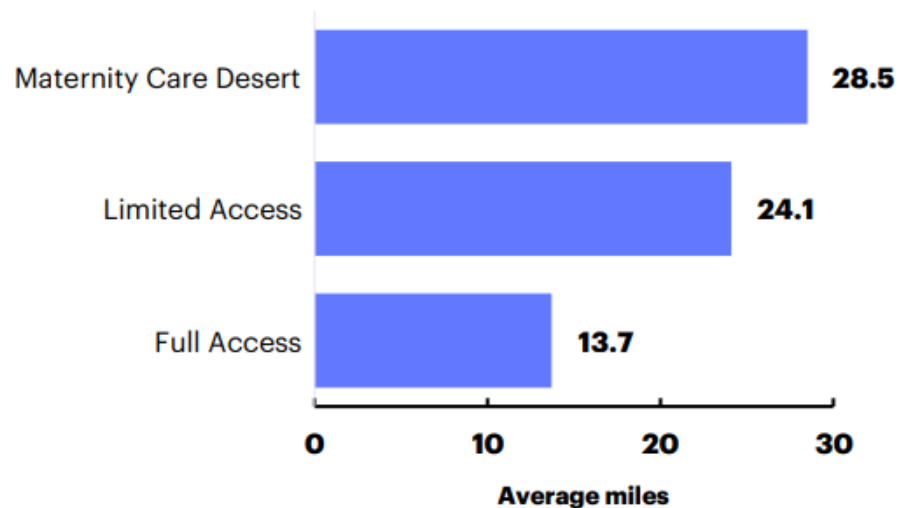
TN

Travel Distance to Hospitals

DISTANCE TO CARE BY RURALITY



DISTANCE TO CARE BY MATERNITY CARE ACCESS

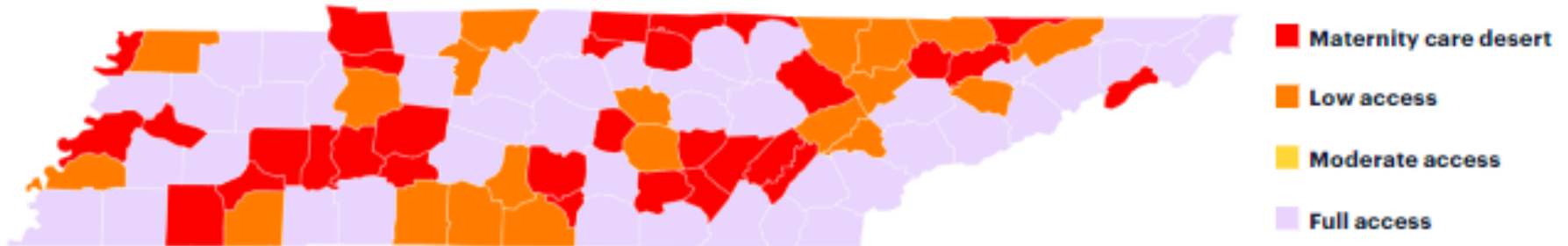


Sources: United States Census Bureau. "S1301 : Fertility." American Community Survey. 2017-2021. Web. 1 Nov 2022. American Hospital Association, 2021; American Board of Family Medicine, 2017-2020; U.S. Health Resources and Services Administration (HRSA), Area Health Resources Files, 2022.

Maternity Care Deserts

**5,651 TN babies born in maternity care deserts
6.9% of all births**

**EMS personnel are increasingly
transporting high risk mothers and babies.**



- Maternity Care Deserts
 - 0 hospitals and birth centers offering obstetric care
 - 0 obstetric providers (obstetrician, family physician, CNM/CM per 10,000 births)

Opportunity for Emergency Medical Services

- Tennessee has 19,000 Emergency Medical Services (EMS) statewide
- EMS are not required to be trained and certified in Neonatal Resuscitation (NRP)
- Providing the training and certification exams will improve EMS capacity to respond to emergencies.

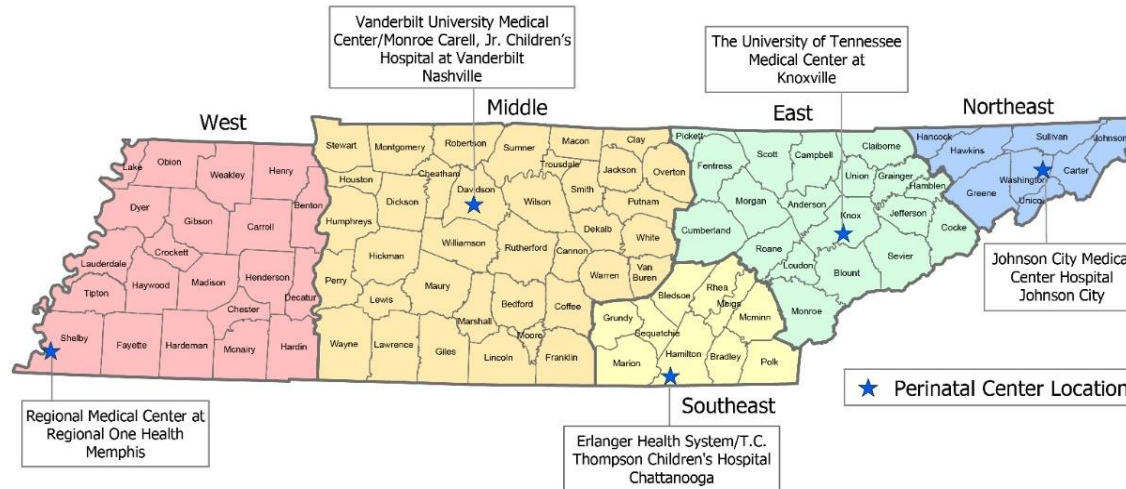


<https://rqipartners.com/programs/nrp/>

NRP Background

- All 5 Regional Perinatal Centers (RPC) teach the NRP training course developed by the AAP
- Fees for the certification exams are the responsibility of the EMS staff
- Certification is required every two years and can cost \$55, a barrier to certification

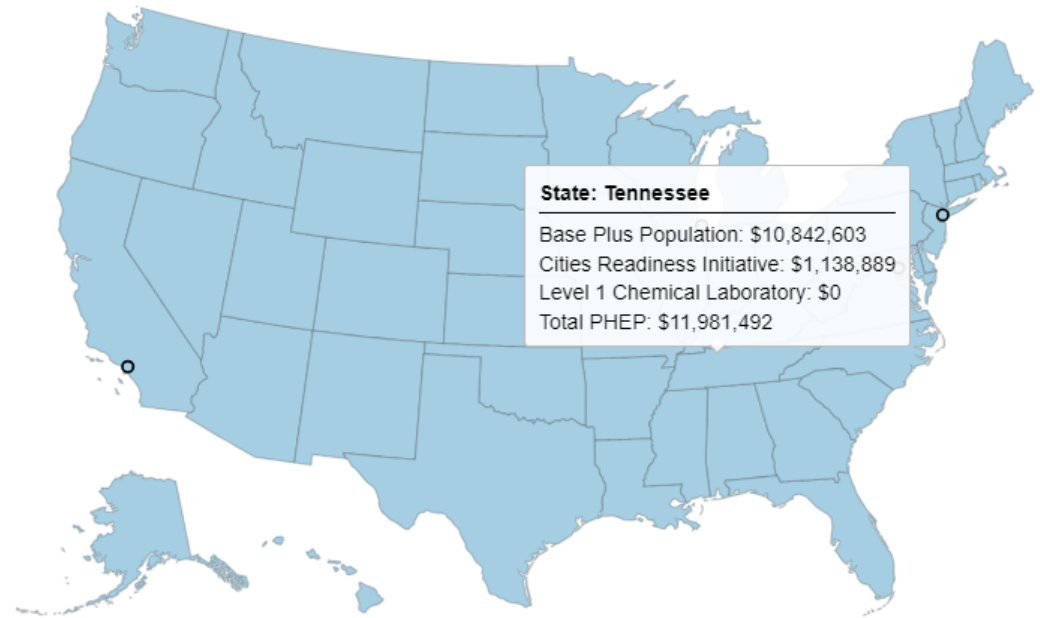
Tennessee Perinatal Regions and Perinatal Centers



Action: Apply for Emergency Preparedness Funds

- \$135,000 received in FY25 to purchase NRP certification exams
- Funding distributed to the 5 RPCs based on number of EMS in regions
- The funding is covering 3,471 exams (with volume discount)

Emergency Preparedness Funding - FY2024



Territories **AS** **GU** **PR** **VI** **MP** **FM** **PW** **MH**

<https://www.cdc.gov/readiness/php/data-research/epf/index.html>



Sustainability and Systems Change

- RPCs have a 2-year access to the AAP eBook (training materials) for NRP courses
- Regional Perinatal Centers' outreach coordinators are marketing NRP course to all EMS providers in their geographic area
- Request to EMS Board to require NRP certification is under consideration
- Push for EMS training schools to require NRP certification prior to graduation (already required at some)



<https://www.tn.gov/health/health-program-areas/health-professional-boards/ems-board/ems-board/about.html>

Policy: Perinatal Telehealth Program

Tennessee Strong Families

- Purpose
 - To create a perinatal telehealth program which will improve access to high-risk perinatal care and decrease maternal and infant mortality and morbidity
- Funding
 - \$2 million per year recurring
- Status
 - Request for Grant Proposals closed August 2024

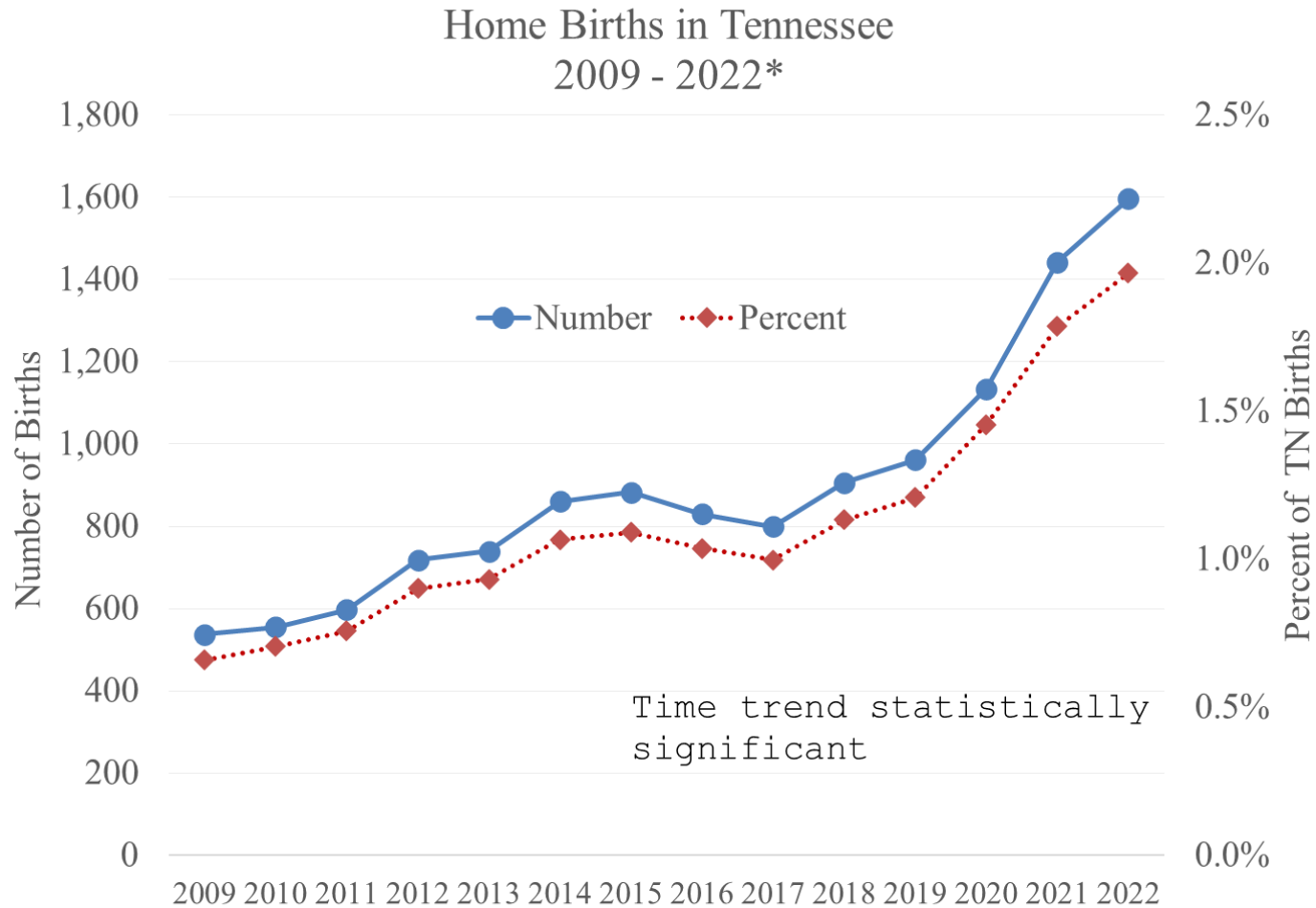


<https://roamsnm.org/telehealth/telematernal-fetal-medicine/>



#2 Increasing Home Births: Mobilizing Newborn Screening Outreach

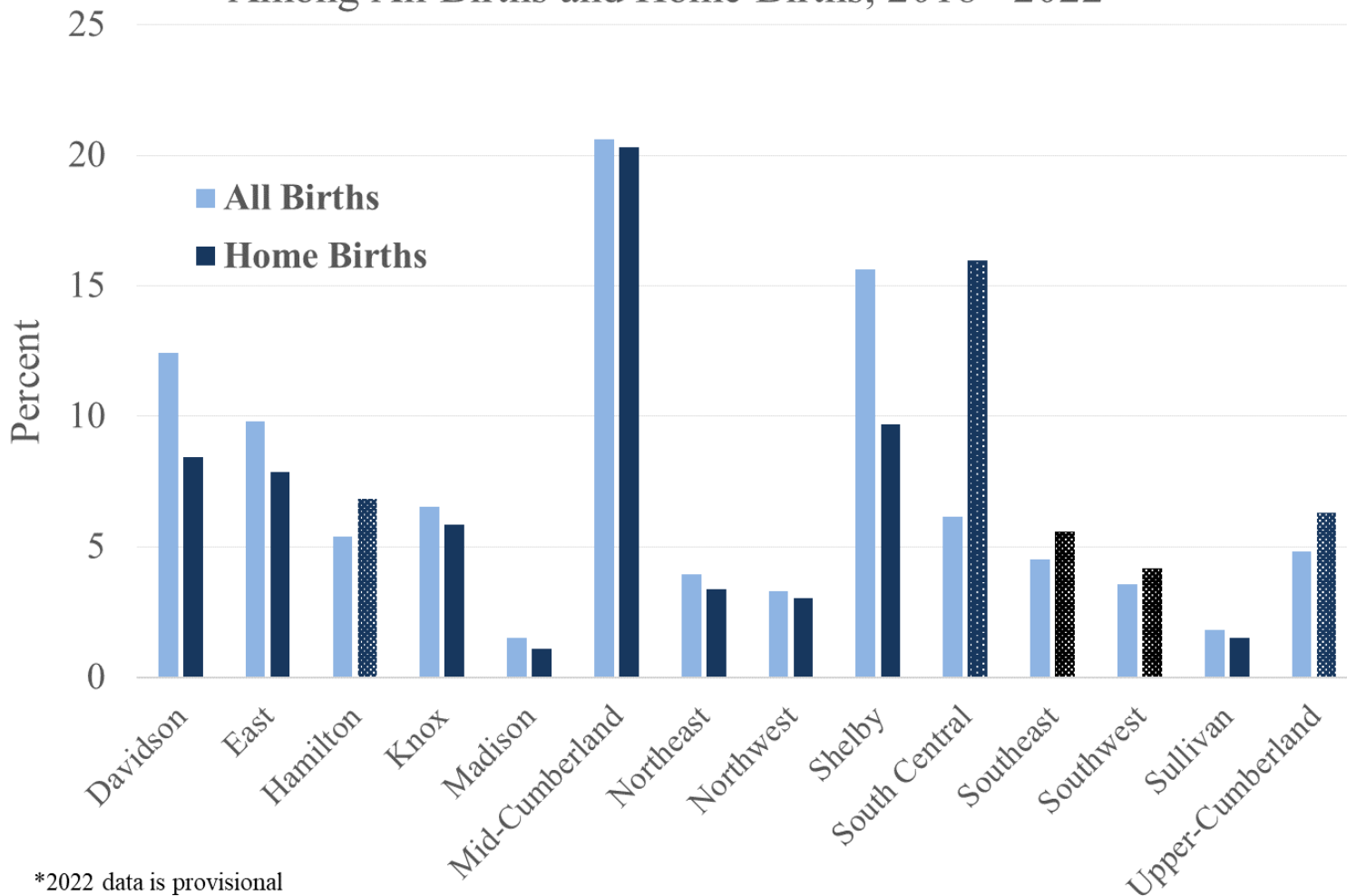
Increasing Home Births in Tennessee



*2022 data is provisional

Geographic Distribution of Home Births

Distribution of Births by TDH Region
Among All Births and Home Births, 2018 - 2022*



*2022 data is provisional

Data source: Division of Family Health and Wellness, Tennessee Department of Health.
Updated August 2023.



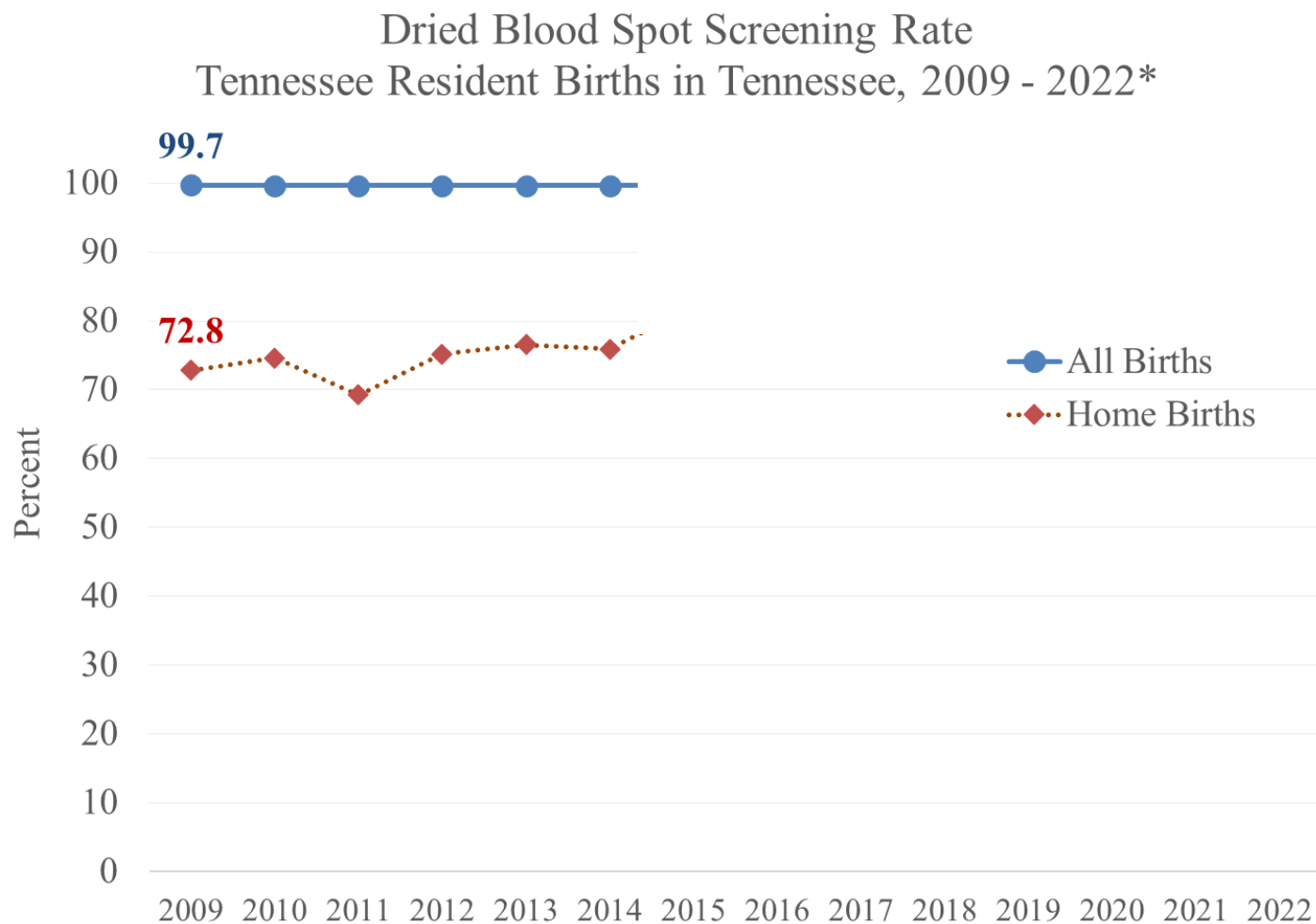
Downstream Impacts?

What are the potential impacts on maternal and infant health with an increased home birth rate?

Are these infants accessing timely newborn screening?



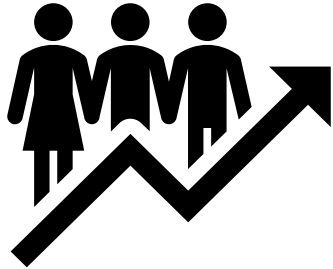
Lower Screening for Home Births



*2022 data is provisional. Refusals, deaths and those who moved out of the state were excluded from rate calculation.

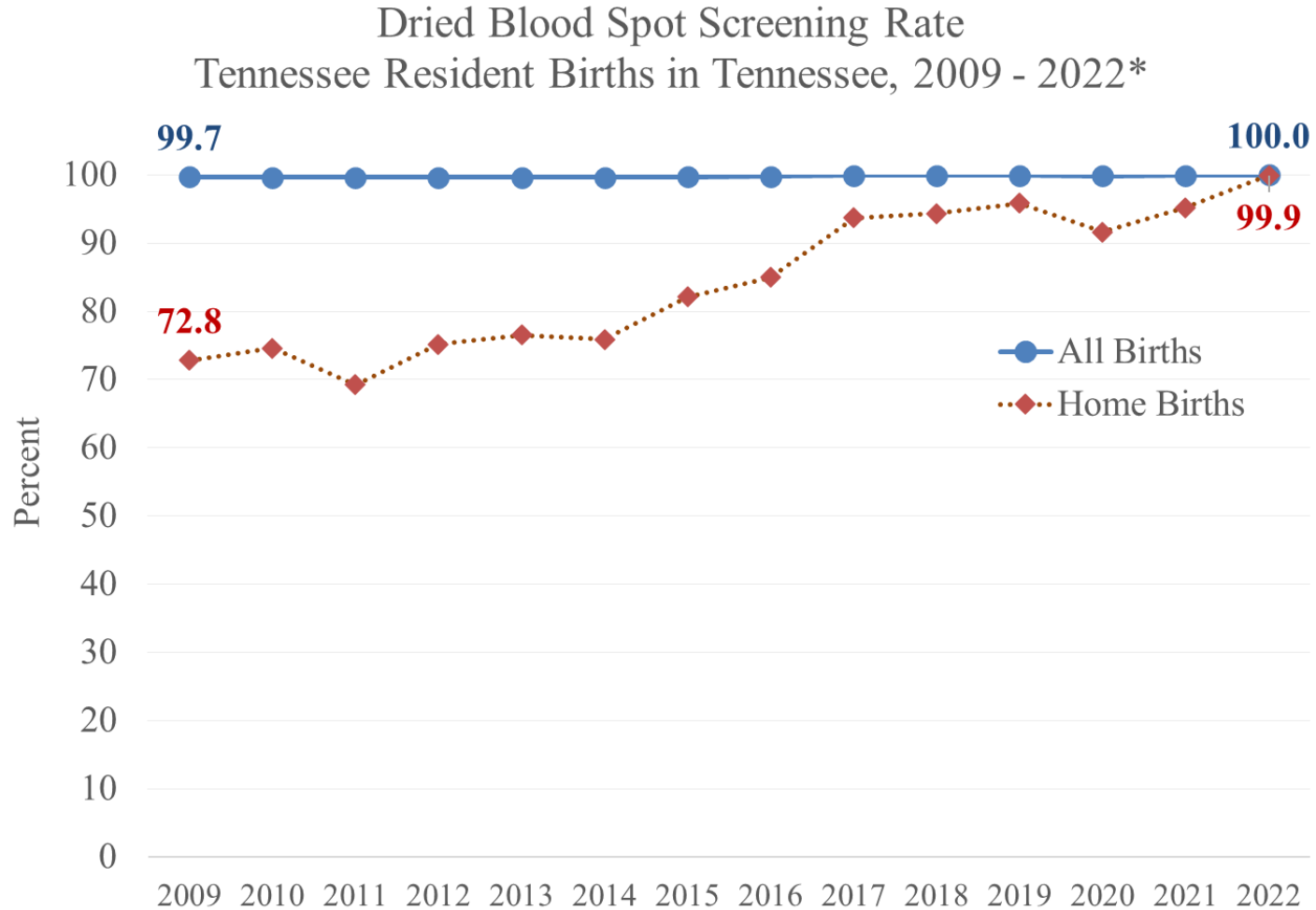
Data source: Division of Family Health and Wellness, Tennessee Department of Health.
Updated August 2023.

Quality Improvement Capacity & Action



- New staff added in 2015
 - Additional administrative support
 - Quality Assurance Coordinator
 - Nurse Case Manager Coordinator
 - Nurse Educator
 - Epidemiologist
- Increased and targeted outreach to hospitals and the Tennessee Midwife Association.

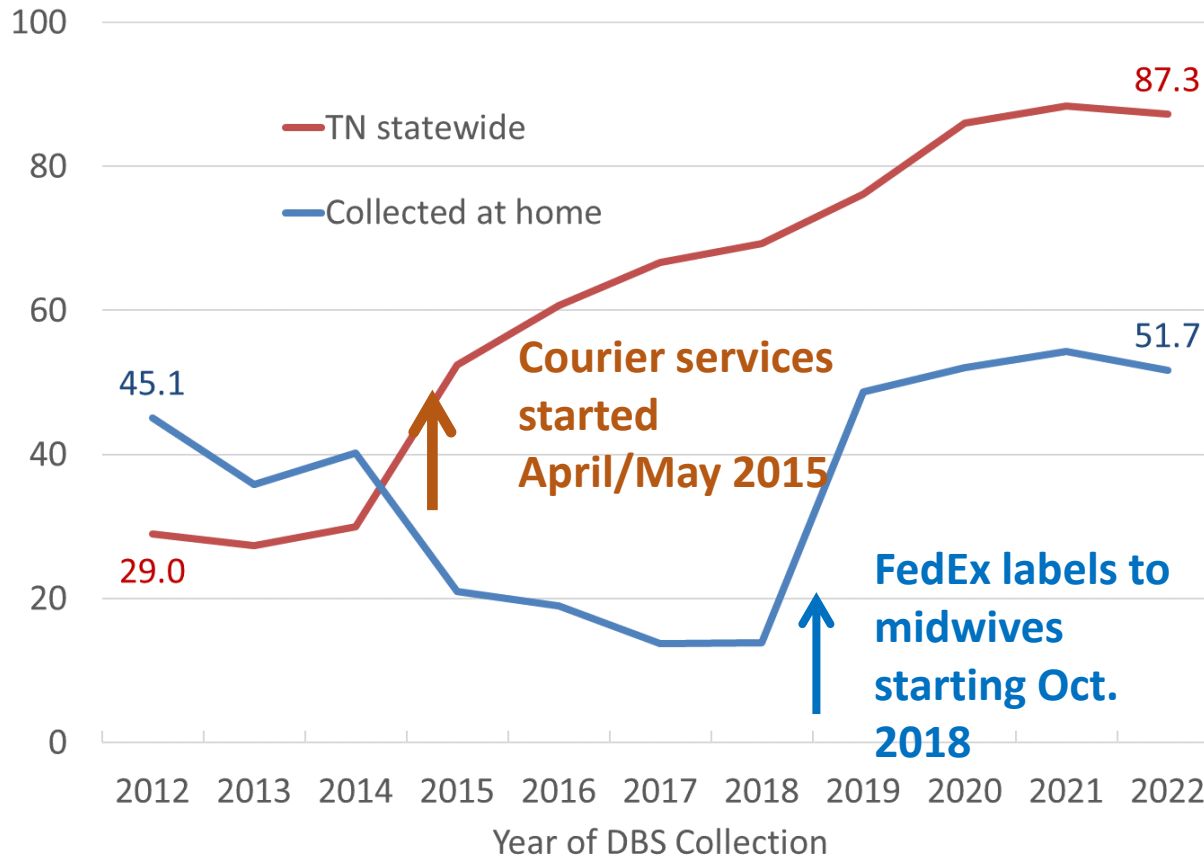
Improvements Over Time



*2022 data is provisional. Refusals, deaths and those who moved out of the state were excluded from rate calculation.

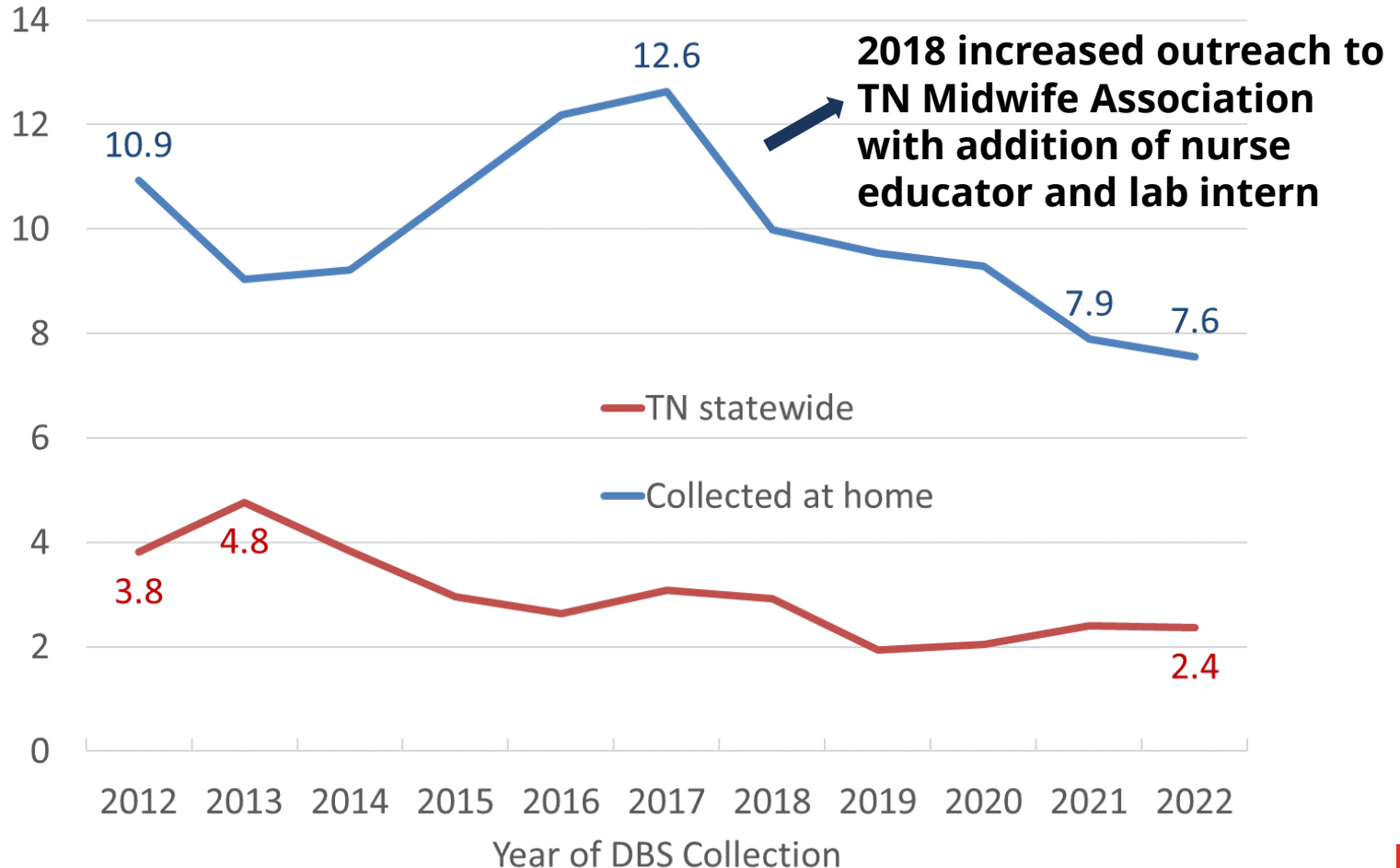
Improving Timeliness

Percent Initial and Repeat DBS Received <48 Hours from Collection

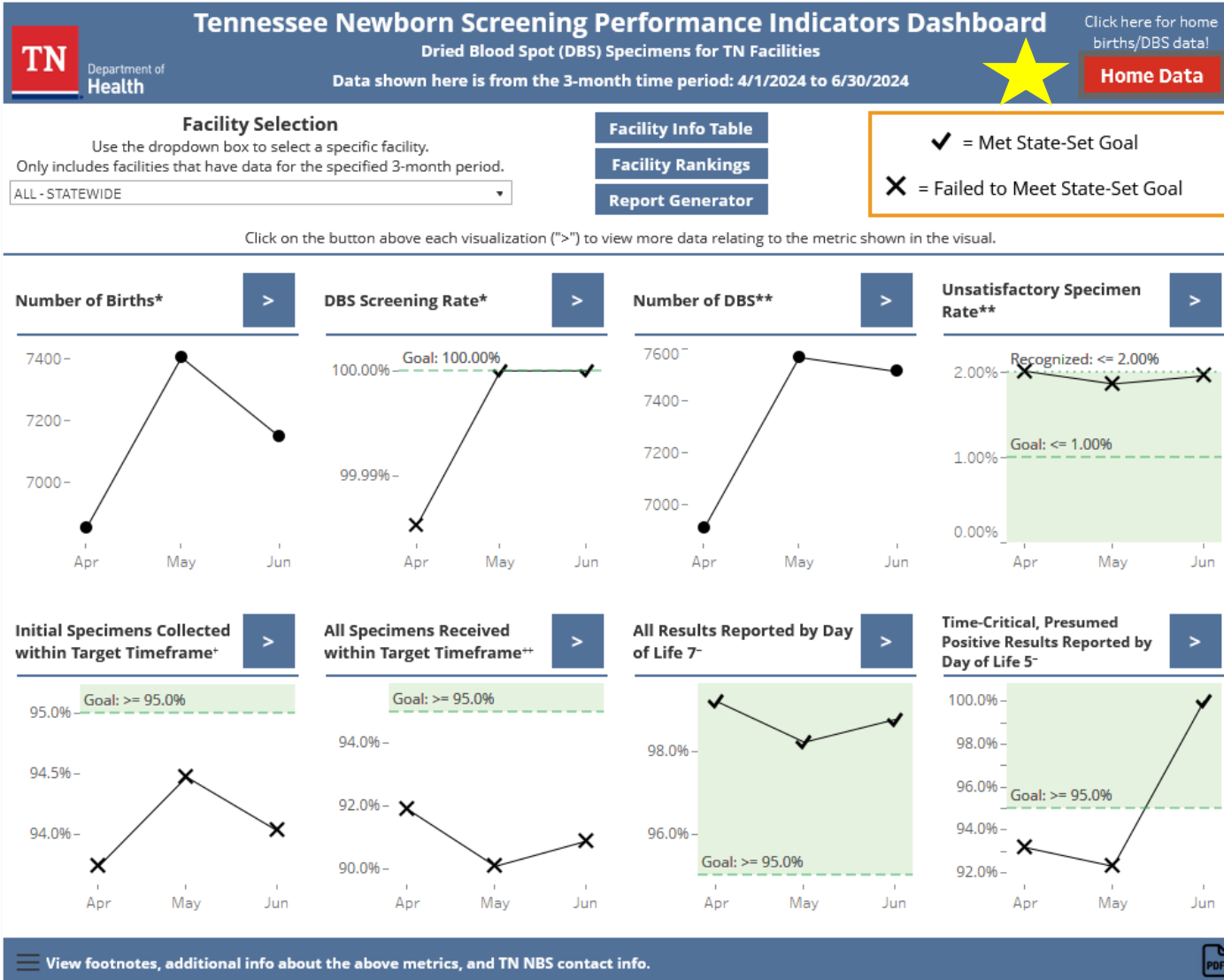


Decreasing Unsatisfactory Specimens

Dried Blood Spot Unsatisfactory Rate (%)

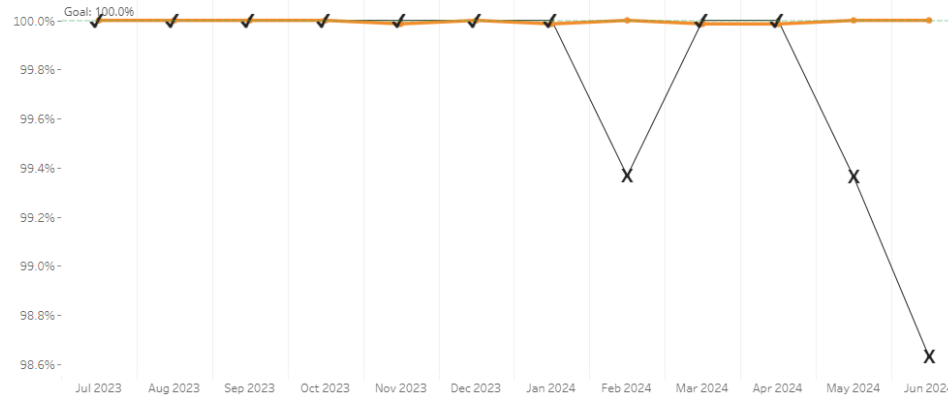


Newborn Screening Dashboard



Surveillance of Home Birth Screening

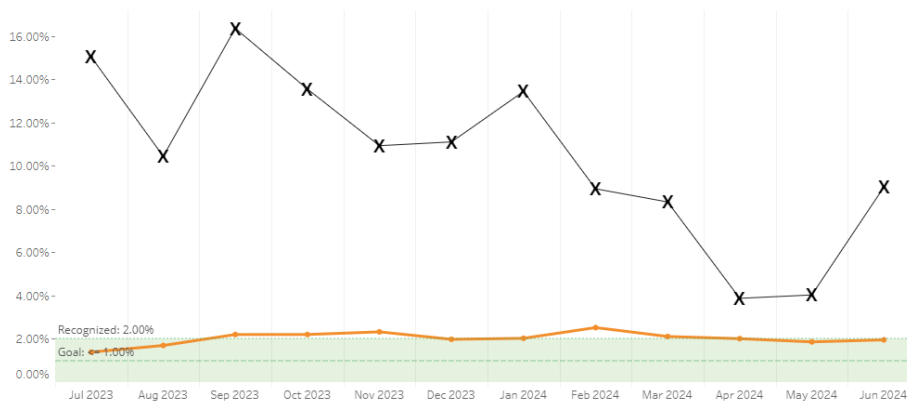
DBS Screening Rate* for Home Births
July 2023 to June 2024 by Month



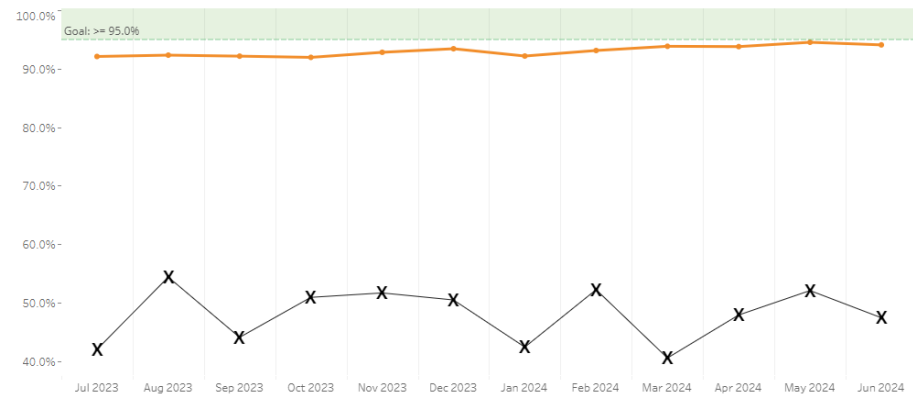
Color Legend

- Home Data
- Statewide Facility Data

Unsatisfactory Specimen Rate** for DBS Submitted from Home
July 2023 to June 2024 by Month



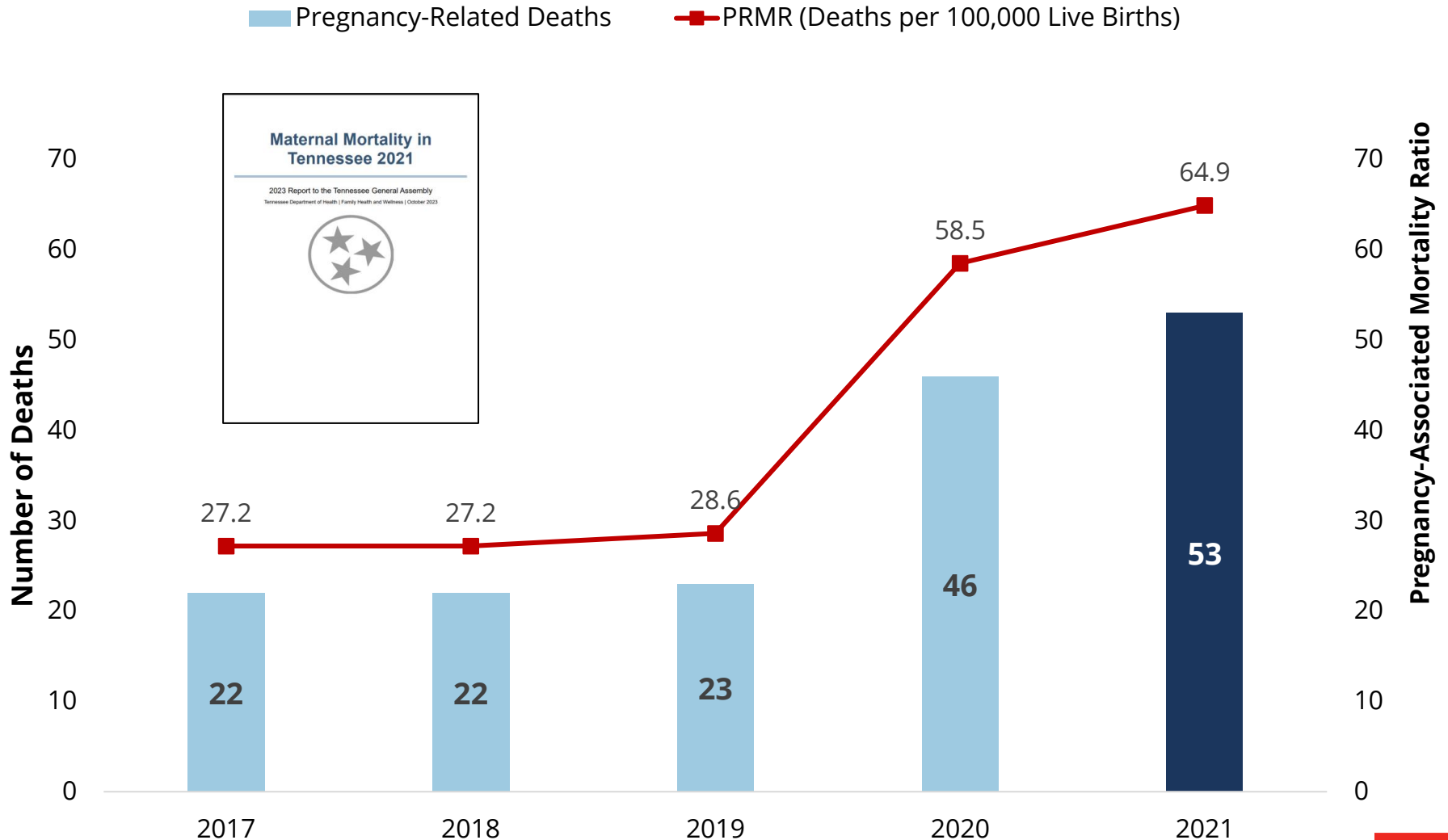
Initial Specimen Collection Timeliness* for Specimens Submitted from Home
July 2023 to June 2024 by Month





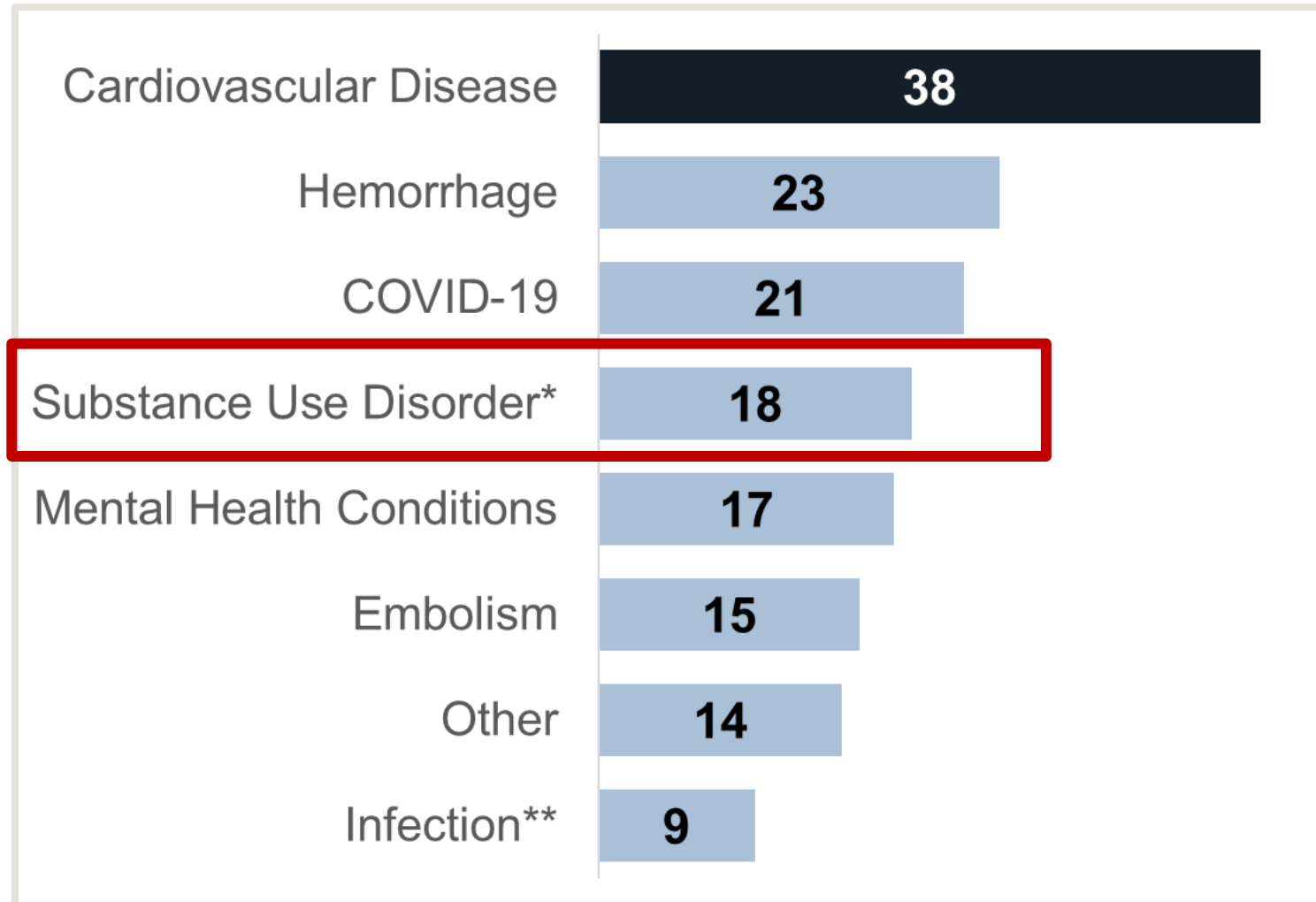
**#3 Overdoses in the
Postpartum Period:
From Review to Action**

Pregnancy-Related Mortality



Data Sources: Tennessee Department of Health, Division of Family Health and Wellness, Maternal Mortality Review Program, 2017-2021. Tennessee Department of Health; Division of Vital Records and Statistics; Birth Statistical System, 2017-2021. Prepared by Tennessee Department of Health, Division of Family Health and Wellness.

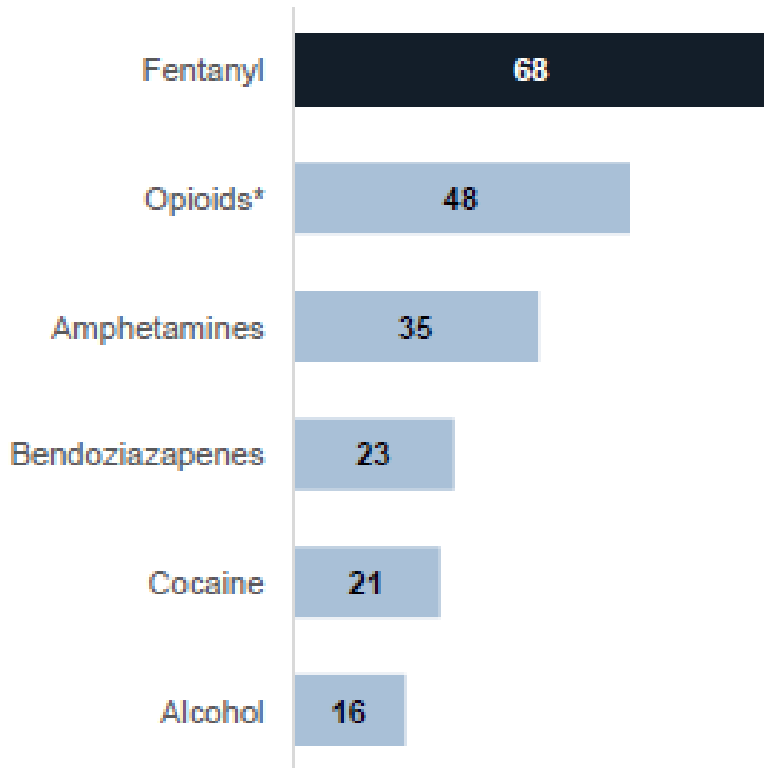
Underlying Cause of Pregnancy-Related Deaths: 2017-2021



Pregnancy-Associated Acute Overdose Deaths

Acute overdose was the leading cause of pregnancy-associated, but not related death in 2021

Leading Substances Found in Acute Overdose Deaths: 2017-2021



- Between 2017 and 2021, acute overdose not related to pregnancy was the cause of 87 maternal deaths
- Fentanyl was the single most common substance present in 78% of overdose deaths
- SUD was prevalent in 94% of these deaths
- 83% of deaths occurred between 43 days and 1 year postpartum

MMRC Recommendations on Naloxone

- The State should support distribution to all households with known SUD and substance use history should be provided with naloxone, including before, during, and after pregnancy.
- TDH and TDMHSAS should promote training and use of Naloxone for those with a history of substance misuse



Universal Postpartum Naloxone



- May 2021-April 2022 Maine's PQC piloted Universal PP Naloxone project in a small rural hospital with ~200 annual deliveries
- Increases access and community saturation with naloxone
- Decreased stigma for known substance users and unidentified substance users
- Provider implicit bias training
- 197 postpartum discharges
 - 97% received OD recognition and naloxone administration education
 - 94% accepted first-aid kit
 - 76% accepted naloxone

Opioid Abatement Council Proposal and Award

Universal Postpartum Naloxone

- Universal distribution of first aid kits for all moms discharged from hospitals after delivery
 - Harm reduction
 - De-stigmatize substance use disorder
 - Remove barriers from accessing naloxone
- First aid kits will include 2 doses of naloxone and fentanyl test strips along with other first aid supplies
- Funding for 3 years from Opioid Abatement Council
 - 396 proposals and FHW was 1/116 grants awarded
 - Year 1: \$60,650



<https://innovation.mainehealth.org/2023/06/23/nalox-one-first-aid-kits/>

Where to Pilot?

Maternal Mortality in Tennessee 2021

2023 Report to the Tennessee General Assembly
Tennessee Department of Health | Family Health and Wellness | October 2023



2022 Tennessee Drug Overdose Deaths

Tennessee Department of Health
Office of Informatics and Analytics

February 21, 2024



2022 Drug Overdose Hospital Discharges in Tennessee

Tennessee Department of Health
Office of Informatics and Analytics

March 1, 2024

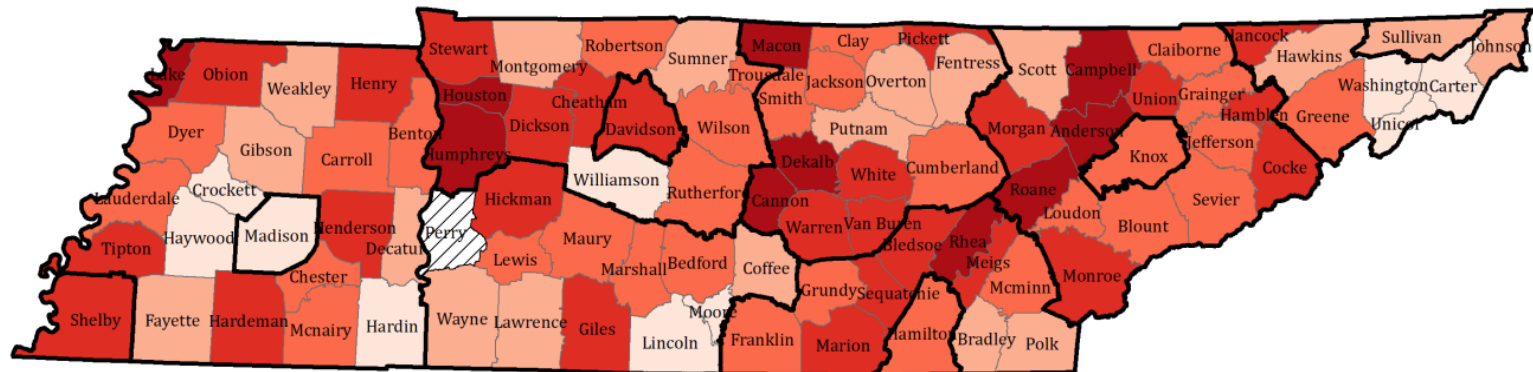
Neonatal Abstinence Syndrome Surveillance Annual Report 2021



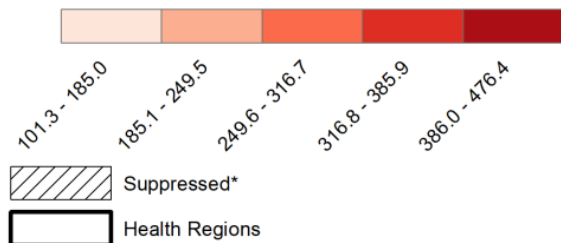
Identifying Priority Counties

Priority Counties for Pilot:

- Pregnancy-associated deaths where SUD was contributing factor
- Female OD-related Emergency Department visits
- General population fatal and non-fatal opioid overdose data
- Counties with hospitals >1000 deliveries/year were excluded for the pilot.
- For counties ranking high with no birthing facility, the neighboring county was reviewed



Age-adjusted Rate per 100,000 Population for All Drug Overdose Outpatient Visits (2022)



*Rates for counts less than 10 are suppressed

https://www.tn.gov/content/dam/tn/health/documents/pdo/legislative-report/Drug_Overdose_Hospital_Discharges_Report_2024.pdf

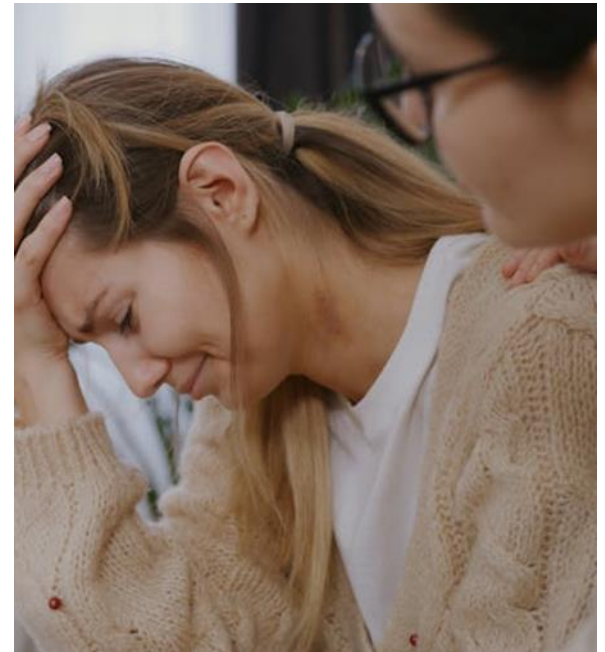
Current Status

- Funding received from Opioid Abatement Council mid-July
- Potential pilot hospitals identified
- Education and resources in development
- Evaluation plan in development



Maternal Mental Health and Substance Use Disorder (MMHSUD)

- Tennessee was awarded a **five-year, \$3.75 million grant** from HRSA (2023-2028) to address MMHSUD. This Program will:
 - Establish a regional MMHSUD **teleconsultation service** to provide on-demand consults between women’s health providers and the maternal mental health team
 - Increase routine **behavioral health screening**, intervention, treatment, and referrals for pregnant , and postpartum women
 - **Provide education and training to maternal health providers** on MMHSUD





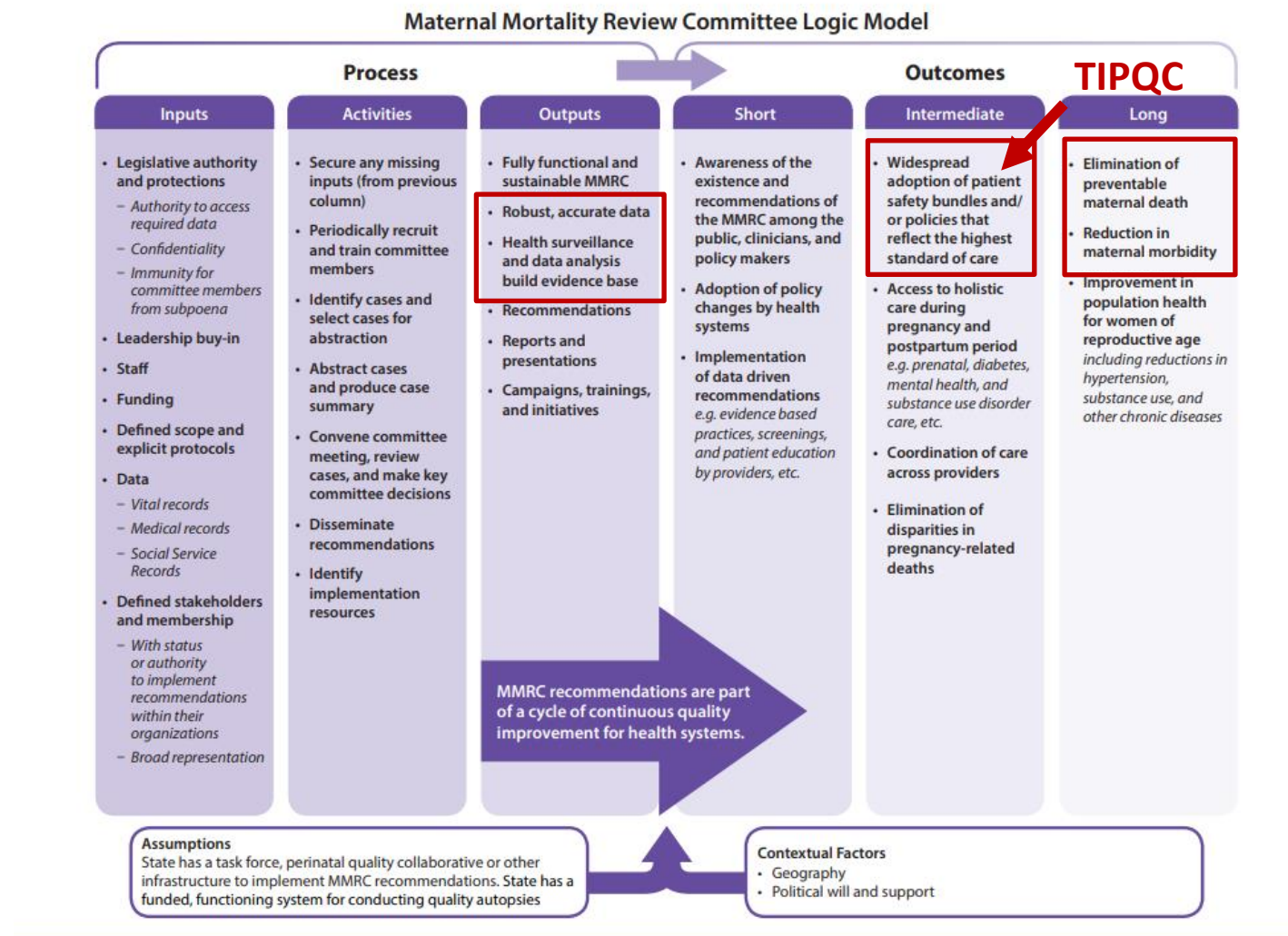
Moving Forward

What is your role in improving maternal health?



<https://www.gettyimages.com/detail/photo/smokey-mountain-sunset-royalty-free-image/1482698155>

How will you use these data to drive outcomes?



Data and Reports

- New website
- <https://www.tn.gov/health/health-program-areas/fhw/data-and-reports.html>

Family Health and Wellness

About Us

Populations We Serve

Data and Reports

Funding and Grants

Get Involved

Contact Us

Program Index (A to Z)

Data and Reports

Dashboards

- Birth Defects
- Childhood Lead Poisoning Surveillance
- Newborn Dried Blood Spot Screening Dashboard
- Perinatal Health Indicators

Maternal and Infant Health Mapping Tool (HIRSA)

Annual and Legislative Reports

Annual and Legislative Reports

Below you will find the most recent annual and legislative reports. For archived or previous reports, please visit the program specific pages.

- [Birth Defects Data Report \(2023\)](#)
- [Child Fatality Review Report \(2023\)](#)
- [Fetal Death Report \(2024\)](#)
- [Home Visiting Report \(FY2023\)](#)
- [Maternal and Child Block Grant \(2023 Application/2021 Report\)](#)
- [Maternal Mortality Review Report \(2023\)](#)
- [Neonatal Abstinence Syndrome Report \(2021\)](#)
- [Suicide Prevention Report \(2022\)](#)
- [Traumatic Brain Injury Report \(2023\)](#)

> Additional Data and Resources

> Strategic Plans and Reports

Remember Your Why



Thank You

Yoshie Darnall
Hannah Dudley
Hilary Fryman
Crissy Hartsfield
Amanda Ingram
Yinmei Li
Kristyn Long
Margaret Major
Audrey Stach
Trang Wadsworth
Denise Werner
Isaac Yi



Thank you.
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