



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

## A Bird's-Eye View of Racial and Ethnic Disparities for Selected Postpartum Behaviors Post-Exposure to Maternal Health Education/ Support, PRAMS 2016-2021 (October 2023)

NJ PRAMS is a joint research 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 giving birth in New Jersey each month is selected for the PRAMS survey, and close to 70% participate, translating to roughly 1,500 interviews annually. Survey questions address mothers' feelings and experiences before, during, and after pregnancy. The PRAMS sample design purposefully oversamples smokers and racial/ethnic minorities. Data is weighted to represent New Jerseyan mothers who gave birth in selected years.

### Background & Significance



#### *Home Visiting*

Evidenced-based home visiting (EBHV) programs are offered to pregnant individuals during pregnancy and postpartum. EBHV is designed to support mothers who reside in vulnerable communities impacted by food insecurity, health care deserts, and other barriers to achieving positive maternal and child health outcomes.<sup>1</sup> The EBHV programs being implemented nationwide attempt to address the needs of these at-risk families by offering services and support they might not otherwise access. The programs are free and voluntary to eligible families. By offering visits in the home environment, home visitors can provide a more tailored approach to service delivery.<sup>2</sup>

These EBHV programs have been recommended for improving maternal and newborn outcomes. New Jersey Department of Health (NJDOH) receives HRSA funding to implement the Maternal, Infant, and Early Childhood Home Visiting (MIECHV) program. In NJ, the MIECHV program has implemented three EBHV models: (1) Healthy Families America, (2) Nurse-Family Partnership, and (3) Parents as Teachers. For over a decade, NJ has adopted an Early Childhood Comprehensive System of Care (ECCS) that can serve up

to 5,000 families of infants and young children in all 21 counties.<sup>3</sup> Moreover, NJDOH partners with the NJ Department of Children and Families (NJ DCF) to implement MIECHV; through this partnership, 1,530 families in 13 at-risk counties are expected to receive MIECHV-related services yearly.

In the Pregnancy Risk Assessment Monitoring System (PRAMS) survey, a prenatal home visit is defined by a respondent answering "Yes" to the question that pertains to a home visitor coming to their home to help prepare for their newborn during the prenatal period. A postpartum home visit is defined by a respondent answering "Yes" to the question that pertains to a home visitor coming to their home to help them learn how to take care of themselves and/or their new baby during the postpartum period. For both prenatal and postpartum visits, a home visitor is a nurse, a health care worker, a social worker, or others who work for a program that helps mothers of newborns. In 2021, for PRAMS survey participants, the overall home visit rate encompassing both prenatal and postpartum was 7.9%.<sup>4</sup> From 2016-2021, the overall home visit rate for NJ PRAMS participants was 10.6%.



## Childbirth Education

Childbirth classes designed to educate pregnant women during the prenatal period about labor and birth experiences seek to promote healthy childbirth experiences and educate attendees on topics such as healthy lifestyle habits, anxiety reduction, and postpartum care.<sup>5</sup> A growing body of literature concurs that childbirth education during the prenatal period has positive long-term outcomes on the pregnancy and postpartum periods with regard to the attendees

making healthier lifestyle choices and, thus, improving perinatal outcomes.<sup>6</sup>

In the PRAMS survey, attendance at childbirth classes is defined by a respondent answering "Yes" to the question inquiring whether they took childbirth class/classes during their most recent pregnancy to prepare for childbirth and learn what to expect during labor and delivery. In 2021, for NJ PRAMS survey participants, the overall childbirth class attendance rate was 19.4%. From 2016-2021, for NJ PRAMS survey participants, the overall childbirth class attendance rate was 19.5%.

In this brief, NJ PRAMS weighted data from 2016-2021 was analyzed to examine the association between maternal health education/support (ME/S) (i.e., childbirth education and/or home visitation) and selected postpartum behaviors.

## 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 2016-2021 were combined into one analytical dataset for this research study. The combined NJ PRAMS 2016-2021 dataset was used to conduct descriptive, bivariate, and multivariate analyses to examine the association between attendance at childbirth classes, home visitation during and after pregnancy, and postpartum behaviors among PRAMS survey participants.

The independent variable selected for this study is a combination of childbirth class and home visitation during and after pregnancy (categorized as yes/no). The dependent variables are selected key postpartum behaviors:



Breastfeeding Initiation



Smoking Relapse



Safe Sleep Practices (i.e., placing an infant on back to sleep, no soft bedding in the infant's sleeping environment)



Postpartum Checkup

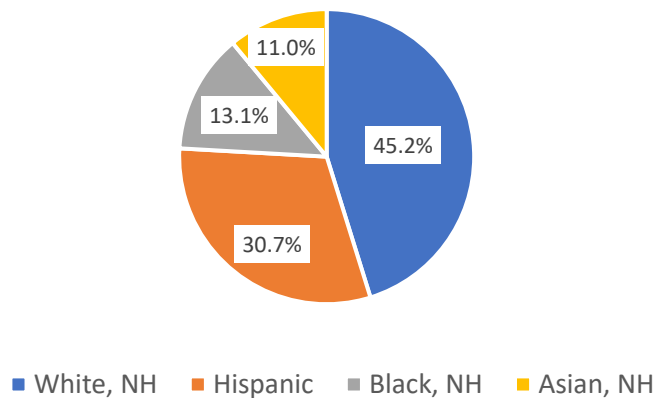
All statistical analyses were conducted using SAS 9.4. Logistic regression analyses were performed, and adjustments were made by race/ethnicity. About 10,800 NJ mothers were included between 2016-2021 in this study.

# Descriptive Analysis

## Demographic Characteristics

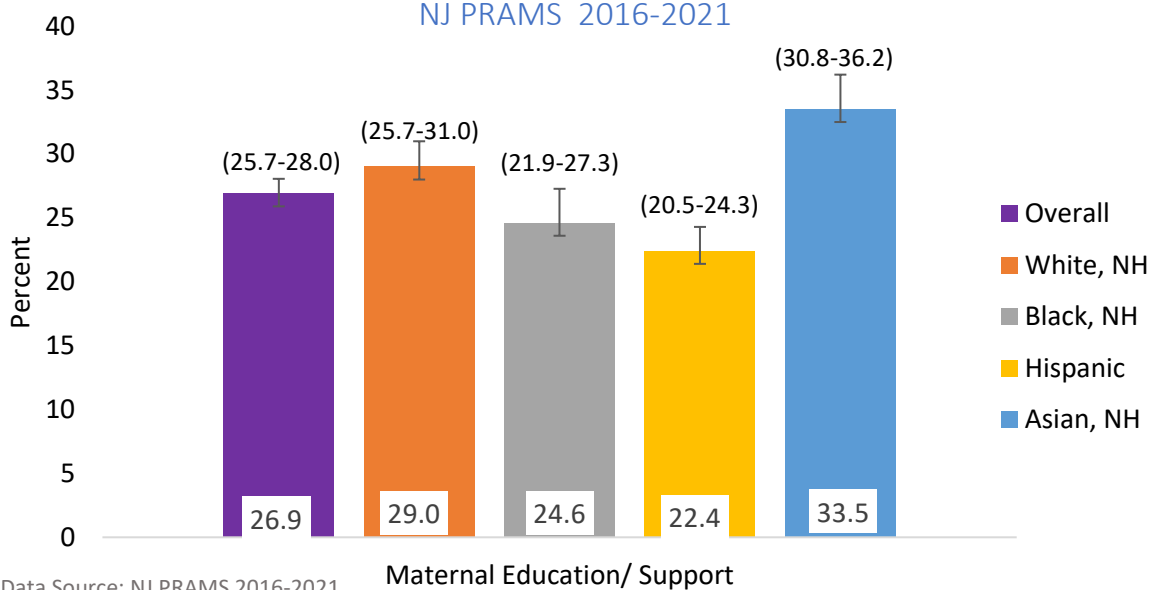
As of 2021, about 9.2 million people reside in NJ. They are distributed over 21 counties with an ethnic breakdown of 70.7% White; 15.3% Black or African American; 21.9% Hispanic of any race; and 10.5% Asian.<sup>7</sup> There are approximately 100,000 live births in NJ each year.<sup>8</sup> In 2021, 46.1% of reported births were of White, Non-Hispanic (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. The racial and ethnic makeup of PRAMS survey respondents from 2016-2021 mirrors the racial and ethnic makeup of the 2021 NJ mothers (Figure 1). Table 1 depicts additional descriptive data.

Figure 1. Racial Distribution, NJ PRAMS 2016-2021



Data Source: NJ PRAMS 2016-2021

Figure 2. Maternal Education/ Support by Race/Ethnicity, NJ PRAMS 2016-2021



Data Source: NJ PRAMS 2016-2021

From 2016-2021, 26.9% of survey respondents were exposed to maternal education/support (ME/S) (Figure 2). When disaggregated by race/ethnicity, variations were observed (Figure 2). Compared to the overall rate of 26.9%, more White, NH survey respondents were exposed to ME/S (29%), and fewer Black, NH respondents were exposed, 24.6% (Figure 2). When disaggregated by age groups, about 32% of survey respondents under age 20 were exposed to ME/S, while 22.1% of those who were 35 and up were exposed to ME/S (Table 2). About 24% of those exposed to ME/S attended some high school classes, while 29.9% attended some college classes or earned a college degree (Table 2).

**Table 1.** Population Characteristics, NJ PRAMS 2016-2021

	Weighted Percent (%)
<b>Sociodemographic Characteristics</b>	
<b>Age, Years</b>	
<20	2.6
20-24	12.1
25-34	59.2
35+	26.0
<b>Education</b>	
Some high school or less	10.0
High School/GED	23.8
Some college or above	66.1
<b>Exposure to Maternal Education/Support- Yes</b>	26.9
<b>Selected Postpartum Behaviors</b>	
<b>Breastfeeding Initiation- Yes</b>	89.9
<b>Adopted Safe Sleep Practices- Yes</b>	
Back to Sleep	73.3
No Soft Bedding	46.3
<b>Smoking Relapse- Yes</b>	34.3
<b>Attended Postpartum Checkup- Yes</b>	88.8

Data Source: NJ PRAMS 2016-2021

**Table 2.** Exposure to Education/ Support (Yes) by Sociodemographic Characteristics, NJ PRAMS, 2016-2021

	Weighted Percent & P-value	
	Exposure to Education/ Support= Yes (%)	p-value
<b>Sociodemographic Characteristics</b>		
<b>Age, Years</b>		
<20	32.1	<.0001*
20-24	26.9	
25-34	28.9	
35+	22.1	
<b>Education</b>		
Some high school or less	24.1	<.0001*
High school/GED	20.0	
Some college or above	29.9	

Data Source: NJ PRAMS 2016-2021

\* Statistically Significant

## Selected Postpartum Behaviors



### *Breastfeeding Initiation*

Based on published literature, breastfeeding confers an array of health benefits to the mother and infant dyad.<sup>9</sup> The American Academy of Pediatrics (AAP) recommends that all infants without a contraindication should be fed breast milk exclusively until six months of age. EBHV programs offer a promising approach to closing breastfeeding initiation and duration gaps.<sup>10</sup> EBHV programs engage with families during a critical period when families make important decisions about infant feeding.<sup>11</sup> Many EBHV programs include breastfeeding curricula, and based on published literature, EBHV programs can improve breastfeeding outcomes.<sup>12</sup>

In the PRAMS survey, breastfeeding initiation is defined by a respondent answering "Yes" to ever breastfeeding or pumping breast milk to feed their newborn, even for a short period of time. Based on analyses conducted by the CDC on PRAMS data released in 2020, for all states that partook in PRAMS-related activities meeting the required 50% response rate threshold, 87.9% of mothers with a recent live birth initiated breastfeeding.<sup>13</sup> NJ exceeded this rate in both 2020 (89.1%) and 2021 (90.5%).<sup>14</sup>

Across the years 2016 to 2021, 89.9% of NJ PRAMS survey respondents initiated breastfeeding post-delivery (Table 1). Of the NJ PRAMS survey respondents who initiated breastfeeding, 27.8% had been exposed to ME/S (Table 3).



### *Safe Sleep Practices*

Infant mortality (IM) is defined by the CDC as the death of an infant before his or her first birthday.<sup>15</sup> From 2009 to 2020, NJ saw a 20% decrease in the IM rate.<sup>16</sup>

AAP guidelines to prevent the leading cause of injury or death in infancy, which includes sudden infant death syndrome (SIDS), stipulate that an infant should

1. be placed on his or her back at all sleep times – including naps and at night
2. sleep on a firm sleep surface, such as a safety-approved mattress and crib, at all times
3. sleep in an area free of soft objects and loose bedding
4. not share a bed with anyone but may share a room

In the PRAMS survey, safe sleep practices are assessed by multiple survey items, to which survey respondents select answers that align with the AAP-recommended guidelines. The first survey item pertains to the position in which they most often place their infant to sleep: on his or her side, back, or stomach. The second and third survey items pertain to the infant's sleeping environment: in his or her crib, free of soft objects and loose bedding.

In the 2020 CDC analyses inclusive of states meeting the response rate threshold, the overall safe sleep practice rate defined by the infant being most often laid on their back to sleep was 79.5%; in NJ, this rate was 73.7% in 2020 and 75.2% in 2021.<sup>17</sup>

Across the years 2016 to 2021, 73.3% of NJ PRAMS survey respondents reported placing their infants on their backs to sleep (Table 1). Of the survey respondents who placed their infant on their back to sleep, 27.9% were exposed to ME/S (Table 3).

Across the years 2016 to 2021, 46.3% of NJ PRAMS survey respondents reported placing their infant to sleep without any soft bedding (Table 1). Of the NJ PRAMS survey respondents who placed their infant to sleep without soft bedding, 29.6% were exposed to ME/S (Table 3).



### *Smoking Relapse*

Smoking during pregnancy is a major public health concern.<sup>18</sup> The adverse health outcomes associated with smoking during pregnancy affect the mother-infant dyad. Based on published research, mothers who smoke during pregnancy are at an increased risk for ectopic pregnancy, premature rupture of membranes, placental

abruption, placenta previa, spontaneous abortion, and more.<sup>19</sup> The infant of a smoker is at an increased risk for premature birth, lower birth weight, sudden infant death syndrome, and other congenital conditions.<sup>20</sup>

In the PRAMS survey, smoking relapse is calculated using a combination of the survey participants answering "Yes" to have smoked before they got pregnant and during pregnancy in combination with the smokers who quit during pregnancy and reported that they restarted smoking post-delivery.

Based on analyses conducted on the PRAMS sample inclusive of all states that met the response threshold in 2020, about 14.0 % of women nationwide reported smoking three months before pregnancy; this compared to 9.0% in NJ. <sup>21</sup> In 2021, about 40% of NJ PRAMS survey respondents who quit during pregnancy relapsed post-pregnancy.<sup>22</sup>

Across the years 2016 to 2021, 34.3% of NJ PRAMS survey respondents relapsed after quitting smoking during pregnancy (Table 1). Of the NJ PRAMS survey respondents who relapsed, 18.6% were exposed to ME/S (Table 3).



### Postpartum Checkup

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.<sup>23</sup> To better address potential adverse health outcomes post-delivery, ACOG recently updated their postpartum guidelines. Instead of a routine checkup 4 to 6 weeks after giving birth, they recommend that the postpartum visit be ongoing, as needed, and with a comprehensive postpartum visit no later than 12 weeks post-delivery.<sup>24</sup> This novel change emphasizes every mother's need to attend postpartum visits. Several evidence-based home-visiting models specifically target enrolling women prenatally and continuing home-visiting services after the baby's birth.<sup>25</sup>

In the PRAMS survey, a postpartum check is defined by a respondent answering "yes" to having a postpartum (PP) checkup. In this instance, a PP checkup is a regular checkup about 4-6 weeks after she gives birth. In 2020, 88.1% of mothers in all states that partake in PRAMS-related activities attended their postpartum checkups. The 2020 rate for NJ was 84.9%, and the 2021 rate was 90.4%.<sup>26</sup>

Across the years 2016 to 2021, 88.8% of NJ PRAMS survey respondents attended their postpartum checkup (Table 1). Of the NJ PRAMS survey respondents who attended their postpartum checkup, 27.7% were exposed to ME/S (Table 3).

**Table 3.** Exposure to Education/ Support (Yes) by Postpartum Health Behaviors, NJ PRAMS, 2016-2021

	Weighted Percent & P-value	
	Exposure to Education/ Support= Yes (%)	p-value
<b>Postpartum Behaviors</b>		
Breastfeeding Initiation- Yes	27.8	<.0001*
Adopted Safe Sleep Practice- Yes		
<i>Back to Sleep</i>	27.9	0.0005*
<i>No Soft Bedding</i>	29.6	<.0001*
Smoking Relapse- Yes	18.6	0.0112*
Attended Postpartum Checkup- Yes	27.7	<.0001*

Data Source: NJ PRAMS 2016-2020

\* Statistically Significant



## Statistical Analysis



### Breastfeeding Initiation

When adjusted for Race/Ethnicity, women exposed to ME/S were 75.6% more likely to initiate breastfeeding after birth (Table 4). Black, NH women exposed to ME/S were 20.8% less likely to initiate breastfeeding after birth than their White, NH counterparts. Hispanic women exposed to ME/S were 30.3% less likely to initiate breastfeeding after birth than their White, NH counterparts (Table 4). Asian, NH women exposed to ME/S were 18.7% more likely to initiate breastfeeding after birth than their White, NH counterparts (Table 4).



### Safe Sleep Practices

When adjusted for Race/Ethnicity, women exposed to ME/S were 17.7% likelier to place their infant on their back to sleep (Table 4). Black, NH women exposed to ME/S were 17.1% less likely to place their infant on their back to sleep than their White, NH counterparts (Table 4). Hispanic women exposed to ME/S were 28.1% less likely to place their infant on their back to sleep than their White, NH counterparts (Table 4). Asian, NH women who were exposed to ME/S were 22.3% more likely to place their infant on their back to sleep (Table 4).

When adjusted for Race/Ethnicity, women exposed to ME/S were 30.6% likelier to place their infant to sleep

without soft bedding (Table 4). The association is not significant for Black, NH (Table 4). Hispanic women exposed to ME/S were 28% less likely to place their infant to sleep without soft bedding than their White, NH counterparts (Table 4). Asian, NH women exposed to ME/S were 32.4% more likely to place their infant to sleep without soft bedding than their White, NH counterparts (Table 4).



### Smoking Relapse

Women who were exposed to ME/S were 45.2% less likely to relapse after birth. When stratified by race/ethnicity, the association is not significant (Table 4).



### Postpartum Checkup

When adjusted for Race/Ethnicity, women exposed to ME/S were about 54% more likely to attend postpartum checkups (Table 4). Black, NH women exposed to ME/S were 20.8% less likely to attend their postpartum checkups than their White, NH counterparts (Table 4). Hispanic women exposed to ME/S were 28.1% less likely to attend postpartum checkups than their White, NH counterparts (Table 4). Asian, NH women exposed to ME/S were 23.7% more likely to attend postpartum checkups than their White, NH counterparts (Table 4).

**Table 4.** Multivariate Analysis: Race/Ethnicity and Postpartum Behaviors for Women Who Have Been Exposed to Maternal Education/ Support, NJ PRAMS, 2016-2021

Selected Postpartum Behaviors	Crude OR	Adjusted OR	Race/Ethnicity			
			White, NH	Black, NH	Hispanic	Asian, NH
Breastfeeding Initiation	1.737* (1.387-2.174)	1.756* (1.395-2.210)	Ref.	0.792* (0.664-0.944)	0.697* (0.6020-0.808)	1.187* (1.014-1.389)
Adopted Safe Sleep Practice						
<i>Back to Sleep</i>	1.273* (1.111-1.458)	1.176* (1.020-1.355)	Ref.	0.829* (0.692-0.992)	0.719* (0.618-0.835)	1.223* (1.044-1.433)
<i>No soft bedding</i>	1.347* (1.192-1.522)	1.306* (1.151-1.481)	Ref.	0.861 (0.719-1.032)	0.720* (0.618-0.839)	1.324* (1.123-1.560)
Smoking Relapse	0.548*					

	(0.343-0.876)					
Attended Postpartum Checkup	1.722 * (1.401-2.117)	1.536* (1.246-1.894)	Ref.	0.792* (0.663-0.946)	0.719* (0.619-0.833)	1.237* (1.057-1.449)

Data Source: NJ PRAMS, 2016-2020

\* Statistically Significant p= <0.05

 Not significant when adjusted for Race/Ethnicity

## Agenda for Action

Published literature confirms that EBHV builds a longitudinal, trusting relationship essential for behavioral change.<sup>27</sup> Additional analyses are needed to determine the racial and ethnic disparities observed with regard to postpartum behaviors post-exposure to ME/S. However, these statistics warrant the need to continue implementing childbirth education and evidence-based home-visiting programs in NJ communities to improve postpartum behaviors. Presently, there is a plethora of initiatives that offer New Jerseyans access to childbirth education and home visits. These programs are free and voluntary to eligible families:

**Healthy Women Healthy Families (HWHF)** – Through a collaborative and coordinated community-driven approach that facilitates increased access to comprehensive and culturally sensitive prenatal and postpartum care, NJDOH is taking a holistic approach to tackling the persistent racial and ethnic disparities related to maternal and child health outcomes. The services provided through the HWHF initiative focus on giving families and/or women of childbearing age access to resources and referrals to local community services that promote child and family wellness. Through the HWHF initiative, the NJDOH implements new and innovative activities in municipalities with high Black, NH; and Hispanic infant and maternal mortality rates. Through this initiative, the opportunity is offered to mothers to get referred through [Connecting NJ](#) to a network of partners, agencies, and local community services that seek to improve health outcomes. These activities focus on increasing breastfeeding education and Doula care during the postpartum period. Services are available to mothers in all 21 NJ counties.

**Maternal, Infant, and Early Childhood Home Visiting (MIECHV) Program-** In New Jersey, the MIECHV program has implemented the three EBHV models listed below.

- 1) **Nurse-Family Partnership (NFP)** model is an evidence-based home visitation program that is designed to reach first-time, low-income families during early pregnancy and continue until the target child turns two years old. It provides in-home health and parenting education by a registered nurse. Supportive services are provided to at-risk, low-income, first-time pregnant women and their families.
- 2) **Healthy Families (HF)** is a model that mainly focuses on providing services to families during pregnancy and not later than two weeks after the child's birth. The clients served through this program are deemed at risk for multiple health and behavioral factors, including but not limited to teen pregnancy, first-time or subsequent pregnancy, low income, inadequate or no prenatal care, unstable housing, social isolation, depression, substance use, domestic violence and other indicators that place a child at risk of abuse and neglect.
- 3) **Parents as Teachers (PAT)** is a service model that serves pregnant women and parents of infants and children ages up to three or entering preschool. The inclusion criteria for PAT are identical to those of HF.

## 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 2016-2021. 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 PRAMS survey data is subject to common survey biases: recall bias, non-response bias, and social desirability bias. For instance, the relationship between ME/S and postpartum behavior is an association and cannot be interpreted as causal.

### 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- [www.nj.gov/health/](http://www.nj.gov/health/)
2. Division of Family Health Services- <https://www.nj.gov/health/fhs/>
3. New Jersey Department of Children and Families- [DCF | Universal Home Visiting Program \(nj.gov\)](http://www.nj.gov/dcf/universal-home-visiting-program)
4. New Jersey Home Visiting Programs- [DCF | Home Visitation Programs \(nj.gov\)](http://www.nj.gov/dcf/home-visitation-programs)
5. Connecting NJ- [Connecting NJ](http://www.nj.gov/connecting-nj)

Contact NJ PRAMS: [mchepi@doh.nj.gov](mailto:mchepi@doh.nj.gov) Website: [nj.gov/health/fhs/maternalchild/mchepi/prams/](http://nj.gov/health/fhs/maternalchild/mchepi/prams/)

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- <sup>6</sup> Lamaze International. (2013). About Lamaze. Retrieved from <http://www.lamaze.org/AboutLamaze>
- <sup>7</sup> U.S. Census Bureau, [U.S. Census Bureau QuickFacts: New Jersey](http://www.census.gov/quickfacts/nj)

- <sup>8</sup> New Jersey Department of Health's State Health Assessment Data, [NJSHAD - Query Result - New Jersey Birth Data: 1990-2021 - Count \(state.nj.us\)](#)
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- <sup>22</sup> New Jersey State Health Assessment Data, [NJSHAD - Query Result - New Jersey PRAMS Data - Smoking Relapse \(state.nj.us\)](#)
- <sup>23</sup> American College of Obstetricians and Gynecologists, Potential Task Force on Redefining the Postpartum Visit Committee on Obstetric Practice, [Optimizing Postpartum Care \(acog.org\)](#)
- <sup>24</sup> March of Dimes, [Your postpartum checkups | March of Dimes](#)
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- <sup>27</sup> Centers for Disease Control and Prevention. The CDC guide to strategies to support breastfeeding mothers and babies. Available at: <https://www.cdc.gov/breastfeeding/pdf/bf-guide-508.pdf>.