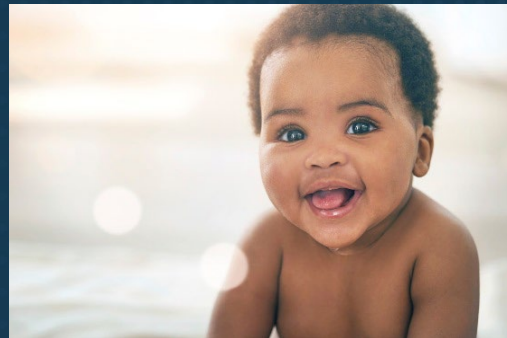


# OVERVIEW OF THE PREGNANCY RISK ASSESSMENT MONITORING SYSTEM (PRAMS)

LEE WARNER, PHD; HOLLY SHULMAN, MA; PHIL HASTINGS, PHD; AND RUBEN SMITH, PHD

THE FINDINGS AND CONCLUSIONS IN THIS REPORT ARE THOSE OF THE AUTHORS AND DO NOT NECESSARILY REPRESENT THE OFFICIAL POSITION OF THE CENTERS FOR DISEASE CONTROL AND PREVENTION.



Centers for Disease Control and Prevention

National Center for Chronic Disease Prevention and Health Promotion

Division of Reproductive Health



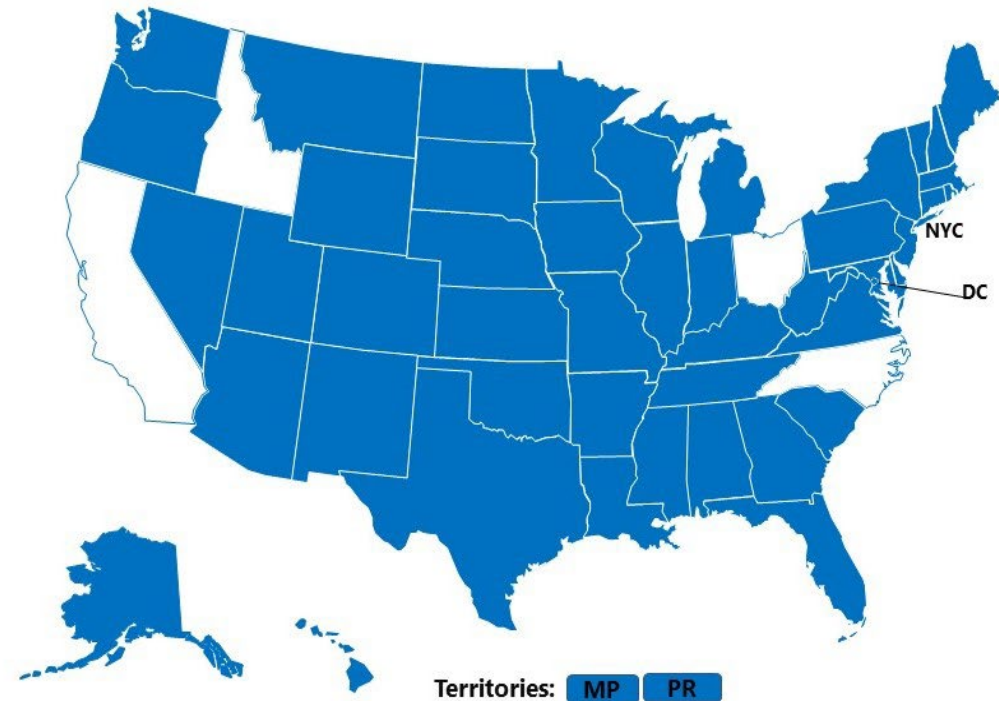
# WHAT IS PRAMS?

- Population-based surveillance system, established in 1987, as part of CDC's Safe Motherhood Initiative
- Self-reported maternal behaviors and experiences around the time of pregnancy
- Supplements birth certificate information
- Jurisdiction-specific and near-national estimates



# SURVEILLANCE: CURRENT FUNDING CYCLE (2021-2025)

- 50 jurisdictions
  - 46 states
  - 4 cities/territories
    - District of Columbia
    - New York City
    - Puerto Rico
    - Northern Mariana Islands
- Represents 81% of live births



# PRAMS POPULATION OF INTEREST

- Women who recently delivered a live-born infant
  - Resident of jurisdiction (i.e., state, city, or territory)
  - Birth within the calendar year of data collection
  - Randomly sampled from jurisdiction's birth certificate records
  - Sampled when infants are 2-6 months old
  - Jurisdictions sample ~1000 – 3000 women per year



# DATA COLLECTION PROCEDURES

- Standardized protocol
- Mixed mode data collection
  - Three mailed surveys
  - Phone follow-up (up to 15 attempts)
  - Web module in pilot testing



# FLEXIBILITIES

- Stratification – oversample subpopulations to address priorities
- Incentives and rewards (cash, gift cards, baby items, etc.)
- Survey topics
  - 60% common to all sites
  - 40% selected by site
    - Standard question modules
    - Jurisdiction-developed questions
  - Ability to add supplements on new or emerging topics (COVID, opioid use, etc.)



# PRAMS QUESTIONNAIRE



# ESTABLISHED QUESTIONNAIRE TOPICS

- Preconception care
- Oral Health
- Pregnancy intention
- Prenatal care
- Health insurance
- Cigarette and alcohol use
- Intimate partner violence (physical abuse)
- Postpartum contraception
- Mental health (depression)
- Breastfeeding
- Infant sleep environment



# QUESTIONNAIRE SUPPLEMENTS

Topic	Year	# of PRAMS Sites
Social Determinants of Health	2022	22
COVID-19 Vaccine	2021	22
COVID-19 experiences	2020	34
Disability	2019 – 2020	25
Prescription Opioid use	2019	32
Marijuana & prescription drug use	2017	10
Zika	2016 – 2017	22
History of Breast & Ovarian Cancer	2016 – 2020	4
E-cigarette use	2015	2
H1N1 Influenza & Seasonal Influenza	2009	30

# RECENT RELEASES: CDC VITAL SIGNS

## Postpartum Depressive Symptoms and Provider Discussions About Perinatal Depression – U.S., 2018

Morbidity and Mortality Weekly Report

### Vital Signs: Postpartum Depressive Symptoms and Provider Discussions About Perinatal Depression — United States, 2018

Brenda L. Bauman, MSPH<sup>1</sup>; Jean Y. Ko, PhD<sup>1</sup>; Shanna Cox, MSPH<sup>1</sup>; Denise V. D'Angelo, MPH<sup>1</sup>; Lee Warner, PhD<sup>1</sup>; Suzanne Folger, PhD<sup>1</sup>; Heather D. Tevendale, PhD<sup>1</sup>; Kelsey C. Coy, MPH<sup>1</sup>; Leslie Harrison, MPH<sup>1</sup>; Wanda D. Barfield, MD<sup>1</sup>

**Introduction:** Perinatal depression is a complication of pregnancy that can result in adverse maternal and infant outcomes. Screening to identify pregnant and postpartum women with depressive symptoms is recommended to provide diagnosis, treatment, and follow-up care to reduce poor outcomes.

**Methods:** CDC analyzed 2018 data from the Pregnancy Risk Assessment Monitoring System to describe depressive symptoms (PDS) among women with a recent live birth and to assess whether health care providers asked women about depression during prenatal and postpartum health care visits, by site and maternal and infant characteristics.

**Results:** Among respondents from 31 sites, the prevalence of PDS was 13.2%, ranging from 9.7% in Illinois to 20.7% in Mississippi. The prevalence of PDS exceeded 20% among women who were aged  $\leq 19$  years, were American Indian or Alaska Native, smoked during or after pregnancy, experienced intimate partner violence before or during pregnancy, or whose infant had died since birth. The prevalence of women whose health care provider asked about depression during prenatal care visits was 79.1% overall, ranging from 50.7% in Puerto Rico to 90.7% in Alaska. The prevalence of women reporting that a provider asked about depression during postpartum visits was 87.4% overall, ranging from 50.7% in Puerto Rico to 96.2% in Vermont.

**Conclusions and Implications for Public Health Practice:** The prevalence of self-reported PDS varied by maternal and infant characteristics. Whether providers asked women about perinatal depression was not consistent across sites. Provision of recommended screenings and appropriate referrals for diagnosis, treatment, and follow-up care to ensure early and effective management of depression to reduce adverse maternal and infant outcomes.

**Vital Signs**  
Identifying Maternal Depression  
Missed opportunities to support moms

1 in 8 women report symptoms of depression after giving birth.

20% About 1 in 5 women were not asked about depression during a prenatal visit.

50% Over half of pregnant women with depression were not treated.

**Overview:**  
Pregnancy can be an exciting time in a woman's life, but it can also bring challenges. Many women experience the baby blues after giving birth, and some women develop symptoms of depression that are more intense, long-lasting, and can interfere with daily activities. Mothers with depression feel sad, hopeless, and have little interest in doing things they once enjoyed.

**PROBLEM:**  
Healthcare providers are missing opportunities to ask women about depression.

- About 1 in 5 women were not asked about symptoms of depression during a prenatal visit.

## Vital Signs: Prescription Opioid Pain Reliever Use During Pregnancy — 34 U.S. Jurisdictions, 2019

Morbidity and Mortality Weekly Report (MMWR)

CDC



### Vital Signs: Prescription Opioid Pain Reliever Use During Pregnancy — 34 U.S. Jurisdictions, 2019

Weekly / July 17, 2020 / 69(28):897-903

Jean Y. Ko, PhD<sup>1</sup>; Denise V. D'Angelo, MPH<sup>1</sup>; Sarah C. Haight, MPH<sup>1</sup>; Brian Morrow, MA<sup>1</sup>; Shanna Cox, MSPH<sup>1</sup>; Beatriz Salvesen von Essen, MPH<sup>1</sup>; Andrea E. Strahan, PhD<sup>2</sup>; Leslie Harrison, MPH<sup>1</sup>; Heather D. Tevendale, PhD<sup>1</sup>; Lee Warner, PhD<sup>1</sup>; Charlan D. Kroelinger, PhD<sup>1</sup>; Wanda D. Barfield, MD<sup>1</sup> ([View author affiliations](#))

[View suggested citation](#)

#### Summary

What is already known about this topic?

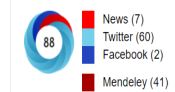
Data on self-reported prescription opioid use during pregnancy are limited.

What is added by this report?

Analysis of 2019 survey data found that 6.6% of women reported prescription opioid use during pregnancy. Among these women, 21.2% reported misuse (a source other than a health care provider or a reason for use other than pain), 27.1% wanted or needed to cut down or stop using, and 31.9%

#### Article Metrics

Altmetric:



Citations: 15

# PRAMS METHODOLOGY

AJPH PREGNANCY RISK ASSESSMENT MONITORING SYSTEM

## The Pregnancy Risk Assessment Monitoring System (PRAMS): Overview of Design and Methodology

Holly B. Shelton, MA, Denise V. D'Angelo, MPH, Leslie Hamern, MPH, Robert A. Smith, PhD, and Lee Warner, PhD

**Data System.** The Pregnancy Risk Assessment Monitoring System (PRAMS) is an ongoing state-based surveillance system of maternal behaviors, attitudes, and experiences before, during, and shortly after pregnancy. PRAMS is conducted by the Centers for Disease Control and Prevention's Division of Reproductive Health in collaboration with state health departments.

**Data Collection/Processing.** Birth certificate records are used in each participating jurisdiction to select a sample representative of all women who delivered a live-born infant. PRAMS is a mixed-mode mail and telephone survey. Annual state sample sizes range from approximately 1000 to 3000 women. States stratify their sample by characteristics of public health interest such as maternal age, race/ethnicity, geographic area of residence, and infant birth weight.

**Data Analysis/Dissemination.** States meeting established response rate thresholds are included in multistate analytic data sets available to researchers through a proposal submission process. In addition, estimates from selected indicators are available online.

**Public Health Implications.** PRAMS provides state-based data for key maternal and child health indicators that can be tracked over time. Stratification by maternal characteristics allow for examinations of disparities over a wide range of health indicators. (*Am J Public Health*. 2018;108:1305–1313. doi:10.2105/AJPH.2018.304563)

See also Witt, p. 1277, and Ghandour, p. 1380.

The Pregnancy Risk Assessment Monitoring System (PRAMS) is part of the Centers for Disease Control and Prevention (CDC) initiative to reduce infant mortality and low birth weight and promote safe motherhood. PRAMS was implemented in 1987<sup>1</sup> because infant mortality rates were no longer declining as rapidly as they had been in prior years.<sup>2</sup> Although the US infant mortality rate has dropped 15% over the past decade, the United States continues to have one of the highest infant mortality rates among developed countries, at 5.8 per 1000 live births in 2015.<sup>3</sup> Despite recent declines, preterm birth rates remain high (9.9% in 2014),<sup>4</sup> and sudden infant death syndrome is the leading cause of death among infants 1 to 12 months old (approximately 1600 deaths in 2013).<sup>5</sup> Maternal mortality and morbidity rates have also been increasing. The number of reported pregnancy-related deaths in the United States rose from 7.2 per 100 000 live

births in 1987 to 17.3 per 100 000 live births in 2013.<sup>6,7</sup> Moreover, the number of women presenting at delivery with 1 or more chronic conditions rose from 66.9 per 1000 delivery hospitalizations in 2005–2006 to 91.8 per 1000 delivery hospitalizations in 2013–2014.<sup>7</sup>

### DATA PROGRAM

PRAMS is an ongoing state-level, population-based surveillance system of selected maternal behavior and experiences that occur before, during, and shortly after

pregnancy. It is conducted by participating state, territorial, tribal, or local health departments in partnership with CDC's Division of Reproductive Health. CDC provides annual funding to participating sites through a cooperative agreement, with supplemental funding contributed by recipients. Since the system's inception, the number of participating states and areas (referred to hereafter as states) has increased from 6 to 51, including 47 states, the District of Columbia, New York City, Puerto Rico, and the Great Plains Tribal Chairman's Health Board (Figure 1). PRAMS surveillance currently covers approximately 83% of all US births.

### Purpose

The main purposes of PRAMS are to promote the collection, analysis, and dissemination of population-based data of high scientific quality and to support the use of data to develop policies and programs that aim to decrease maternal and infant morbidity and mortality. PRAMS data are used by academic researchers, nongovernmental health organizations, state health departments, and federal agencies to guide development of new programs and policies, evaluate existing programs and policies, develop educational materials for health care providers and the public, and contribute to general health knowledge.

### Public Health Significance

PRAMS provides state-specific data used to monitor health behaviors, access to care, and receipt of services among pregnant women. For example, PRAMS data

### ABOUT THE AUTHORS

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Correspondence should be sent to Holly B. Shelton, MA, Centers for Disease Control and Prevention, 4770 Buford Hwy, MCH7A, Atlanta, GA 30354 (e-mail: hshelton@cdc.gov). Reprints can be ordered at <http://www.ajph.org> by clicking the "Reprints" link.

This article was accepted May 4, 2018.

doi:10.2105/AJPH.2018.304563

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Shelton et al. | Peer-Reviewed Research | 1305

# DATA AVAILABILITY

## 2020 data

- **Now available**
- **New indicators**
  - COVID-19 experiences
  - Maternal disability

## 2021 data

- **Expected release fall 2022**
- **New indicator**
  - COVID-19 vaccine

### PRAMS



#### What is PRAMS?

PRAMS, the Pregnancy Risk Assessment Monitoring System, is a surveillance project of the Centers for Disease Control and Prevention (CDC) and health departments.

Developed in 1987, PRAMS collects jurisdiction-specific, population-based data on maternal attitudes and experiences before, during, and shortly after pregnancy. PRAMS surveillance currently covers about 81% of all U.S. births.

PRAMS provides data not available from other sources. PRAMS data are used by researchers to investigate emerging issues in the field of reproductive health and by state, territory, and local governments to plan and review programs and policies aimed at reducing health problems among mothers and babies.



#### About PRAMS

The goal of the PRAMS project is to improve the health of mothers and infants by reducing adverse outcomes.

#### PRAMS Questionnaires

#### Selected Maternal and Child Health (MCH) Indicators 2016-2019

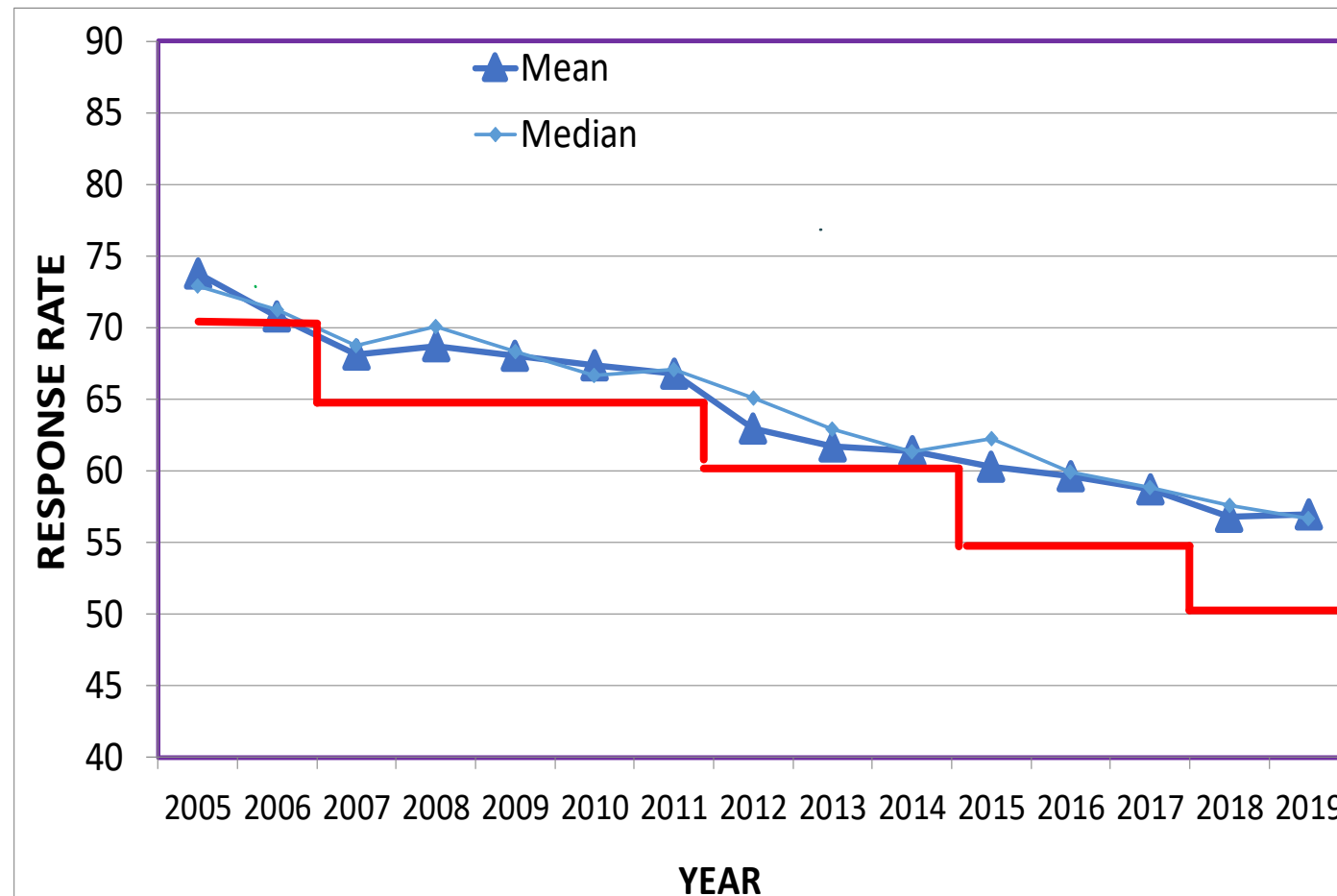
[Data table with selected MCH indicators from 2016-2019](#). Data is presented for all PRAMS sites and also presented by individual jurisdiction.

## RESPONSE RATE THRESHOLDS FOR DATA RELEASE

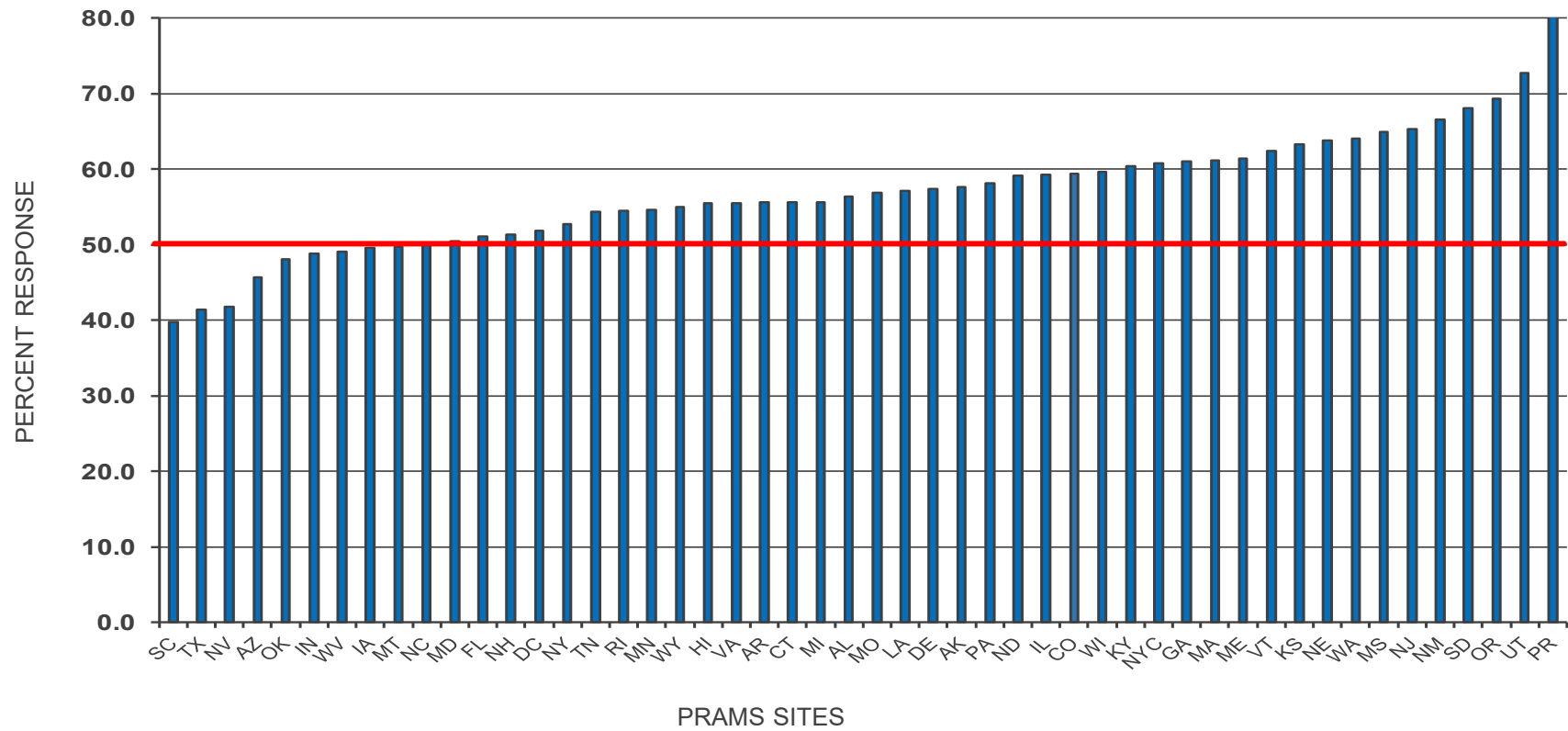
- PRAMS currently implements response rate thresholds based on what could reasonably be achieved within survey climate using PRAMS protocol
- Data released and included in CDC reports if jurisdiction reaches or exceeds threshold:
  - Before 2007 – 70%
  - 2007 to 2011 – 65%
  - 2012 to 2014 - 60%
  - 2015 to 2017 – 55%
  - 2018 to 2020 – 50%



# PRAMS MEAN/MEDIAN WEIGHTED RESPONSE RATES BY YEAR, 2005 - 2019



# PRAMS WEIGHTED RESPONSE RATES BY JURISDICTION, 2019



# RESPONSE RATE THRESHOLD ADVANTAGES AND DISADVANTAGES

## Pros

- Strong incentive for jurisdictions to maintain data collection efforts
- Concerns that response rates would drop if threshold abolished

## Cons

- Little evidence to support continued use of threshold policy
- Difficult to justify withholding critical maternal and child health (MCH) data
  - PRAMS response rates higher than many federal health surveys
  - Many sites below threshold have high levels of maternal and infant morbidity and mortality
  - Major data collection and processing effort unused



# PURPOSE OF NONRESPONSE BIAS ANALYSES

- Survey response rates steadily falling, with more rapid declines of late
  - Higher response rate *less likely* to have NRB
  - Lower response rate *not always* indicative of NRB
- 2006 Office of Management and Budget (OMB) Directive
  - Mandated NRB assessment for federal surveys with <80% response
- Continually lowering PRAMS response rate threshold unsustainable
- *Systematic Review of Nonresponse Bias Studies in Federally Sponsored Surveys*. FCSM 20-02. Federal Committee on Statistical Methodology. March 2020.
- *Standards and Guidelines for Statistical Surveys*. Office of Management and Budget. 2006



# NEW NON-RESPONSE BIAS EFFORTS IN PRAMS

1. *True bias analysis*: comparing weighted auxiliary data estimates with actual population values
2. *Level of effort analysis*: simulating response groupings and examining incremental bias for different response levels
3. *Model-based analysis*: estimating worst-case bias under different missing data assumptions

Each analysis examines bias through a different lens but collectively may provide actionable results to inform PRAMS data release policies



## CONTACT INFORMATION

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**PRAMS webpage: <https://www.cdc.gov/prams/>**