



PREGNANCY RISK ASSESSMENT MONITORING SYSTEM
A survey for healthier babies in New Jersey

Association Between Perceived Racial Bias and Postpartum Depression Indicators, 2017-2020 (July 2023)

NJ PRAMS is a joint project of the New Jersey Department of Health (NJDOH) and the Centers for Disease Control and Prevention (CDC). Information from PRAMS is used to help plan better health programs for NJ mothers and infants. One out of every 50 mothers is sampled monthly when newborns are 2-6 months old. Survey questions address their feelings and experiences before, during, and after pregnancy. The PRAMS sample design oversamples smokers and minorities. Data are weighted to give representative estimates of proportions in specific categories and of actual persons. Approximately 30,000 birthing persons are included between 2002-2020, with an average response rate of 70%.

Background & Significance

Postpartum Depression

Postpartum depression (PPD) involves extreme sadness and anxiety, resulting in sleep, energy, and appetite changes.¹ According to the Centers for Disease Control and Prevention (CDC), in 2020, 1 in 10 United States (US) women reported severe symptoms that suggest they experienced an episode of PPD.² The etiology of PPD is multifaceted. PPD is a serious medical condition triggered by and occurs after childbirth.³ Risk factors include the experience of stressful life events, low social support, being a teenage mother, having a previous history of depression, preterm delivery, and pregnancy complications.⁴ Published studies concur that PPD is significantly associated with adverse maternal and infant outcomes, such as lower breastfeeding initiation and poor maternal and infant bonding.⁵

Moreover, studies have found that exposure to social stressors (e.g., social-human interactions, economic conditions, housing, and discrimination) over time can cause wear and tear on the body's adaptive systems, leading to adverse maternal health outcomes.⁶

In the Pregnancy Risk Assessment Monitoring System (PRAMS), PPD is defined by a respondent "always" or "often" feeling down, depressed, or hopeless or having little interest or little pleasure in doing things she usually enjoyed since delivery. Based on analyses conducted by the CDC on PRAMS and released in 2020, about 1 in 8 mothers with a recent live birth experienced symptoms of PPD (Figure 1).⁷ PRAMS estimates of mothers affected by PPD differ by age, race/ethnicity, and state of residency. In 2020, the overall PPD rate for all states that partake in PRAMS-related activities that met the required 50% response rate threshold was 13.4% (CI: 12.9%-13.9%).⁸

Figure 1. Distribution of Postpartum Depression Indicators, Nationwide *PRAMS*, 2020



Data Source: Centers for Disease Control PRAMS, 2020

Racial Bias

Multiple studies show biases as the attitudes or stereotypes that affect our understanding, actions, and decisions. These biases cause attitudes about other people based on personal characteristics, including, but not limited to, age, race, and ethnicity. Racial bias may affect a healthcare provider's perceptions and decisions, creating inequalities in access, patient-provider interactions, treatment decisions, and health outcomes.⁹ Biases may influence how healthcare professionals communicate with and treat their patients, leading to subsequent disparities in maternal health.¹⁰ High levels of PPD and lower levels of attendance of postpartum visits have been found in low-income women, especially Black, non-Hispanic (NH) women.¹¹ However, little is known about how racial bias affects PPD outcomes, especially for Black, NH women.¹²

In this brief, NJ PRAMS weighted data from 2017-2020 was analyzed to examine the association between racial bias and postpartum depression among birthing people in NJ.

Methodology

The weighted PRAMS data, a linked analytical dataset between NJ PRAMS and birth certificate data, provided a representative estimate of proportions in specific categories and actual persons. The individual datasets from 2017 through 2020 were combined into one analytical dataset for this research study. The combined NJ PRAMS 2017-2020 was used to conduct descriptive, bivariate, and multivariate analyses to examine the association between racial bias and postpartum depression among PRAMS survey participants.

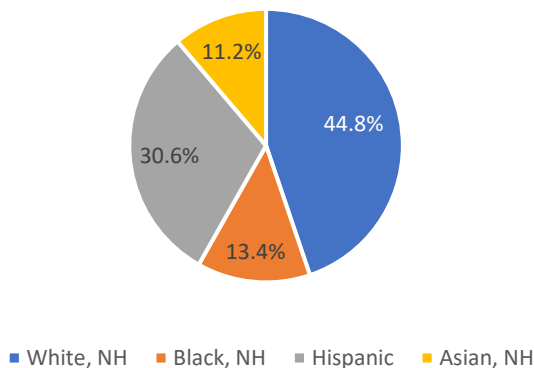
The independent variable selected for this study is the experience of racial bias (categorized as yes/no), defined as

being emotionally upset as a result of being treated differently based on race within 12 months before the baby was born. The dependent variable was PPD indicators (categorized as yes/no) (e.g., feeling down, depressed, hopeless, or having little interest or pleasure in doing things). All statistical analyses were conducted using SAS 9.4. Logistic regression analyses were performed, and adjustments were made by maternal age, race/ethnicity, educational attainment, health insurance coverage during pregnancy, postpartum care, and birth outcomes (i.e., preterm birth). About 7,200 mothers between 2017-2020 were included in this study.

Descriptive Analysis

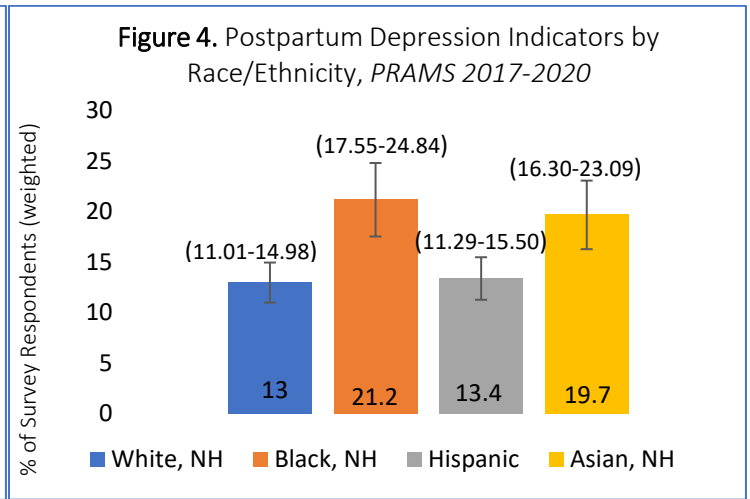
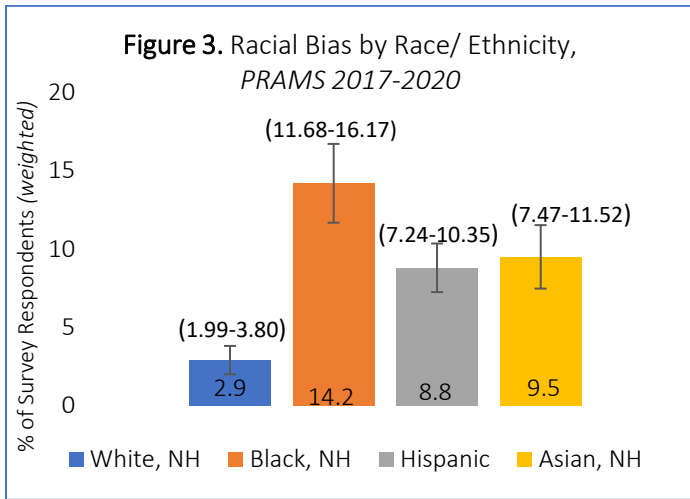
Demographic Characteristics

Figure 2. Racial Distribution, NJ PRAMS 2017-2020 (Weighted)



Data Source: NJ PRAMS 2017-2020

As of 2021, about 9.2 million people were living in NJ. They are distributed over 21 counties with a racial/ethnic breakdown of 71.1% White, NH, 15.3% Black or African American, NH, 21.5% Hispanic of any race, and 10.3% Asian, NH.¹³ There are approximately 100,000 live births in NJ each year.¹⁴ In 2021, 46.1% of reported births were of White, NH descent women, 30.0% were of Hispanic descent, nearly 13% of all live births were of Black, NH descent, and about 10% were of Asian, NH descent.¹⁵ The racial and ethnic makeup of PRAMS survey respondents from 2017-2020 mirrors the racial and ethnic makeup of the 2021 NJ birthing population (Figure 2). Similarly, the PRAMS 2017-2020 sample mirrors the maternal age distribution of the 2021 NJ birth sample.¹⁶



Data Source: NJ PRAMS 2017-2020

Racial Bias

Based on NJ PRAMS data analyses, between 2017 and 2020, about 6.9% of survey respondents perceived racial bias. When the data is disaggregated by race/ethnicity, 14.2% of Black, NH mothers perceive racial bias before and during pregnancy compared to 2.9% of White, NH mothers (Figure 3). Hispanic mothers perceived racial bias about three times more likely than their White, NH counterparts (8.8%) (Figure 3). Bivariate analyses of racial bias and PPD reveal that about 16.3% of those who perceived racial bias also experience PPD symptoms (Table 1).

Postpartum Depression

Based on NJ PRAMS data analyses, between 2017 and 2020, nearly 1 in every 7 mothers reported experiencing PPD indicators. Black, NH mothers experience PPD indicators disproportionately higher than their White counterparts. In NJ, from 2017-2020, 21.2 % of Black, NH mothers reported experiencing PPD indicators compared to 13.0% of White NH mothers (Figure 4). Bivariate analyses between racial bias and PPD reveal that about 40.3 % of those who experienced PPD indicators perceived racial bias before and during pregnancy (Table 2).

Tables 1 and 2 depict selected measures by selected factors for PPD indicators and racial bias.

Table 1. Racial Bias (Yes) by Selected Measures, 2017-2020

	Weighted Percent & P-value	
	Racial Bias= Yes (%)	p-value
PPD Indicators (Yes)	16.3	<.0001*
Maternal Race/ Ethnicity		<.0001*
White, NH	2.9	
Black, NH	14.2	
Hispanic	8.8	
Asian, NH	9.5	
Age, Years		0.0391*
<20	11.7	
20-24	8.1	

Table 2. PPD Indicators (Yes) by Selected Measures, 2017-2020

	Weighted Percent & P-value	
	PPD =Yes (%)	p-value
Racial Bias (Yes)	40.3	<.0001*
Maternal Race/ Ethnicity		<.0001*
White, NH	13.0	
Black, NH	21.2	
Hispanic	13.4	
Asian, NH	19.7	
Age, Years		0.0007*
<20	21.4	
20-24	21.5	

25-34	7.1		25-34	14.2	
35+	5.6		35+	13.2	
Education Attainment		<.0001*	Education Attainment		0.6822
Some High School or less	9.4		Some High School or less	15.3	
High School/GED	9.2		High School/GED	16.0	
Some College or Above	5.7		Some College or Above	14.6	
Prenatal Care Insurance Coverage		<.0001*	Prenatal Care Insurance Coverage		0.0062*
Medicaid	8.8		Medicaid	15.7	
Private insurance	5.2		Private Insurance	14.6	
No insurance	11.3		No Insurance	12.3	
Chronic Disease (HTN and/or DM.)	12.6	<.0001*	Chronic Disease (HTN, DM)	18.4	0.1497
Intimate Partner Violence	26.2	<.0001*	Intimate Partner Violence	43.5	<.0001*
Preterm Birth	9.9	0.0165*	Preterm Birth	23.4	<.0001*
No Postpartum Checkup	9.3	0.0165*	No Postpartum Checkup	18.0	0.0869

Data Source: NJ PRAMS, 2017-2020

* Statistically Significant

Racial Bias, Postpartum Depression, and Preterm Birth (Birth Outcome)

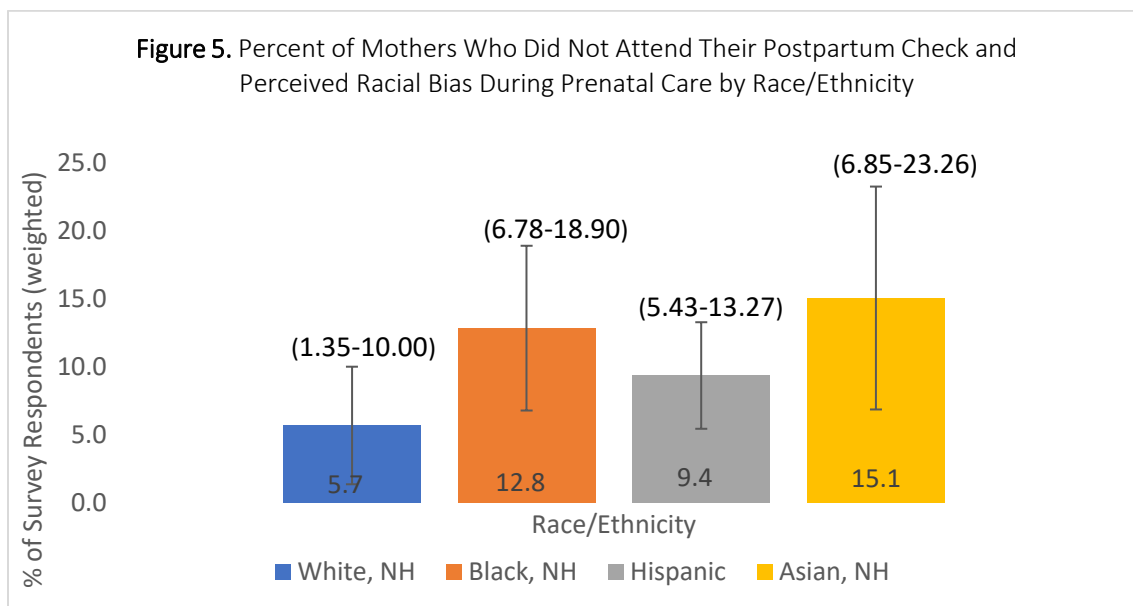
Preterm live births are defined as the birth of an infant before 37 weeks of gestation.¹⁷ Being born prematurely increases an infant's risk of morbidity and mortality. Premature infants have a greater risk of dying in the first month of life, may require intensive care at birth, and are at higher risk of developmental disabilities and chronic illnesses.¹⁸ From 2017-2020, 8.6% of survey participants delivered their infant prematurely. When disaggregated by race/ethnicity, Black, NH mothers were more likely than White, NH, to deliver a baby prematurely (11.3% and 8.1%, respectively).

Mothers who perceived racial bias had a higher preterm delivery rate than those who did not (9.9%, and 6.6%, respectively) (Table 1). Black, NH mothers who perceived racial bias were more likely to deliver a baby prematurely compared to their white counterparts (20.3%, and 4.3%, respectively). Mothers who experienced PPD indicators had a higher preterm delivery rate compared to those who did not experience PPD indicators (23.4%, and 14.2%, respectively). Asian, NH mothers who experienced PPD indicators were more likely to deliver a baby prematurely compared to their White, NH, Black, NH, and Hispanic counterparts (33.8%, 25.8%, 22.5%, and 17.3%, respectively).

Racial Bias, Postpartum Depression, and Postpartum Care

American College of Obstetricians and Gynecologists (ACOG) concurs that postpartum care is critical in optimizing the well-being of the mother-infant dyad post-delivery. It is especially valuable for mothers who are diagnosed with chronic diseases.¹⁹ To better address potential adverse health outcomes post-delivery, ACOG recently updated the postpartum guideline; instead of a routine checkup that is done 4 to 6 weeks after giving birth, they recommend that the postpartum visits should be ongoing, as needed, and with a comprehensive postpartum visit no later than 12 weeks post delivery.²⁰ This novel change places emphasis on the need for every mother to attend their postpartum visits.

From 2017-2020, 11.6% of survey respondents did not attend their postpartum visits. Black, NH mothers who perceived racial bias were about two times more likely not to attend their postpartum visits than their White, NH counterparts (12.8%, and 5.7%, respectively) (Figure 5). About 9.4% of Hispanic and 15.1% of Asian mothers who perceived racial bias did not attend their postpartum visits (Figure 5).



Data Source: NJ PRAMS, 2017-2020

From 2017-2020, Black, NH mothers who experienced PPD indicators were more likely not to attend their postpartum visits than their White, NH counterparts (24.8%, and 18.1%, respectively). About 12.9% of Hispanic and 23.3% of Asian mothers who experienced PPD indicators did not attend their postpartum visits.

Statistical Analysis

Race/Ethnicity and Racial Bias in Mothers Who Experienced PPD Indicators

Table 3: Multivariate Analysis: Race/Ethnicity and Racial Bias in Mothers with PPD Indicators

	Adjusted OR	95 % CI	p-value
Racial Bias			
No	Ref.		
Yes	4.155*	3.055-5.653	<.0001
Maternal Race/ Ethnicity			
White, NH	Ref.		
Black, NH	1.470*	1.095- 1.974	0.0104
Hispanic	0.934	0.721-1.211	0.6080
Asian, NH	1.425*	1.071-1.895	0.0151

Data Source: NJ PRAMS, 2017-2020

* Statistically Significant

who reported experiencing PPD indicators, the odds of perceiving racial bias were 4.4 times more likely (95% CI: 3.286-5.943, p= <.0001) compared to those who did not. Mothers between 25-34 years of age who experienced PPD were 41% less likely to perceive racial bias compared to mothers between 20 and 24 years of age (95% CI: 0.438-0.793, p= 0.0005). Mothers over 34 years of age (35+) who experienced PPD were 45% less likely to perceive racial bias (95% CI: 0.394-0.765, p= 0.0004) compared to mothers between 20 and 24 years of age.

The odds of experiencing PPD indicators were 4.4 times more likely (95% CI: 3.304-5.947, p=<.0001) among mothers who reported perceiving racial bias compared to those who did not. When adjusted for race/ethnicity, among mothers who reported experiencing PPD indicators, the odds of perceiving racial bias were about 4.2 times more likely, compared to those who did not (95% CI: 3.055-5.653, p= <.0001). Black, NH mothers who experienced PPD were about 47% more likely to have perceived racial bias compared to their White, NH counterparts (95% CI: 1.095- 1.974, p=0.0104). Asian, NH mothers who experienced PPD were 42% more likely to have perceived racial bias compared to their White, NH counterparts (95% CI: 1.071-1.895, p=0.0151). The association was not significant for Hispanic mothers (p=0.6080) (Table 3).

In the bivariate analysis, mothers under 25 years of age were more likely to experience PPD indicators and perceived racial bias (Tables 1 & 2). When adjusted for maternal age, among mothers

Table 4: Multivariate Analysis: Preterm Birth and Racial Bias in Mothers with PPD Indicators

	Adjusted OR	95 % CI	p-value
Racial Bias			
No	Ref.		
Yes	4.336*	3.224-5.832	<.0001
Preterm Birth			
No	Ref.		
Yes	1.720*	1.240-2.385	0.0012

Data Source: NJ PRAMS, 2017-2020

* Statistically Significant

Racial Bias, Preterm Birth in Mothers Who Experienced PPD Indicators

When adjusted for preterm birth, among mothers experiencing PPD indicators, the odds of perceiving racial bias were about 4.3 times more likely (95% CI: 3.224-5.832, p=<.0001) compared to those who did not (Table 4). Mothers who reported experiencing PPD indicators and delivered a baby prematurely were 72% more likely to have perceived racial bias compared to those who delivered full-term infants (95% CI: 1.240-2.385, p=0.0012) (Table 4). For the multivariate analysis, education, chronic diseases, postpartum checkup, and health insurance coverage were not statistically significant.

Agenda for Action

These statistics warrant the need to continue implementing implicit and explicit bias trainings for staff in the traditional (e.g., nurses, MDs, medical assistants, etc.) and non-traditional (e.g., community health workers) perinatal workforce. There is a need to educate the traditional and non-traditional perinatal workforce on the impact of structural racism on health outcomes. These trainings are integral in exploring the roles of conscious and unconscious bias in decision-making and communication. Furthermore, they will encourage providers to identify internal systems contributing to those persisting racial biases and work to change them. Moreover, to remove a barrier to accessing postpartum care, Medicaid insurance coverage in NJ has been extended for 12 months after delivery or the date the pregnancy ends. Currently, NJ has several programs in process toward achieving equitable maternity care and reducing racial bias in healthcare, some of which include:

Implicit/Explicit Bias Training – On November 1, 2021, [New Jersey Statute 26:2H-12.108](#) was adopted. This statute requires that every New Jersey hospital that provides inpatient maternity services and every birthing center licensed in the state, pursuant to PL 1971, c.136 (C.26:2H-1 et seq.), shall implement an evidence-based explicit and implicit bias training program. To assist facilities in fulfilling this requirement, NJDOH is developing the Reproductive Justice Project for Equitable Maternal Health course to provide explicit and implicit bias training. This course seeks to address the racial inequities in our maternal healthcare system. The course is designed to:

- Present statistics to illustrate the public health problem of maternal mortality, particularly within New Jersey.
- Introduce how race can affect a patient's maternal outcomes and the resulting effects on lives and communities.
- Explore America's history of medical racism and its relevance to today's issues.
- Provide an overview of racism, prejudice, and systemic oppression in the context of health care.
- Explore what explicit and implicit biases are, how they occur, and how to recognize them.
- Provide different techniques for mitigating explicit and implicit biases while providing obstetric care—and review techniques for advocating for reproductive justice.

Shared Decision-Making (SDM) – [P.L.2019, c.133](#), mandated that NJDOH designs and evaluates an SDM tool for hospitals that provide inpatient maternity services and birthing centers. It requires the informed involvement of women in decisions around childbirth, with special relevance to C-sections. Shared Decision-Making is the process whereby providers and patients work together to make decisions, select tests or treatments, and develop plans of care that take into consideration the following:

- A patient's preferences and values,
- Latest medical research and evidence, and
- The risks and benefits versus expected outcomes.

The NJDOH, in collaboration with the New Jersey Health Care Quality Institute (NJHCQI) and Ariadne Labs, launched the Shared Decision-Making Hospital Pilot, also known as TeamBirth NJ, in September 2022. TeamBirth is an innovative and structured method

that fosters better communication between the clinical team, the birthing person, and their support persons. The central components of TeamBirth include using a whiteboard to outline care plans and progress and huddles between the full care team, patient, and support persons during the labor and birthing process. Since the initial launch of TeamBirth NJ at three birthing hospitals and one birthing center, preliminary data has shown that patients and support persons feel more informed and included in the care process. In addition, some hospital staff have reported improved communication between clinicians, birthing people, and their families. By September 2023, the NJDOH intends to expand TeamBirth NJ to three additional birthing hospitals and one birthing center.

Postpartum Mood Disorder Program – To improve access to perinatal and anxiety disorder screening, treatment, and support services and raise awareness about PPD, the NJDOH funds multiple community-based agencies to implement PPD-related activities in NJ communities that aim to support individuals who experience PPD symptoms and get them connected to needed services.

Healthy Women Healthy Families 2.0 (HWHF) – Through a collaborative and coordinated community-driven approach that facilitates increased access to comprehensive and culturally sensitive prenatal and postpartum care, the NJDOH is taking a holistic approach to tackling the persistent racial and ethnic disparities as they relate to maternal and child health outcomes. Services are available to birthing individuals in all 21 NJ counties. The services provided through the HWHF initiative focus on providing access to community resources and referrals to families and/or women of childbearing age. HWHF staff utilizes the ConnectingNJ network to make referrals to partners, agencies, and local community services that promote child and family wellness based on the client’s specific needs.

Additionally, through the HWHF initiative, depending on the client’s needs, they may be assigned to a Community Health Worker (CHW) capable of providing enhanced social support and creating a bridge between under-served and hard-to-reach populations and the different systems (e.g., health, social, and community services). Moreover, depending on their needs, through HWHF 2.0, clients are offered the opportunity to get assigned to a Postpartum Doula trained to provide the necessary support to families after childbirth, both physically and emotionally, while facilitating a comforting transition for the newborn and family.

Strengths & Limitations

NJ PRAMS sample is representative of the population. This weighted analysis can be applied to all mothers who delivered a live birth in NJ during 2017-2020. PRAMS was designed to supplement the vital records data by providing state-specific data on maternal behaviors and experiences to be used for planning and assessing perinatal health programs. Since PRAMS utilizes a standardized methodological approach, it eases data comparison across states. Moreover, the NJ PRAMS data is weighted to provide a sample that is a representative estimate of proportions in specific categories and of actual persons.

However, despite the robust methodological approach, PRAMS data is subject to limitations. The racial bias measure was based on the respondent’s race and their perception of racial bias or racism. PRAMS data did not use clinician diagnoses of depression to define mothers who suffered postpartum depression indicators. Depressive symptoms reported by respondents could have been due to other mental health conditions (e.g., schizophrenia or bipolar disorder) or may not indicate clinical depression. The relationship between racial bias and PPD was an association and cannot be interpreted as causal. Moreover, the PRAMS survey data is subject to common survey biases: recall bias, non-response bias, and social desirability bias.

Note on Language and Grammar

In alignment with the Nurture NJ Maternal and Infant Health Strategic Plan and other recent publications, this document uses language conventions that are intended to be universal and inclusive. We use the phrases and terms "maternal health", "mother", "woman", "she" and "her" to refer to a person who recently gave birth. We recognize that not all birthing people identify as women; these terms are meant to include cisgender females, non-binary individuals, and transgender men. The terms survey respondents and mothers are used interchangeably.

In keeping with APA guidance, all racial and ethnic groups are capitalized as they are considered proper nouns.

Resources

1. New Jersey Department of Health- <https://www.nj.gov/health/>
2. Division of Family Health Services-<https://www.nj.gov/health/fhs/maternalchild/mentalhealth/about-disorders/>
3. New Jersey TeamBirth- <https://www.njhcgj.org/teambirth-created-to-enhance-labor-delivery-experience/>
4. Four dimensions of the current race-based system of advantage- [Humboldt Area Foundation](#)
5. Smithsonian Exhibit The bias inside us- [Introduction | The Bias Inside Us](#)
6. ConnectingNJ- [Connecting NJ](#)

Contact NJ PRAMS: mchepe@doh.nj.gov Website: <https://nj.gov/health/fhs/maternalchild/mchepe/prams/>

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- ¹³ U.S. Census Bureau, [U.S. Census Bureau QuickFacts: New Jersey](#)
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- ²⁰ March of Dimes, [Your postpartum checkups | March of Dimes](#)