Pregnancy Risk Assessment Monitoring System (PRAMS)

Consolidated Report 2012 – 2015

DELAWARE HEALTH AND SOCIAL SERVICES
Division of Public Health

PREGNANCY RISK ASSESSMENT MONITORING SYSTEM (PRAMS) CONSOLIDATED REPORT – 2012-2015

John Carney Jr., Governor
State of Delaware

Kara Odom Walker, MD, MPH, MSHS, Secretary
Delaware Department of Health and Social Services

Karyl Thomas Rattay, MD, MS, Director
Division of Public Health

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Family Health Systems Section
Jesse S. Cooper Building
417 Federal Street | Dover, DE 19901
Phone: 302-744-4920| Fax: 302-739-6653

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Contact the Family Health Section at 302-744-4551.

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Suggested citation: Hussaini, SK. Pregnancy Risk Assessment Monitoring System Consolidated Report 2012-2015. Delaware Department of Health and Social Services, Division of Public Health. July 2018.
Centers for Disease Control and Prevention (CDC) Grant #U01DP006239-03-00.

TABLE OF CONTENTS

Highlights 1

1. Characteristics of Pregnant Delaware Women 9
   1.1. Demographics 11
   1.2. Socioeconomic status and income distribution 12
   1.3. Access to Health Care 13

2. Prepregnancy Wellness (prior to pregnancy) 16
   2.1. Emotional 16
   2.2. Environmental 21
   2.3. Financial 21
   2.4. Intellectual 21
   2.5. Occupational 21
   2.6. Physical 21
   2.7. Social 36
   2.8. Spiritual 37

3. Pregnancy Wellness (during pregnancy) 38
   3.1. Emotional 38
   3.2. Environmental 47
   3.3. Financial 50
   3.4. Intellectual 54
   3.5. Occupational 54
   3.6. Physical 57
   3.7. Social 68
   3.8. Spiritual 71
   3.9. Other experiences 71

4. Post Pregnancy Wellness (after pregnancy) 75
   4.1. Emotional 75
   4.2. Environmental 81
   4.3. Financial 90
   4.4. Intellectual 92
   4.5. Occupational 92
   4.6. Physical 92
   4.7. Social 98
   4.8. Spiritual 98

5. Infant Health Outcomes 100

Appendix 109
   A. Data Sources 109
   B. Methods 109

HIGHLIGHTS

The Pregnancy Risk Assessment Monitoring System (PRAMS) report 2012-2015 provides a comprehensive assessment of the characteristics, experiences, and factors that influence the health of Delaware mothers.

The Delaware PRAMS is a collaborative project between the Division of Public Health (DPH) and the U.S. Centers for Disease Control and Prevention (CDC), Division of Reproductive Health. PRAMS provides data on a sample of women who gave birth in Delaware. The sample is drawn from Delaware Vital Statistics and some women are sampled at a higher rate than others.

Using a Social Determinants of Health (SDOH) framework and a wellness perspective, the report is organized into three major conceptual domains of: 1) prepregnancy wellness (i.e., preconception health or health before pregnancy); 2) pregnancy wellness (health during pregnancy); and 3) post pregnancy wellness (i.e., health after pregnancy). The wellness domains are further classified into eight sub-domains: 1) emotional wellness; 2) environmental wellness; 3) financial wellness; 4) intellectual wellness); 5) occupational wellness; 6) physical wellness; 7) social wellness; and 8) spiritual wellness.

WELLNESS PRIOR TO PREGNANCY

Emotional wellness was defined using self-reported proxy measures from PRAMS data that are in essence, the absence of depression, anxiety, being told by a health care worker that the mother had depression and/or anxiety prior to pregnancy, an index measure for stressful life events and pregnancy "intendedness." Within this domain of prior to pregnancy, we find that:

- Younger mothers were more likely to be screened for depression and diagnosed with depression; were more likely to have had adverse experiences before pregnancy; and were more likely to have unintended pregnancies.
- Mothers with 12 years of schooling and those with low levels of income were more likely to have been checked for and/or diagnosed with depression; more likely to have been exposed to adverse experiences before pregnancy; and also more likely to have higher unintended pregnancies.
- Race and ethnic disparities were also evident in this sub-domain, as blacks were likely to report more adverse experiences. Ethnic minorities were more likely to have poor emotional wellness compared to non-Hispanic whites.
- Place, as in the mother's county of residence, was associated with emotional wellness. Mothers who resided in New Castle County or Sussex County were more likely to have been screened for depression. Mothers were also likely to report a higher prevalence of adverse experiences if their county of residence was Kent or Sussex; these counties also had higher rates of unintended pregnancies.

Physical wellness is usually synonymous with overall wellness, perhaps due to the ease of measuring physical wellness. Analyses of prepregnancy physical wellness indicators (i.e., body mass index, exercise, chronic conditions, taking multivitamins, and taking prenatal

vitamins or folic acid before pregnancy) suggest that physical wellness varies with age, education, income, race and ethnicity, and county of residence.

- Fifty-five percent of Delaware mothers were overweight and/or obese prior to pregnancy. This trend remained stable during the 2012-2015 period. According to the four-year average of 2012-2015 data, 27 percent (95% CI: 25.5-28.5) of Delaware mothers were either overweight and/or obese [28 percent (95% CI: 26.5-29.6)]. From a population perspective, these numbers translate to approximately 11,000 mothers who are overweight and 11,500 mothers who are obese. Mothers with low levels of education and income, and those who identified themselves as black, and/or Hispanic had higher rates of obesity.
- Although the percent of mothers who exercised three or more days weekly increased between 2012 and 2015 from 44 percent to 46 percent, still over 50 percent of mothers did not exercise prior to pregnancy. Physical activity was lowest among mothers with low levels of education, income, and among racial and ethnic minorities.
- The percentage of mothers with two or more chronic conditions before pregnancy decreased from 28 percent in 2012 to 26 percent in 2015; however, the percentage of mothers with one chronic condition remained relatively stable. Rates of chronic diseases were higher among mothers with low levels of education and income, and among black and Hispanic mothers.
- Daily intake of multivitamins among mothers increased from 29 percent in 2012 to 32 percent in 2015. Multivitamin intake was lowest among younger mothers, mothers with low levels of education and income, and among racial and ethnic minorities.
- Smoking before pregnancy is a critically important prepregnancy wellness indicator as it has significant impact on both maternal and neonatal health. Delaware saw a significant decline (~27 percent) in mothers who reported smoking three months before pregnancy, from 27.2 percent in 2012 to 19.8 in 2015. Smoking rates were higher among younger mothers, those with low levels of education and income, and among non-Hispanic whites, followed by blacks.
- Regarding prepregnancy physical wellness (i.e., body mass index, exercise, taking vitamins, and the presence of chronic diseases), there is a strong socio-economic gradient. It is evident that those with lower levels of education and income and non-Hispanic blacks have poor prepregnancy wellness, which increases their risk for poor outcomes.

Prepregnancy wellness indicators for environmental, intellectual, financial, occupational, social, and spiritual wellness were not available in PRAMS.

WELLNESS DURING PREGNANCY

Emotional wellness indicators during pregnancy were defined using self-reported proxy measures from PRAMS data that included discussion with health care providers about depression and physical abuse during pregnancy. Questions also included instances of actual physical abuse (i.e., intimate partner violence) during pregnancy and asked mothers how they

felt about the prenatal care and the advice they received from their provider. Finally, preparing for childbirth was a proxy indicator.

- During 2012-2015, approximately 70 percent of the mothers reported that their health care providers discussed depression during pregnancy. About 58 percent of mothers reported that their health care providers discussed physical abuse during pregnancy. Older mothers were less likely to report that health care providers discussed depression and/or physical abuse. Mothers with low levels of education and income, blacks, and Hispanics were more likely to report that their health care providers discussed depression and/or physical abuse.
- There was a 27 percent decline in Delaware mothers' reports of physical abuse during pregnancy, from 3 percent in 2012 (which estimates to about 300 mothers every year reporting physical abuse during pregnancy) to 2 percent in 2015. Younger mothers were more likely to report being physically abused during pregnancy. Mothers with low levels of education and income, blacks, and Hispanics were more likely to report physical abuse during pregnancy.
- Majority of the mothers reported that they were satisfied with the advice they received on how to take care of themselves during pregnancy. However, mothers who reported taking childbirth classes decreased from 20 percent in 2012 to 17 percent in 2015.

Environmental wellness is complex and encompasses multiple dimensions. However, it is generally agreed that it is important to focus on the built, or physical, environment and the natural environment, referring to how a geographic area or neighborhood is designed. While there were no specific measures in PRAMS to assess environmental wellness prior to pregnancy, one proxy measure for environmental wellness during pregnancy was access to transportation during prenatal care.

- The percent of mothers who indicated transportation as a barrier to accessing early prenatal care varied from a high of 17 percent in 2013 to a low of 12 percent in 2014. On average, during 2012-2015 about 14 percent of the Delaware mothers indicated transportation barriers as one of their reasons for not getting prenatal care as early as they wanted. Young mothers, mothers with less than 12 years of schooling, those with incomes less than $10,000, and racial and ethnic minorities were more likely to indicate having transportation barriers. Interestingly, there were no differences in the prevalence rates of mothers who indicated transportation as a barrier by place (i.e., mother's county of residence).

Financial wellness is a critical component of overall wellness. This measure incorporates personal disposable income and wealth that promotes economic mobility within families and generations. Financial wellness is one of the most potent predictors of overall health and perhaps most important during a major life event such as pregnancy. Two proxy indicators were utilized to assess financial wellness during pregnancy: cost as a barrier to accessing prenatal care and enrollment in the Supplemental Nutrition Assistance Program (SNAP) for Women, Infants, and Children (WIC).

- The percent of mothers who indicated cost as a barrier to accessing prenatal care decreased by 17 percent, from 22 percent in 2012 to 18.3 percent in 2015.

Older mothers were more likely to report cost as a barrier to prenatal care. As expected, mothers with low levels of education and income, and racial and ethnic minorities were more likely to report cost as a barrier to prenatal care access. Mothers who indicated their county of residence was Sussex were also more likely to report cost as a barrier to accessing care; Sussex was followed by New Castle County.

- The percent of mothers enrolled in WIC decreased by about 11 percent during 2012-2015, from a high of 48 percent in 2012 to 43 percent in 2015. WIC enrollment was higher among young mothers, those with low levels of education and income, among racial and ethnic minorities, and in Sussex and New Castle counties.

Occupational wellness captures an individual's satisfaction and enrichment derived from his/her occupation and/or work. One element of occupational wellness may include working conditions and whether or not there are provisions to take time off from work to care for oneself. One proxy measure for occupational wellness was the ability of mothers to take time off from work to get prenatal care when they needed it.

- During 2012-2014, the percent of mothers who indicated being unable to take time off from work to get prenatal care increased from 8 percent to 10 percent; it decreased to 7 percent in 2015. Despite the wide variation in estimates, on average during 2012-2015, approximately 8 percent (~ 900) mothers indicated being unable to take time off. Young mothers, those with low levels of education, other racial and ethnic minorities including Hispanics, and those indicating they lived in Sussex County were more likely to report an inability to take time off from work.

Physical wellness during pregnancy comprised of several indicators and included aspects of oral health (i.e., having teeth cleaned during pregnancy), smoking and drinking during the last three months of pregnancy, but also conditions originating during pregnancy such as hypertension, and morbidities during pregnancy such as vaginal bleeding, kidney/bladder infection, preterm labor, placental problems, premature rupture of membranes, and blood transfusion. Indicators also included daily intake of fruits and vegetables, recommended weight gain during pregnancy, and infections during pregnancy.

- The percent of mothers who had their teeth cleaned during pregnancy increased by approximately 9 percent, from 41 percent in 2012 to 44 percent in 2015. Mothers who were 20-24 years of age, those with low levels of education and income, blacks and Hispanics, and those who indicated Sussex County as their place of residence had low prevalence for having had their teeth cleaned during pregnancy.
- The percent of mothers who had high blood pressure during pregnancy increased by 9 percent, from 15 percent in 2012 to 16 percent in 2015. Smoking during the last three months of pregnancy decreased 31 percent, from 13 percent in 2012 to 9 percent in 2015. However, alcohol use during the last three months of pregnancy increased 35 percent, from 6 percent in 2012 to 8 percent in 2015.

- There were differences in prevalence of high blood pressure, smoking, and alcohol use by maternal age, race and ethnicity, and place of residence. For instance, mothers who were less than 20 years of age, those with 12 years of schooling, those with income levels below $10,000, blacks and non-Hispanic whites, and those indicating Kent County as their place of residence had a higher prevalence of high blood pressure. On the contrary, the prevalence of smoking during the last trimester was higher among mothers who were in the 20-24 years age range, while alcohol use during the last trimester was higher among mothers who were 35 years and older. Further, smoking prevalence during the last trimester of pregnancy was higher among mothers with low levels of education and income, while alcohol use was higher among mothers higher education and income levels. The prevalence of smoking and alcohol was higher among non-Hispanic whites.
- The prevalence of most maternal morbidities such as vaginal bleeding, kidney/bladder infection, preterm labor, problems with placenta, and premature rupture of membranes remained stable during 2012-2015. However, blood transfusion, increased 92 percent, from 1.3 percent in 2012 to 2.3 percent in 2015. Blood transfusions are indicative of excessive blood loss, usually for postpartum hemorrhaging; therefore, the increase in the prevalence of blood transfusions perhaps indicates a rising incidence of postpartum hemorrhage.
- The percent of mothers who indicated consuming at least two servings of fruits daily increased 7 percent during 2012-2015, while those consuming vegetables decreased 41 percent.
- Despite mixed evidence on weight gain during pregnancy, excess weight gain has been associated with large for gestation babies and higher primary cesareans rates. The prevalence for excess weight gain during pregnancy remained stable at 50 percent during 2012-2015. The prevalence of two or more infections during pregnancy increased 7 percent, from 15 percent in 2012 to 16 percent in 2015.

- Social wellness encompasses several elements: developing a sense of connection, belonging, and a well-developed support system; and contributing to the common welfare of a community. One proxy measure for social wellness during pregnancy was having access to support, which include access to cash ($50 from someone), someone to help if the mother was sick and needed to be in bed, someone to take them to a clinic or doctor's office, and someone to talk to about any problems.
  - During 2012-2015, on average, social support of Delaware mothers remained stable. However, social support increased with levels of education and income, and was higher among non-Hispanic whites.

WELLNESS AFTER PREGNANCY

Postpartum depression is one of the core indicators of emotional wellness that impacts 7 to 13 percent of mothers in the U.S. Another proxy measure for emotional wellness is breastfeeding (i.e., ever or currently).

- In Delaware, 13 percent of mothers who gave birth experienced postpartum depression, which approximates to about 1,366 women annually.

- During 2012 to 2015, the prevalence of postpartum depression increased by 2 percent. The prevalence of postpartum depression was higher among younger mothers, those with 12 years of schooling and low income levels; and was highest among other non-Hispanics, followed by blacks. The prevalence of postpartum depression was two times higher among mothers who indicated their payer was Medicaid, compared to mothers who were not enrolled in Medicaid.
- Delaware's "ever-breastfed" prevalence increased 9 percent, from 79 percent in 2012 to 86 percent in 2015. Yet the prevalence of "currently breastfeeding" declined 22 percent, from 51.2 percent in 2012 to 40 percent in 2015. In general, breastfeeding was lower among younger mothers and those with low levels of education and income, and breastfeeding prevalence was lowest among blacks.

Environmental wellness measures during pregnancy essentially relied on distal measures such as home visiting, infant sleep position, and bed sharing.

- Home visiting services are generally available to only eligible women who may be at high risk for an adverse pregnancy outcome. Approximately 18 percent of mothers or about 1,854 women indicated receiving a home visit. However, there was about a 12 percent decline in the rate of home visiting during 2012-2015, from 20 percent in 2012 to 18 percent in 2015. Plausible reasons for decline in home visiting could be due to capacity (i.e., staff shortages, increased caseloads), reduction in referrals to home visiting programs, and/or reluctance among eligible mothers for home visiting services.
- The percent of women who put their infants to sleep on their backs increased by 5 percent during 2012-2015, from 78 percent in 2012 to 81 percent in 2015. The prevalence of infants who were put to sleep on their backs was lower among younger mothers, those with low levels of education and income, among blacks, followed by other non-Hispanics and those who indicated they resided in Sussex County or Kent counties.
- The prevalence of never sharing a bed with an infant remained stable during 2012-2015. However, the prevalence of bed sharing was higher among younger mothers, blacks, and those who lived in Sussex County or Kent County.

Postpartum Medicaid status served as a proxy measure for capturing financial wellness after pregnancy as it provides mothers the ability to continue care postpartum. The postpartum Medicaid status declined by 13 percent during 2012-2015, from 44 percent in 2012 to 38 percent in 2015. Plausible reasons for decline in postpartum Medicaid status could be increase use of third-party insurance, changes in eligibility requirements, and/or improvement in financial well-being of mothers.

Physical wellness after pregnancy was measured using mode of delivery and postpartum contraception. The mode of delivery is associated with delivery morbidities and postpartum contraception, dependent upon whether it is used at all, or the type used, impacts the risk of a subsequent pregnancy with a short interpregnancy interval, especially if pregnancy is mistimed and/or is unintended.

- The prevalence of cesarean sections (C-sections) have generally fluctuated around 30 percent, meaning that one in every three births are typically cesarean births. In 2012, Delaware's C-section rate was 33.2 percent; it declined by 15 percent to a rate of 28.1 percent in 2015. Vital statistics data provide a better population estimate. According to Delaware Health Statistics Center data from birth certificate, the C-section rate declined 4 percent, from 33.1 percent in 2012 to 32 percent in 2015.
- There has been a steady increase in postpartum women using "the most effective methods of contraceptives," and long acting reversible contraceptives (LARCs). There was a 20 percent increase in using "the most effective methods of contraceptives," from 22 percent in 2012 to 27 percent in 2015. There was 50 percent increase in using postpartum LARCs, from 10 percent in 2012 to 15 percent in 2015.

INFANT HEALTH OUTCOMES

- Several domains discussed in this report (i.e., prepregnancy wellness, pregnancy wellness, and post pregnancy wellness) and the social gradients influence maternal and child health. Low birth weight (<2,500 grams) and preterm birth (< 37 weeks of gestation) are two outcomes captured in PRAMS data.
- Prepregnancy emotional wellness indicators: depression before pregnancy, maternal adverse experiences before pregnancy, and unintended pregnancy were all associated with low birth weight. For the period 2012-2015, for those with depression the prevalence of low birth weight was higher, 12 percent, vs. 7 percent for those with no dpression. In the same period, the prevalence of preterm births was higher in mothers who were diagnosed with depression prior to pregnancy, 12 percent, as compared to those not diagnosed with depression, 8 percent. Mothers exposed to adverse experiences were 40 percent more likely to deliver a low birth weight baby as compared to those who were unexposed. Mothers who indicated that their pregnancy was unintended were 40 percent more likely to deliver a low birth weight baby and 30 percent more likely to deliver a premature baby.
- Prepregnancy physical wellness indicators, especially body mass index (BMI), chronic conditions, and smoking three months before pregnancy, were also associated with poor birth outcomes. The prevalence of premature deliveries was 11 percent higher among mothers whose prepregnancy BMI was greater than or equal to 30 (obese) as compared to other BMI categories. Similarly, a dose-response relationship exists between the prevalence of chronic conditions and the prevalence of preterm births. The prevalence of low birth weight deliveries was about 6 percent among mothers with no chronic conditions and about 9 percent among mothers with one chronic condition. The prevalence of low birth weight deliveries was 10 percent among mothers with two or more chronic conditions. Similar to low birth weight, about 7 percent of preterm deliveries were to mothers with no chronic conditions, 9 percent were to mothers with one chronic condition, and about 11 percent were to mothers with two or more chronic conditions. Mothers who smoked three months before pregnancy were 75 percent more likely to deliver a low birth weight baby and 60 percent more likely to deliver a premature baby.

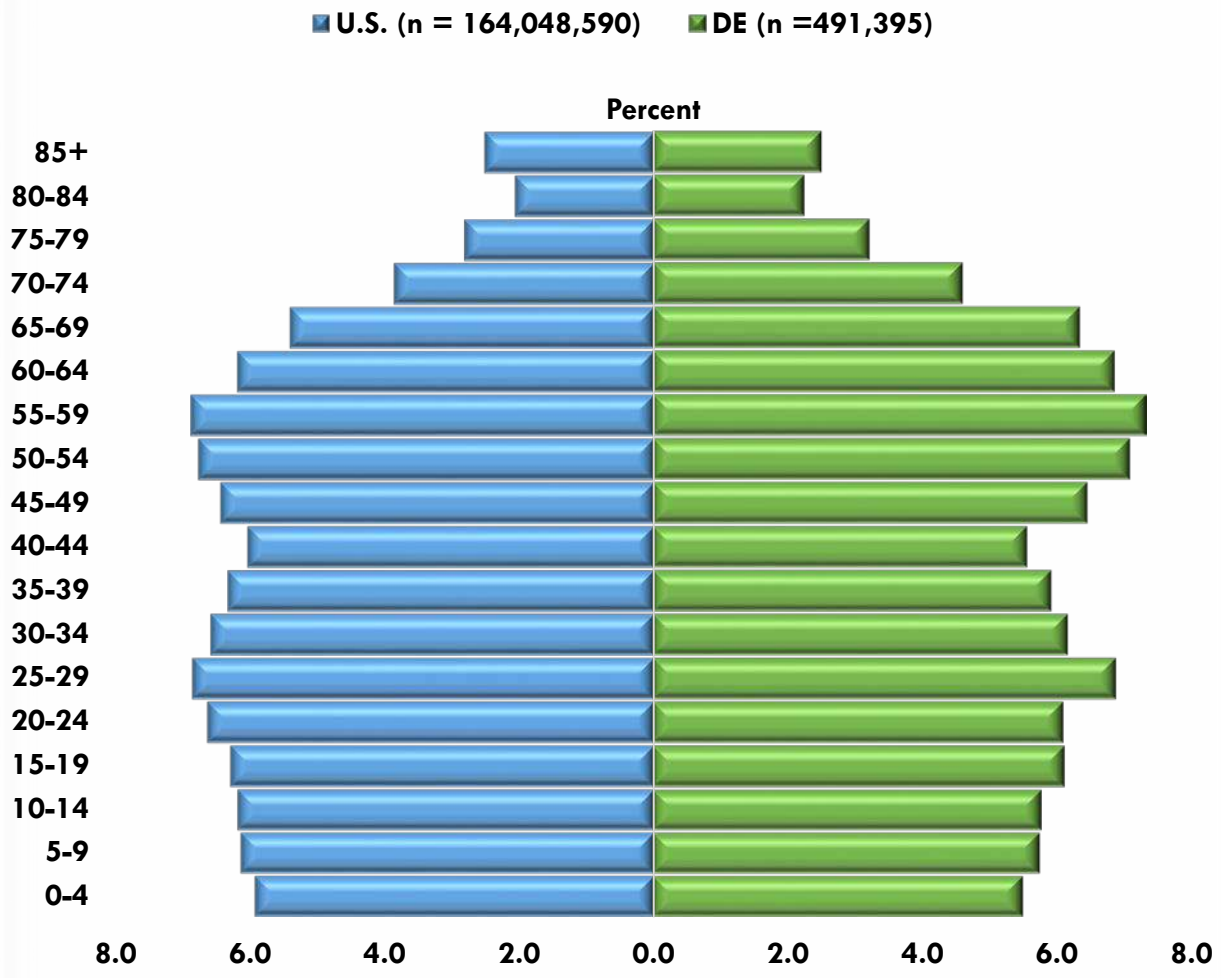
- Pregnancy wellness indicators such as physical abuse during pregnancy, dental hygiene, and smoking during the last trimester were associated with infant health outcomes. The prevalence of low birth weight was 12 percent higher among mothers who were physically abused during pregnancy, compared to 8 percent among those who were not abused. The prevalence of preterm births was also higher (10 percent vs. 9 percent). Among mothers who had their teeth cleaned during pregnancy compared to those who did not, the prevalence of low birth weight was lower (7 percent vs. 9 percent). Among mothers with hypertension compared to those without it, the prevalence of low birth weight was higher (16 percent vs. 6 percent) and the prevalence of preterm births was higher (19 percent vs. 7 percent). The prevalence of having a low birth weight baby, was higher among mothers who smoked during the last trimester (15 percent) compared to those who did not (7 percent). The prevalence of preterm birth was also higher among mothers who smoked during the last trimester (14 percent), compared to those who did not (8 percent).

PRAMS data from 2012-2015 provides a detailed overview of the multiple factors that influence health with an underlying SDOH framework. As a concept, wellness provides us with a method to understand how emotional, environmental, financial, intellectual, occupational, physical, social, and spiritual dimensions interact during the life course, vis-à-vis pregnancy and infant health. Despite the lack of measures in every dimension, evidence from PRAMS data underscores the importance of prepregnancy wellness, pregnancy wellness, and post pregnancy wellness. The strong socioeconomic gradient evident in these health indicators and outcomes further shows the impacts of "upstream" social determinants of health on "downstream" health conditions and issues. It is important to recognize the multi-dimensional nature of health problems and the inter-generational impact that social determinants have on wellness. Addressing women's health requires multi-sectoral collaborative approaches and evidence-based population health strategies to target the most vulnerable Delaware women of childbearing age.

CHARACTERISTICS OF PREGNANT DELAWARE WOMEN

The childbearing population, typically defined as 15-44 year-old women, is a critical component of fertility and population growth. According to the 2016 U.S. Census, there are 491,395 women in Delaware; of those, approximately 37 percent (179,716) women are of childbearing age. Figure 1 outlines the age-distribution of U.S. and Delaware women. As per Census estimates, Delaware's childbearing population, on a percentage basis, is lower when compared to the U.S. in all age-groups.

Figure 1. Age distribution of Women, U.S. and Delaware, 2016



Source: U.S. Census Bureau, Population Division. Annual Estimates of the Resident Population for Selected Age Groups by Sex for the United States, States, Counties and Puerto Rico Commonwealth and Municipios: April 1, 2010 to July 1, 2016.

The age distribution of women of childbearing age mirrors the percentage of women in the U.S. The same holds for those who gave birth (Figure 2), except that the percentages of women age 25-29 years and over 30 years who gave birth in Delaware are slightly higher as compared to the U.S. percentage. During 2012 to 2016, over 53,000 women in Delaware gave birth, with the majority residing in New Castle County (Figure 3).

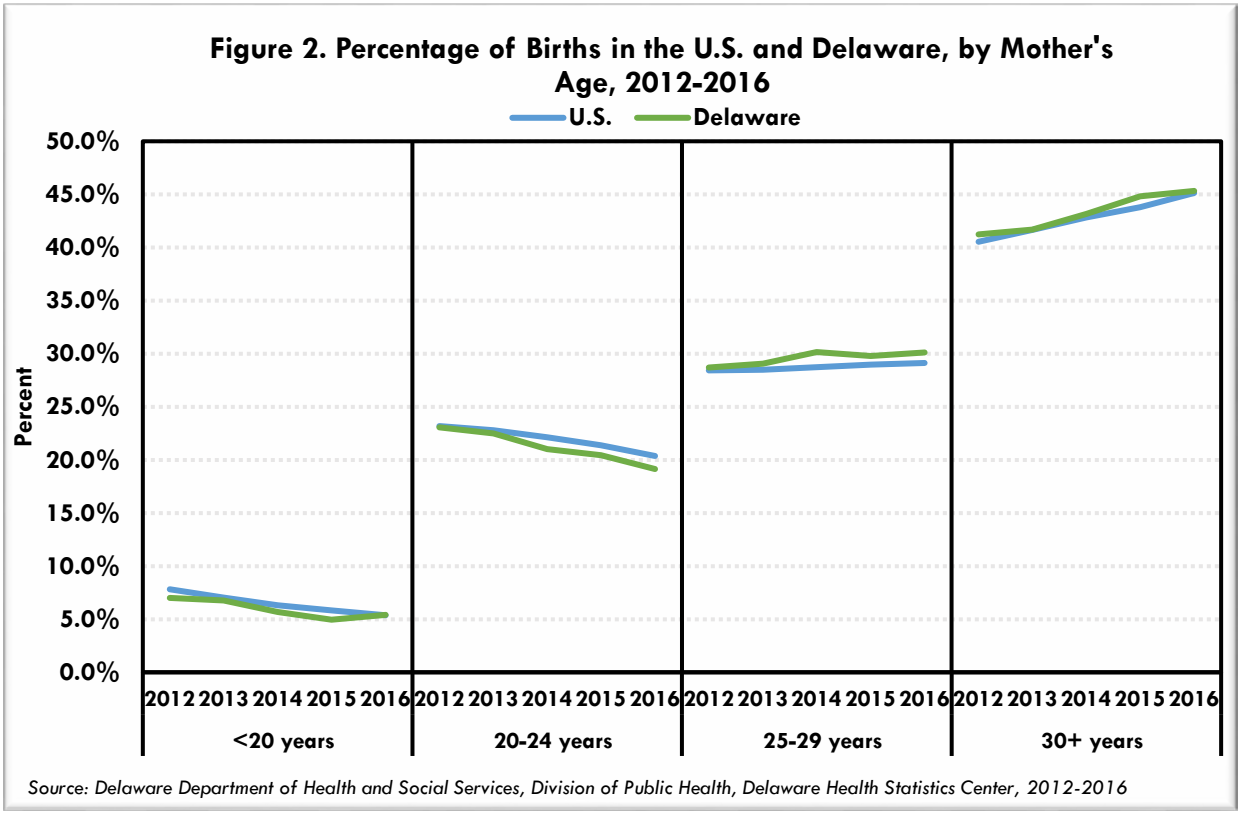


Figure 2. Percentage of Births in the U.S. and Delaware, by Mother's Age, 2012-2016
U.S.
Delaware
Percent
50.0%
45.0%
40.0%
35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
2012 2013 2014 2015 2016
<20 years
20-24 years
25-29 years
30+ years
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2012-2016

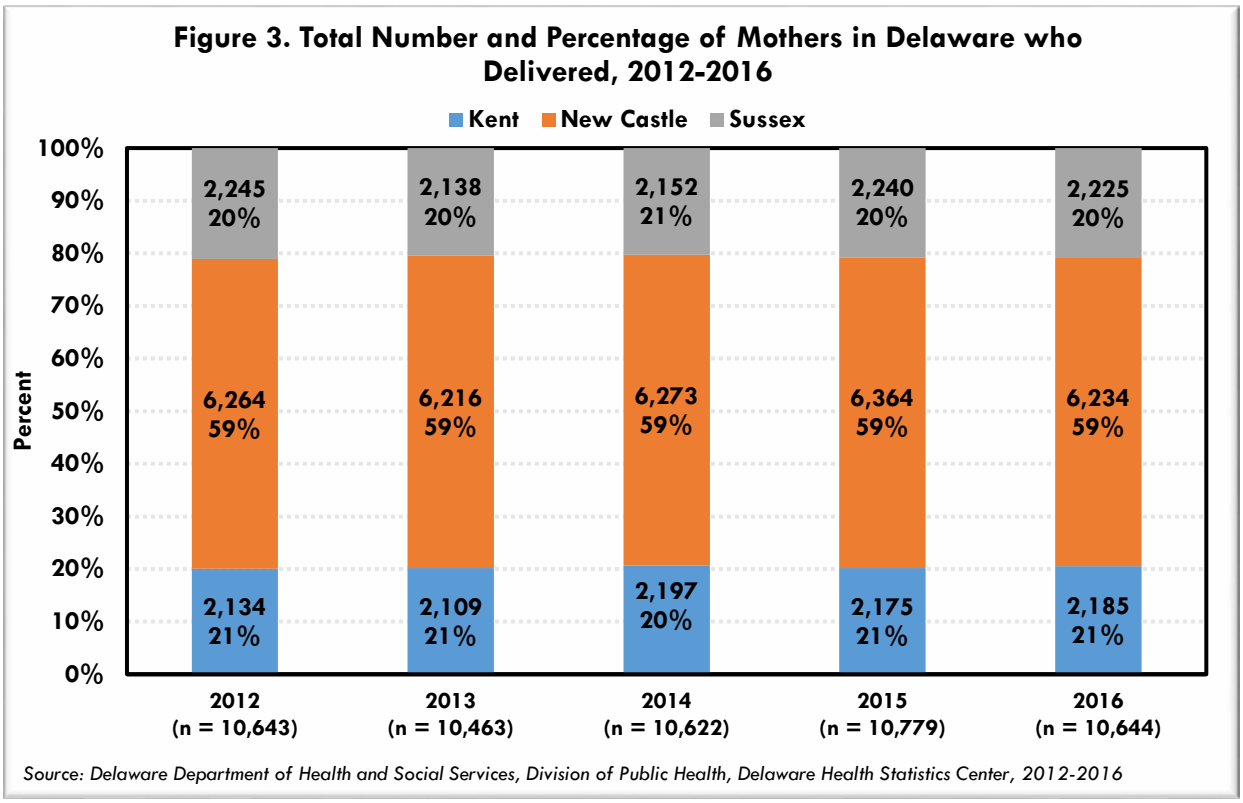


Figure 3. Total Number and Percentage of Mothers in Delaware who Delivered, 2012-2016
Kent
New Castle
Sussex
Percent
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2,245 20%
6,264 59%
2,134 21%
2,138 20%
6,216 59%
2,109 21%
2,152 21%
6,273 59%
2,197 20%
2,240 20%
6,364 59%
2,175 21%
2,225 20%
6,234 59%
2,185 21%
2012 (n = 10,643)
2013 (n = 10,463)
2014 (n = 10,622)
2015 (n = 10,779)
2016 (n = 10,644)
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Health Statistics Center, 2012-2016

Despite the relatively small size of Delaware, its population closely mirrors the U.S. in many ways, especially regarding women of childbearing age. The Pregnancy Risk Assessment Monitoring System (PRAMS) data is the focus of our report. The Delaware PRAMS is a collaborative project between the Delaware Department of Health and Social Services (DHSS), Division of Public Health (DPH) and the U.S. Centers for Disease Control and Prevention (CDC), Division of Reproductive Health. PRAMS provides data on a sample of women who gave birth in Delaware. The sample is drawn from Delaware Vital Statistics. Some women are sampled at a higher rate than others.

1.1 Demographics

The percentage of mothers who are less than 25 years of age responding to the PRAMS survey steadily declined during the 2012-2015 survey periods. In contrast, the percentage of mothers age 25 to 34 years steadily increased, from 53 percent in 2012 to 61 percent in 2015. Women respondents age 35 years and older remained relatively stable (Table 1).

Table 1. Characteristics of Delaware mothers, Pregnancy Risk Assessment Monitoring System surveys, 2012 to 2015.

Respondent characteristics	PRAMS Survey Year†				
	2012 (n = 1,030) Percent (95%CI)	2013 (n = 1,014) Percent (95%CI)	2014 (n = 934) Percent (95%CI)	2015 (n = 943) Percent (95%CI)	2012-2015 (n = 3,921) Percent (95%CI)
Maternal Age					
<20 years	7.6 (5.8-9.4)	6.0 (4.3-7.7)	5.7 (4-7.4)	4.1 (2.7-5.5)	5.8 (5-6.7)
20-24 years	24.7 (21.9-27.6)	24.0 (21.1-26.9)	19.0 (16.3-21.8)	19.5 (16.7-22.4)	21.8 (20.4-23.2)
25-34 years	52.9 (49.6-56.2)	55.9 (52.5-59.2)	60.5 (57.1-63.9)	61.2 (57.9-64.6)	57.6 (56-59.3)
35 years and older	14.8 (12.4-17.1)	14.1 (11.9-16.4)	14.8 (12.4-17.3)	15.1 (12.8-17.5)	14.7 (13.5-15.9)
Education					
<12 years of schooling	19.1 (16.5-21.7)	18.4 (15.7-21)	16.3 (13.7-19)	16.2 (13.6-18.8)	17.5 (16.2-18.8)
12 years of schooling	24.2 (21.4-27)	25.7 (22.7-28.7)	23.7 (20.7-26.7)	24.8 (21.8-27.8)	24.6 (23.1-26.1)
>12 years of schooling	56.7 (53.4-60)	55.9 (52.5-59.3)	60.0 (56.5-63.4)	59.0 (55.6-62.5)	57.9 (56.2-59.6)
Income					
<$10,000	21.7 (18.8-24.6)	19.6 (16.9-22.4)	19.1 (16.3-22)	17.9 (15.1-20.6)	19.6 (18.2-21)
$10,000-$26,000	15.0 (12.6-17.5)	17.0 (14.3-19.6)	16.3 (13.7-19)	15.1 (12.5-17.7)	15.9 (14.6-17.2)
$26,001-$44,000	12.8 (10.5-15.1)	15.9 (13.3-18.4)	14.2 (11.7-16.7)	14.3 (11.8-16.8)	14.3 (13.1-15.5)
$44,001 or more	50.4 (47-53.9)	47.5 (44.1-51)	50.3 (46.8-53.9)	52.7 (49.1-56.2)	50.3 (48.5-52)
Race/Ethnicity					
White non-Hispanic	57.9 (54.6-61.3)	55.8 (52.4-59.2)	55.6 (52.1-59.1)	56.4 (52.9-59.9)	56.4 (54.7-58.1)
Black non-Hispanic	26.3 (23.2-29.3)	27.1 (23.9-30.2)	24.4 (21.4-27.5)	25.9 (22.7-29)	25.9 (24.3-27.5)
Hispanics	13.2 (11-15.5)	13.8 (11.4-16.1)	15.7 (13.1-18.3)	14.9 (12.4-17.4)	14.4 (13.2-15.6)
Others	2.6 (1.5-3.6)	3.4 (2.2-4.6)	4.3 (2.8-5.7)	2.8 (1.7-4)	3.3 (2.6-3.9)
County					
Kent County	21.7 (19-24.4)	20.3 (17.6-23)	21 (18.2-23.9)	22.9 (20-25.8)	21.5 (20.1-22.9)
New Castle County	57.9 (54.7-61.2)	59.6 (56.3-62.9)	59.1 (55.7-62.5)	57.4 (54-60.8)	58.5 (56.8-60.2)
Sussex County	20.4 (17.8-23.1)	20.1 (17.4-22.9)	19.9 (17.1-22.6)	19.7 (17-22.5)	20.0 (18.7-21.4)
Insurance					
Non-Medicaid	59.6 (56.2-63)	55.8 (52.3-59.2)	61.2 (57.6-64.7)	63.2 (59.8-66.7)	60.0 (58.3-61.7)
Medicaid	40.4 (37-43.8)	44.2 (40.8-47.7)	38.8 (35.3-42.4)	36.8 (33.3-40.2)	40.0 (38.3-41.7)

Source: Delaware Department of Health and Social Services, Delaware Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring System (PRAMS), 2012-2015 data.

†Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates.

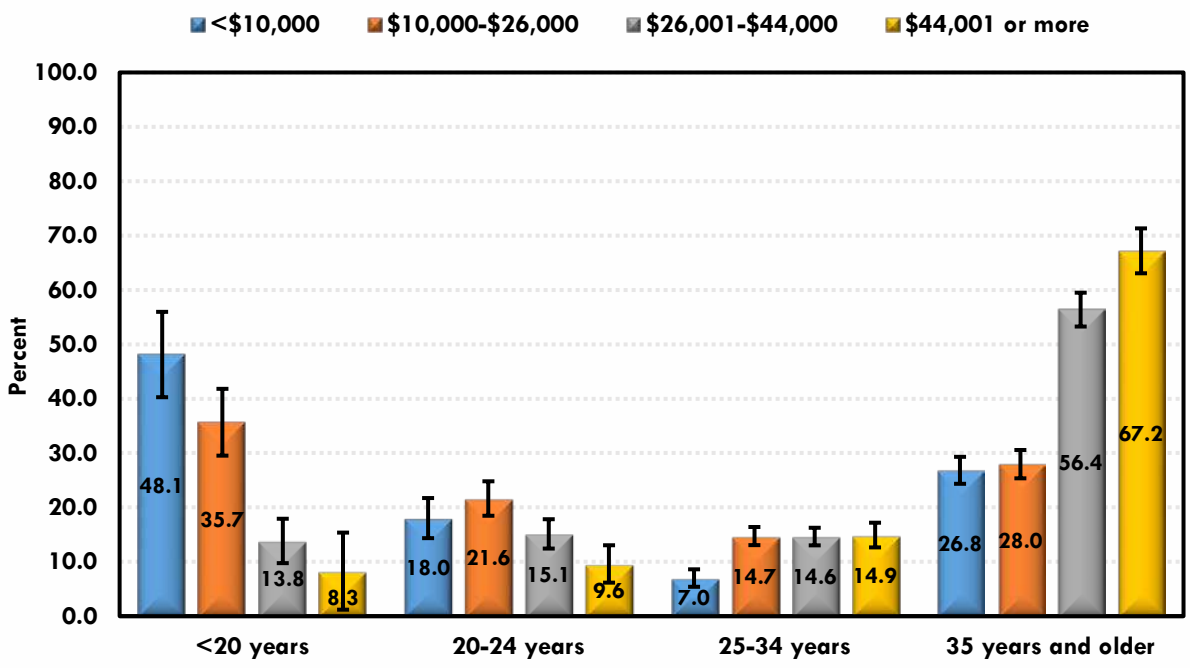
Other characteristics of PRAMS survey respondents that remained relatively stable during this period are: race and ethnicity, mother's county of residence, and the socioeconomic status of the mothers (i.e., education, income and insurance). The relative stability of the characteristics of the PRAMS survey respondents enables robust year-to-year comparisons on a variety of outcomes.

1.2 Socioeconomic status and income distribution

It is well established within the domain of social epidemiology to examine health inequalities in relation to material, behavioral, and psychosocial pathways and increasingly research has attempted to identify the biological plausibility of social gradients of health.[1] In part the emphasis is on the effects of early life (including in utero) on later health outcomes. Although PRAMS data are cross-sectional, examining the health status of the women within their relative socioeconomic status (SES) will help us to understand where targeted population health efforts may be most beneficial.

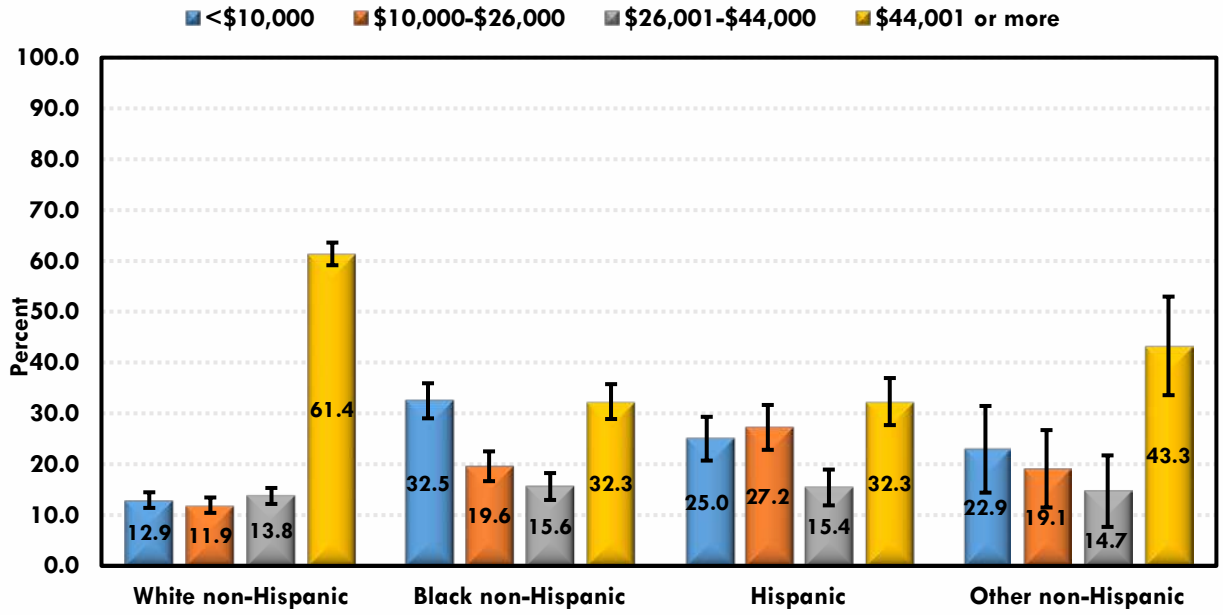
Figure 4 and Figure 5 provide distribution of income 12 months prior to delivery by mothers' ages and race and ethnicity. Income levels were higher for older mothers compared to younger mothers and blacks and Hispanics/Latinas generally had lower levels of income compared to non-Hispanic whites.

Figure 4. Income* by Mother's Age in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Household income 12 months before your new baby was born.

[1] Cable, N. Life Course Approach in Social Epidemiology: An Overview, Application and Future Implications. *J Epidemiol*, 2014; 24(5): 347-352.



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Household income 12 months before your new baby was born.

1.3 Access to health care

Access to health care, when narrowly defined as availability of health insurance, affects how individuals utilize health care. In particular, access to health care for pregnant women may affect the type of prepregnancy, during pregnancy, and post-pregnancy care services sought.

According to the 2016 Census estimates, the percentage of people without health insurance coverage in the U.S. in 2016 was about 10 percent. However, the percentage of persons without health insurance coverage in Delaware was 6 percent, well below the national average. Despite the fact that Delaware has a smaller percentage of uninsured individuals, there are disparities within the female population. Based on the current five-year 2016 Census estimates (Figure 6) among Delaware females 18-44 years of age, the percent without health insurance coverage was about 10 percent (15,611), compared to 17 percent (9,555,889) nationally. Being underinsured and/or lacking health insurance coverage may substantially affect these women from accessing several upstream preventive services that influence their health as well as their children's health. The Affordable Care Act (ACA), or health care law, provides differential tax credits based on the size and structure of the person's employer. While large firms can potentially provide competitive and comprehensive health insurance, small firms/employers may provide minimal coverage.

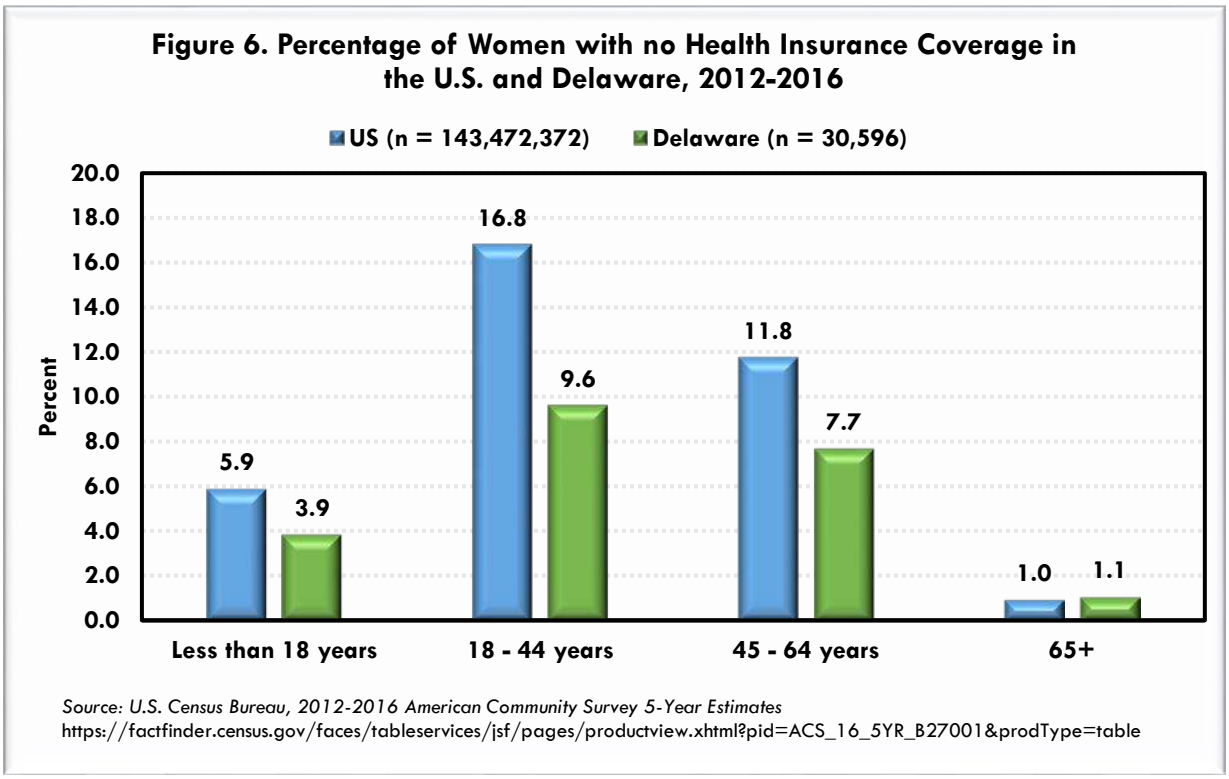


Figure 6. Percentage of Women with no Health Insurance Coverage in the U.S. and Delaware, 2012-2016

Source: U.S. Census Bureau, 2012-2016 American Community Survey 5-Year Estimates
https://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?pid=ACS_16_5YR_B27001&prodType=table

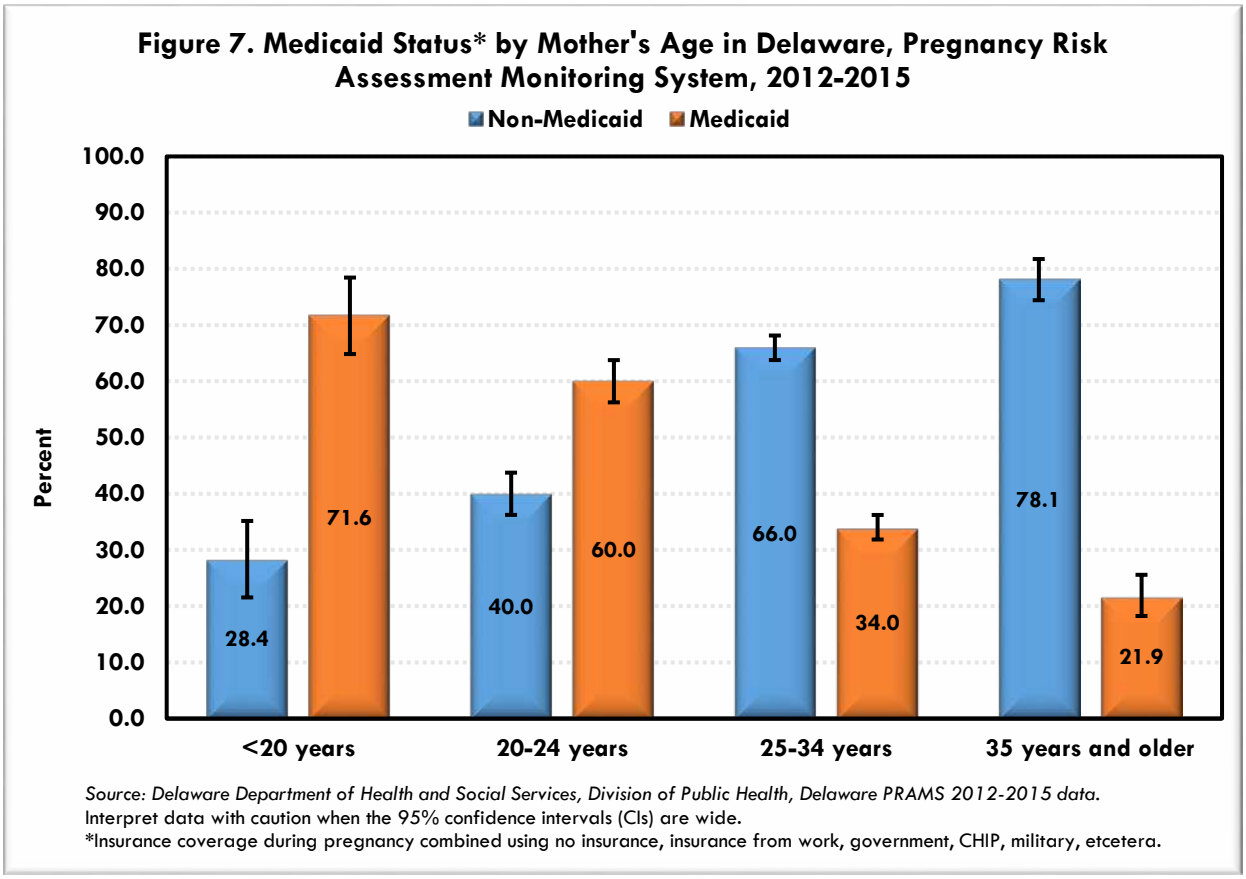
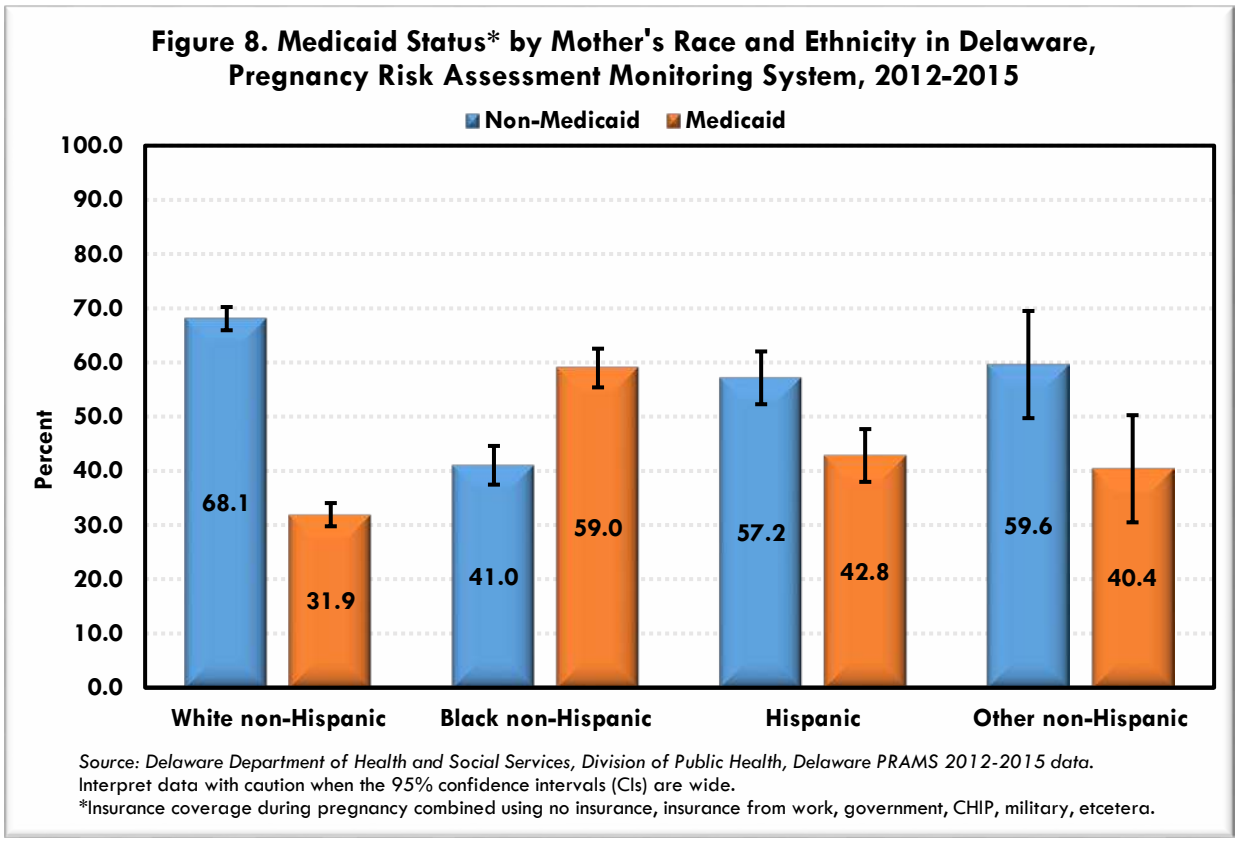


Figure 7. Medicaid Status* by Mother's Age in Delaware, Pregnancy Risk Assessment Monitoring System, 2012-2015

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Insurance coverage during pregnancy combined using no insurance, insurance from work, government, CHIP, military, etcetera.



Younger women, black, and Hispanic/Latina women were more likely to be covered by Medicaid during pregnancy (Figures 7 and 8).

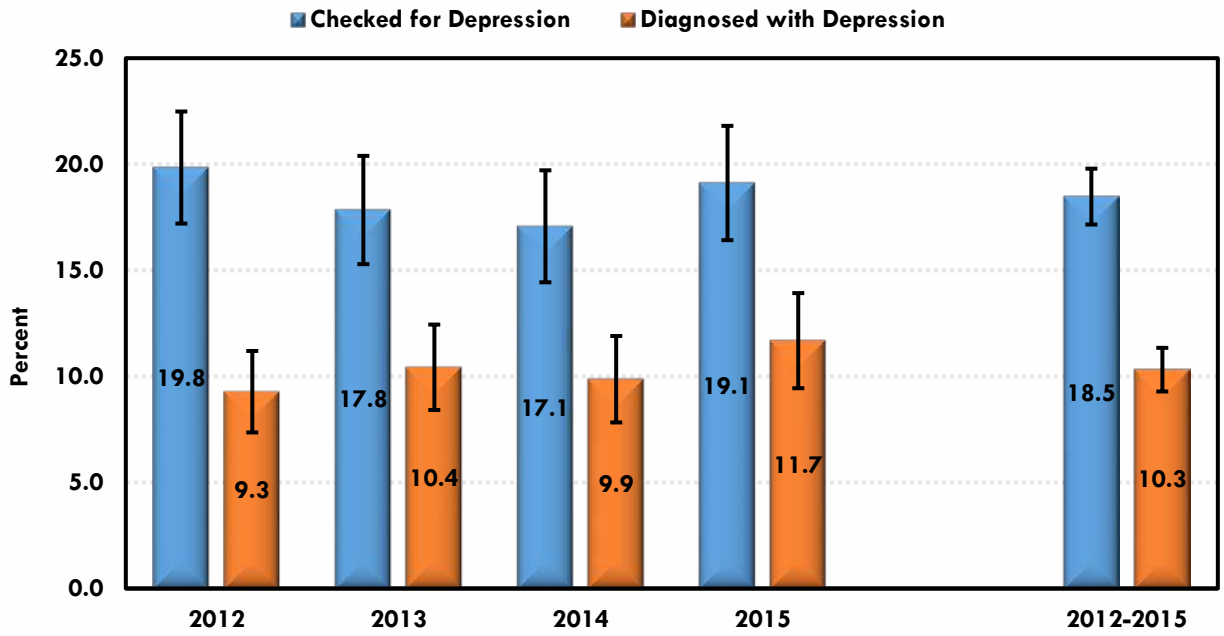
PREPREGNANCY WELLNESS

While the concept of 'wellness' is not new, the term is definitely more than just the absence of disease or illness. Generally viewed from a holistic perspective, wellness represents the positive aspects of physical, mental, social, and spiritual health. The concept is consistent with the World Health Organization's (WHO) definition of human health as "a state of complete physical, mental, and social wellbeing and not merely the absence of disease and infirmity" (WHO, 1948). Measuring wellness is complex because it encompasses eight dimensions: emotional, environmental, financial, intellectual, occupational, physical, social, and spiritual. This report defines prepregnancy wellness measures on the PRAMS questionnaire as wellness occurring "before pregnancy." Pregnancy wellness is defined as wellness measures occurring "during pregnancy." Post pregnancy wellness is defined as wellness "after pregnancy." Each chapter provides data within these domains where applicable, although not all measures and questions may fit well within the eight dimensions. Wellness measures are stratified by age, education, income, race and ethnicity, and place of residence.

2.1 Emotional wellness

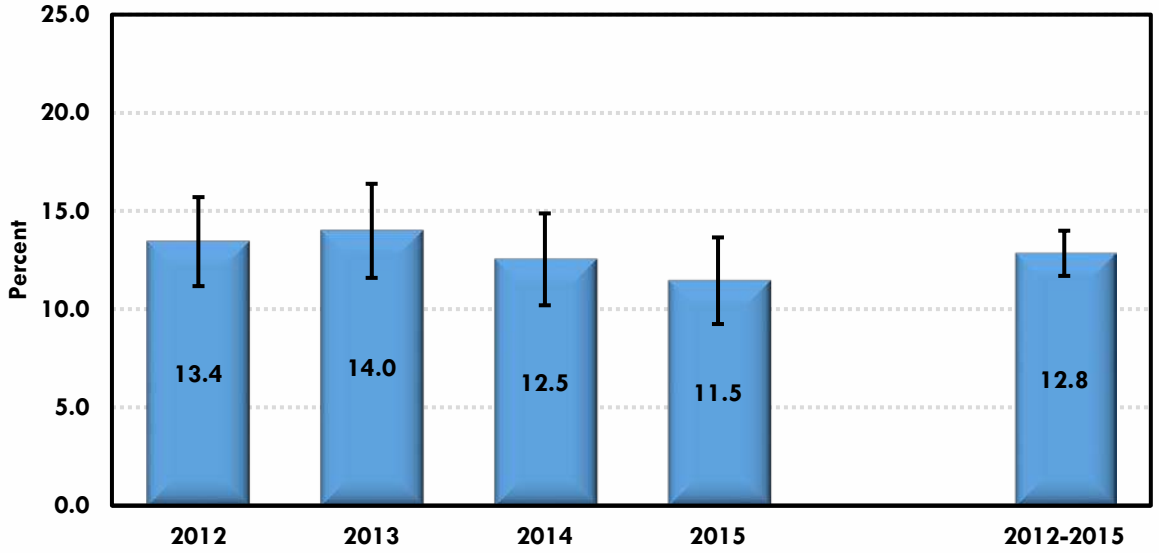
Emotional wellness is defined using self-reported measures from PRAMS data, and is the absence of depression, anxiety, being told by a health care worker that the mother had depression and/or anxiety prior to pregnancy, and an index measure for stressful life events and pregnancy "intendedness." Figures 9 through 11 provide indicators specific to emotional wellness.

Figure 9. Percentage of Mothers Who were Checked for Depression and/or Diagnosed with Depression before Pregnancy* in Delaware, 2012-2015



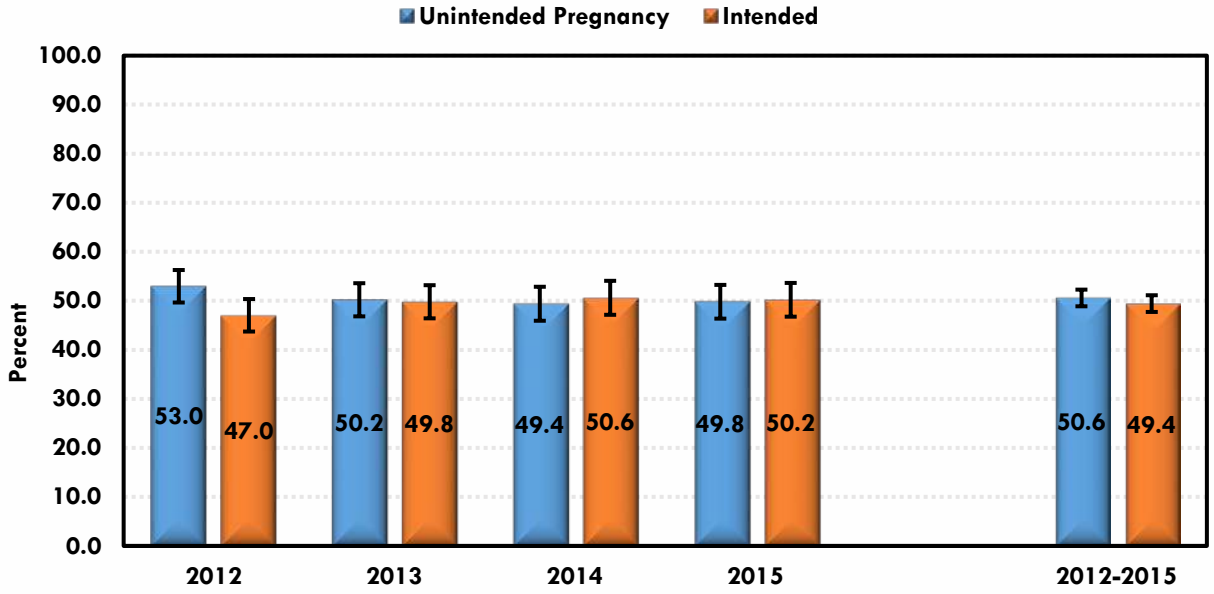
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*I visited a HCW and was checked for depressoin or anxiety; Told by doctor, nusrse, etc., had condition of depression.

Figure 10. Percentage of Mothers Exposed* to Adverse Experiences Prior to Pregnancy in Delaware, 2012-2015



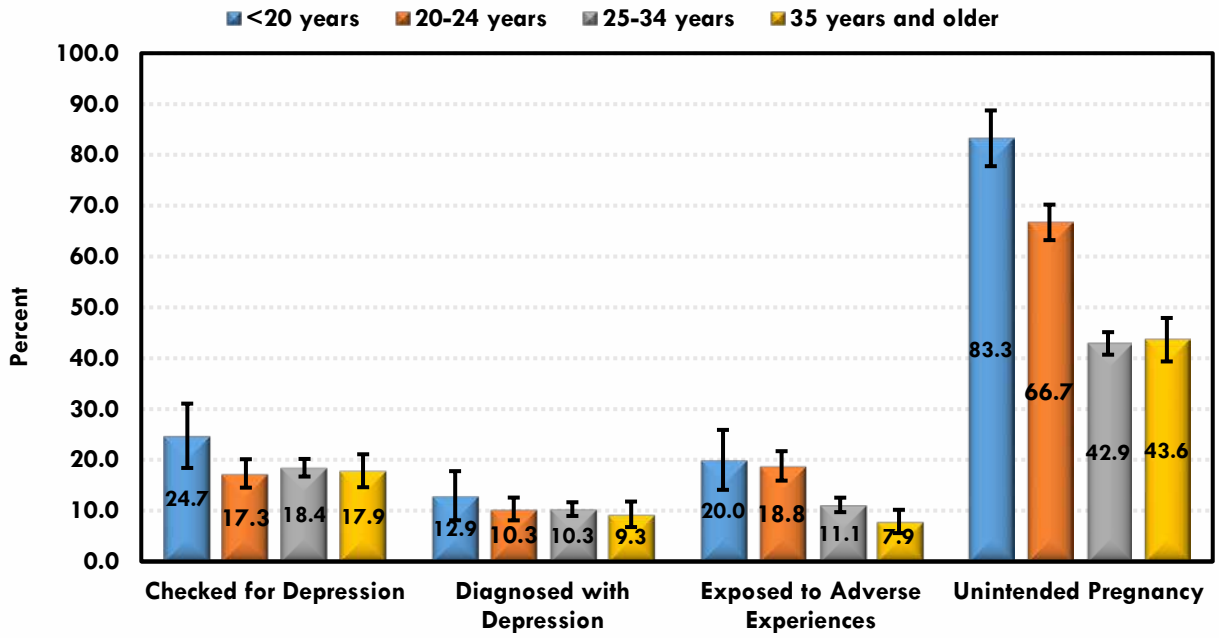
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Adverse experiences is an index of 15 variables assessed prior to pregnancy. "Exposed" is defined as having 5 or more adverse experiences. There are14 stress events plus physical abuse.

Figure 11. Percentage of Mothers who Indicated that their Pregnancy was Intended* or not, in Delaware, 2012-2015



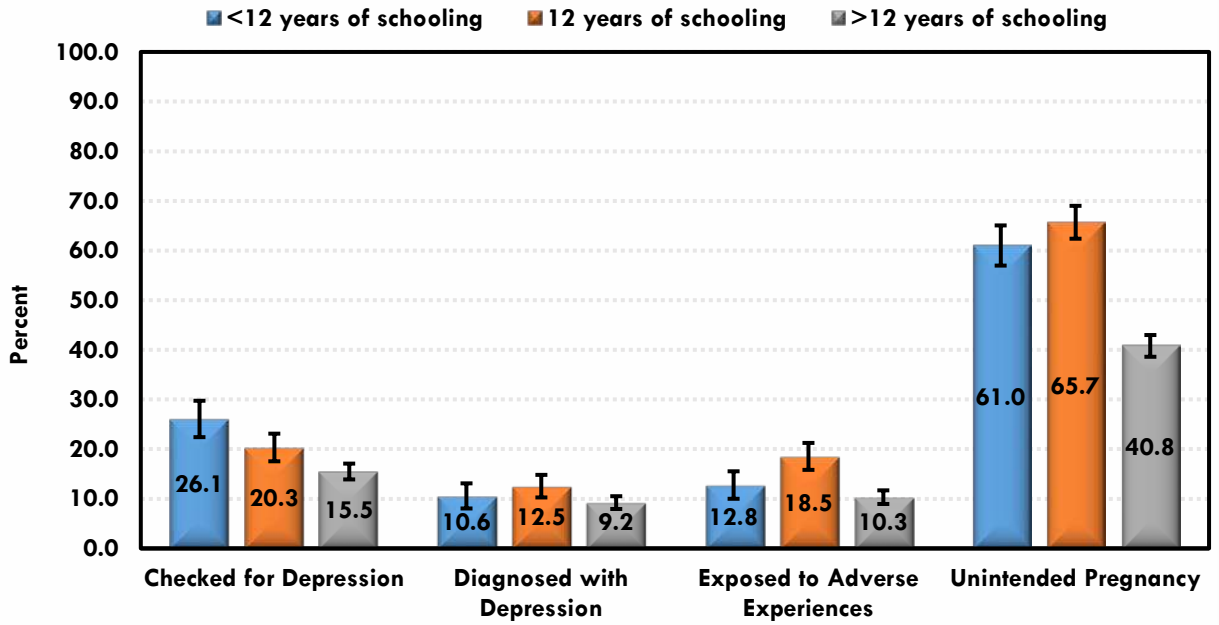
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Thinking back to just before you got pregnant with your new baby, how did you feel about becoming pregnant? Responses include: 1) sooner; 2) later; 3) then; 4) then or later; 5) was not sure. Responses 1 and 3 indicate "intended" and 2,4,5 indicated "unintended."

Figure 12. Prepregnancy Emotional Wellness Indicators by Mother's Age in Delaware, 2012-2015



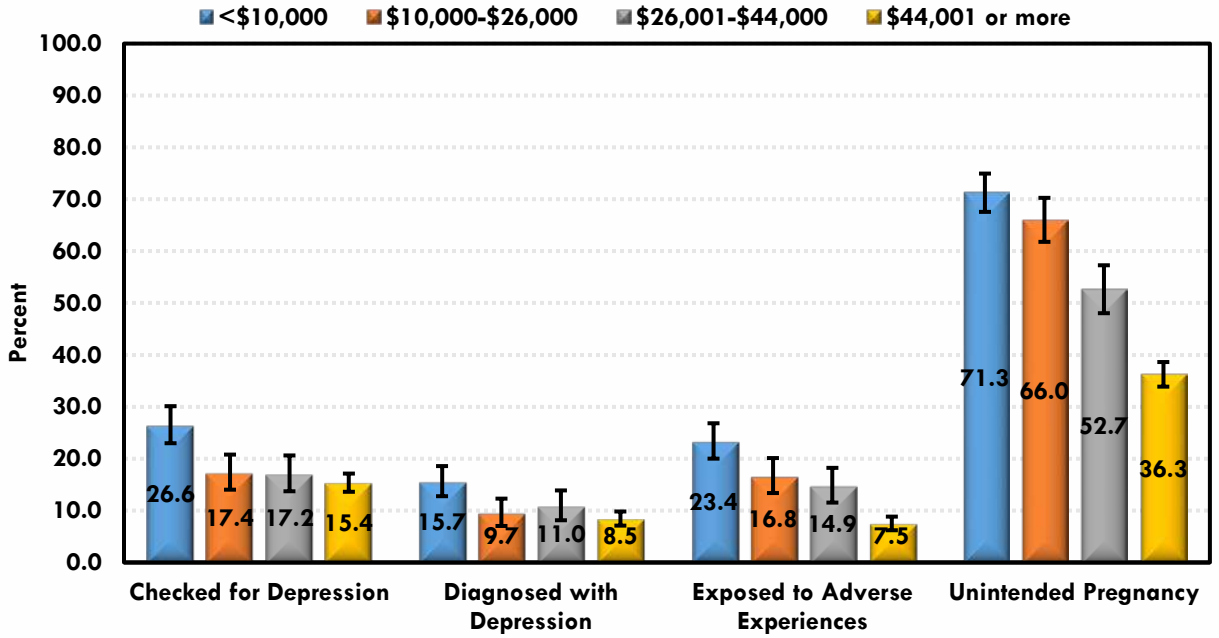
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.

Figure 13. Prepregnancy Emotional Wellness Indicators by Mother's Education in Delaware, 2012-2015



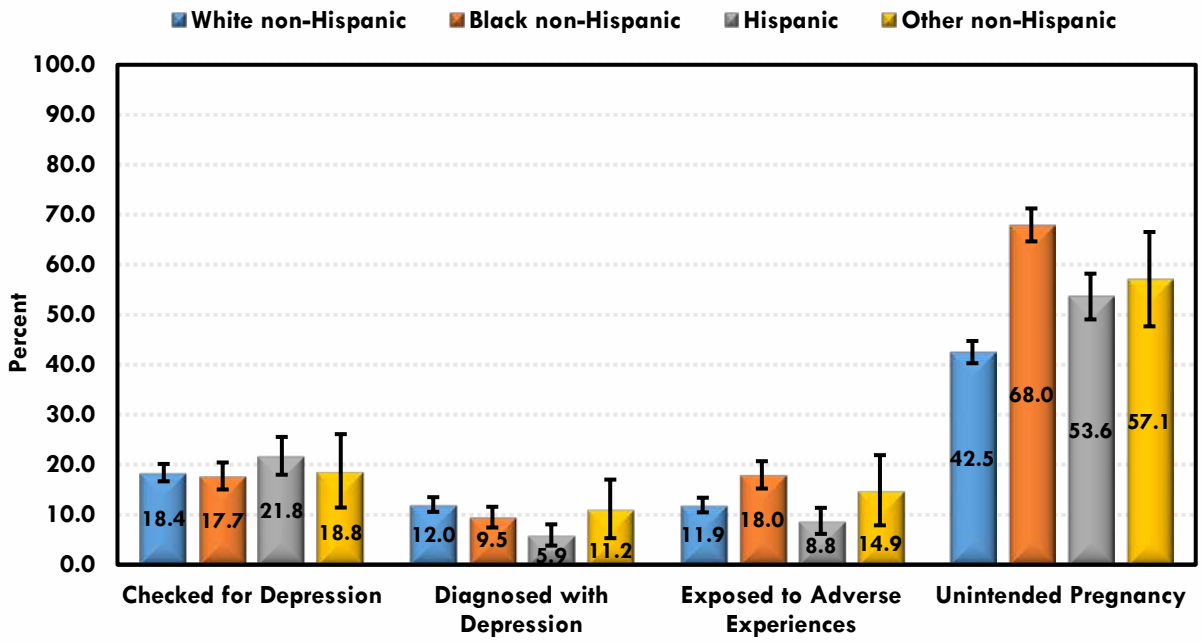
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.

Figure 14. Prepregnancy Emotional Wellness Indicators by Mother's Income in Delaware, 2012-2015

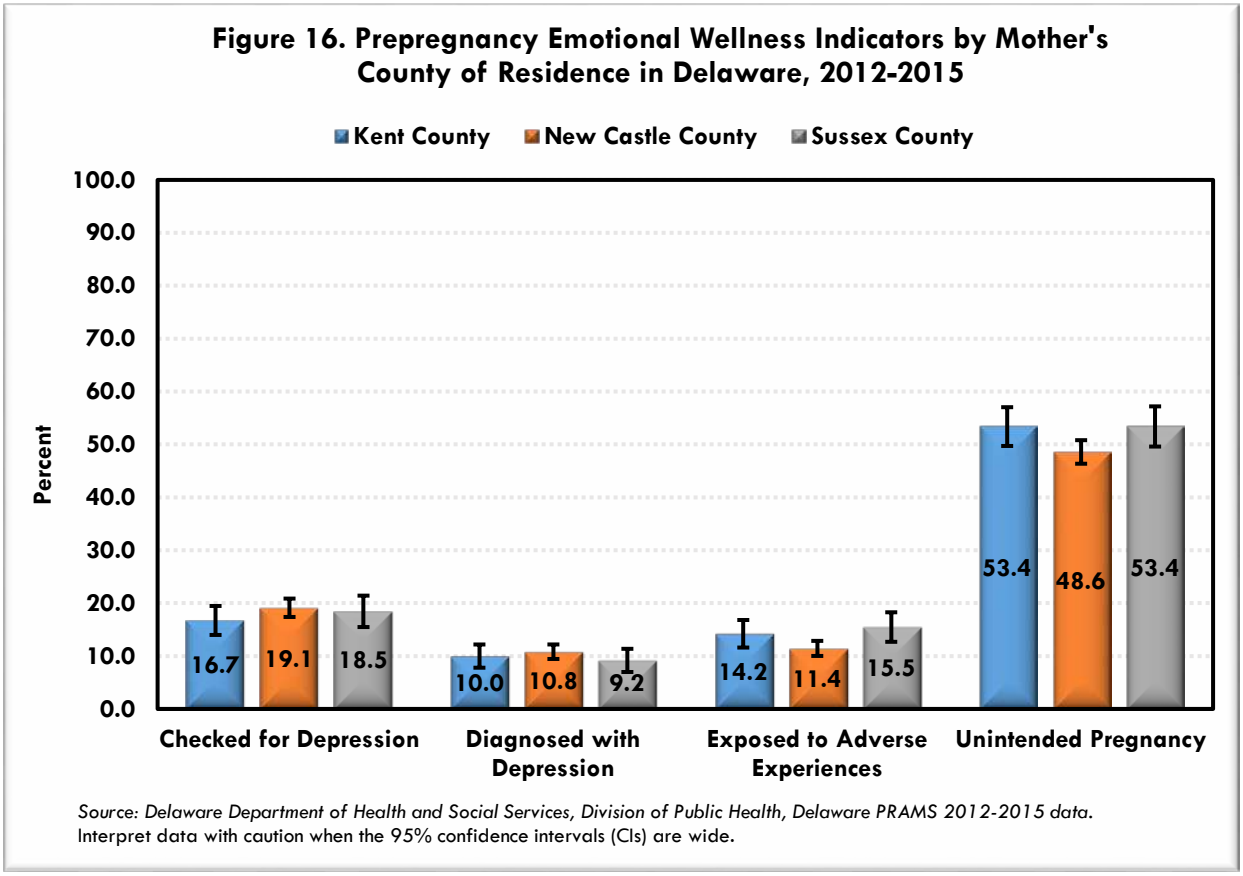


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.

Figure 15. Prepregnancy Wellness Indicators by Mother's Race and Ethnicity in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.



There was considerable variation with regards to prepregnancy emotional wellness (Figures 9 through 16). The emotional wellness indicators "checked for depression," "diagnosed with depression," "exposed to adverse experiences," and "unintended pregnancy" remained relatively stable during 2012-2015. However, there was considerable variation in these emotional wellness indicators by age, education, income, race and ethnicity, and county of residence. For instance, while younger mothers were more likely to be checked for depression, and also be diagnosed for depression, they were also more likely to have had adverse experiences before pregnancy, and were also more likely to have unintended pregnancies. Further, mother's with less than 12 years of schooling and with low levels of income were more likely to have been checked and/or diagnosed with depression and also more likely to have been exposed to adverse experiences before pregnancy and also more likely to have higher unintended pregnancies. There were racial and ethnic disparities as well. For instance, African American /Blacks were more likely to have been exposed adverse experiences before pregnancy and were also likely to have higher unintended pregnancies. In contrast, Hispanics and other non-Hispanics were more likely to have been checked for depression, while other non-Hispanics were more likely to have been diagnosed with depression. With regards to mother's county of residence although mothers who resided in New Castle County or Sussex County were more likely to have been checked for depression, there was no differences with regards to diagnoses of depression. Kent County and Sussex county mothers were also like to report higher prevalence of adverse experiences before pregnancy and these counties also had higher rates of unintended pregnancy.

2.2 Environmental wellness

While measuring environmental wellness is complex and encompasses multiple dimensions, it is generally agreed that it is important to focus on the built, or physical, environment and the natural environment where the built environment refers to how a geographic area or neighborhood is designed. This is particularly relevant because according to WHO, wellbeing is influenced by the circumstances in which people are born, grow up, live, work and age (the social determinants of health). The built environment also influences access to healthy foods and physical activity. There were no specific measures in the PRAMS for assessing environmental wellness.

2.3 Financial wellness

A critical component of overall wellness is financial wellness, a measure that incorporates personal disposable income and wealth that promotes economic mobility within families and generations. Financial wellness is one of the most potent predictors of overall health and perhaps related to many health-related behaviors.

2.4 Intellectual wellness

Intellectual wellness recognizes creative abilities and finds ways to expand knowledge and skills.[2] There were no specific proxy measures available to gauge intellectual wellness.

2.5 Occupational wellness

Occupational wellness captures an individual's satisfaction and enrichment derived from his/her occupation and/or work. Working conditions, including workplace safety and stress levels, contribute to one's health and well-being. Perceived racial discrimination in the workplace may perhaps be used as a proxy for workplace stress; some evidence suggests that it affects overall health status.[3]

2.6 Physical wellness

Physical wellness is usually synonymous to overall wellness, perhaps due to the ease of measuring physical wellness, whether it is anthropometric measures (i.e., height and weight) and/or self-reported measures of physical activity, and nutrition (i.e., consumption of fruits, vegetables, and sugary drinks). Despite the over-utilization of this concept, it is perhaps the most predictive, reliable, and valid measure of overall wellness. Maintaining recommend body weight, engaging in regular physical activity, and consuming nutritional meals of proper portions are strongly related to good health. The Healthy People 2020 goals include:

1. promoting health and reducing chronic disease risk through the consumption of healthful diets and the achievement and maintenance of healthy body weights,
2. improving health, fitness, and quality of life through daily physical activity.[4]

Body Mass Index (BMI) is a person's weight in kilograms divided by the square of height in meters. While a high BMI can be an indicator of high body fat and be used to screen for weight

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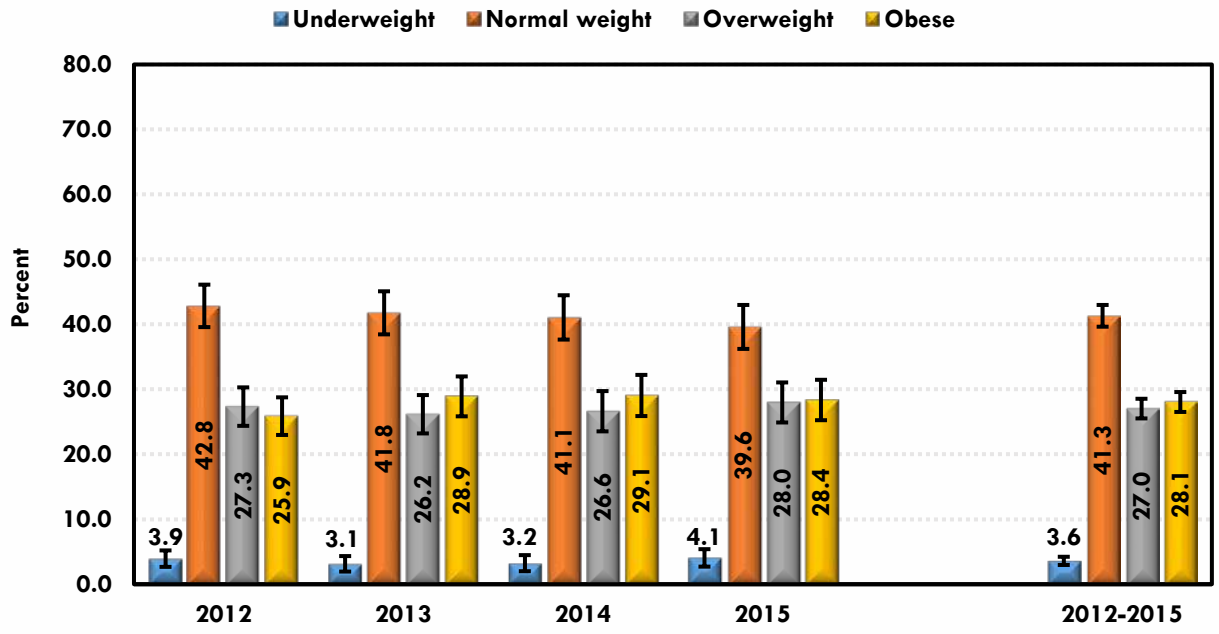
[2] The Eight Dimensions of Wellness. http://www.samhsa.gov/wellness-initiative/eight-dimensions-wellness. Accessed August 11, 2016.
[3] Zuckerman RB, Tinsley LJ, Hawk H, Cohen B. Perceived reactions to race and health status in the Massachusetts Behavioral Risk Factor Surveillance System Survey. *Ethn Dis*. 2012 Autumn;22(4):492-6.
[4] U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Healthy People 2020. Available at http://healthypeople.gov/2020.

categories that may lead to health problems, it is not diagnostic of the body fat or health of an individual. A healthy BMI, exercise and physical activity, and a healthy diet (i.e., consumption of fruits and vegetables) may be used to gauge an individual's physical wellness.

The percentage of mothers who are overweight or obese prior to pregnancy has remained stable during the 2012-2015 time period at around 55 percent. The four-year average estimates for the percentage of Delaware mothers who were overweight was 27 percent (95% CI: 25.5-28.5), while the percentage for obesity was 28 percent (95% CI: 26.5-29.6). These numbers translate to approximately 11,000 mothers who are overweight and 11,500 mothers who are obese.

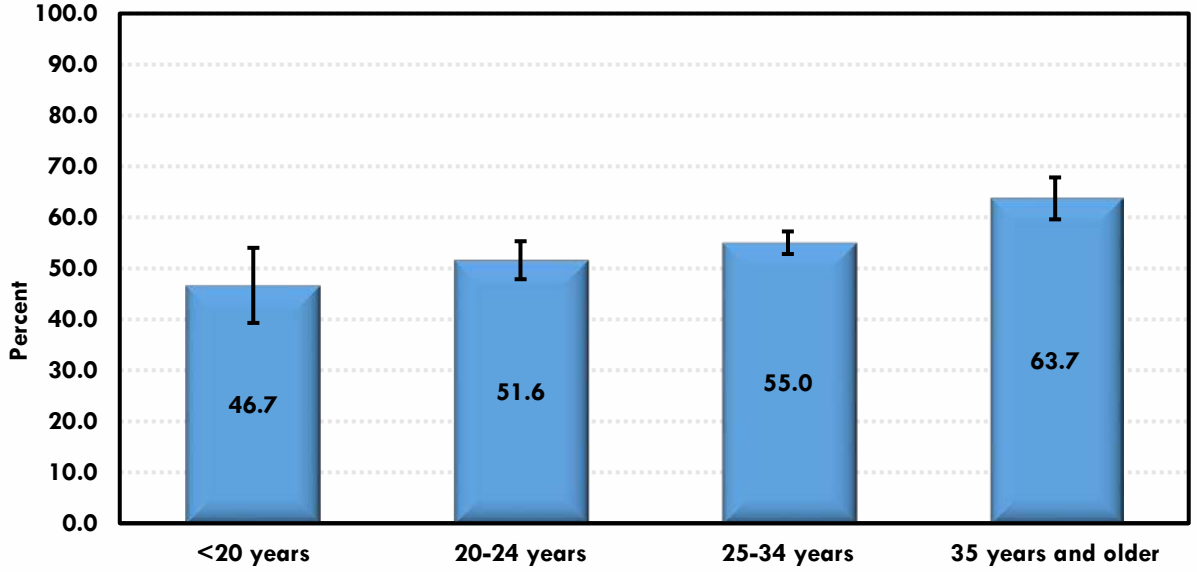
Figure 17. Prepregnancy bodymass index* of mothers in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Body Mass Index

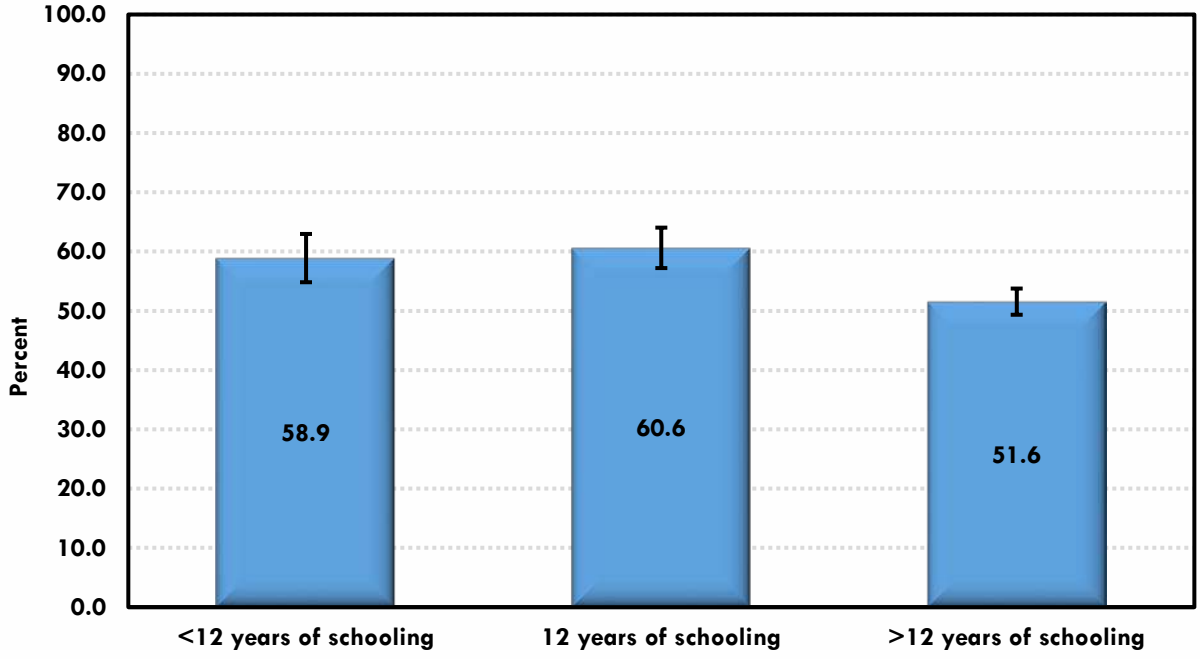
Analyses of prepregnancy physical wellness indicators (i.e., body mass index, exercise, chronic conditions, taking multivitamins, prenatal vitamins, or folic acid before pregnancy) suggest that physical wellness varies with age, education, income, race and ethnicity, and county of residence. Data also suggest that in particular, low-levels of education, low-levels of income, black race, and in some cases county of residence were associated with poor prepregnancy physical wellness (Figures 18-40).

Figure 18. Percentage of Mothers who are Overweight or Obese* before Pregnancy by Age in Delaware, 2012-2015



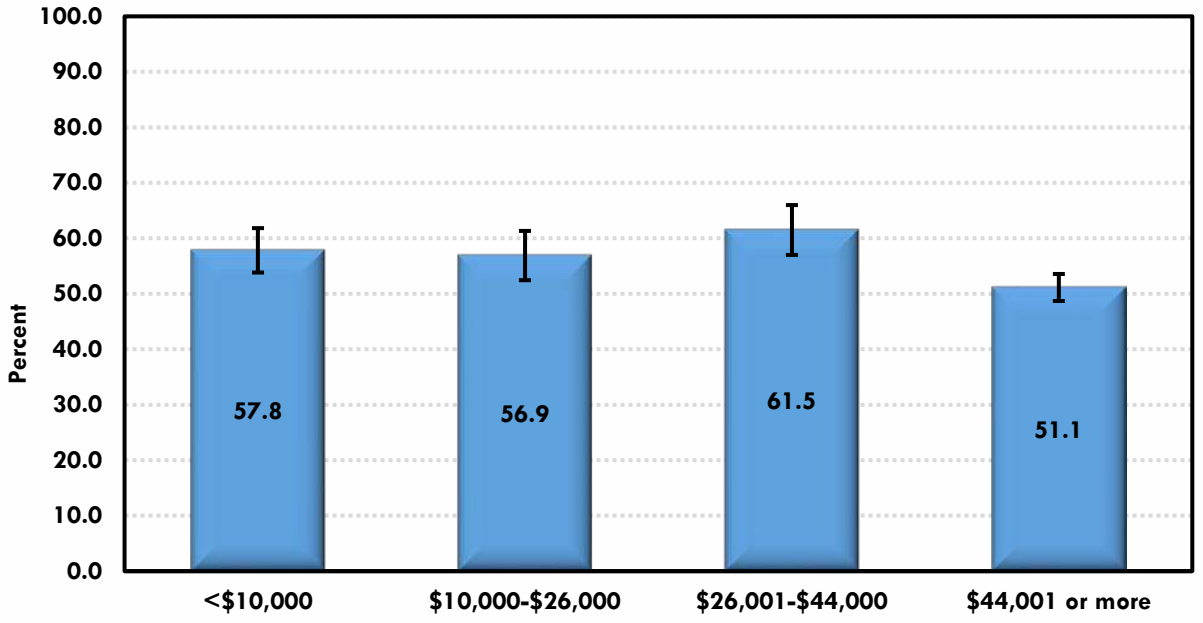
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Based on Body Mass Index, BMI ≥ 25.

Figure 19. Percentage of Mothers who were Overweight or Obese* before Pregnancy by Education in Delaware, 2012-2015



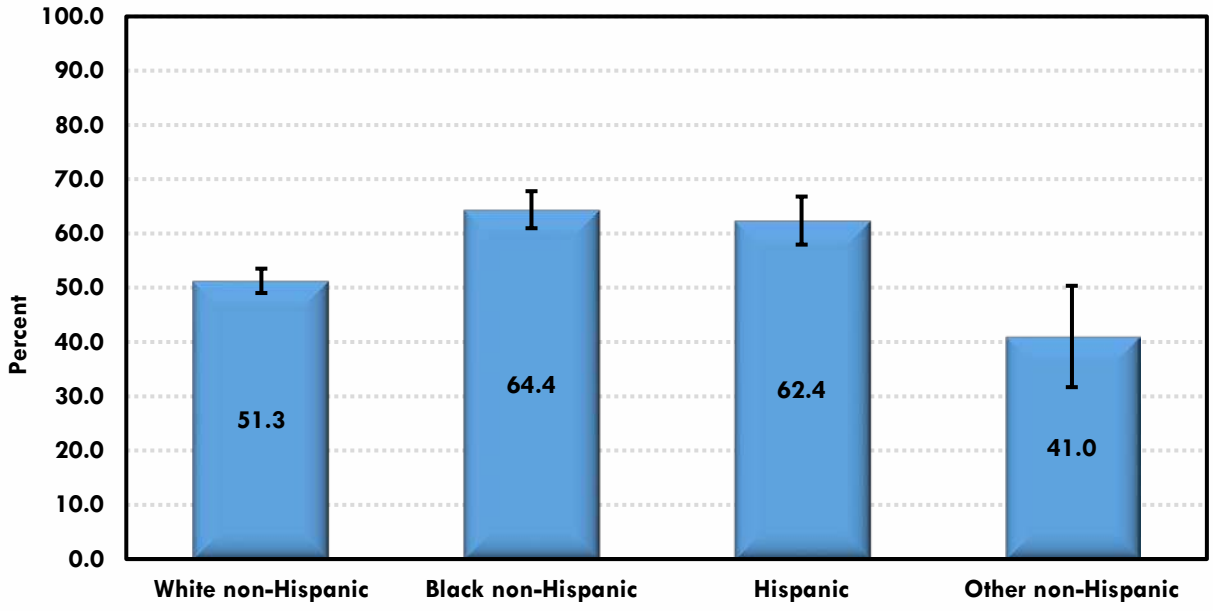
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Based on Body Mass Index, BMI ≥ 25.

Figure 20. Percentage of Mothers who are Overweight or Obese* before Pregnancy by Income in Delaware, 2012-2015



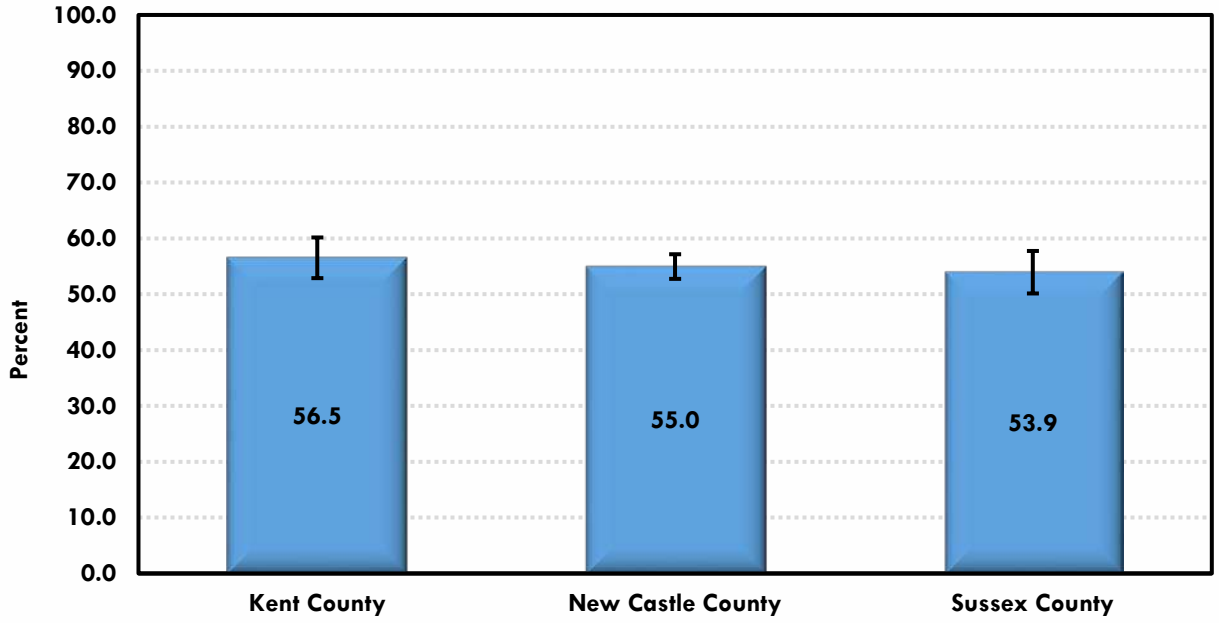
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Based on Body Mass Index, BMI ≥ 25.

Figure 21. Percentage of Mothers who are Overweight or Obese* before Pregnancy by Race and Ethnicity in Delaware, 2012-2015



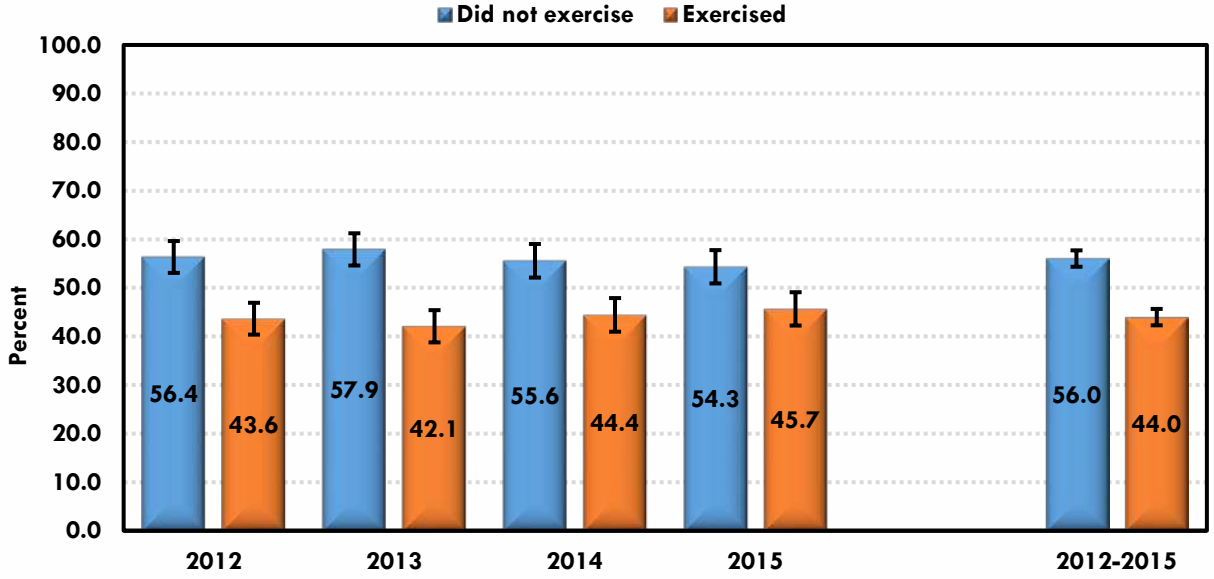
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Based on Body Mass Index, BMI ≥ 25.

Figure 22. Percentage of Mothers who are Overweight or Obese* before Pregnancy by County of Residence in Delaware, 2012-2015



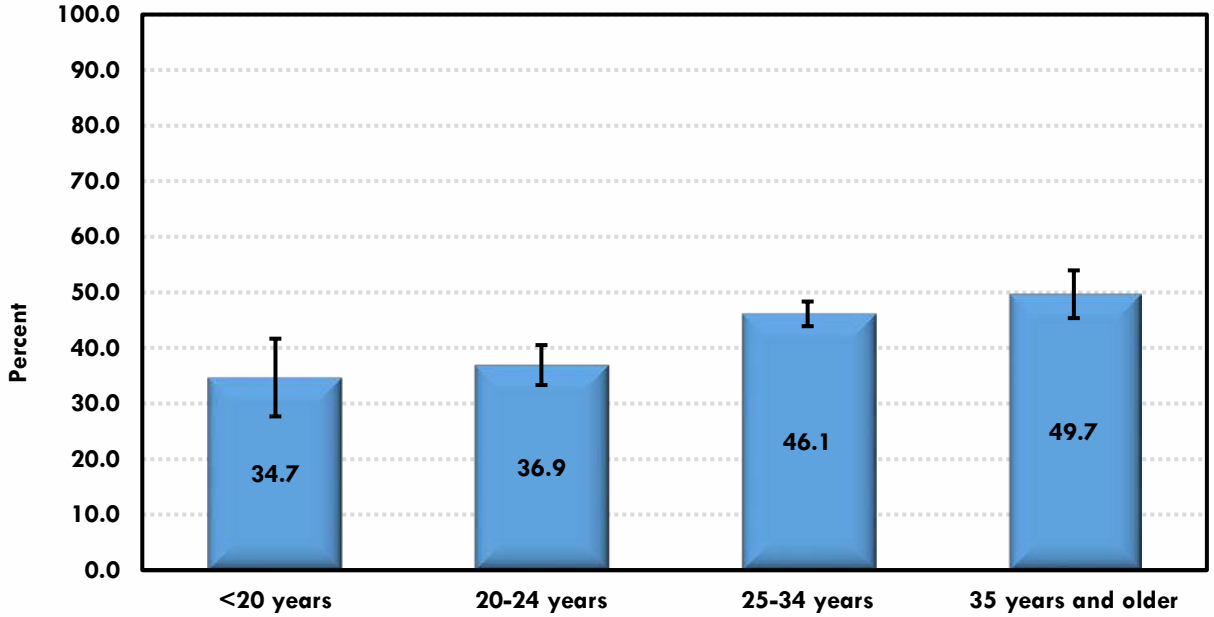
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Based on Body Mass Index, BMI ≥ 25.

Figure 23. Percentage of Mothers who Exercised 3 or more days* before Pregnancy in Delaware, 2012-2015



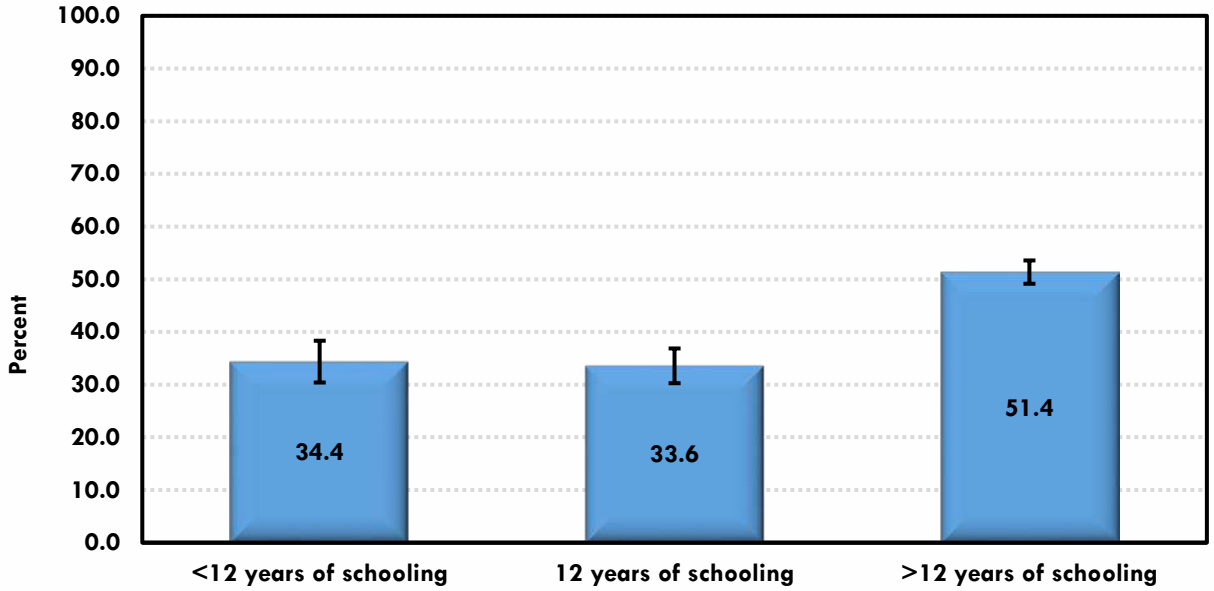
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*At any time during the 12 months before you got pregnant with your new baby, did you do any of the following things?... *I was exercising 3 or more days of the week.*

Figure 24. Percentage of Mothers who Exercised 3 or more days* before Pregnancy by Age in Delaware, 2012-2015



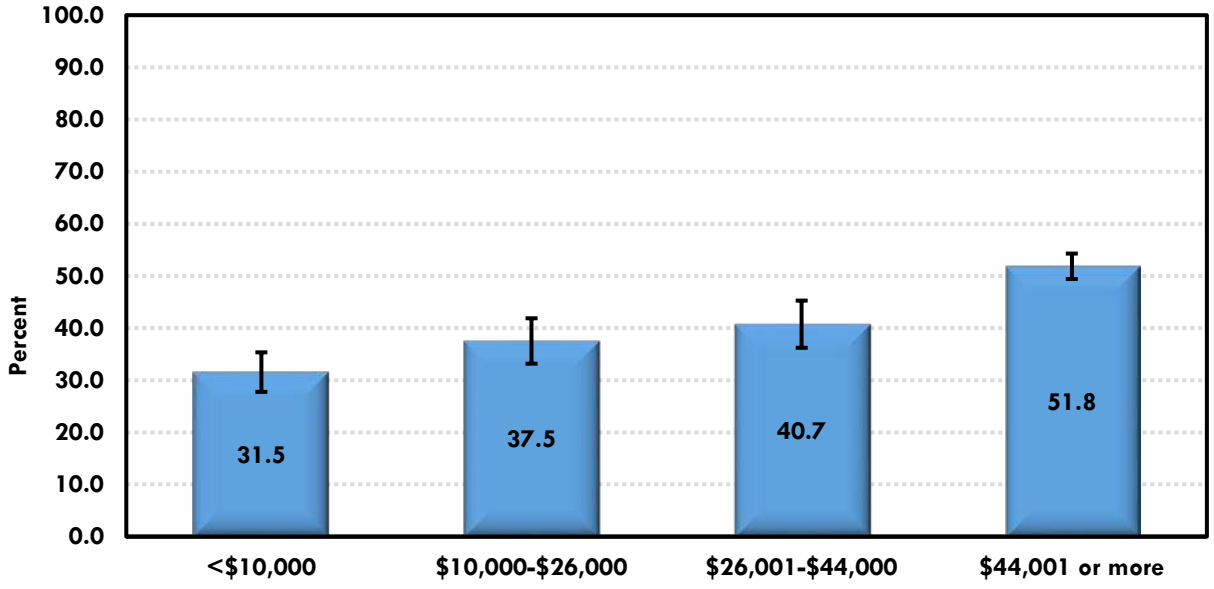
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*At any time during the 12 months before you got pregnant with your new baby, did you do any of the following things?... *I was exercising 3 or more days of the week.*

Figure 25. Percentage of Mothers who Exercised 3 or more days* before Pregnancy by Education in Delaware, 2012-2015



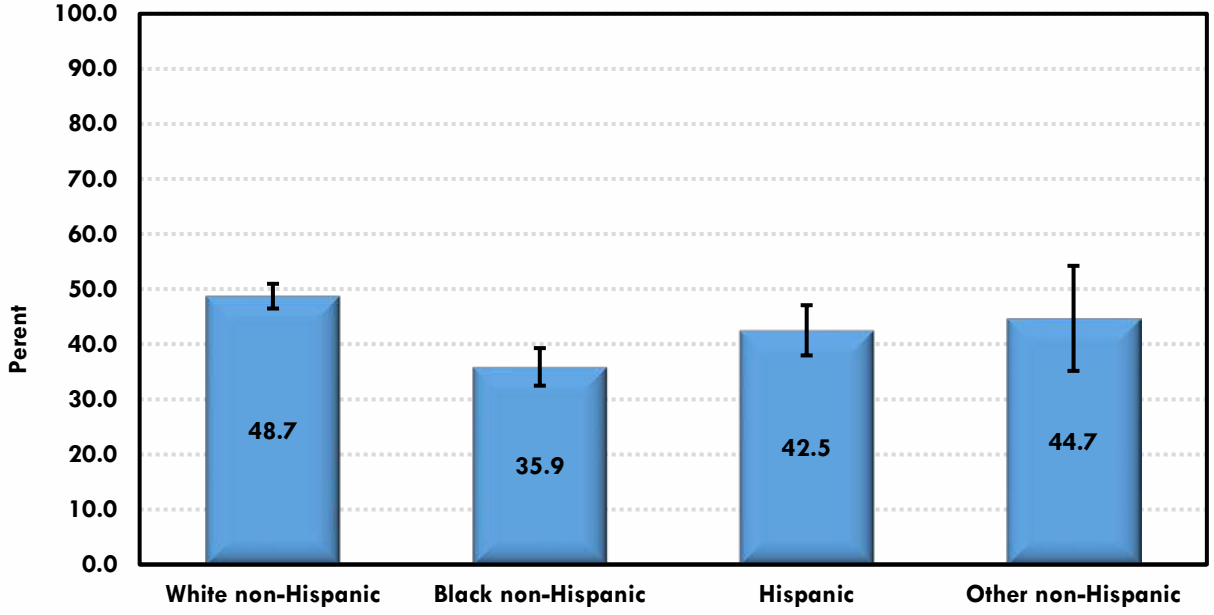
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*At any time during the 12 months before you got pregnant with your new baby, did you do any of the following things?... *I was exercising 3 or more days of the week.*

Figure 26. Percentage of Mothers who Exercised 3 or more days* before Pregnancy by Income in Delaware, 2012-2015



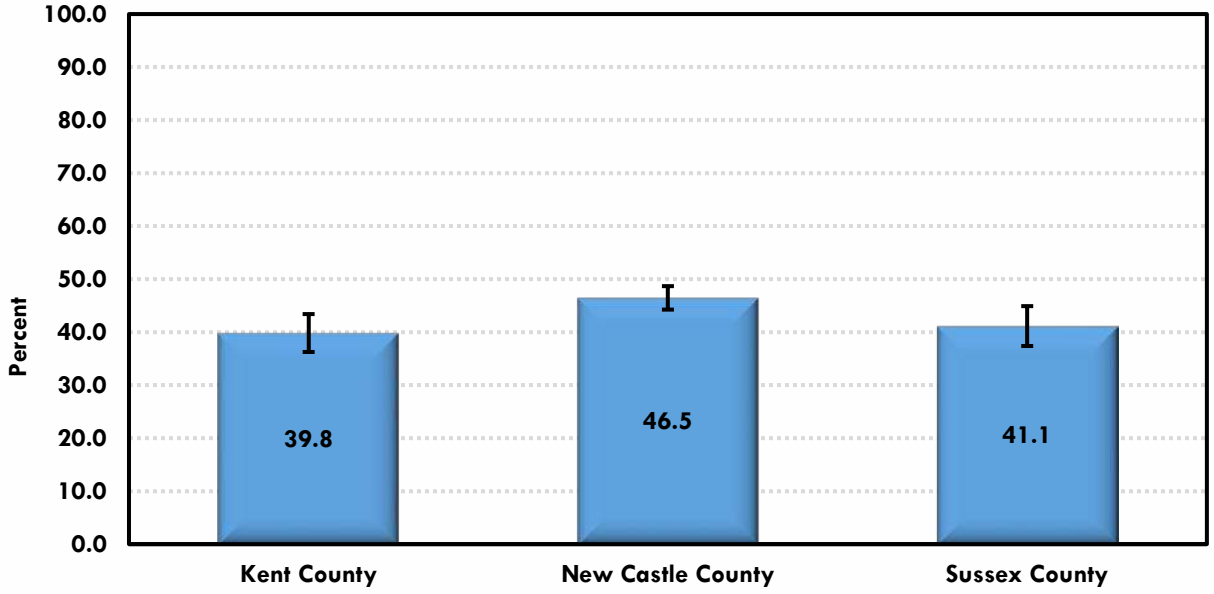
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*At any time during the 12 months before you got pregnant with your new baby, did you do any of the following things?... *I was exercising 3 or more days of the week.*

Figure 27. Percentage of Mothers who Exercised 3 or more days* before Pregnancy by Race and Ethnicity in Delaware, 2012-2015



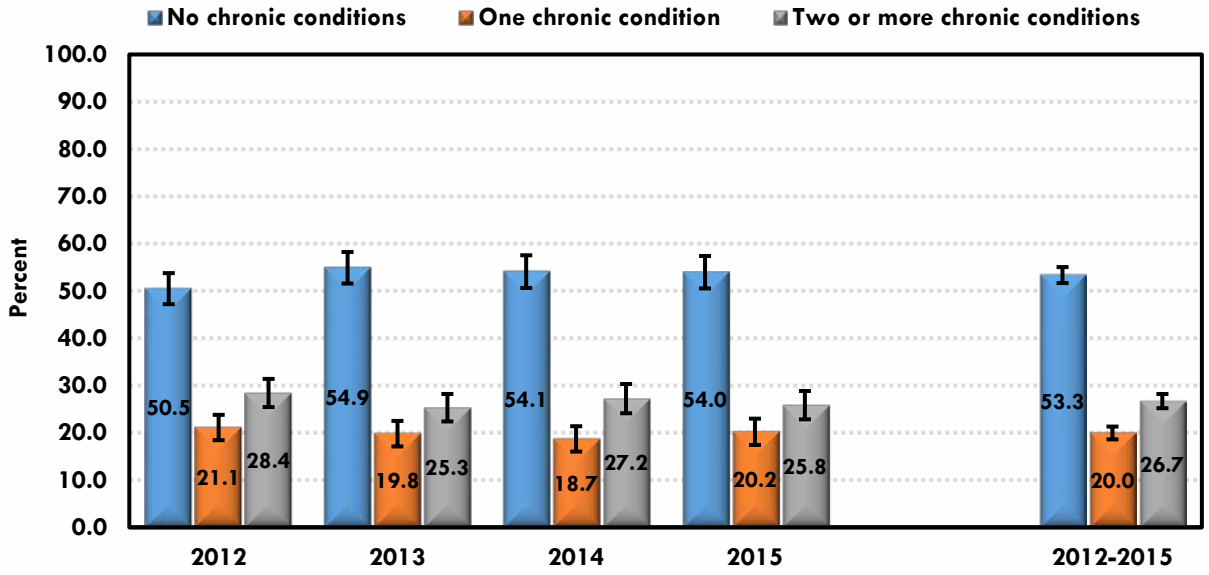
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*At any time during the 12 months before you got pregnant with your new baby, did you do any of the following things?... *I was exercising 3 or more days of the week.*

Figure 28. Percentage of Mothers who Exercised 3 or more days* before Pregnancy by County of Residence in Delaware, 2012-2015



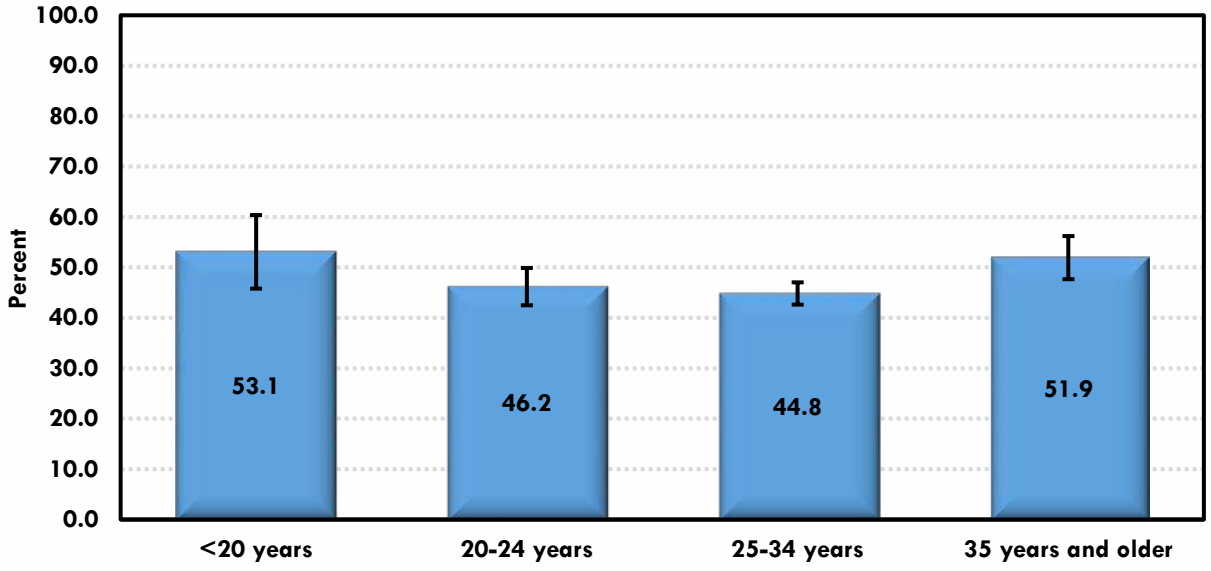
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*At any time during the 12 months before you got pregnant with your new baby, did you do any of the following things?... *I was exercising 3 or more days of the week.*

Figure 29. Percentage of Mothers who had one or more Chronic Conditions* before Pregnancy in Delaware, 2012-2015



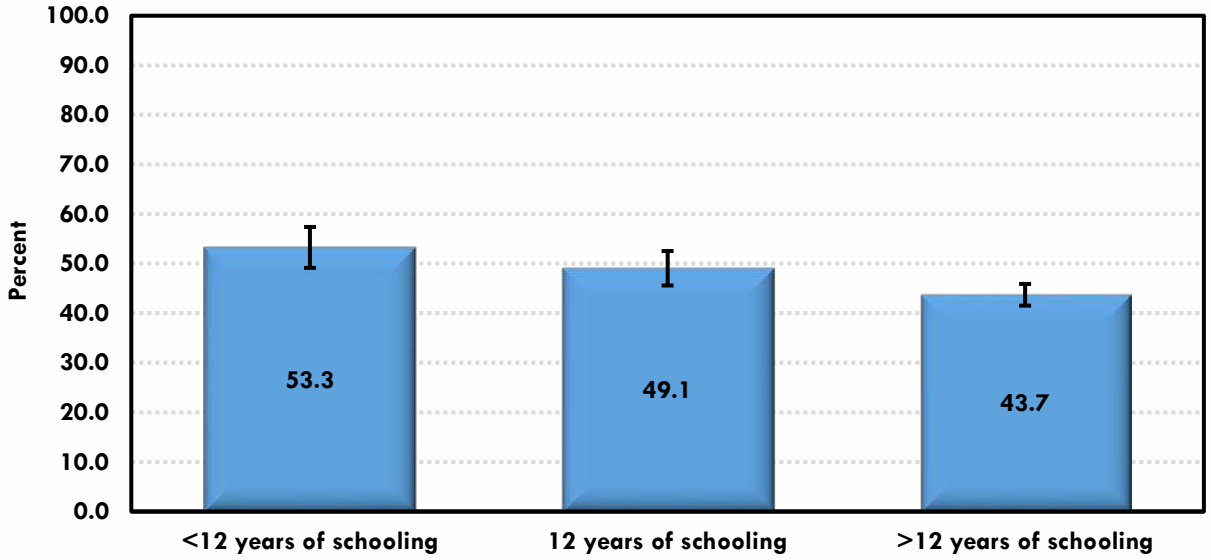
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Includes questions visiting health care worker and being checked for diabetes and/or high blood pressure, being diagnosed with diabetes and/or high blood pressure, having asthma, anemia, heart problems, epilepsy, and/or thyroid problems 3 months before getting pregnant.

Figure 30. Percentage of Mothers who had one or more Chronic Conditions* before Pregnancy by Age in Delaware, 2012-2015



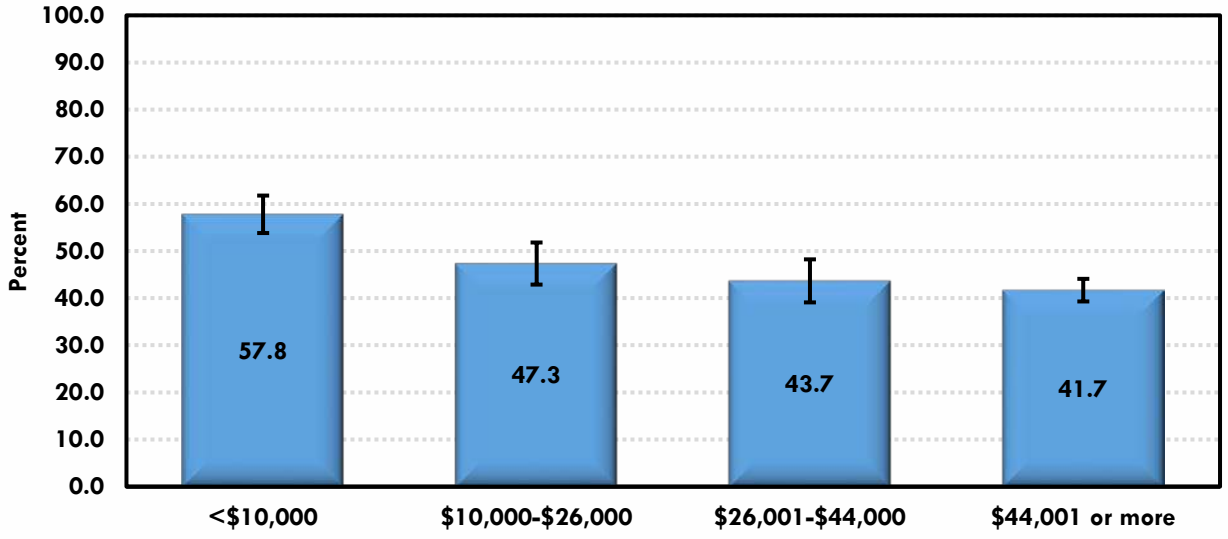
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Includes questions visiting health care worker and being checked for diabetes and/or high blood pressure, being diagnosed with diabetes and/or high blood pressure, having asthma, anemia, heart problems, epilepsy, and/or thyroid problems 3 months before getting pregnant.

Figure 31. Percentage of Mothers who had one or more Chronic Conditions* before Pregnancy by Education in Delaware, 2012-2015



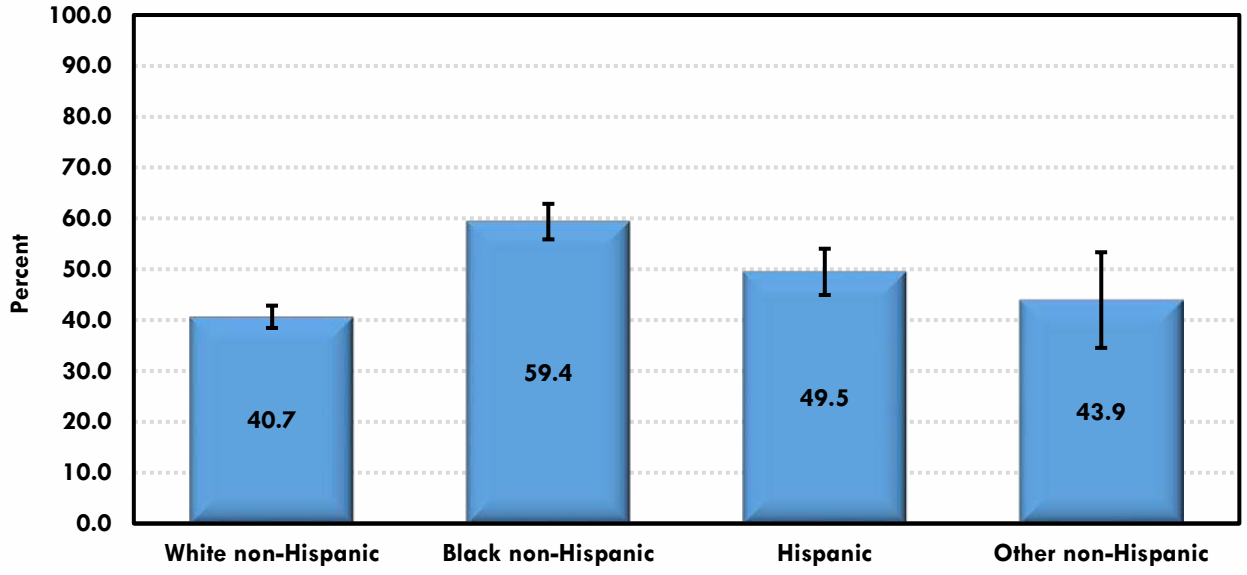
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Includes questions visiting health care worker and being checked for diabetes and/or high blood pressure, being diagnosed with diabetes and/or high blood pressure, having asthma, anemia, heart problems, epilepsy, and/or thyroid problems 3 months before getting pregnant.

Figure 32. Percentage of Mothers who had one or more Chronic Conditions* before Pregnancy by Income in Delaware, 2012-2015



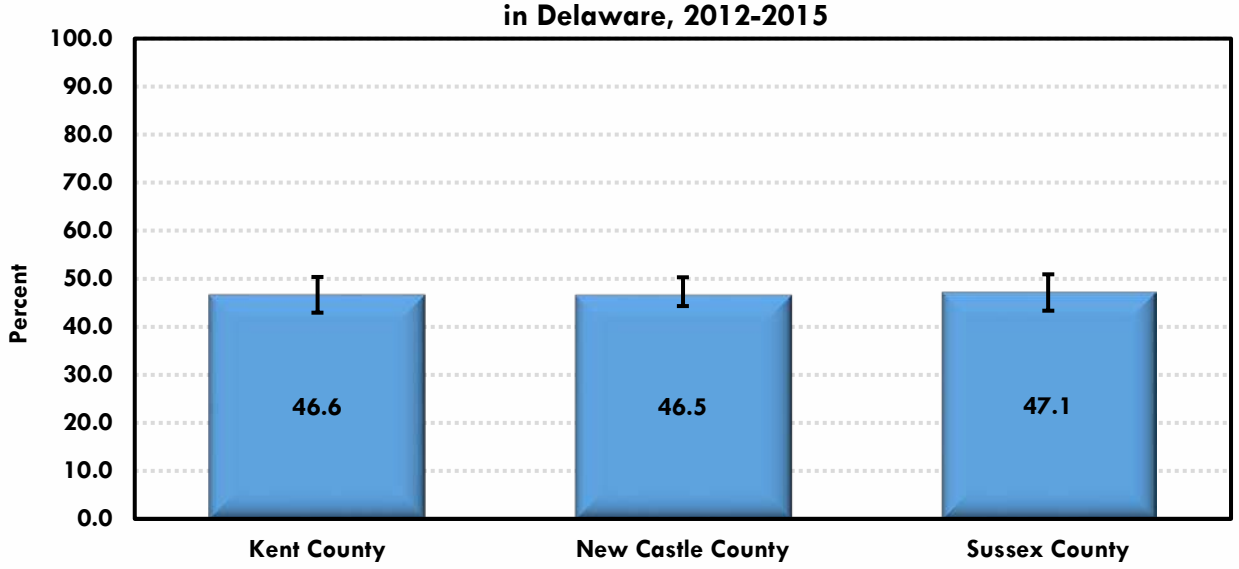
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Includes questions visiting health care worker and being checked for diabetes and/or high blood pressure, being diagnosed with diabetes and/or high blood pressure, having asthma, anemia, heart problems, epilepsy, and/or thyroid problems 3 months before getting pregnant.

Figure 33. Percentage of Mothers who had one or more Chronic Conditions* before Pregnancy by Race and Ethnicity in Delaware, 2012-2015



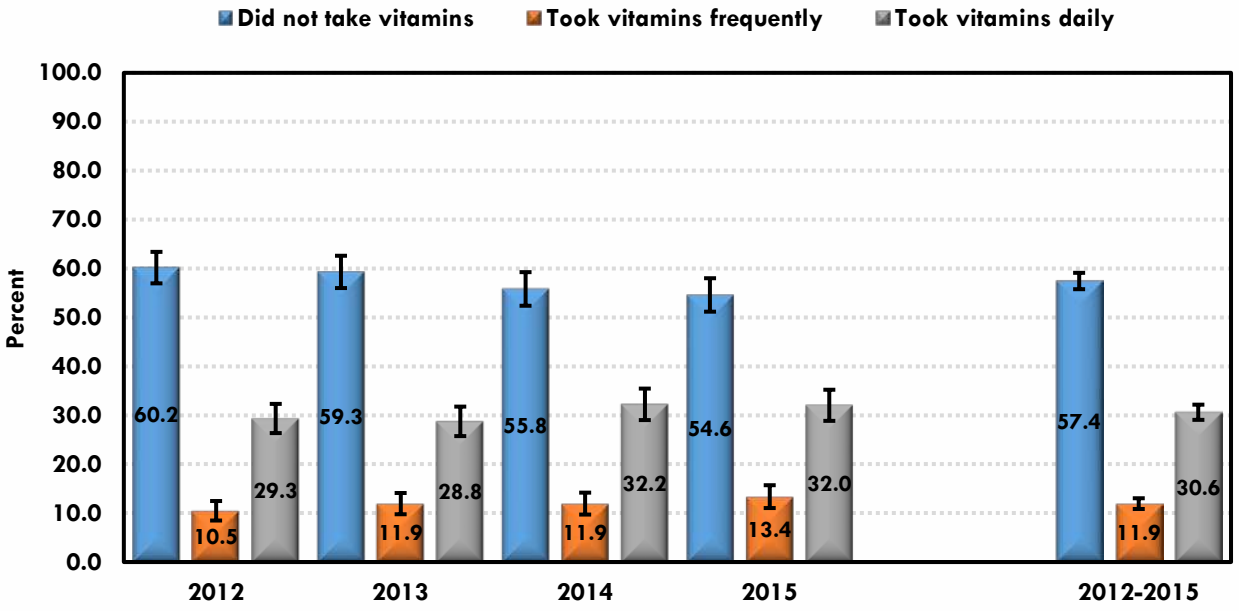
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Includes questions visiting health care worker and being checked for diabetes and/or high blood pressure, being diagnosed with diabetes and/or high blood pressure, having asthma, anemia, heart problems, epilepsy, and/or thyroid problems 3 months before getting pregnant.

Figure 34. Percentage of Mothers who had one or more Chronic Conditions* before Pregnancy by County of Residence in Delaware, 2012-2015



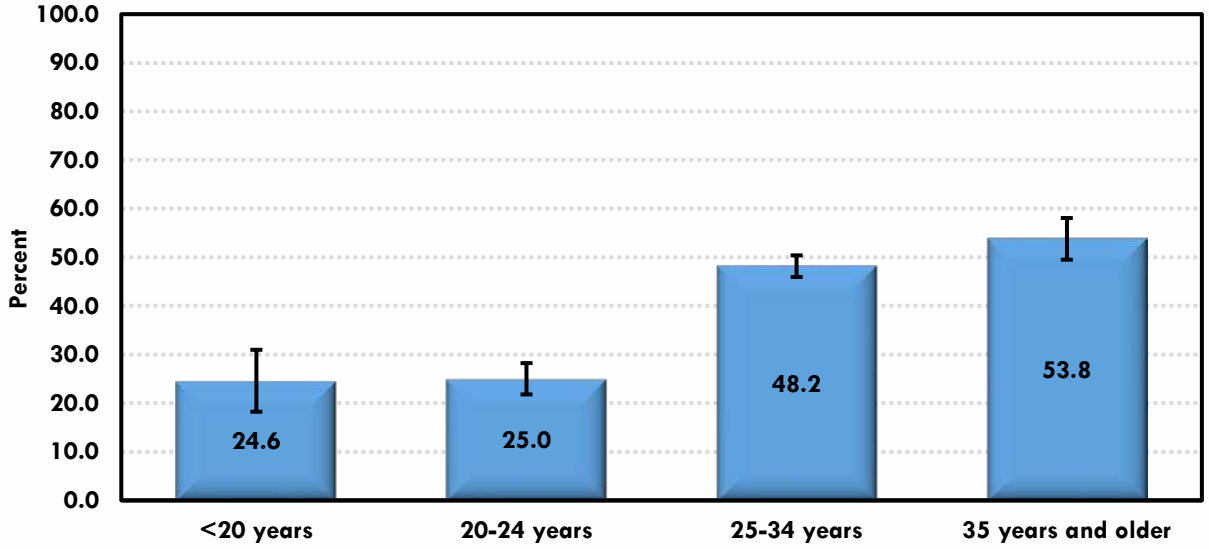
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Includes questions visiting health care worker and being checked for diabetes and/or high blood pressure, being diagnosed with diabetes and/or high blood pressure, having asthma, anemia, heart problems, epilepsy, and/or thyroid problems 3 months before getting pregnant.

Figure 35. Percentage of Mothers who took Vitamins* before Pregnancy in Delaware, 2012-2015



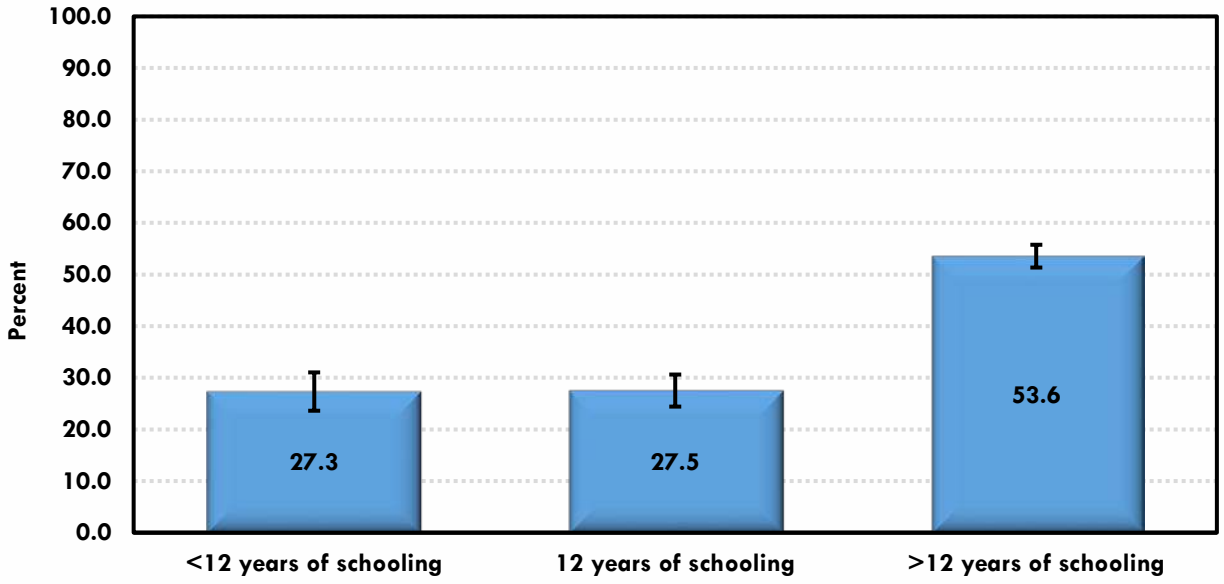
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During the month before you got pregnant with your new baby, how many times a week did you take a multivitamin, a prenatal vitamin, or a folic acid vitamin?...*A. I didn't take a multivitamin, prenatal vitamin, or folic acid vitamin in the month before I got pregnant; B. 1 to 3 times a week; C. 4 to 6 times a week; D. Every day of the week.* B and C combined to indicate frequently.

Figure 36. Percentage of Mothers who took Vitamins* before Pregnancy by Mother's Age in Delaware, 2012-2015



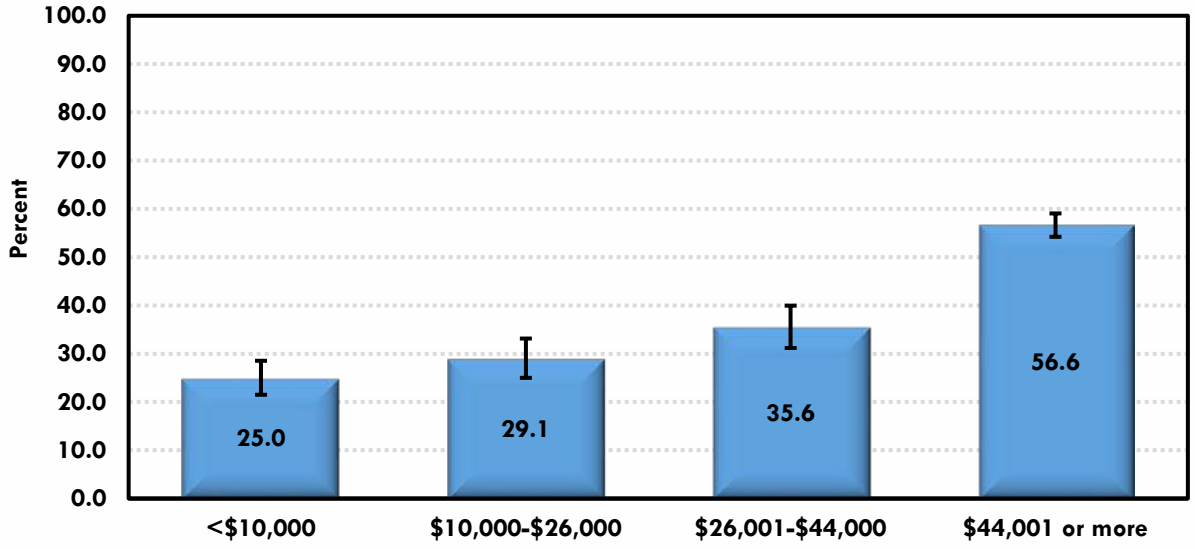
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During the month before you got pregnant with your new baby, how many times a week did you take a multivitamin, a prenatal vitamin, or a folic acid vitamin?...*A. I didn't take a multivitamin, prenatal vitamin, or folic acid vitamin in the month before I got pregnant; B. 1 to 3 times a week; C. 4 to 6 times a week; D. Every day of the week.* B and C combined to indicate frequently.

Figure 37. Percentage of Mothers who took Vitamins* before Pregnancy by Mother's Education in Delaware, 2012-2015



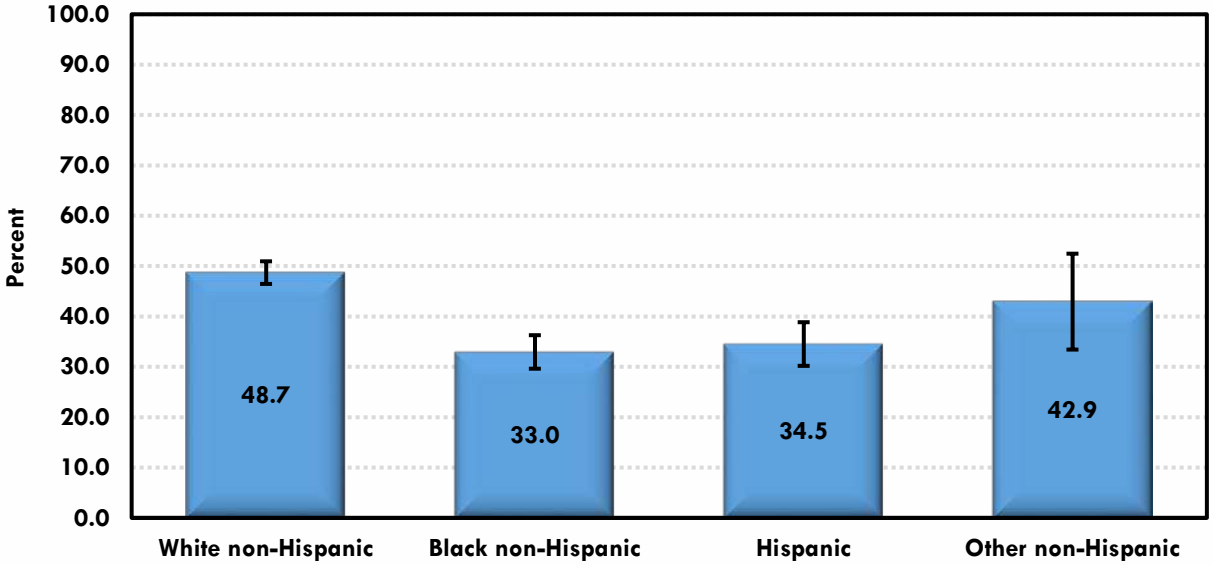
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During the month before you got pregnant with your new baby, how many times a week did you take a multivitamin, a prenatal vitamin, or a folic acid vitamin?...*A. I didn't take a multivitamin, prenatal vitamin, or folic acid vitamin in the month before I got pregnant; B. 1 to 3 times a week; C. 4 to 6 times a week; D. Every day of the week.* B and C combined to indicate frequently.

Figure 38. Percentage of Mothers who took Vitamins* before Pregnancy by Mother's Income in Delaware, 2012-2015

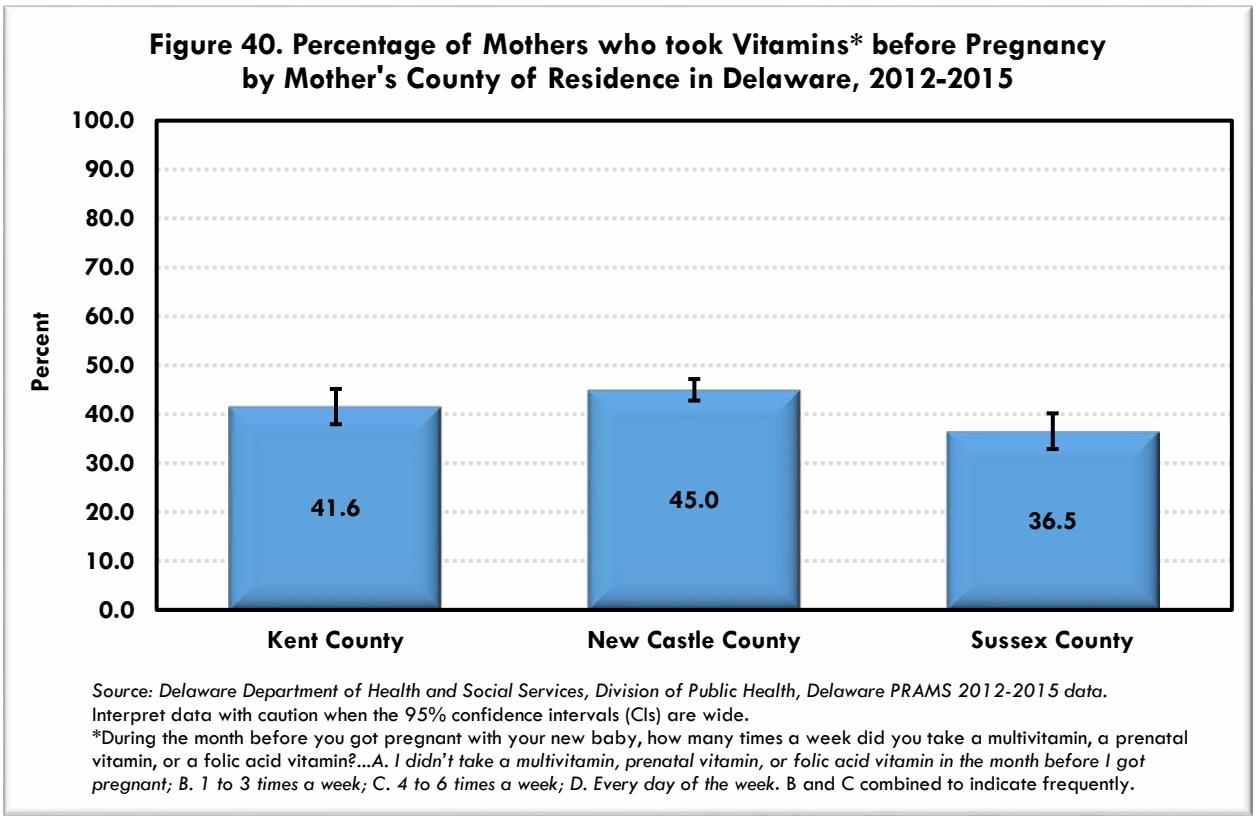


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During the month before you got pregnant with your new baby, how many times a week did you take a multivitamin, a prenatal vitamin, or a folic acid vitamin?...*A. I didn't take a multivitamin, prenatal vitamin, or folic acid vitamin in the month before I got pregnant; B. 1 to 3 times a week; C. 4 to 6 times a week; D. Every day of the week.* B and C combined to indicate frequently.

Figure 39. Percentage of Mothers who took Vitamins* before Pregnancy by Mother's Race and Ethnicity in Delaware, 2012-2015

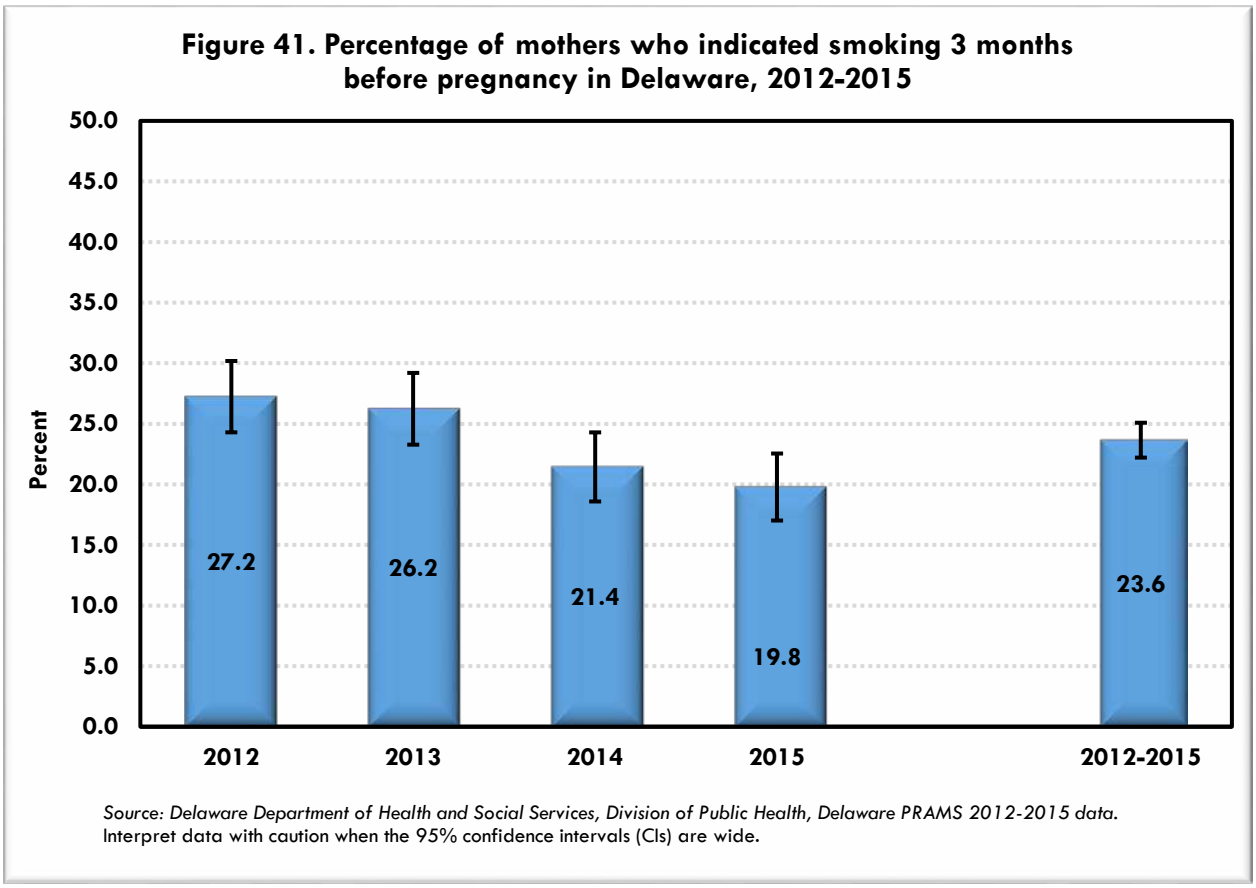


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During the month before you got pregnant with your new baby, how many times a week did you take a multivitamin, a prenatal vitamin, or a folic acid vitamin?...*A. I didn't take a multivitamin, prenatal vitamin, or folic acid vitamin in the month before I got pregnant; B. 1 to 3 times a week; C. 4 to 6 times a week; D. Every day of the week.* B and C combined to indicate frequently.



A strong socio-economic gradient exists in prepregnancy physical wellness (i.e., body mass index, exercise, taking vitamins, and presence of chronic diseases). Those with lower levels of education, lower levels of income, and non-Hispanic blacks seem to have poor prepregnancy wellness, increasing their risk of poor outcomes.

Smoking before pregnancy is a critical prepregnancy wellness indicator, as it significantly affects maternal and neonatal health. Delaware saw a significant decline in mothers who reported smoking three months before pregnancy (Figure 41). For instance, the 2012 prevalence rate was 27.2 percent (95% CI: 24.3-30.2) and the 2015 rate was 19.8 percent (95% CI: 17.0-22.6): a 27 percent change. From a population perspective, despite decreases in smoking rates during the three months before pregnancy, approximately 2,400 mothers (95% CI: 2,260-2,556) indicated smoking three months before pregnancy in 2012-2015.



Smoking three months before pregnancy was stratified by maternal age, education, income, race and ethnicity, and county of residence (see Table 2). The prevalence of smoking was highest among mothers 20-24 years of age at 30.7 percent (95% CI: 27.3-34.1), followed by mothers less than 20 years of age at 27.6 percent (95% CI: 21.1-34.1). In general, we find the prevalence of smoking was higher among younger mothers. The prevalence of smoking three months before pregnancy was highest among mothers with 12 years of schooling at 38.5 percent (95% CI: 35.1-41.9), followed by those with less than 12 years of schooling at 26.6 percent (95% CI: 23.0-30.3). Smoking prevalence was higher among mothers with low income levels with over 40 percent (95% CI: 36.8-44.8) of mothers who fell into the less than $10,000 income category. Unlike other prepregnancy wellness indicators we find that prevalence of smoking was highest among non-Hispanic whites at 29 percent (95% CI: 27.0-31.1), followed by non-Hispanic blacks 22.7 percent (95% CI: 19.7-25.6). Mothers who indicated their county of residence as Sussex had higher prevalence of smoking rates (26.5 percent; 95% CI: 23.2-29.9), followed by Kent (24.6 percent; 95% CI: 21.4-27.8) and New Castle County (22.3 percent; 95% CI: 20.5-20.4).

Smoking has detrimental effects on health, and smoking during pregnancy leads to low birth weight and premature births, which in turn increases the risk of infant mortality. The Delaware PRAMS data suggest that there are tremendous opportunities to reduce prepregnancy smoking among Delaware mothers.

Table 2. Characteristics of Delaware Mothers who Smoked Three Months before Pregnancy, 2012-2015

Respondent characteristics	Percentage of mothers smoking 3 months before pregnancy	
	Yes (95%CI)	No (95%CI)
Maternal Age***		
<20 years	27.6 (21.1-34.1)	72.4 (65.9-78.9)
20-24 years	30.7 (27.3-34.1)	69.3 (65.9-72.7)
25-34 years	22.4 (20.5-24.2)	77.6 (75.8-79.5)
35 years and older	16.6 (13.4-19.8)	83.4 (80.2-86.6)
Education***		
<12 years of schooling	26.6 (23.0-30.3)	73.4 (69.7-77.0)
12 years of schooling	38.5 (35.1-41.9)	61.5 (58.1-64.9)
>12 years of schooling	16.6 (15.0-18.2)	83.4 (81.8-85.0)
Income***		
<$10,000	40.8 (36.8-44.8)	59.2 (55.2-63.2)
$10,000-$26,000	28.2 (24.2-32.3)	71.8 (67.7-75.8)
$26,001-$44,000	23.5 (19.6-27.4)	76.5 (72.6-80.4)
$44,001 or more	16.6 (14.8-18.4)	83.4 (81.6-85.2)
Race/Ethnicity***		
White non-Hispanic	29.0 (27.0-31.1)	71.0 (68.9-73.0)
Black non-Hispanic	22.7 (19.7-25.6)	77.3 (74.4-80.3)
Hispanic	10.2 (7.4-13.0)	89.8 (87.0-92.6)
Other non-Hispanic	15.8 (8.8-22.8)	84.2 (77.2-91.2)
County		
Kent County	24.6 (21.4-27.8)	75.4 (72.2-78.6)
New Castle County	22.3 (20.5-24.1)	77.7 (75.9-79.5)
Sussex County	26.5 (23.2-29.9)	73.5 (70.1-76.8)

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

***p < .05

2.7 Social wellness

Social wellness encompasses several elements: developing a sense of connection, belonging, and a well-developed support system;[5] and contributing to a community's common welfare.[6] Thinking about one's race and/or ethnicity may be a proxy for sense of social adjustment, connection, and/or belonging. Other proxy measures such as participation in civil society (i.e., social capital)

[5] The Eight Dimensions of Wellness. http://www.samhsa.gov/wellness-initiative/eight-dimensions-wellness. Accessed August 11, 2016.

[6] Miller JW. Wellness: the history and development of a concept. *Spektrum Freizeit* 2005 Sept.; 27(1):85-106.

and trust in the neighborhood help gauge social wellness; however, questions for these indicators are not available in PRAMS data.

2.8 Spiritual wellness

Spiritual wellness is generally linked to lower mortality, reduced stressed levels, lower anxiety, and faster recovery[7]. PRAMS lacks specific measures for spiritual wellness.

[7]Puchalski CM. The role of spirituality in health care. *Proceedings (Baylor University Medical Center)*. 2001;14(4):352-357.

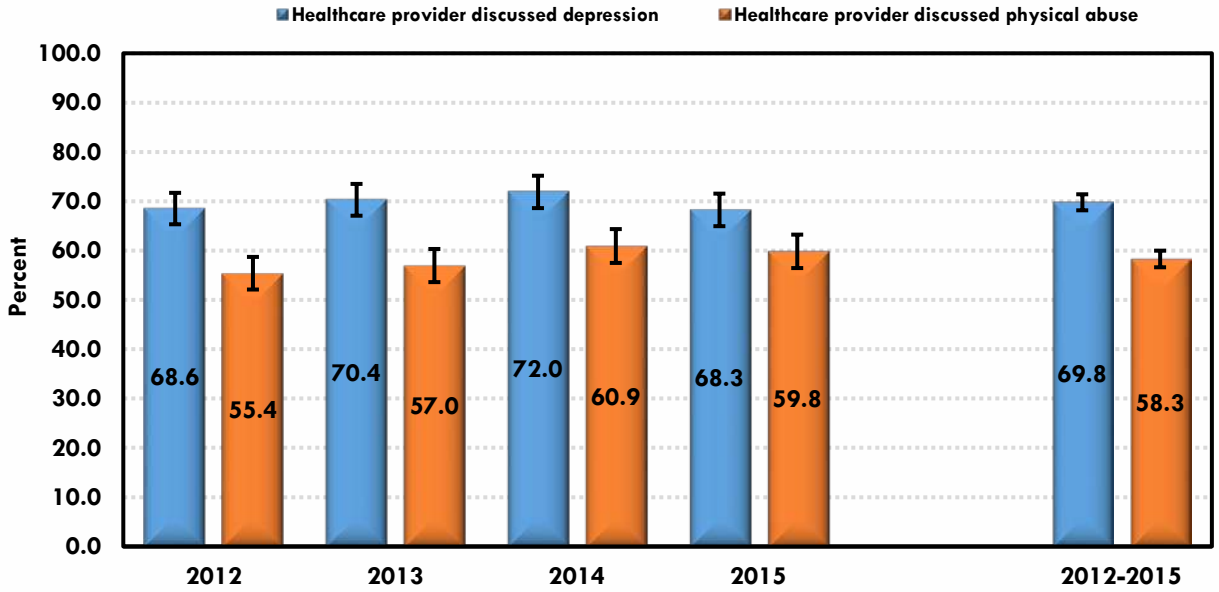
PREGNANCY WELLNESS

This section reviews data on measures captured in the PRAMS questionnaire "during pregnancy." Not all measures and questions may fit within the eight dimensions. All pregnancy wellness measures are stratified by age, education, income, race and ethnicity, and place of residence.

3.1 Emotional wellness

Emotional wellness during pregnancy was defined using self-reported measures from PRAMS data. The first two questions relate to the health care provider's discussion with the mother about depression during pregnancy and physical abuse by their husbands or partners. *During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about any of the things listed below? A. What to do if I feel depressed during my pregnancy or after my baby is born; B. Physical abuse to women by their husbands or partners.* The second question on emotional wellness relates to actual physical abuse during the most recent pregnancy. The third question relates to advice on how to take care of oneself. For instance, mothers were asked…*how did you feel about the prenatal care you got during your most recent pregnancy? Were you satisfied with… the advice you got on how to take care of yourself?* The fourth question related to preparation for childbirth. Mothers were asked… *during your most recent pregnancy, did you take a class or classes to prepare for childbirth and learn what to expect during labor and delivery?*

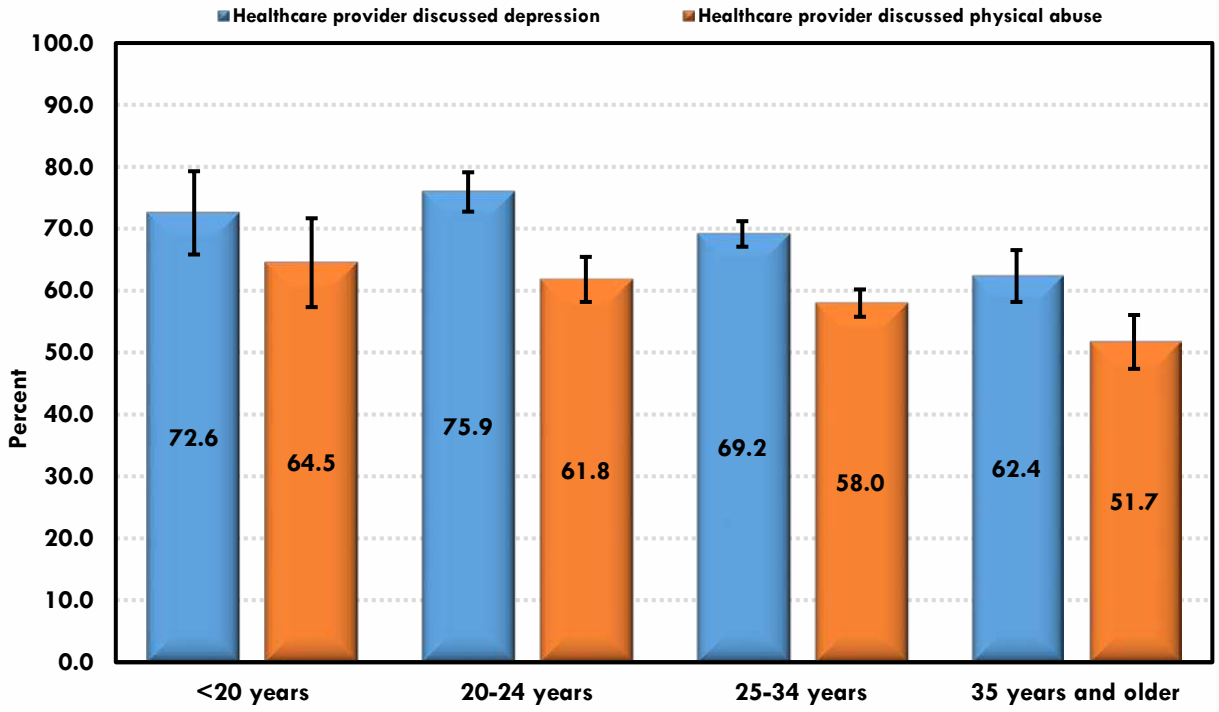
Figure 42. Emotional Wellness Indicators* during Pregnancy in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about any of the things listed below?. *A. What to do if I feel depressed during my pregnancy or after my baby is born; B. Physical abuse to women by their husbands or partners.*

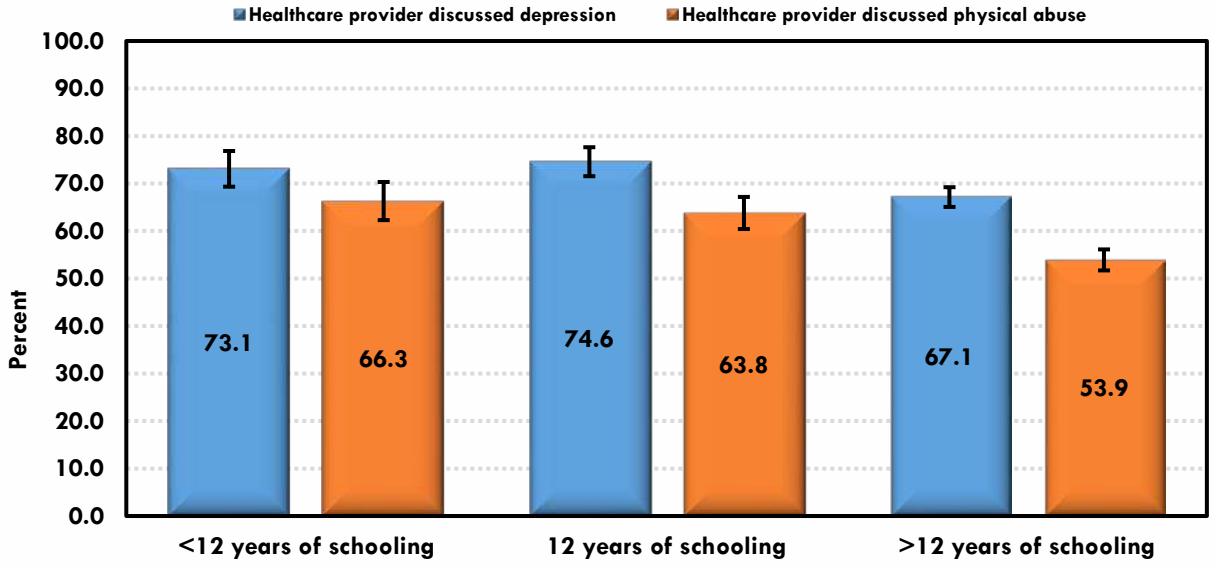
When the emotional wellness indicators during pregnancy are stratified by mother's age, education, income, race and ethnicity, and county of residence, several patterns and differences emerge. Most pronounced are differences regarding education, income, and race and ethnicity consistent with the social gradients of health.

Figure 43. Emotional Wellness Indicators* during Pregnancy by Mother's Age in Delaware, 2012-2015



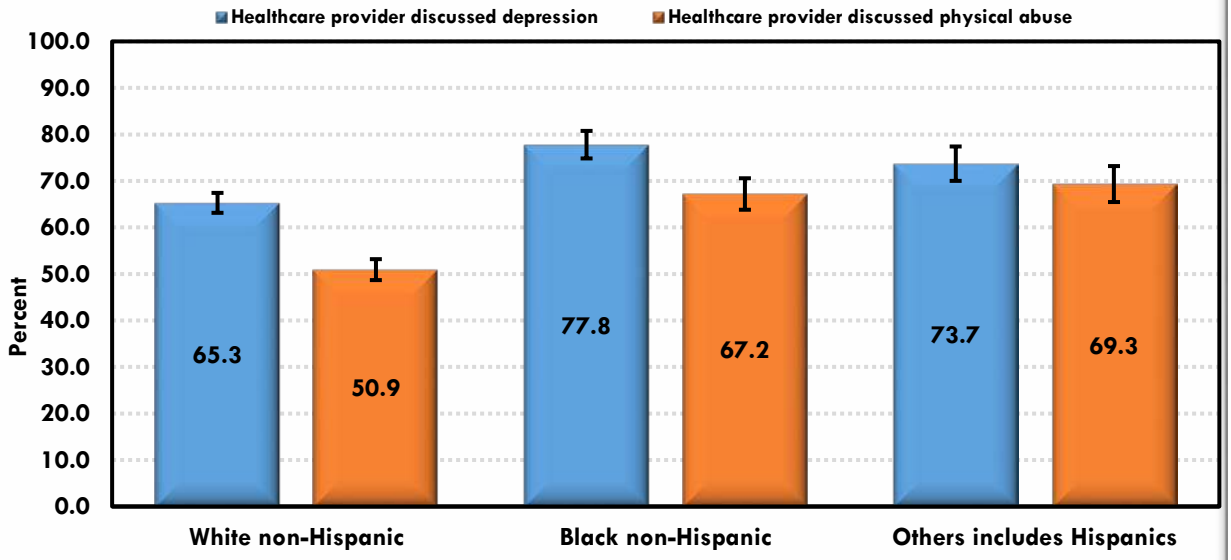
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about any of the things listed below?. *A. What to do if I feel depressed during my pregnancy or after my baby is born; B. Physical abuse to women by their husbands or partners.*

Figure 44. Emotional Wellness Indicators* during Pregnancy by Mother's Education in Delaware, 2012-2015



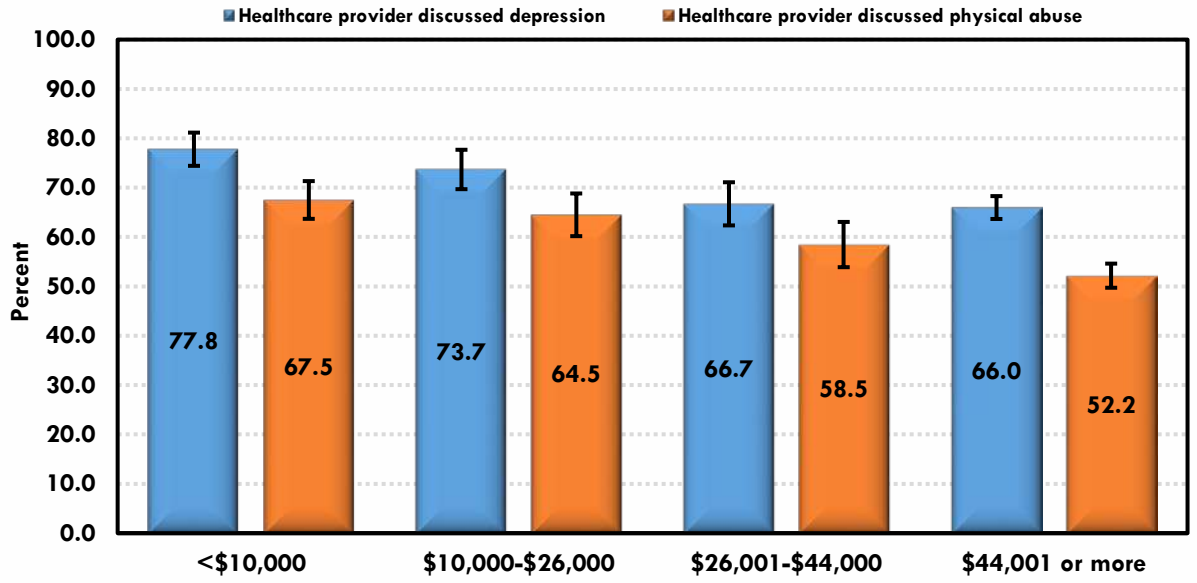
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about any of the things listed below?. *A. What to do if I feel depressed during my pregnancy or after my baby is born; B. Physical abuse to women by their husbands or partners.*

Figure 45. Pregnancy Wellness Indicators* during Pregnancy by Mother's Race and Ethnicity in Delaware, 2012-2015



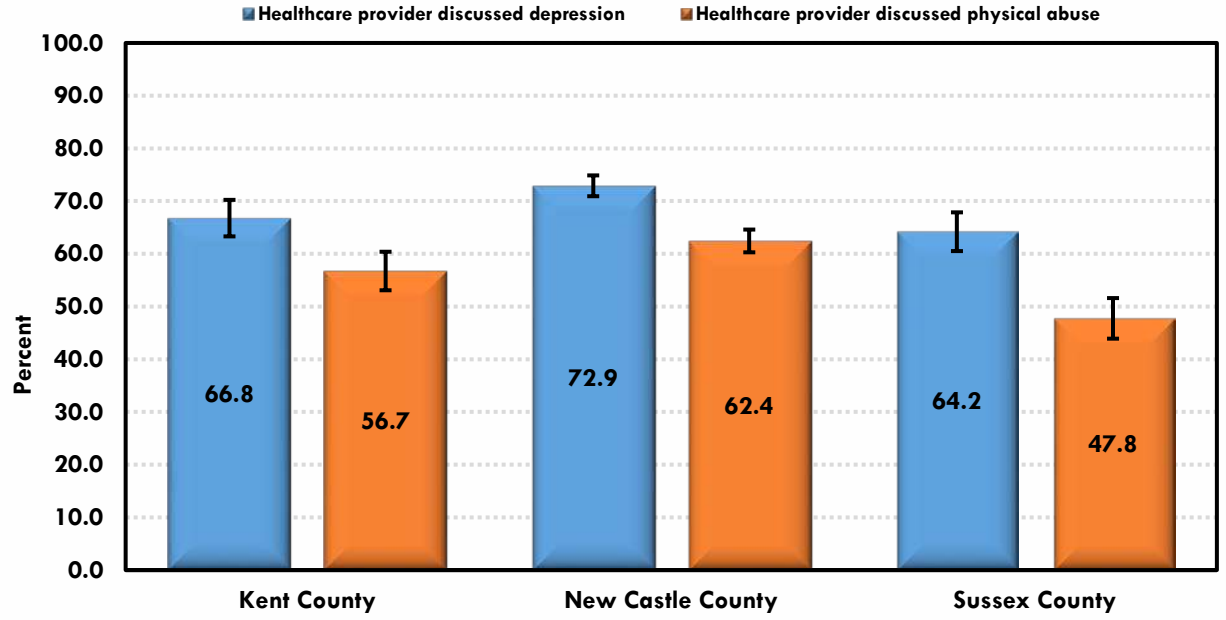
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about any of the things listed below?. *A. What to do if I feel depressed during my pregnancy or after my baby is born; B. Physical abuse to women by their husbands or partners.*

Figure 46. Emotional Wellness Indicators* during Pregnancy by Mother's Income in Delaware, 2012-2015



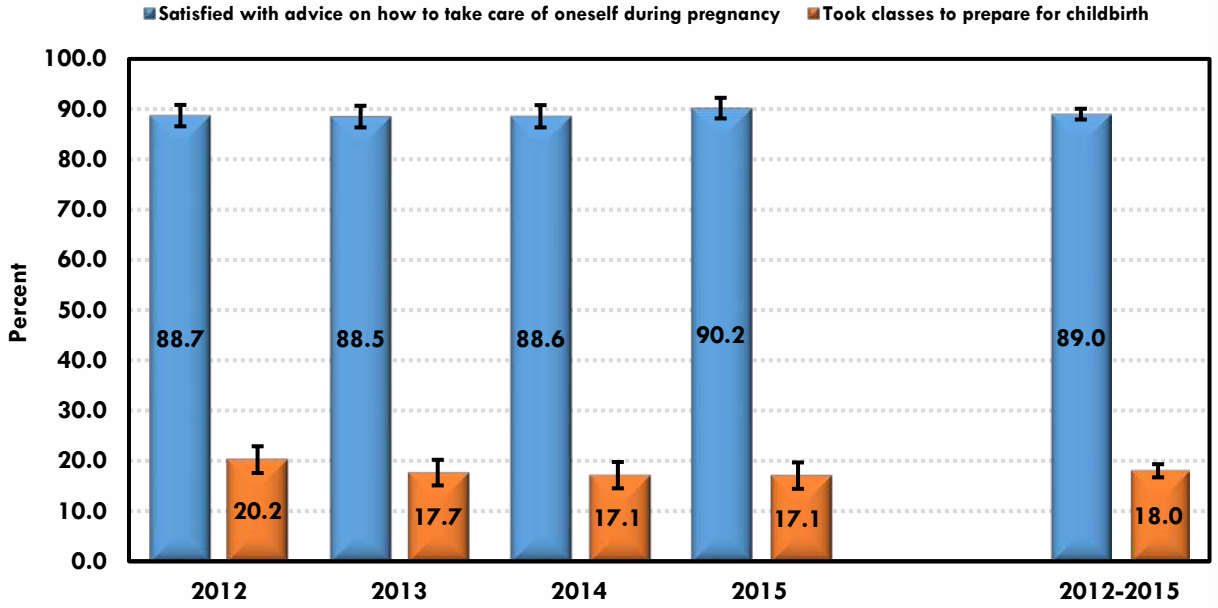
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about any of the things listed below?. *A. What to do if I feel depressed during my pregnancy or after my baby is born; B. Physical abuse to women by their husbands or partners.*

Figure 47. Pregnancy Wellness Indicators* during Pregnancy by Mother's County of Residence in Delaware, 2012-2015



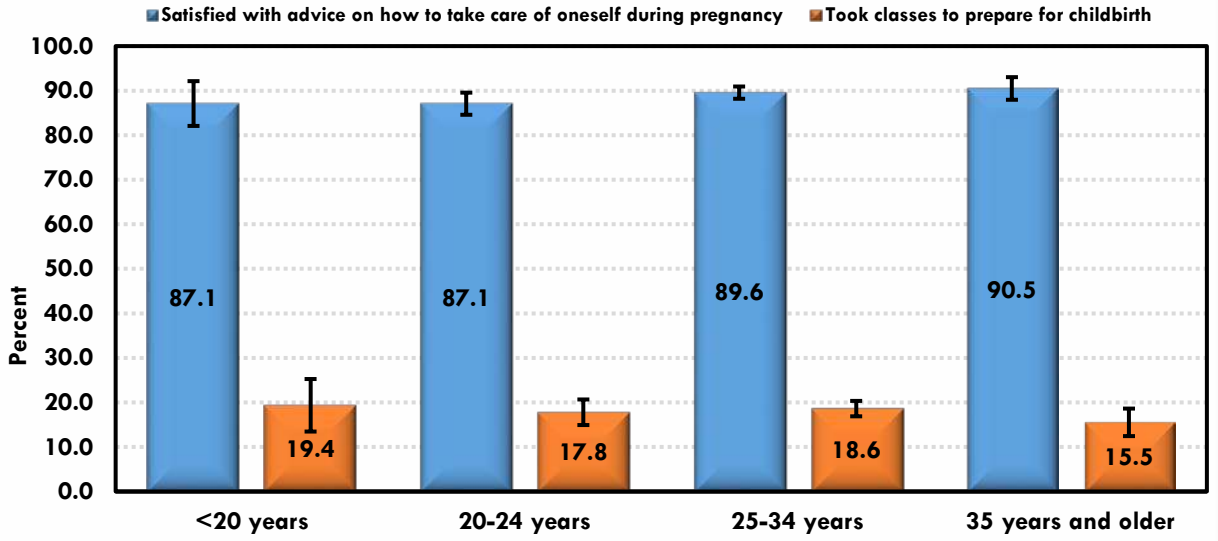
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about any of the things listed below?. *A. What to do if I feel depressed during my pregnancy or after my baby is born; B. Physical abuse to women by their husbands or partners.*

Figure 48. Emotional Wellness Indicators on Taking Care* and Preparing for Childbirth among Mothers in Delaware, 2012-2015**



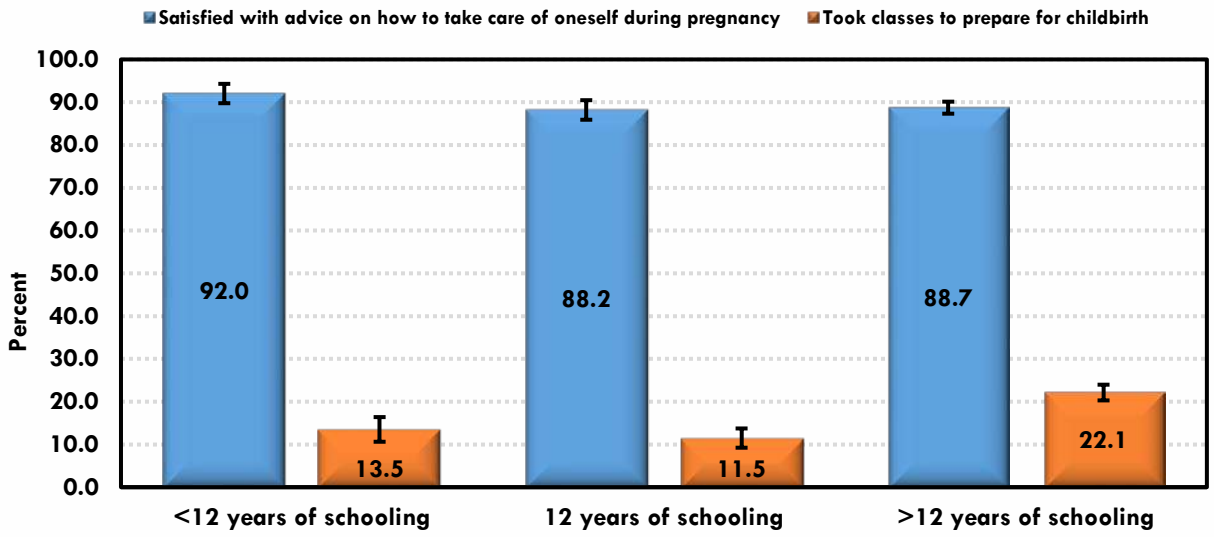
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*How did you feel about the prenatal care you got during your most recent pregnancy? *Were you satisfied with... The advice you got on how to take care of yourself.*
**During your most recent pregnancy, did you take a class or classes to prepare for childbirth and learn what to expect during labor and delivery.

Figure 49. Emotional Wellness Indicators on Taking Care* and Preparing for Childbirth by Mother's Age in Delaware, 2012-2015**



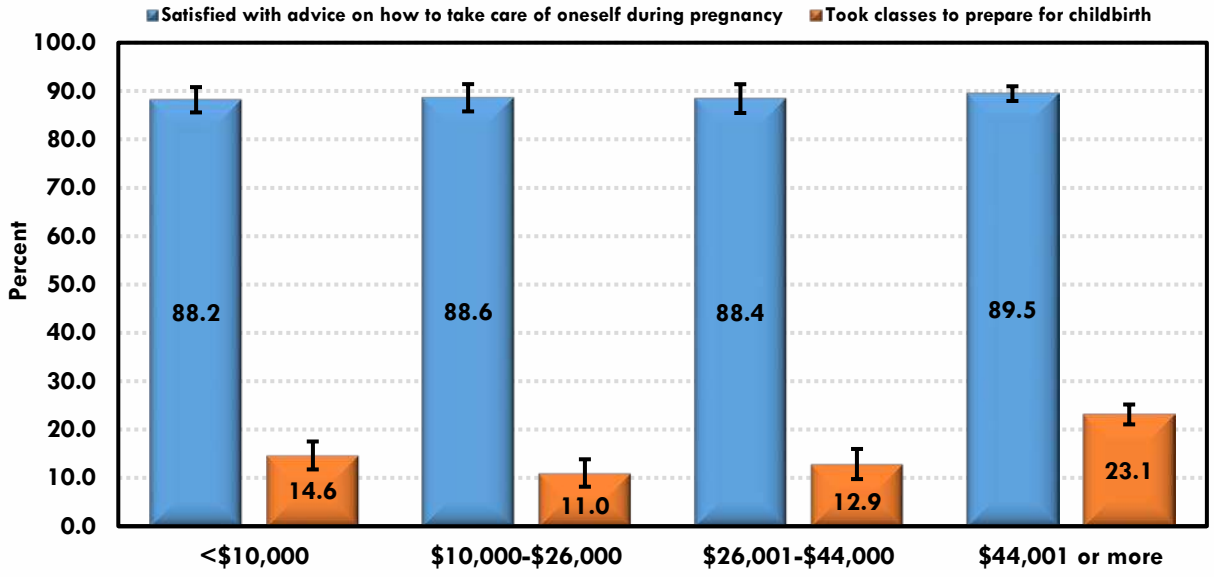
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*How did you feel about the prenatal care you got during your most recent pregnancy? *Were you satisfied with... The advice you got on how to take care of yourself.*
**During your most recent pregnancy, did you take a class or classes to prepare for childbirth and learn what to expect during labor and delivery.

Figure 50. Emotional Wellness Indicators on Taking Care* and Preparing for Childbirth by Mother's Education in Delaware, 2012-2015**



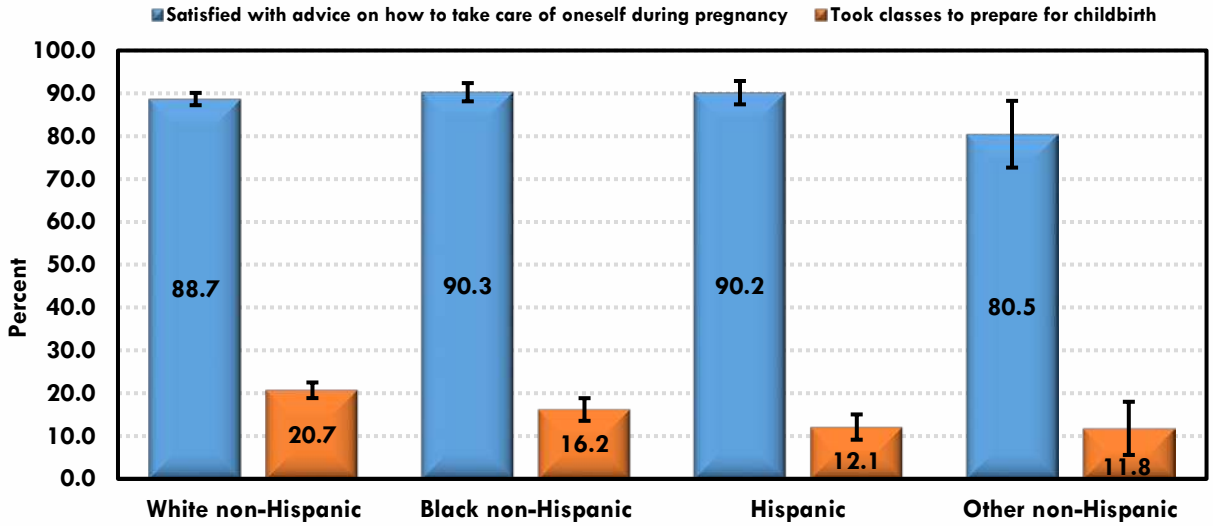
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*How did you feel about the prenatal care you got during your most recent pregnancy? *Were you satisfied with... The advice you got on how to take care of yourself.*
**During your most recent pregnancy, did you take a class or classes to prepare for childbirth and learn what to expect during labor and delivery.

Figure 51. Emotional Wellness Indicators on Taking Care* and Preparing for Childbirth by Mother's Income in Delaware, 2012-2015**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*How did you feel about the prenatal care you got during your most recent pregnancy? *Were you satisfied with... The advice you got on how to take care of yourself.*
**During your most recent pregnancy, did you take a class or classes to prepare or childbirth and learn what to expect during labor and delivery.

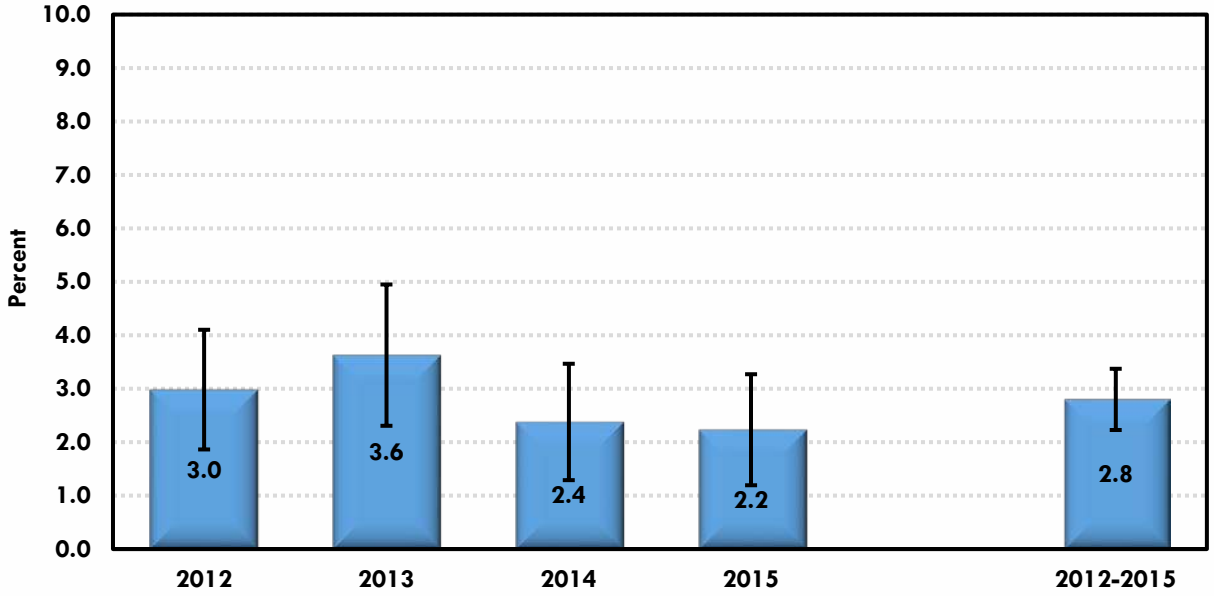
Figure 52. Emotional Wellness Indicators on Taking Care* and Preparing for Childbirth by Mother's Race and Ethnicity in Delaware, 2012-2015**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*How did you feel about the prenatal care you got during your most recent pregnancy? *Were you satisfied with... The advice you got on how to take care of yourself.*
**During your most recent pregnancy, did you take a class or classes to prepare or childbirth and learn what to expect during labor and delivery.

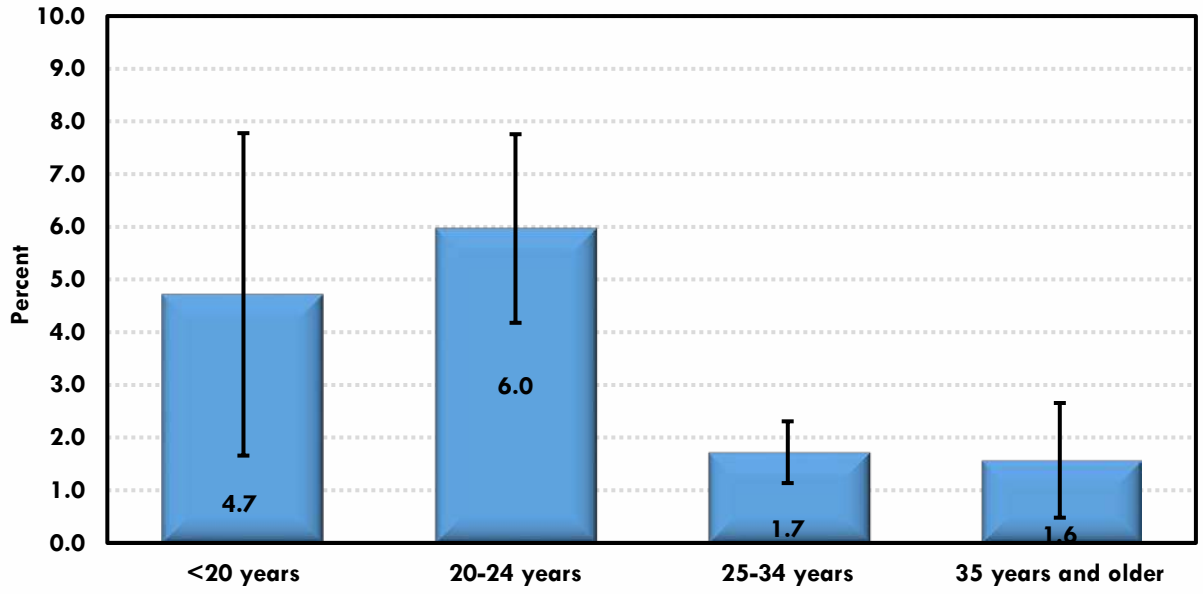
Except for physical abuse during pregnancy, most trends remained relatively stable. Nonetheless, there are opportunities for improvement when health care providers talk to their patients about depression and/or intimate partner violence (i.e., physical abuse) during pregnancy. In 2012, 3 percent (95% CI: 1.9-4.1) of the mothers reported being physically abused during pregnancy, which estimates to about 300 mothers every year reporting physical abuse during pregnancy. However, based on 2015 data, there was a 27 percent decline in Delaware mothers' report of physical abuse during pregnancy.

Figure 53. Percentage of Mothers who were Physically Abused during most recent Pregnancy* in Delaware, 2012-2015



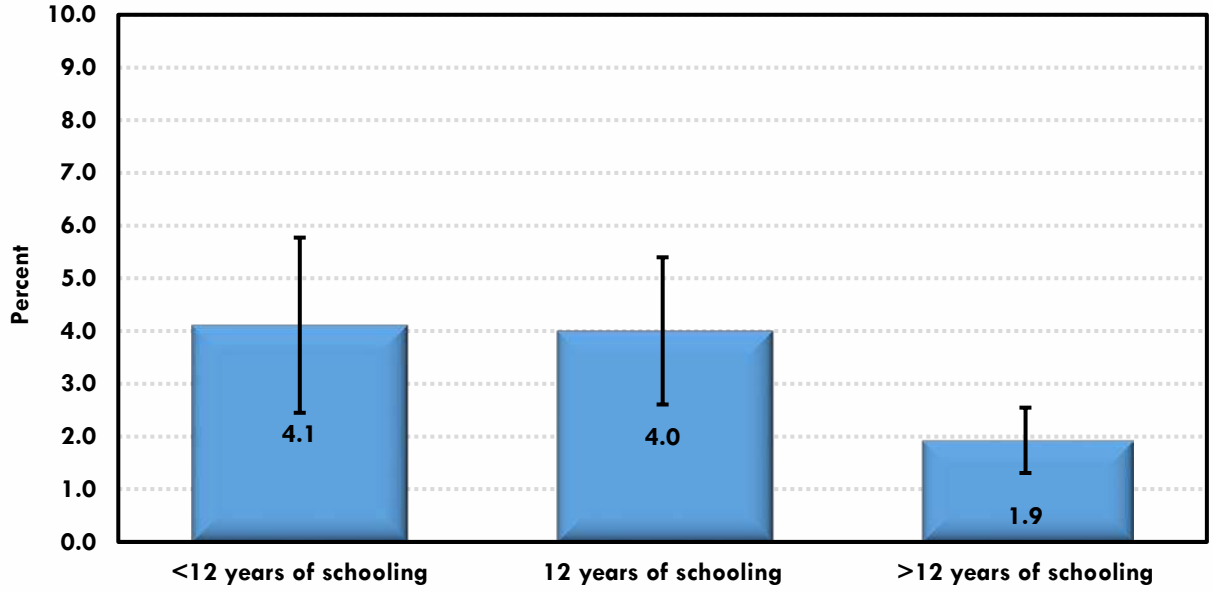
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During your most recent pregnancy, did your husband or partner push, hit, slap, kick, choke, or physically hurt you in any other way?

Figure 54. Percentage of Mothers who were Physically Abused during most Recent Pregnancy* by Mother's Age in Delaware, 2012-2015



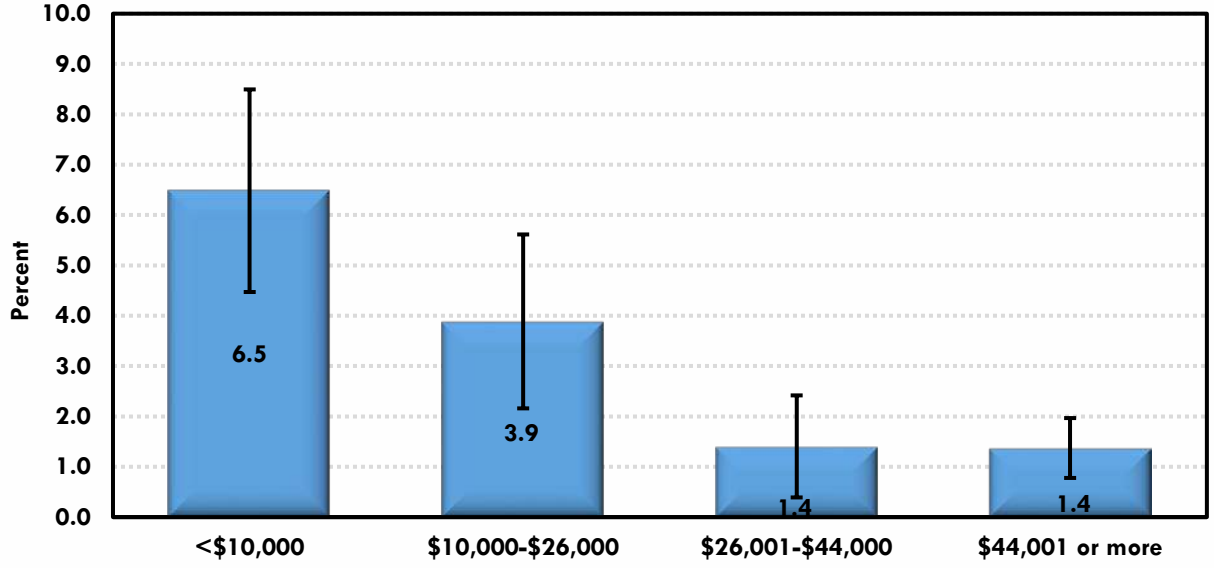
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During your most recent pregnancy, did your husband or partner push, hit, slap, kick, choke, or physically hurt you in any other way?

Figure 55. Percentage of Mothers who were Physically Abused during most Recent Pregnancy* by Mother's Education in Delaware, 2012-2015



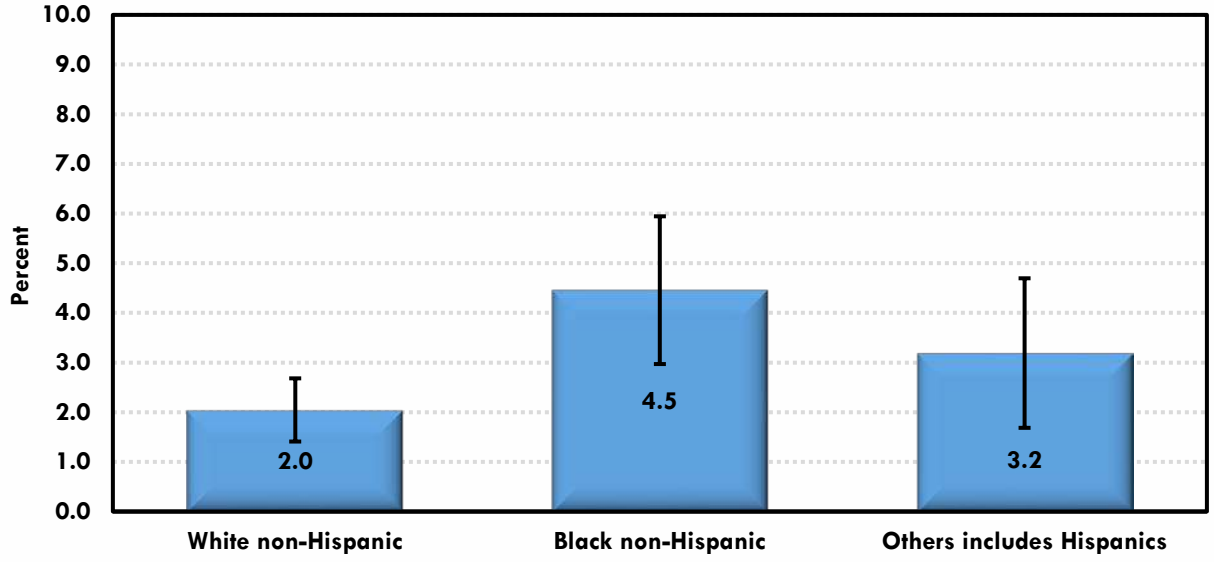
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During your most recent pregnancy, did your husband or partner push, hit, slap, kick, choke, or physically hurt you in any other way?

Figure 56. Percentage of Mothers who were Physically Abused during most recent Pregnancy* by Mother's Income in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During your most recent pregnancy, did your husband or partner push, hit, slap, kick, choke, or physically hurt you in any other way?

Figure 57. Percentage of Mothers who were Physically Abused during most recent Pregnancy* by Mother's Race and Ethnicity in Delaware, 2012-2015

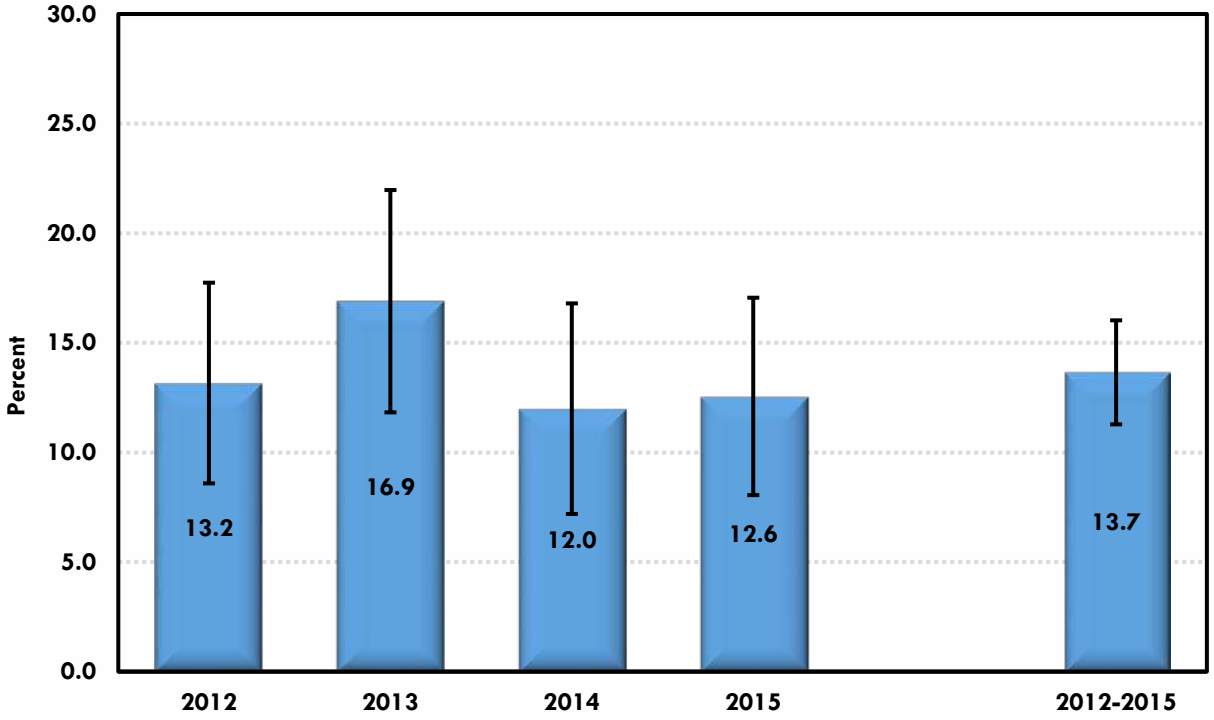


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*During your most recent pregnancy, did your husband or partner push, hit, slap, kick, choke, or physically hurt you in any other way?

3.2 Environmental wellness

While there were no specific measures in the PRAMS for assessing environmental wellness prior to pregnancy, one proxy measure for environmental wellness during pregnancy was access to transportation during prenatal care. Figure 58 displays the percent of women who indicated transportation was a barrier to accessing early prenatal care. It is evident that while access to transportation varied from a high of 17 percent in 2013 to a low of 12 percent in 2014, on average about 14 percent of the Delaware mothers (95% CI: 11.0-16.0) indicated transportation barriers as a reason for not getting prenatal care as early as they wanted.

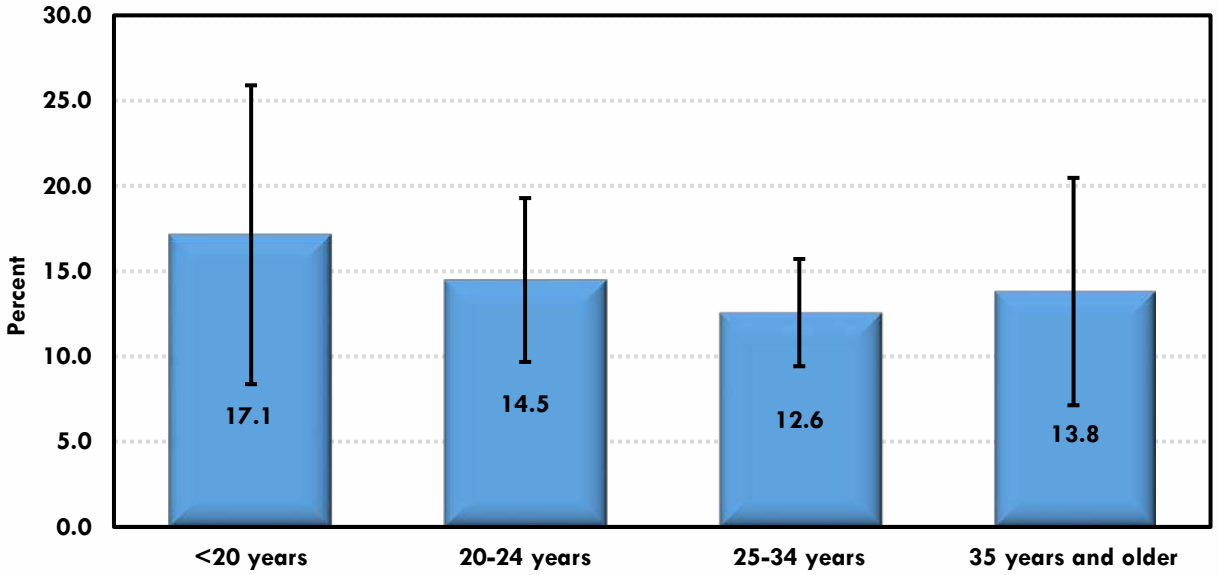
Figure 58. Percentage of Mothers who Indicated that they didn't have Transportation* to Access Prenatal Care in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it?... *I didn't have any transportation to get to the clinic or doctor's office.*

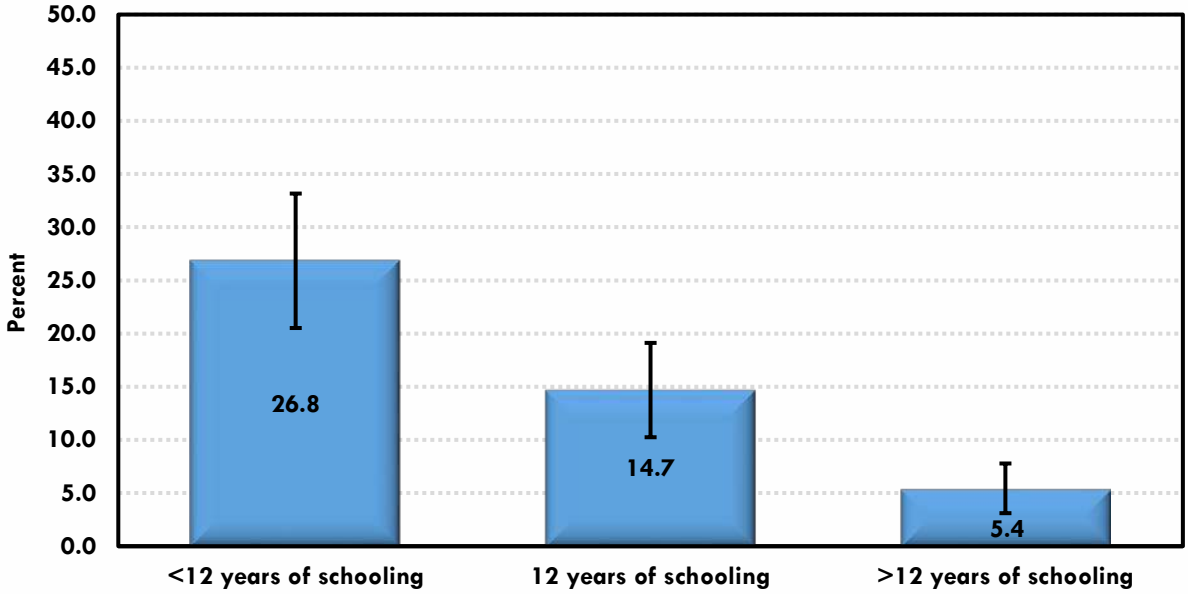
Figures 59 through 63 stratify these by maternal age, education, income, race and ethnicity, and place of residence. Young mothers, mothers with less than 12 years of schooling, those with incomes less than $10,000, and racial and/or ethnic minorities were more likely to indicate having transportation barriers. Interestingly, there were no differences in the prevalence rates of mothers who indicated transportation as a barrier by place (i.e., mother's county of residence).

Figure 59. Percentage of Mothers who Indicated that they didn't have Transportation* to Access Prenatal care by Mother's Age in Delaware, 2012-2015



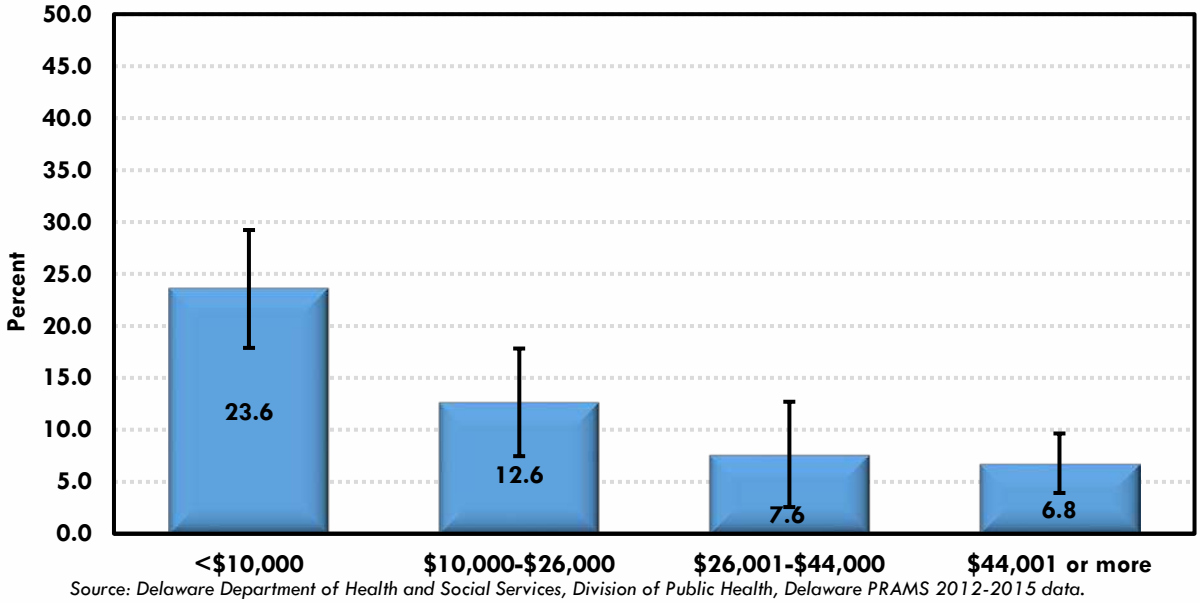
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it?... *I didn't have any transportation to get to the clinic or doctor's office.*

Figure 60. Percentage of Mothers who Indicated that they didn't have Transportation* to Access Prenatal Care by Mother's Education in Delaware, 2012-2015



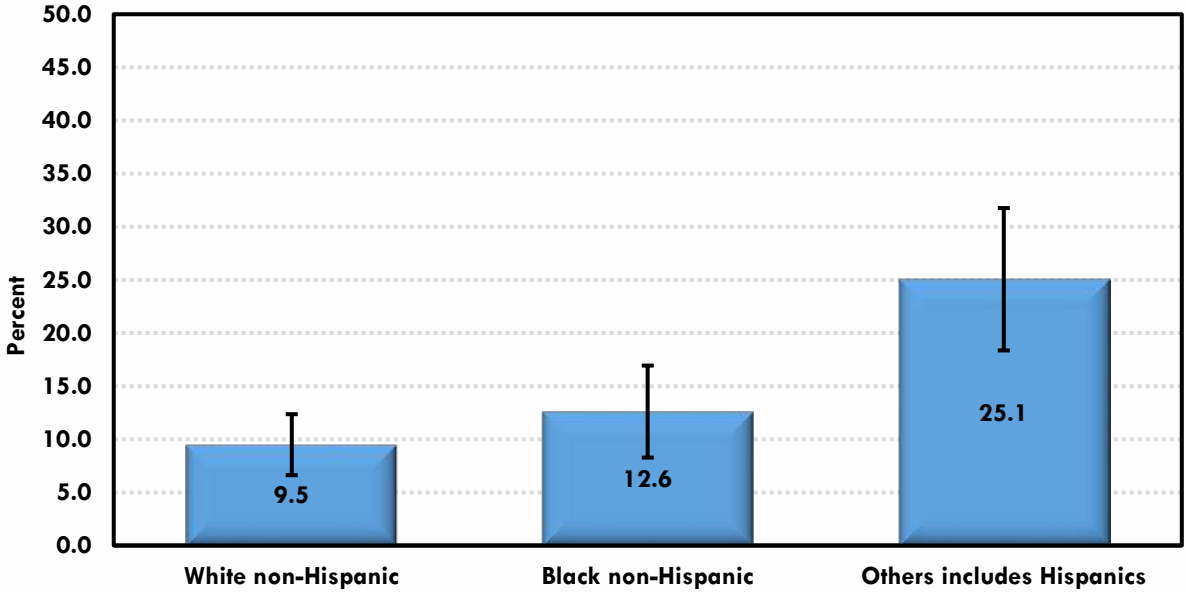
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it?... *I didn't have any transportation to get to the clinic or doctor's office.*

Figure 61. Percentage of Mothers who Indicated that they didn't have Transportation* to Access Prenatal Care by Mother's Income in Delaware, 2012-2015

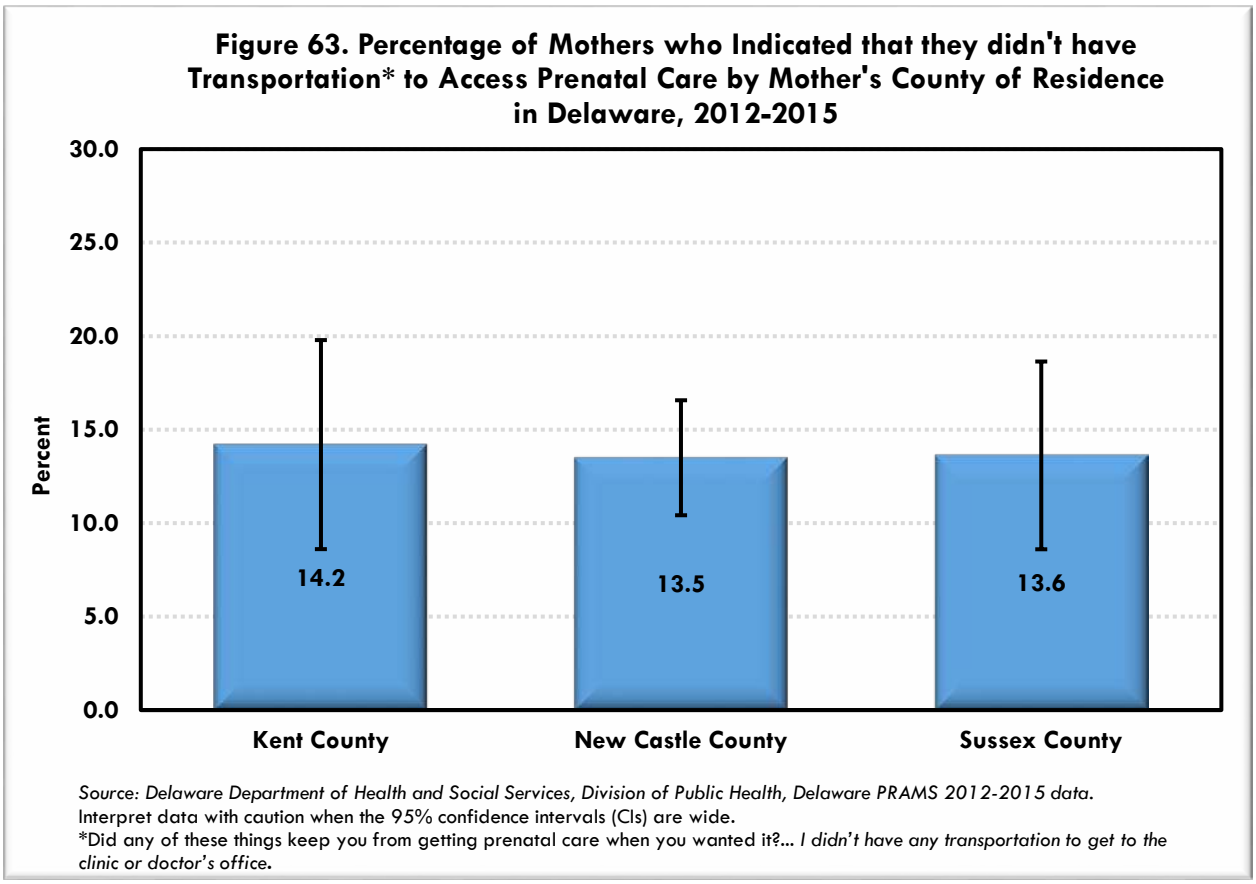


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it?... *I didn't have any transportation to get to the clinic or doctor's office.*

Figure 62. Percentage of Mothers who Indicated that they didn't have Transportation to Access Prenatal Care by Mother's Race and Ethnicity in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it?... *I didn't have any transportation to get to the clinic or doctor's office.*

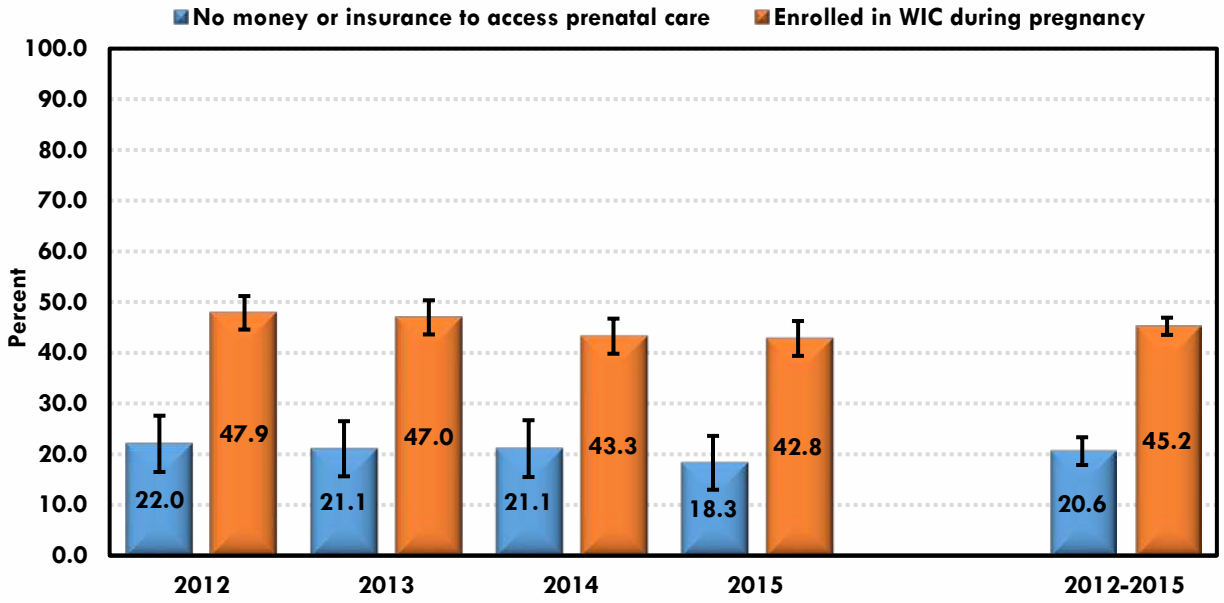


3.3 Financial wellness

While financial wellness is one of the most potent predictors of overall health, it is perhaps most important during a major life event such as pregnancy. Two proxy indicators were utilized to assess financial wellness during pregnancy. The first, and perhaps most critical indicator, was cost as a barrier to access prenatal care. Delaware mothers were asked, "*Did you get prenatal care as early in your pregnancy as you wanted?*" with responses choices of "yes" or "no" and a "no" answer prompting a follow-up question. "*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… I didn't have enough money or insurance to pay for my visits.*"

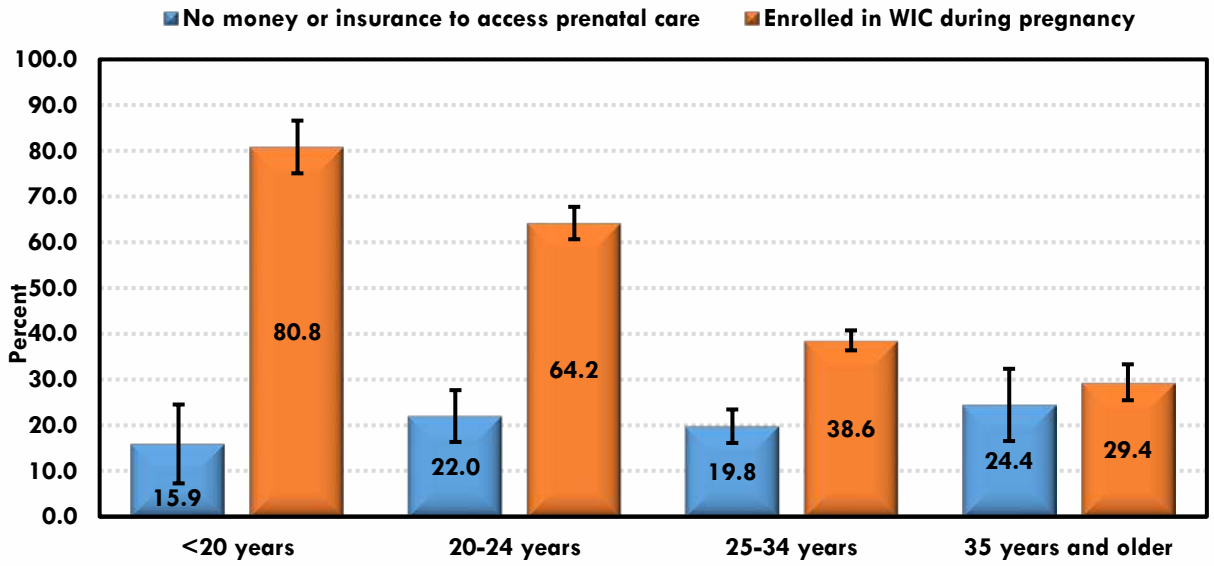
The second indicator was specific to enrollment in the Supplemental Nutrition Assistance Program (SNAP) for Women, Infants, and Children (WIC). Figure 64 provides the overall trends for these two indicators. Figures 64-68 stratify these indicators by mother's age, education, income, race and ethnicity, and county of residence.

Figure 64. Pregnancy Wellness Indicators* for Financial Wellness in Delaware, 2012-2015**



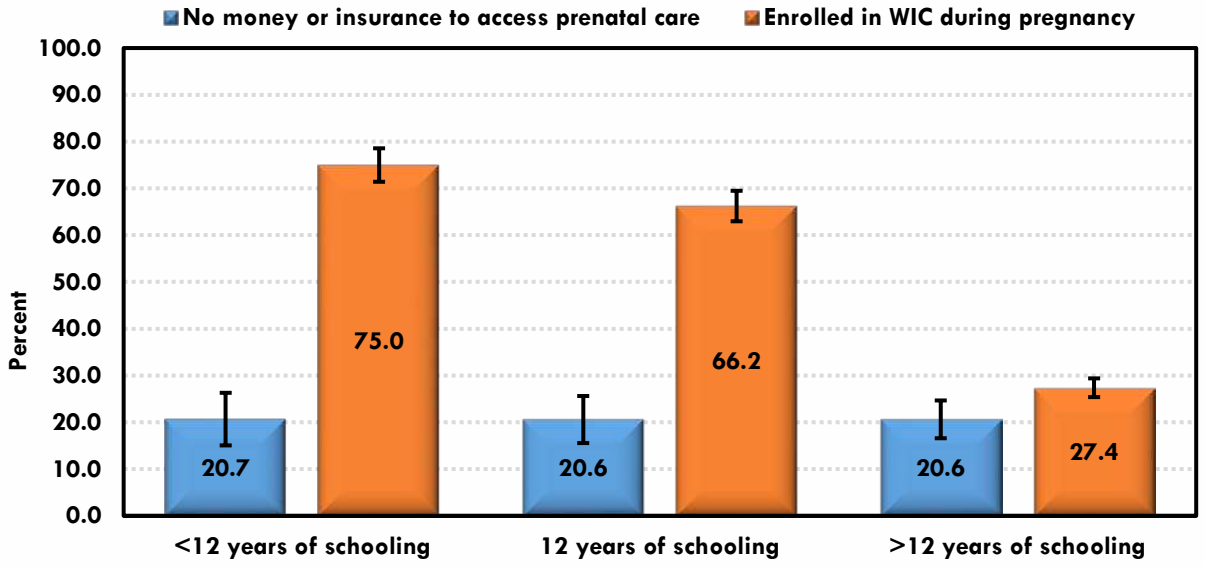
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I didn't have enough money or insurance to pay for my visits.*
**During your most recent pregnancy, were you on WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children)?

Figure 65. Pregnancy Wellness Indicators* for Financial Wellness during Pregnancy by Mother's Age in Delaware, 2012-2015**



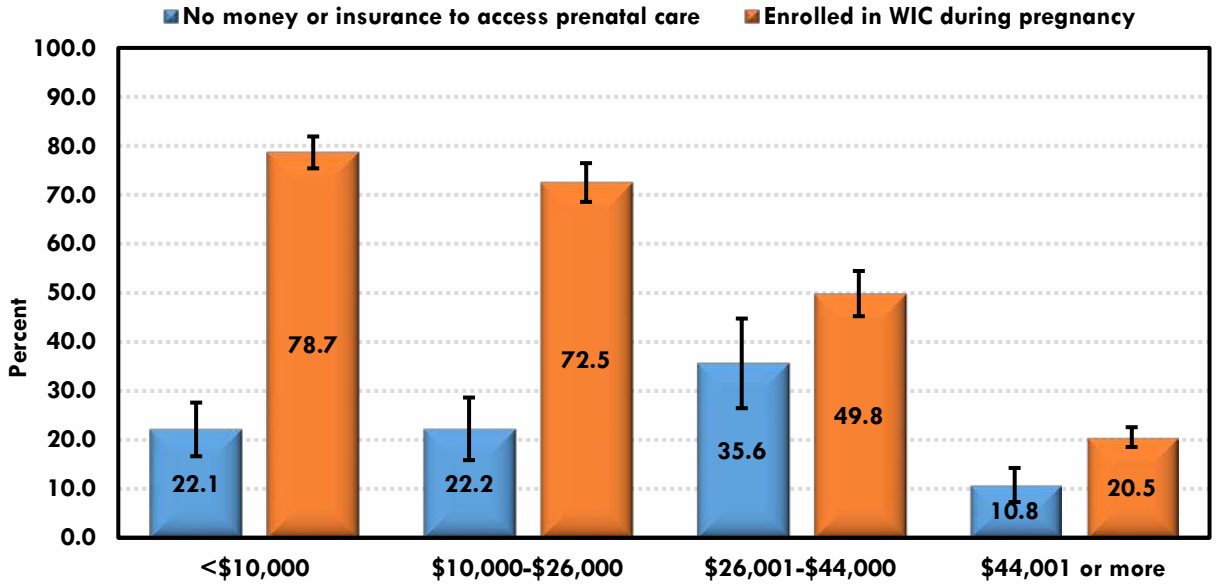
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I didn't have enough money or insurance to pay for my visits.*
**During your most recent pregnancy, were you on WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children)?

Figure 66. Pregnancy Wellness Indicators* for Financial Wellness by Mother's Education in Delaware, 2012-2015**



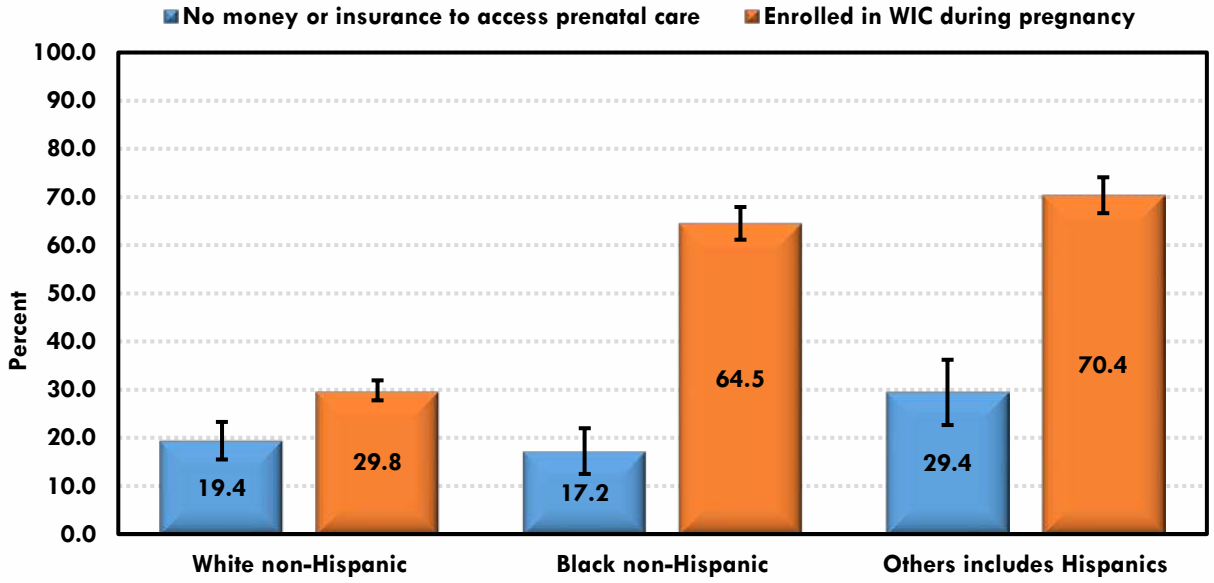
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I didn't have enough money or insurance to pay for my visits.*
**During your most recent pregnancy, were you on WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children)?

Figure 67. Pregnancy Wellness Indicators* for Financial Wellness by Mother's Income in Delaware, 2012-2015**



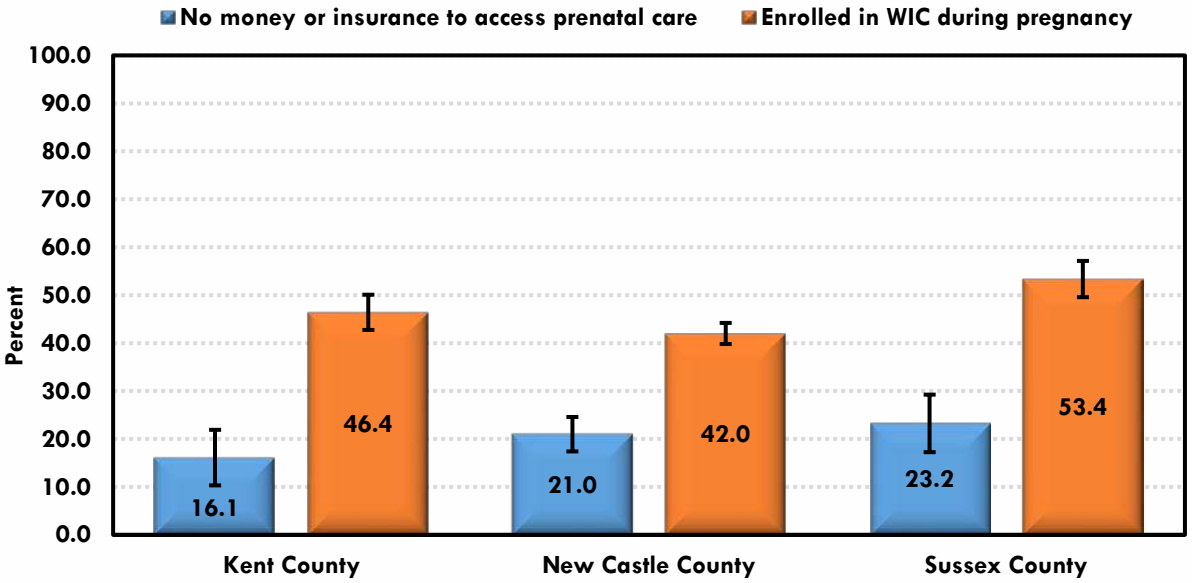
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I didn't have enough money or insurance to pay for my visits.*
**During your most recent pregnancy, were you on WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children)?

Figure 68. Pregnancy Wellness Indicators* for Financial Wellness by Mother's Race and Ethnicity in Delaware, 2012-2015**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I didn't have enough money or insurance to pay for my visits.*
**During your most recent pregnancy, were you on WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children)?

Figure 69. Pregnancy Wellness Indicators* for Financial Wellness by Mother's County of Residence in Delaware, 2012-2015**



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I didn't have enough money or insurance to pay for my visits.*
**During your most recent pregnancy, were you on WIC (the Special Supplemental Nutrition Program for Women, Infants, and Children)?

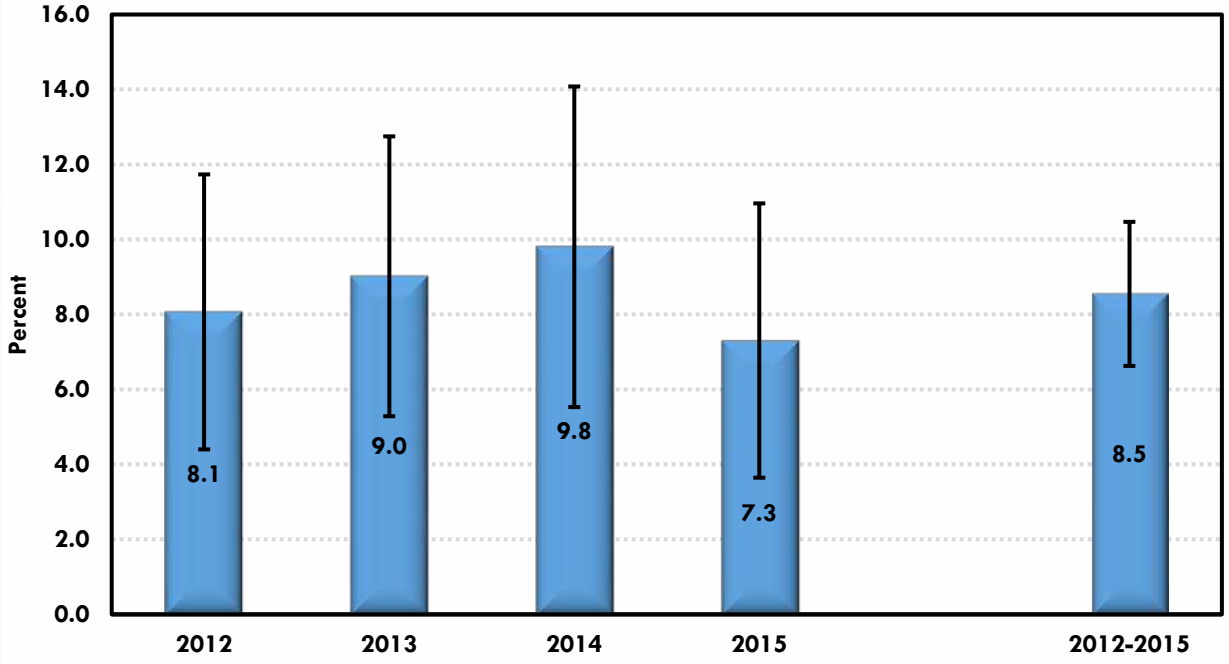
3.4 Intellectual wellness

An important element of intellectual wellness is to recognize creative abilities and find ways to expand knowledge and skills.[8] There were no specific proxy measures available to gauge intellectual wellness.

3.5 Occupational wellness

Another important dimension of wellness is occupational wellness, which essentially captures an individual's satisfaction and enrichment derived from his/her occupation and/or work. One element of occupational wellness may include working conditions and whether or not there are provisions to take time off from work to care for oneself. Delaware mothers were asked, "*Did you get prenatal care as early in your pregnancy as you wanted?*" with responses choices of "yes" or "no" and a "no" answer prompted a follow-up question. "*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… I couldn't take time off from work or school.*" (Figure 70). Figures 70-74 stratify the mothers' age, education, income, race and ethnicity, and county of residence.

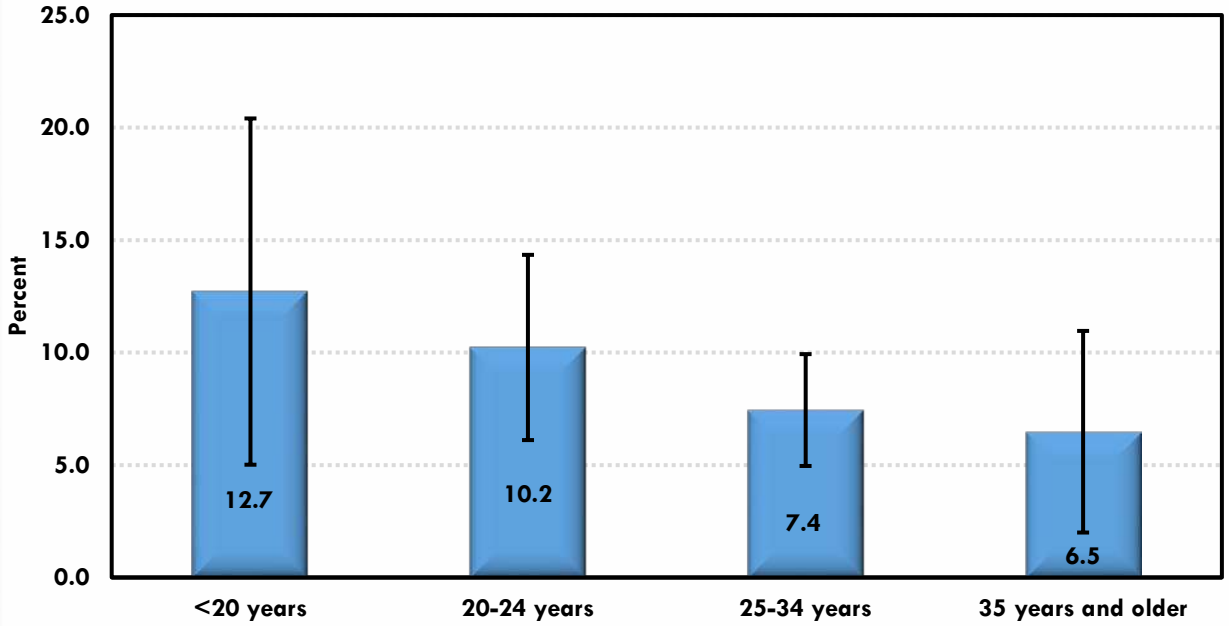
Figure 70. Percentage of Mothers who could not take Time Off* for Prenatal Care in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I couldn't take time off from work or school.*"

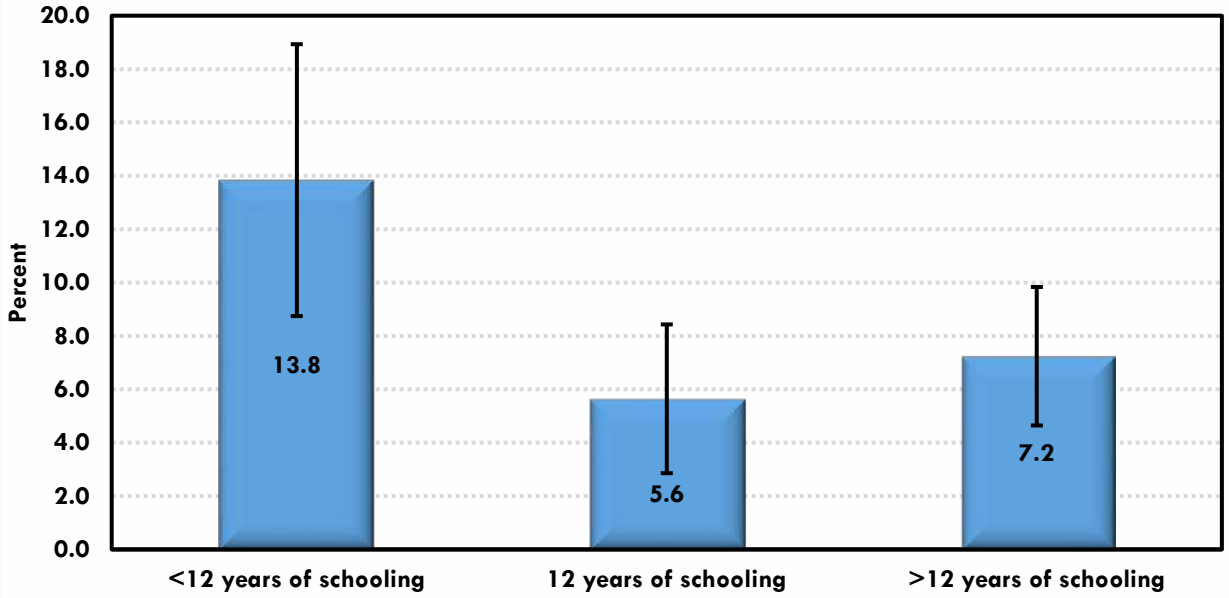
[8] The Eight Dimensions of Wellness. http://www.samhsa.gov/wellness-initiative/eight-dimensions-wellness. Accessed August 11, 2016.

Figure 71. Percentage of Mothers who could not take Time Off* for Prenatal Care by Mother's Age in Delaware, 2012-2015



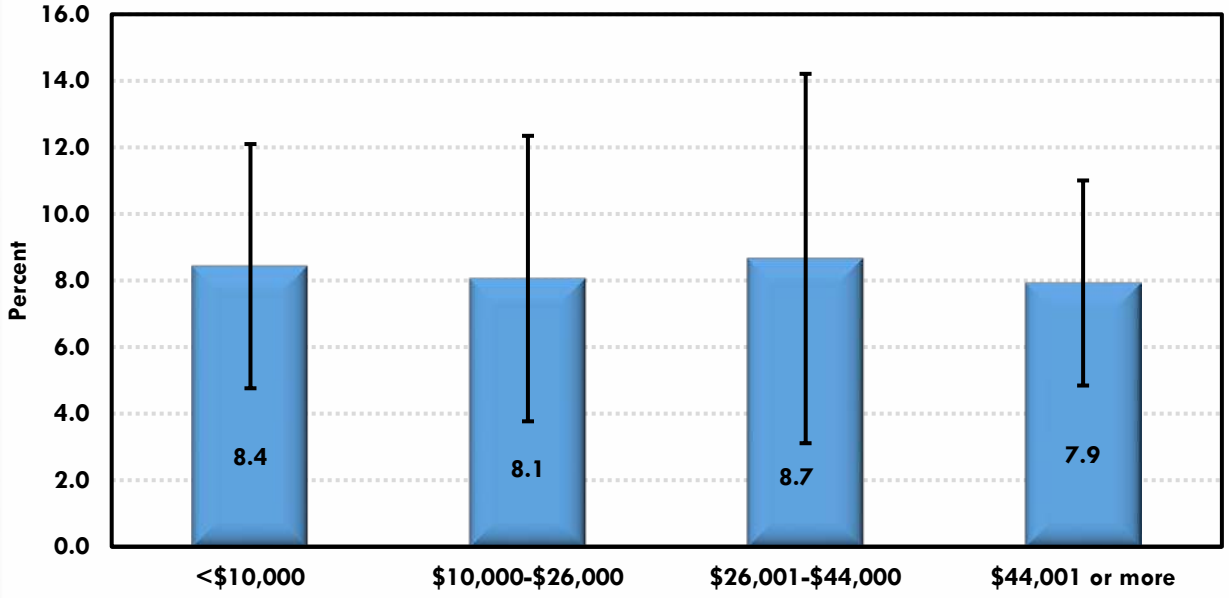
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I couldn't take time off from work or school.*"

Figure 72. Percentage of Mothers who could not take Time Off* for Prenatal Care by Mother's Education in Delaware, 2012-2015



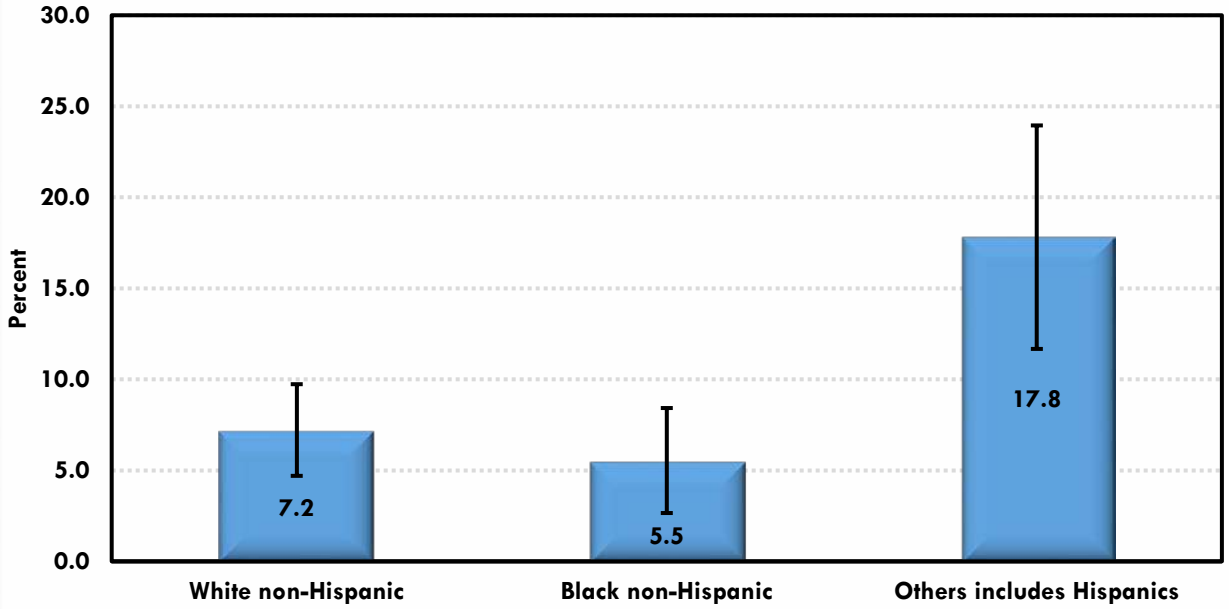
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I couldn't take time off from work or school.*"

Figure 73. Percentage of Mothers who could not take Time Off* for Prenatal Care by Mother's Income in Delaware, 2012-2015

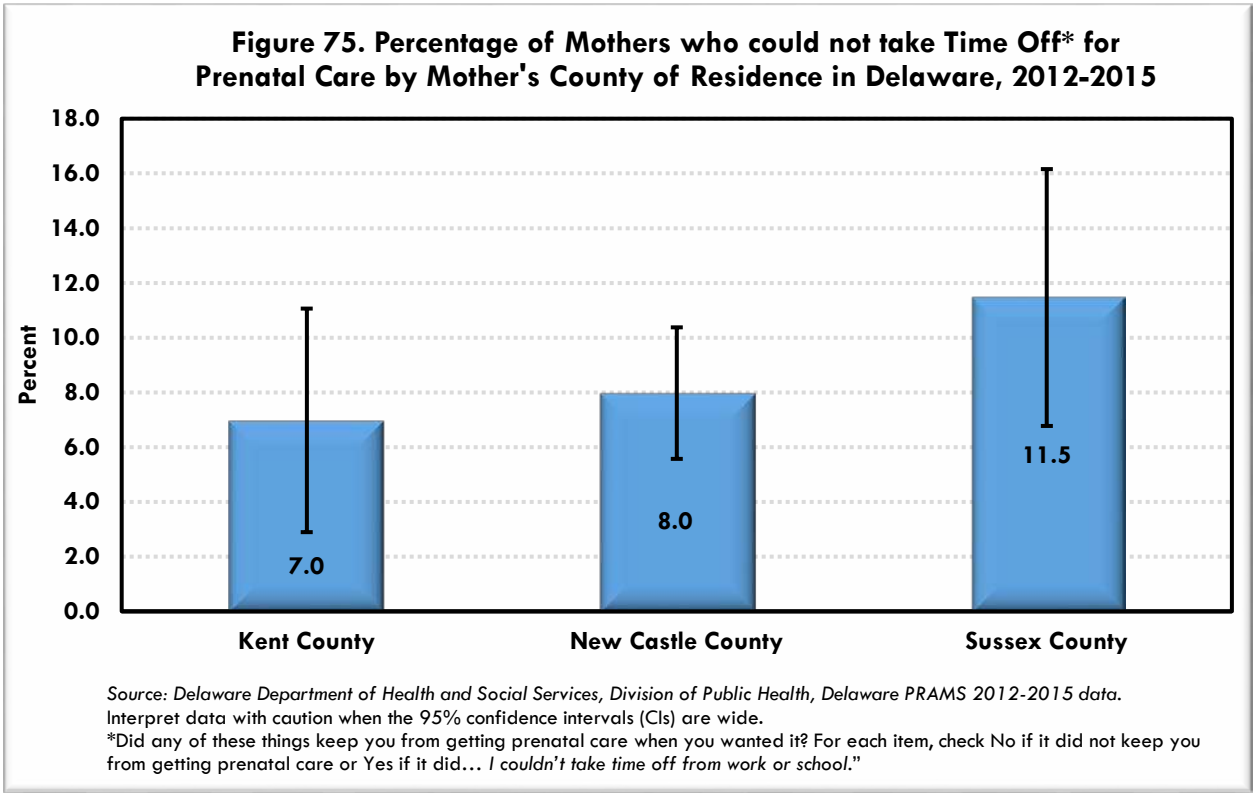


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I couldn't take time off from work or school.*"

Figure 74. Percentage of Mothers who could not take Time Off* for Prenatal Care by Mother's Race and Ethnicity in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Did any of these things keep you from getting prenatal care when you wanted it? For each item, check No if it did not keep you from getting prenatal care or Yes if it did… *I couldn't take time off from work or school.*"



3.6 Physical wellness

While good health prior to pregnancy improves the overall health of the mother vis-à-vis the health of the infant, improving physical wellness during pregnancy can mitigate some risks of poor maternal and infant outcomes. Several physical wellness indicators were utilized in the PRAMS questionnaire (Figure 76). The first question related to dental hygiene and mothers were asked… "*This question is about the care of your teeth during your most recent pregnancy…I had my teeth cleaned by a dentist or dental hygienist* with a "yes" or "no" option. The second question pertained high blood pressure and mothers were asked… "*Did you have any of the following problems during your most recent pregnancy? High blood pressure, hypertension (including pregnancy-induced hypertension [PIH]), preeclampsia, or toxemia.*" The last two questions pertained to smoking and drinking during last three months of pregnancy. Mothers were asked… "*In the last 3 months of your pregnancy… how many cigarettes did you smoke on an average day?*" with response options (41 or more cigarettes, 21 to 40 cigarettes, 11 to 20 cigarettes, 6 to 10 cigarettes, 1 to 5 cigarettes, less than one cigarette, and didn't smoke). A dichotomous variable of "yes" or "no" was created if the mother indicated she smoked cigarettes. Similarly, a dichotomous variable of "yes" or "no" was created for alcoholic drinks per week where mothers were asked… "*During the last 3 months of your pregnancy, how many alcoholic drinks did you have in an average week?*"

Slightly over 40 percent (95% CI: 40.7-44.1) of Delaware mothers indicated that they had their teeth cleaned during pregnancy. Similarly, approximately 15 percent of mothers (95% CI: 14.0-16.4) indicated having high blood pressure; approximately 12 percent of mothers (95% CI: 10.8-13.0) indicated having smoked during last three months of pregnancy; and about 7 percent (95% CI: 6.2-7.9) indicated having consumed alcohol during the last trimester. These physical wellness

indicators are stratified by mother's age, education, income, race and ethnicity, and county of residence (Table 3).

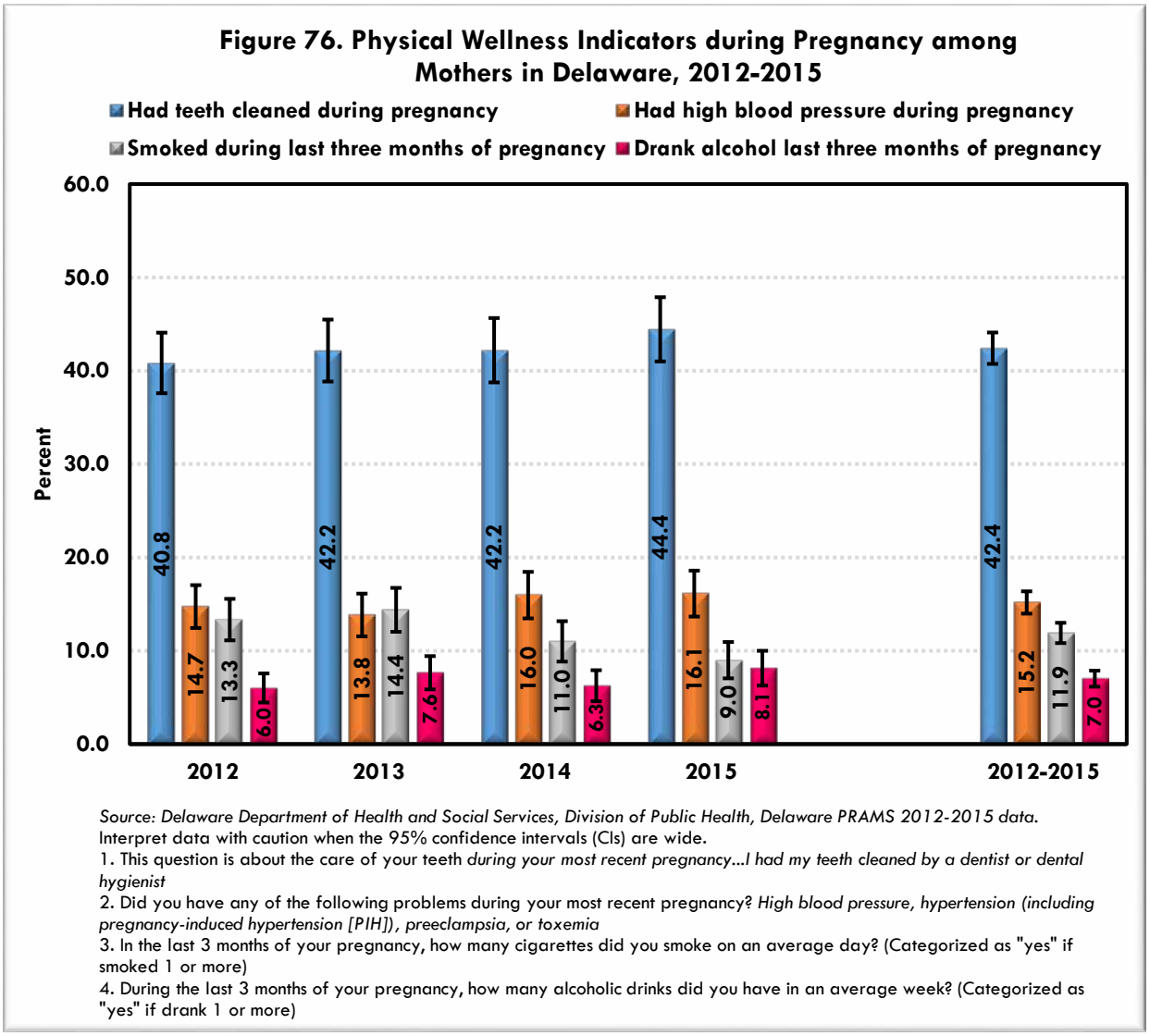


Figure 76. Physical Wellness Indicators during Pregnancy among Mothers in Delaware, 2012-2015

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
1. This question is about the care of your teeth *during your most recent pregnancy...I had my teeth cleaned by a dentist or dental hygienist*
2. Did you have any of the following problems during your most recent pregnancy? *High blood pressure, hypertension (including pregnancy-induced hypertension [PIH]), preeclampsia, or toxemia*
3. In the last 3 months of your pregnancy, how many cigarettes did you smoke on an average day? (Categorized as "yes" if smoked 1 or more)
4. During the last 3 months of your pregnancy, how many alcoholic drinks did you have in an average week? (Categorized as "yes" if drank 1 or more)

There is considerable variation in physical wellness indicators and mother's age, education levels, income, race and ethnicity, and county of residence. Those with low levels of education and/or income had a lower prevalence of dental hygiene (i.e., having teeth cleaned). Non-Hispanic whites and those who indicated their county of residence as New Castle had a higher prevalence of dental hygiene. Regarding high blood pressure, prevalence was higher among: mothers who were less than 20 years of age, non-Hispanic black mothers, mothers with 12 years of schooling; mothers with incomes of less than $10,000; and among mothers living in Kent County. Smoking prevalence was higher among those age 20-24 and those with 12 years of schooling, low levels of income; and among non-Hispanic white women. Drinking prevalence was higher among mothers age 35 and older; mothers with more than 12 years of schooling; mothers with incomes of $44,001 or more); among non-Hispanic whites; and those who indicated their county of residence as New Castle County.

Table 3. Pregnancy Wellness Indicators among Delaware Mothers, 2012-2015

Respondent characteristics	Had teeth cleaned during pregnanacy[1]		High Blood Pressure[2]		Smoked cigarettes during last 3 months of pregnancy[3]		Drank alcohol during last 3 months of pregnancy[4]	
	Yes (%)	95%CI	Yes (%)	95%CI	Yes (%)	95%CI	Yes (%)	95%CI
Maternal Age								
<20 years	49.6	42.1-57.1	20.8	14.8-26.7	12.1	7.4-16.7	4.5	1.3-7.6
20-24 years	30.5	27.1-33.9	14.9	12.3-17.5	16.5	13.8-19.2	4.4	2.9-6.0
25-34 years	43.6	41.4-45.8	14.4	12.8-15.9	10.9	9.5-12.3	7.5	6.3-8.7
35 years and older	52.5	48.2-56.8	16.6	13.5-19.7	8.9	6.4-11.4	10.0	7.4-12.6
Education								
<12 years of schooling	32.2	28.2-36.1	10.6	8.1-13.1	17.6	14.5-20.7	3.4	2.0-4.9
12 years of schooling	27.9	24.7-31.0	17.3	14.7-19.9	22.6	19.7-25.5	5.5	3.9-7.1
>12 years of schooling	51.7	49.5-54.0	15.7	14.1-17.3	5.7	4.7-6.8	8.8	7.5-10
Income								
<$10,000	27.0	23.4-30.7	17.7	14.7-20.8	26.5	23.0-30.0	5.3	3.4-7.1
$10,000-$26,000	30.9	26.7-35.1	13.8	10.8-16.8	15.1	11.9-18.3	3.1	1.7-4.6
$26,001-$44,000	33.4	29.0-37.7	16.8	13.4-20.2	11.8	8.9-14.7	4.8	2.9-6.8
$44,001 or more	55.2	52.7-57.6	15.1	13.4-16.9	6.0	4.9-7.2	9.8	8.4-11.3
Race and Ethnicity								
White non-Hispanic	47.7	45.5-49.9	16.6	15.0-18.3	15.0	13.4-16.6	8.6	7.3-9.8
Black non-Hispanic	35.4	32.0-38.8	18.3	15.7-21.0	11.0	8.8-13.2	6.1	4.4-7.8
Hispanic	35.5	31.1-39.9	7.0	4.8-9.2	3.8	2.1-5.5	4.2	2.4-6.1
Other non-Hispanic	39.7	30.3-49.0	9.2	3.9-14.5	10.5	4.4-16.5	5.3	1.1-9.4
County of Residence								
Kent County	39.6	36.0-43.2	18.3	15.5-21.1	13.5	11.0-16.1	5.4	3.7-7.1
New Castle County	45.6	43.4-47.9	14.2	12.7-15.8	10.8	9.4-12.1	8.4	7.2-9.6
Sussex County	36.1	32.4-39.7	14.6	11.9-17.2	13.5	10.9-16.0	4.7	3.1-6.3

Source: Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

1. *This question is about the care of your teeth during your most recent pregnancy...I had my teeth cleaned by a dentist or dental hygienist*
2. *Did you have any of the following problems during your most recent pregnancy? High blood pressure, hypertension (including pregnancy-induced hypertension [PIH]), preeclampsia, or toxemia*
3. *In the last 3 months of your pregnancy, how many cigarettes did you smoke on an average day? (Categorized as "yes" if smoked 1 or more)*
4. *During the last 3 months of your pregnancy, how many alcoholic drinks did you have in an average week? (Categorized as "yes" if drank 1 or more)*

In addition to these physical wellness indicators, certain morbidity indicators during pregnancy such as vaginal bleeding, kidney or bladder infection abruptio placentae and/or placenta previa, preterm labor, premature rupture of membranes (PROM), blood transfusion, were also examined (Table 4). Figures 77a and 77b display the prevalence of some of these morbidities.

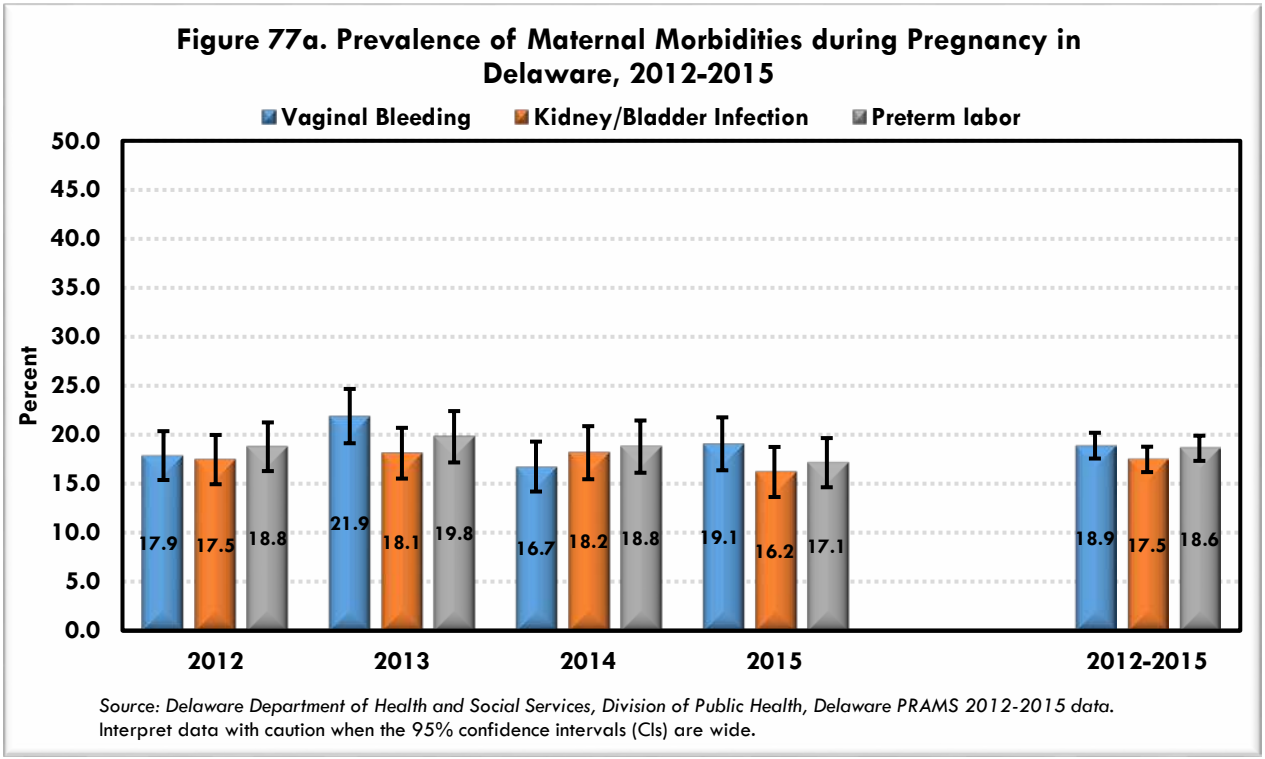


Figure 77a. Prevalence of Maternal Morbidities during Pregnancy in Delaware, 2012-2015
Vaginal Bleeding
Kidney/Bladder Infection
Preterm labor
Percent
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
17.9
17.5
18.8
21.9
18.1
19.8
16.7
18.2
18.8
19.1
16.2
17.1
18.9
17.5
18.6
2012
2013
2014
2015
2012-2015
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.

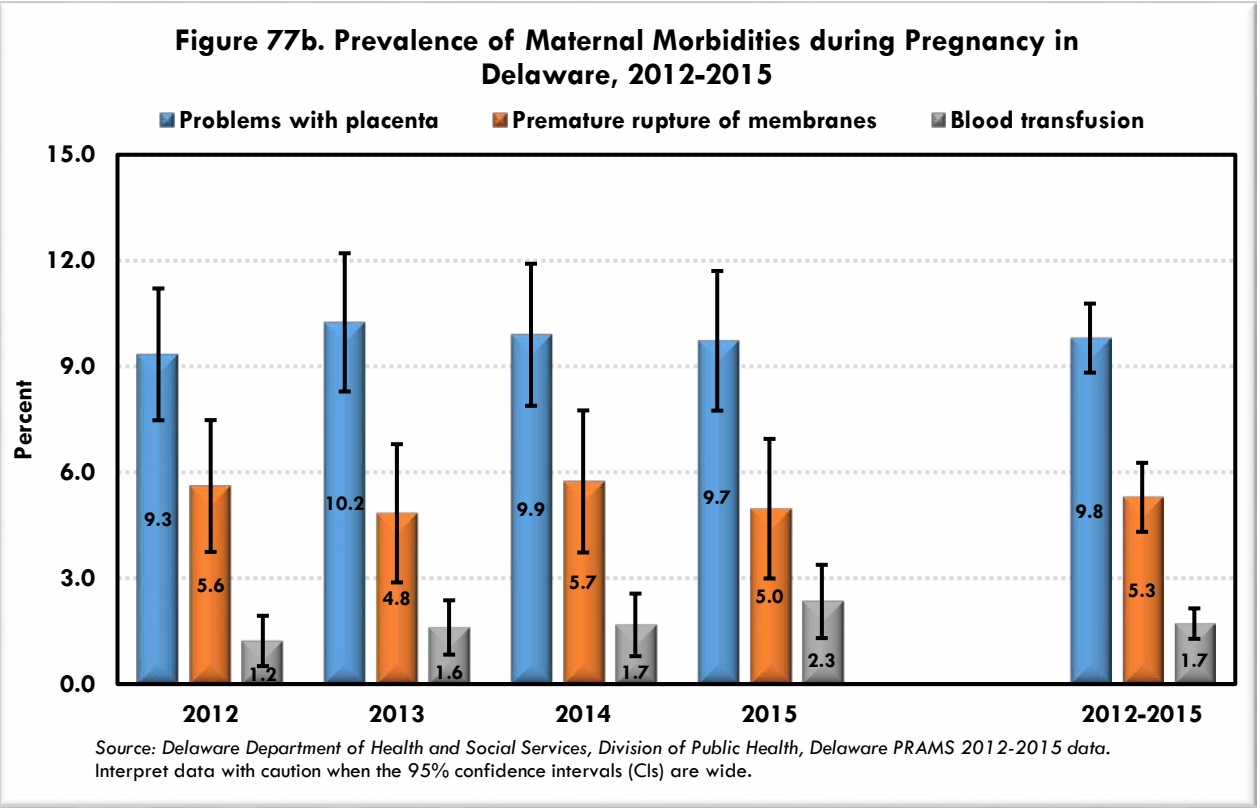


Figure 77b. Prevalence of Maternal Morbidities during Pregnancy in Delaware, 2012-2015
Problems with placenta
Premature rupture of membranes
Blood transfusion
Percent
15.0
12.0
9.0
6.0
3.0
0.0
9.3
5.6
1.2
10.2
4.8
1.6
9.9
5.7
1.7
9.7
5.0
2.3
9.8
5.3
1.7
2012
2013
2014
2015
2012-2015
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.

Table 4. Pregnancy Wellness Indicators and Morbidities among Delaware Mothers, 2012-2015

Respondent characteristics	Vaginal Bleeding		Kidney/Bladder Infection		Problems with placenta		Preterm labor		Premature rupture of membranes		Blood transfusion	
	Yes (%)	95%CI	Yes (%)	95%CI	Yes (%)	95%CI	Yes (%)	95%CI	Yes (%)	95%CI	Yes (%)	95%CI
Maternal Age												
<20 years	27.8	21.2-34.4	24.9	18.5-31.4	7.4	3.7-11.0	26.8	20.4-33.2	8.0	4.6-11.3	2.5	0.3-4.8
20-24 years	17.8	14.9-20.6	24.3	21.1-27.5	7.6	5.7-9.6	20.5	17.6-23.4	7.0	5.3-8.7	2.1	1.0-3.1
25-34 years	18.5	16.8-20.2	14.8	13.2-16.4	10.4	9.1-11.8	17.5	15.8-19.1	4.5	3.7-5.3	1.5	1.0-2.0
35 years and older	18.7	15.4-22.0	14.9	11.8-18.0	11.5	8.9-14.1	17.1	14.0-20.2	4.8	3.3-6.3	1.8	0.7-2.8
Education												
<12 years of schooling	21.5	18.1-24.9	23.9	20.4-27.5	7.0	5.0-9.0	22.6	19.1-26	7.2	5.3-9.0	2.6	1.3-3.9
12 years of schooling	16.9	14.3-19.4	20	17.2-22.8	8.6	6.7-10.5	22.9	20-25.7	7.1	5.5-8.6	2.2	1.2-3.1
>12 years of schooling	18.9	17.2-20.6	14.5	12.9-16.0	11.2	9.9-12.6	15.7	14.1-17.2	4.0	3.3-4.7	1.3	0.8-1.8
Income												
<$10,000	23.7	20.3-27.2	26.1	22.5-29.7	8.8	6.6-10.9	22.5	19.2-25.8	6.8	5.1-8.5	2.8	1.5-4.1
$10,000-$26,000	18.6	15.2-21.9	18.4	14.9-21.9	7.7	5.4-10.0	22.6	18.9-26.2	6.3	4.5-8.2	1.2	0.3-2.1
$26,001-$44,000	17.9	14.4-21.5	19.1	15.5-22.8	9.5	6.9-12.0	22.4	18.6-26.2	7.5	5.3-9.7	2.0	0.7-3.3
$44,001 or more	17.8	15.9-19.6	13.7	12.1-15.4	11.3	9.8-12.8	14.5	12.9-16.2	3.8	3.1-4.6	1.2	0.7-1.8
Race and Ethnicity												
White non-Hispanic	17.8	16.1-19.5	16.9	15.2-18.6	11.6	10.2-13	17.3	15.6-18.9	4.9	4.1-5.8	1.2	0.7-1.7
Black non-Hispanic	22.2	19.2-25.1	18.7	15.9-21.5	7.5	5.8-9.3	23.5	20.6-26.5	6.1	4.7-7.5	2.6	1.5-3.7
Hispanic	16.8	13.5-20.2	18.2	14.7-21.7	7.1	4.8-9.4	15.9	12.7-19.1	6.0	4.2-7.9	2.7	1.2-4.1
Other non-Hispanic	23.0	15.1-30.9	21.4	13.6-29.3	12.5	6.0-19.0	19.5	12.2-26.9	3.2	0.4-6.1	1.0	0.0-2.9
County of Residence												
Kent County	21.2	18.2-24.2	18.4	15.6-21.3	8.8	6.8-10.9	20.1	17.2-23.0	4.8	3.5-6.2	1.4	0.6-2.3
New Castle County	18.5	16.8-20.2	15.9	14.3-17.6	10.3	9.0-11.6	18.0	16.3-19.6	5.8	4.9-6.7	1.9	1.3-2.5
Sussex County	17.6	14.7-20.5	21.0	17.9-24.1	9.5	7.3-11.7	19.0	16.1-21.8	4.3	3.0-5.5	1.5	0.6-2.4

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

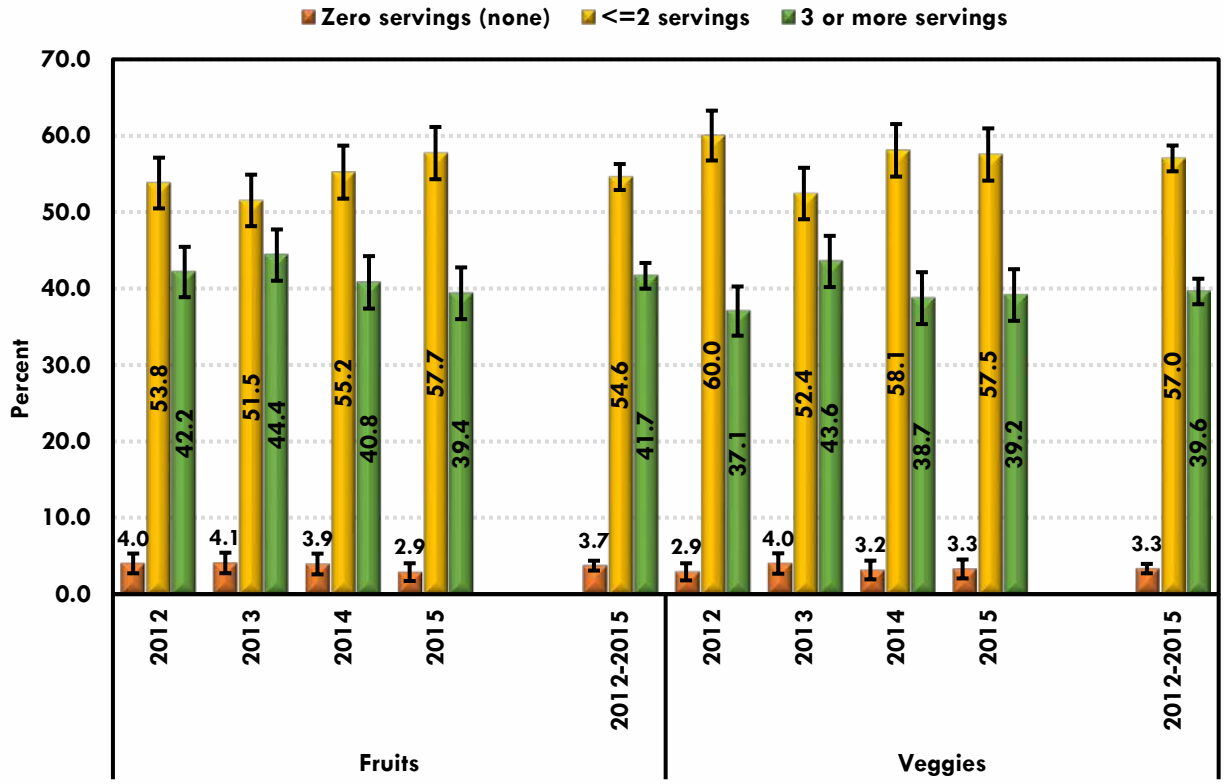
Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

Did you have any of the following problems during your most recent pregnancy....For each item, check No if you did not have the problem or Yes if you did....

Vaginal bleeding; Kidney or bladder (urinary tract) infection (UTI); Problems with the placenta (such as abruptio placentae or placenta previa); Labor pains more than 3 weeks before my baby was due (preterm or early labor); Water broke more than 3 weeks before my baby was due (premature rupture of membranes [PROM]); I had to have a blood transfusion

Physical wellness also encompasses healthy lifestyles. Delaware mothers were also asked: "*During the last 3 months of your most recent pregnancy, about how many servings of fruit and/or vegetables did you have in a day?*" with these response options: zero servings (none), one or two servings a day, three or four servings a day, and five or more servings a day (Figure 78) Most Delaware mothers consumed fruits and vegetables. Fruit and vegetable consumption was also stratified by mother's age, education, income, race and ethnicity, and county of residence (Table 5). In general, the consumption of one or two servings of fruits and vegetables increased with increases in education and income levels.

Figure 78. Percentage of mothers who indicated consuming fruits and vegetables daily* during last three months of pregnancy in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**During the last 3 months of your most recent pregnancy, about how many servings of fruit and/or vegetables did you have in a day?*
Two separate questions with response options: 1) Zero servings (none); 2) 1 or 2 servings a day; 3) 3 or 4 servings a day; 4) 5 or more servings a day. Responses 3 and 4 were combined.

Table 5. Pregnancy wellness indicators and fruits and vegetable consumption among Delaware mothers, 2012-2015

Respondent characteristics	Fruits (95%CI)†			Vegetables (95%CI)†		
	Zero servings (None)	<=2 servings	3 or more servings	Zero servings (None)	<=2 servings	3 or more servings
Maternal Age						
<20 years	3.3 (0.8-5.9)	49.2 (41.9-56.5)	47.5 (40.2-54.8)	12.3 (7.4-17.2)	45.7 (38.4-52.9)	42.0 (34.7-49.3)
20-24 years	5.1 (3.5-6.7)	55.2 (51.5-59)	39.7 (36.0-43.3)	4.9 (3.3-6.5)	61.9 (58.3-65.6)	33.2 (29.6-36.7)
25-34 years	3.4 (2.6-4.2)	54.9 (52.7-57.2)	41.7 (39.5-43.9)	2.4 (1.7-3.0)	57.5 (55.3-59.7)	40.1 (37.9-42.3)
35 years and older	3.1 (1.6-4.7)	54.6 (50.3-58.9)	42.3 (38.1-46.6)	1.3 (0.3-2.4)	52.6 (48.3-56.9)	46.1 (41.8-50.4)
Education***						
<12 years of schooling	5.0 (3.2-6.9)	46.0 (41.9-50.2)	48.9 (44.7-53.1)	5.2 (3.3-7.0)	54.3 (50.1-58.5)	40.5 (36.4-44.7)
12 years of schooling	4.1 (2.8-5.5)	53.6 (50.1-57.1)	42.2 (38.8-45.7)	4.3 (2.9-5.7)	56.4 (52.9-59.9)	39.3 (35.9-42.7)
>12 years of schooling	3.2 (2.4-3.9)	57.5 (55.3-59.7)	39.3 (37.2-41.5)	2.4 (1.7-3.1)	58.2 (56.0-60.4)	39.5 (37.3-41.6)
Income***						
<$10,000	5.6 (3.8-7.4)	53.9 (49.9-57.9)	40.5 (36.6-44.5)	3.8 (3.0-4.7)	59.2 (57.0-61.4)	37.0 (34.8-39.2)
$10,000-$26,000	3.7 (2-5.5.0)	56.5 (52.0-60.9)	39.8 (35.4-44.2)	3.7 (2.3-5.0)	46.0 (42.4-49.6)	50.3 (46.8-53.9)
$26,001-$44,000	3.4 (1.8-5.1)	57.7 (53.1-62.3)	38.9 (34.3-43.4)	2.8 (1.2-4.3)	49.9 (45.3-54.5)	47.3 (42.7-52.0)
$44,001 or more	1.9 (1.2-2.6)	58.8 (56.4-61.2)	39.3 (36.9-41.7)	4.9 (0.9-8.9)	56.3 (46.8-65.8)	38.8 (29.4-48.1)
Race and Ethnicity***						
White non-Hispanic	3.8 (3.0-4.7)	59.2 (57.0-61.4)	37.0 (34.8-39.2)	3.3 (2.5-4.2)	60.8 (58.6-63.0)	35.9 (33.7-38.0)
Black non-Hispanic	3.7 (2.3-5)	46.0 (42.4-49.6)	50.3 (46.8-53.9)	3.0 (1.8-4.3)	49.9 (46.4-53.5)	47.0 (43.4-50.6)
Hispanic	2.8 (1.2-4.3)	49.9 (45.3-54.5)	47.3 (42.7-52.0)	4.3 (2.4-6.3)	55.6 (51.1-60.2)	40.0 (35.5-44.5)
Other non-Hispanic	4.9 (0.9-8.9)	56.3 (46.8-65.8)	38.8 (29.4-48.1)	3.4 (0.0-6.9)	55.6 (46.2-65.1)	41.0 (31.6-50.3)
County of Residence						
Kent County	4.3 (2.8-5.8)	55.6 (51.9-59.2)	40.1 (36.5-43.7)	3.1 (1.8-4.4)	56.7 (53.1-60.4)	39.0 (35.3-42.8)
New Castle County	3.6 (2.7-4.4)	53.8 (51.6-56)	42.6 (40.4-44.8)	3.3 (2.5-4.2)	57.1 (54.8-59.3)	55.6 (51.1-60.2)
Sussex County	3.6 (2.2-5.0)	55.8 (52-59.6)	40.6 (36.8-44.3)	3.6 (2.2-5.0)	57.3 (53.5-61.1)	55.6 (46.2-65.1)

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

***Maternal education, income, and race and ethncity were associated with fruits and vegetable consumption. Age was associated with vegetable consumption, but not with fruits. Maternal county of residence was not associated with fruits and/or vegetable consumption.

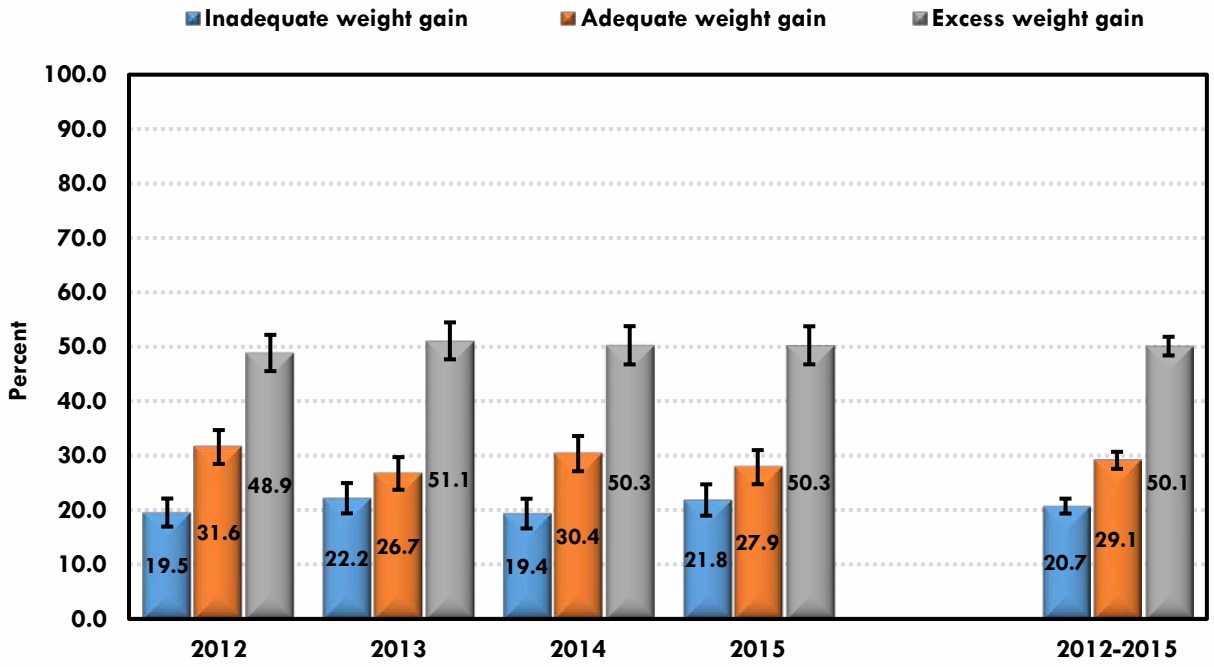
†*During the last 3 months of your most recent pregnancy, about how many servings of fruit and/or vegetables did you have in a day?*

Two separate questions with response options: 1) Zero servings (none); 2) 1 or 2 servings a day; 3) 3 or 4 servings a day; 4) 5 or more servings a day. Responses 3 and 4 were combined.

Weight gain during pregnancy is another integral part of physical wellness. The American College of Obstetricians and Gynecologists (ACOG) provides practice guidelines based on the Institute of Medicine's recommended weight gain for women based on the prepregnancy body mass index (BMI). PRAMS data contain prepregnancy BMI information as well as weight gained during pregnancy from birth certificate data. Using this information recommended weight gain during pregnancy was estimated. Figure 79 displays weight gain during 2012-2015 among Delaware mothers. It is evident that the prevalence for excess weight gain has remained stable at 50 percent (95% CI: 48.4-51.8), which approximates to about 5,000 women annually (95% CI: 4,866-5,216).

Though evidence is mixed on weight gain during pregnancy, excess weight gain has been associated with large for gestational age babies and increased primary cesareans rates. Excess weight gain during pregnancy was stratified by age, education, income, race and ethnicity, and county of residence (Table 6).

Figure 79. Percentage of Mothers who had Inadequate, Adequate and Excess Weight Gain* during pregnancy in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*The American College of Obstetricians and Gynecologists (ACOG) recommended weight gain for mothers based on prepregnancy body mass index (BMI).

Table 6. Pregnancy Wellness Indicator of Weight Gained during Pregnancy among Delaware Mothers, 2012-2015

Respondent characteristics	Weight Gained During Pregnancy†		
	Inadequate	Adequate	Excess
Age			
<20 years	24.1 (17.7-30.4)	30.1 (23.3-36.9)	45.9 (38.5-53.2)
20-24 years	21.1 (18.1-24.1)	27.9 (24.5-31.2)	51.2 (47.5-54.9)
25-34 years	20.9 (19.1-22.8)	27.8 (25.9-29.8)	51.2 (48.9-53.4)
35 years and older	18.0 (14.7-21.3)	34.6 (30.5-38.7)	47.6 (43.3-51.9)
Education***			
<12 years of schooling	29.8 (26.0-33.6)	30.1 (26.2-34.0)	40.1 (36.0-44.2)
12 years of schooling	23.9 (21.0-26.9)	25.6 (22.6-28.7)	50.4 (46.9-53.9)
>12 years of schooling	16.7 (15.1-18.4)	30.4 (28.3-32.5)	52.8 (50.6-55.1)
Income***			
<$10,000	22.7 (19.3-26.0)	26.7 (23.0-30.3)	50.7 (46.5-54.8)
$10,000-$26,000	25.5 (21.6-29.4)	30.6 (26.4-34.8)	43.9 (39.4-48.4)
$26,001-$44,000	19.8 (16.1-23.5)	26.7 (22.6-30.8)	53.5 (48.8-58.2)
$44,001 or more	17.8 (15.9-19.6)	30.3 (28.0-32.6)	51.9 (49.5-54.4)
Race and Ethnicity***			
White non-Hispanic	17.9 (16.2-19.6)	29.5 (27.4-31.5)	52.7 (50.4-54.9)
Black non-Hispanic	23.1 (20.1-26.0)	25.1 (22.0-28.2)	51.9 (48.3-55.5)
Hispanic	28.6 (24.4-32.7)	30.4 (26.2-34.7)	41.0 (36.4-45.5)
Other non-Hispanic	18.4 (11.1-25.6)	38.6 (29.3-47.9)	43.0 (33.6-52.5)
County of Residence			
Kent County	21.3 (18.3-24.3)	28.1 (24.7-31.5)	50.6 (46.8-54.3)
New Castle County	19.6 (17.9-21.4)	28.8 (26.8-30.9)	51.5 (49.3-53.8)
Sussex County	23.3 (20.1-26.6)	31.2 (27.7-34.8)	45.5 (41.6-49.3)

Source: Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

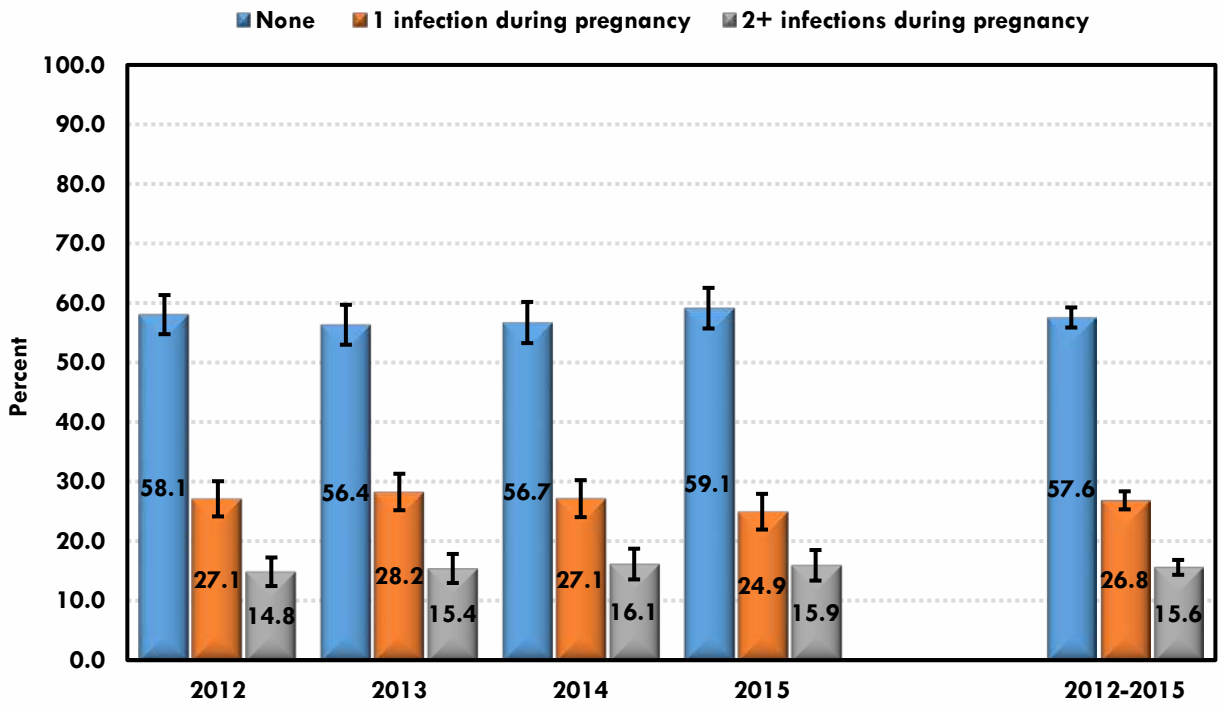
***Maternal education, income, and race and ethncity were associated with weight gained during pregnancy. Maternal age and county of residence were not associated with weight gained during pregnancy.

†Weight gain during pregnancy is calculated for those with singleton births using prepregnancy body mass index (BMI). ACOG opinion see:https://www.acog.org/Clinical-Guidance-and-Publications/Committee-Opinions/Committee-on-Obstetric-Practice/Weight-Gain-During-Pregnancy#14

Infections present during pregnancy are associated with maternal and infant health outcomes. PRAMS data contains questions on infections during pregnancy, self-reported by mothers. Mothers were asked… "*During your most recent pregnancy, did a doctor, nurse, or other health care worker*

tell you that you had: a) genital warts (HPV); b) herpes; c) Chlamydia; d) Gonorrhea; e) Pelvic inflammatory disease; f) syphilis; g) Group B Strep (Beta Strep); h) Bacterial vaginosis; i) Trichomoniasis; j) yeast infections; k) urinary tract infection (UTI); other." Binary responses were combined to create a score and categorized as: none; one mention of infection; and two or more mentions of infections. The prevalence of infections during pregnancy increased slightly from 2012 to 2015. The four-year average prevalence for two or more infections during pregnancy was 15.6 (95% CI: 14.3-16.8), which approximates to 1,600 women (Figure 80).

Figure 80. Percentage of Mothers who Indicated having Infections* during Pregnancy in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**During your most recent pregnancy, did a doctor, nurse, or other health care worker tell you that you had: a) genital warts (HPV); b) herpes; c) Chlamydia; d) Gonorrhea; e) Pelvic inflammatory disease; f) Syphilis; g) Group B Strep (Beta Strep); h) Bacterial vaginosis; i) Trichomoniasis;ji) yeast infections; k) urinary tract infection (UTI); Other.* Binary responses were combined to create a score and categorized as: 1) none; 2) 1 mention of infection; 3) 2 or more mentions of infections.

Table 7 displays the infections stratified by maternal age, education, income, race and ethnicity, and county of residence. While the prevalence of infection declined with age and income levels, it was highest among mothers with a high school education, 48.5 percent (95% CI: 45.0-52.0), and lowest among Hispanics, 31.0 percent (95% CI: 26.7-35.2).

Table 7. Pregnancy Wellness Indicators and Infections during Pregnancy among Delaware Mothers, 2012-2015

Maternal characteristics	Infections During Pregnancy†	
	None	One or more
Age***		
<20 years	47.1 (39.8-54.5)	52.9 (45.5-60.2)
20-24 years	50.9 (47.2-54.7)	49.1 (45.3-52.8)
25-34 years	59.9 (57.7-62.1)	40.1 (37.9-42.3)
35 years and older	62.3 (58.1-66.4)	37.7 (33.6-41.9)
Education***		
<12 years of schooling	61.2 (57.1-65.4)	38.8 (34.6-42.9)
12 years of schooling	51.5 (48.0-55.0)	48.5 (45.0-52.0)
>12 years of schooling	59.1 (56.9-61.3)	40.9 (38.7-43.1)
Income***		
<$10,000	47.9 (43.9-52.0)	52.1 (48.0-56.1)
$10,000-$26,000	57.5 (53.0-61.9)	42.5 (38.1-47.0)
$26,001-$44,000	54.9 (50.3-59.5)	45.1 (40.5-49.7)
$44,001 or more	61.3 (58.9-63.6)	38.7 (36.4-41.1)
Race and Ethnicity***		
White non-Hispanic	59.6 (57.3-61.8)	40.5 (38.2-42.7)
Black non-Hispanic	46.4 (42.8-50.0)	53.6 (50.0-57.2)
Hispanic	69.0 (64.8-73.3)	31.0 (26.7-35.2)
Other non-Hispanic	53.0 (43.5-62.5)	47.0 (37.5-56.5)
County of Residence***		
Kent County	53.4 (49.7-57.1)	46.6 (42.9-50.3)
New Castle County	58.7 (56.5-60.9)	41.3 (39.1-43.5)
Sussex County	58.8 (55.0-62.6)	41.2 (37.4-45.0)

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment System (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

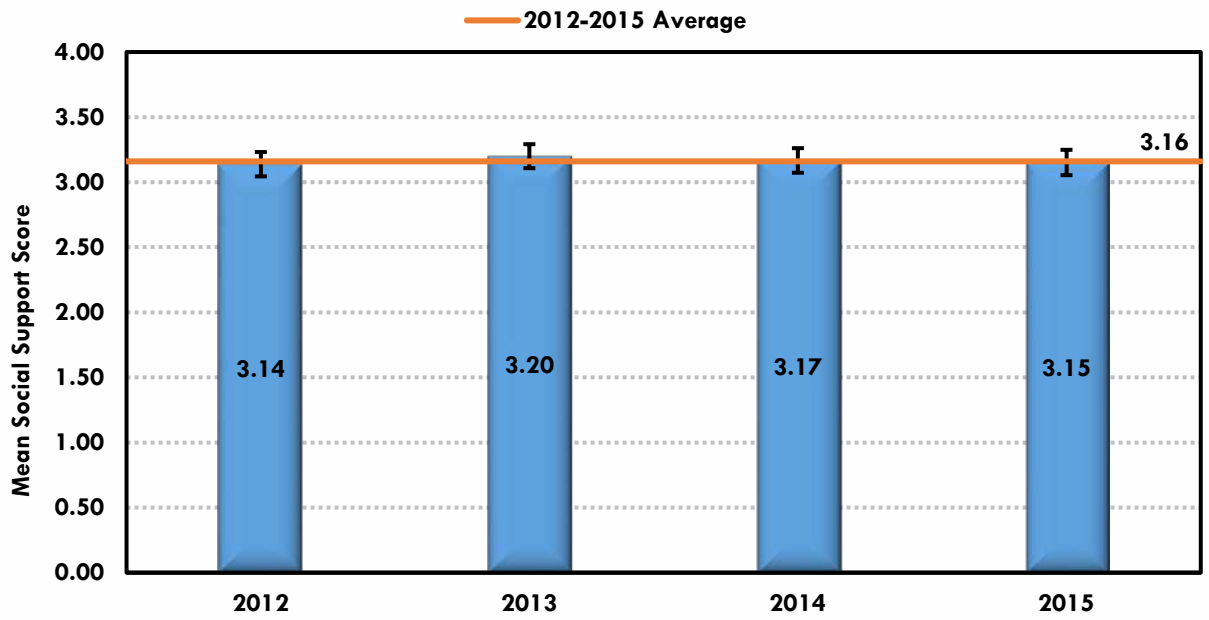
†*During your most recent pregnancy, did a doctor, nurse, or other health care worker tell you that you had: a) Genital warts (HPV); b) Herpes; c) Chlamydia; d) Gonorrhea; e) Pelvic inflammatory disease; f) Syphilis; g) Group B Strep (Beta Strep); h) Bacterial vaginosis; i) Trichomoniasis;ji) Yeast infections; k) Urinary tract infection (UTI); Other.* Binary responses were combined to create a score and categorized as: 1) none; 2) 1 mention of infection; 3) 2 or more mentions of infections.

***Maternal age, education, income, race and ethncity, and county of residence were associated with infections during pregnancy.

3.7 Social wellness

One proxy measure for social wellness could be a well-developed support system. Having access to support is critical during pregnancy and some proxy variables that capture this domain in PRAMS are… "*During your most recent pregnancy, would you have had the kinds of help listed below if you needed them? For each one, check No if you would have not had it or Yes if you would have had it… a) someone to loan me $50; b) someone to help me if I were sick and needed to be in bed; c) someone to take me to the clinic or doctor's office if I needed a ride; d) someone to talk with about my problems.*" These binary items were combined to create a scale that was internally consistent (Cronbach alpha = 0.87) with higher scores indicating higher social support and vice-versa. The average social support scores for mothers in Delaware during 2012-2015 remained relatively stable (Figure 81).

Figure 81. Social Support* among Mothers during Pregnancy in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**During your most recent pregnancy, would you have had the kinds of help listed below if you needed them? For each one, check No if you would have not had it or Yes if you would have had it… a) someone to loan me $50; b) someone to help me if I were sick and needed to be in bed; c) someone to take me to the clinic or doctor's office if I needed a ride; d) someone to talk with about my problems."*

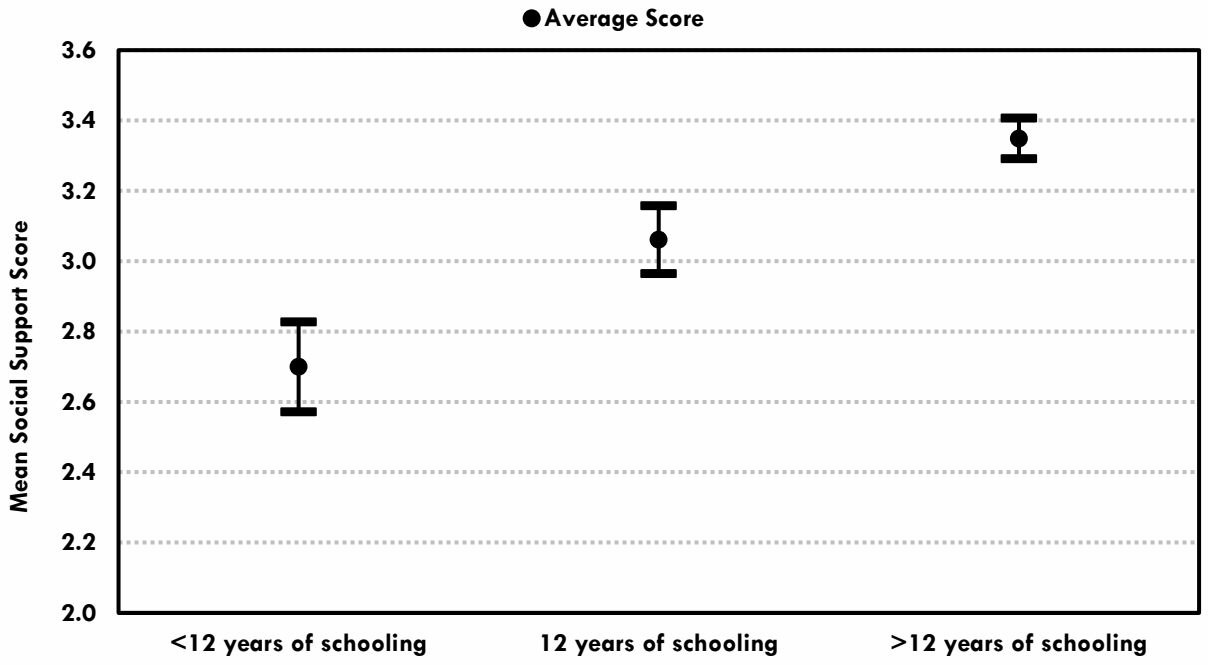
However, when social support is stratified by maternal age, education, income, race and ethnicity, and county of residence, social support varies. A *post hoc* analysis adjusting for multiple comparisons was performed using one-way ANOVA with Bonferroni correction to test differences in average social support scores by education, income, and race and ethnicity. Although there were no significant differences in social support by maternal age and county of residence, there were significant differences in social support during pregnancy for mothers with low levels of education and income (Figures 82 and 83). For instance, mothers with less than 12 years schooling

on average (M = 2.70; 95% CI: 2.57-2.83) had the lowest scores, followed by those with 12 years of schooling (M = 3.06; 95% CI: 2.96-3.16). Those with more than 12 years of schooling on average had greater social support (M = 3.3; 95% CI: 3.3-3.4).

Similarly, mothers with incomes less than $10,000 had the lowest level of social support (M = 2.88; 95% CI: 2.77-3.00); this group was followed by mothers whose incomes were between $10,000 and $26,000 (M = 2.97; 95% CI: 2.84-3.09) and mothers whose incomes were between $26,001 and $44,000 (M = 3.22; 95% CI: 3.10-3.35). Those with incomes of $44,000 or higher (M = 3.39; 95% CI: 3.33-3.45) had the highest level of social support.

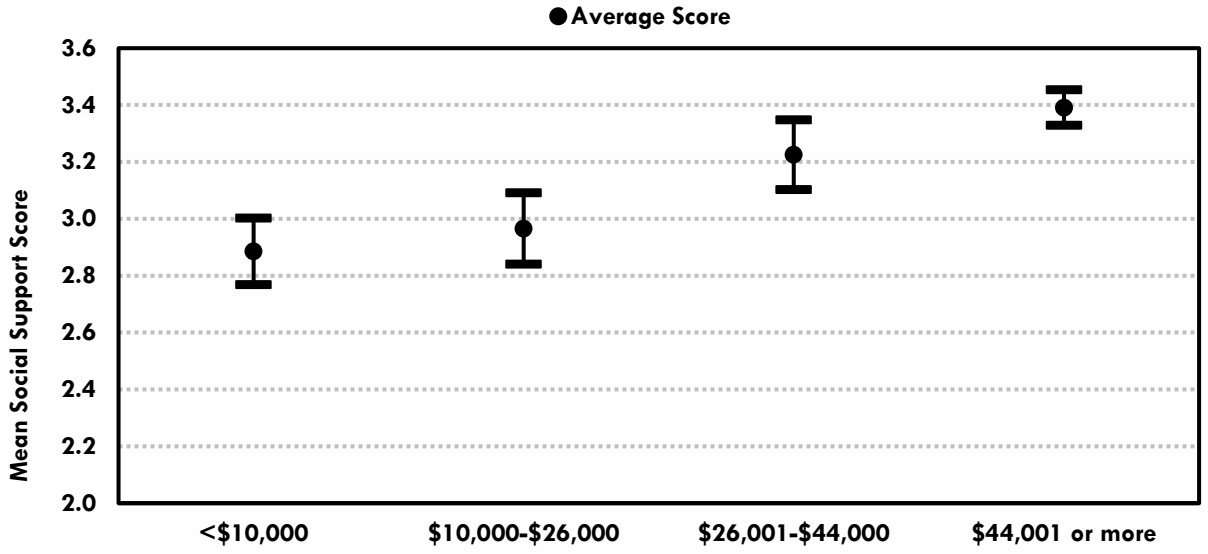
Differences were pronounced for race and ethnic minorities (Figure 84). Hispanics had the lowest levels of social support on average (M = 2.66; 95% CI: 2.51-2.80), followed by other race and ethnicities (M = 2.86; 95% CI: 2.58-3.14), followed by non-Hispanic blacks (M = 3.0; 95% CI: 2.90-3.10), and non-Hispanic whites (M = 3.44; 95% CI: 3.39-3.50)

Figure 82. Social Support* among Mothers by Mother's Education in Delaware, 2012-2015



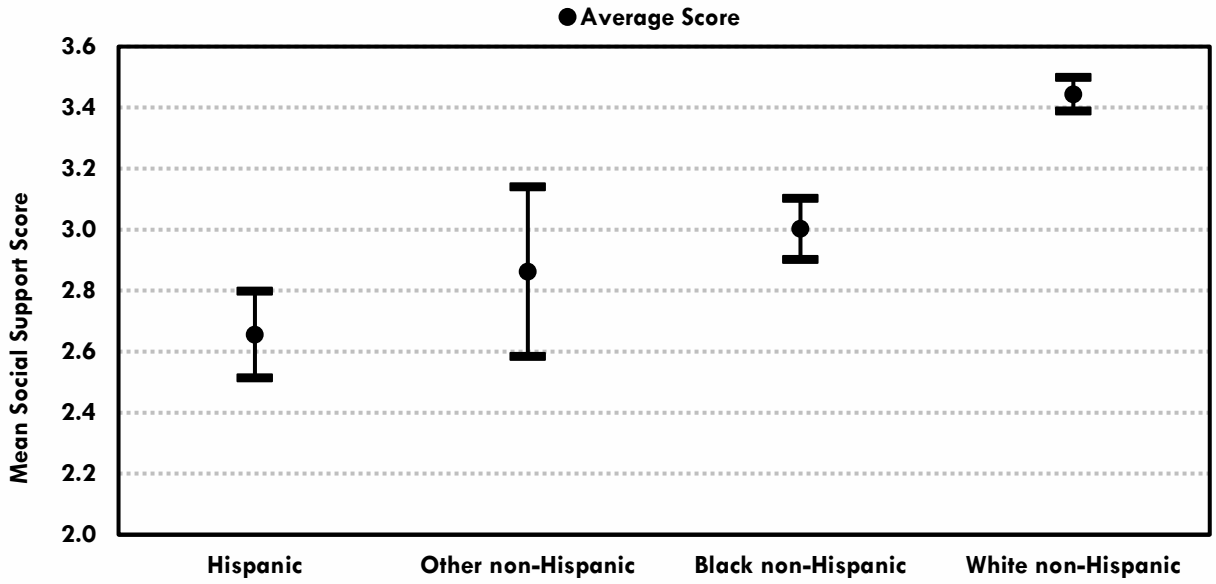
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**During your most recent pregnancy, would you have had the kinds of help listed below if you needed them? For each one, check No if you would have not had it or Yes if you would have had it… a) someone to loan me $50; b) someone to help me if I were sick and needed to be in bed; c) someone to take me to the clinic or doctor's office if I needed a ride; d) someone to talk with about my problems."*

Figure 83. Social Support* among Mothers by Mother's Income in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**During your most recent pregnancy, would you have had the kinds of help listed below if you needed them? For each one, check No if you would have not had it or Yes if you would have had it… a) someone to loan me $50; b) someone to help me if I were sick and needed to be in bed; c) someone to take me to the clinic or doctor's office if I needed a ride; d) someone to talk with about my problems."*

Figure 84. Social Support* among Mothers by Mother's Race and Ethnicity in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**During your most recent pregnancy, would you have had the kinds of help listed below if you needed them? For each one, check No if you would have not had it or Yes if you would have had it… a) someone to loan me $50; b) someone to help me if I were sick and needed to be in bed; c) someone to take me to the clinic or doctor's office if I needed a ride; d) someone to talk with about my problems."*

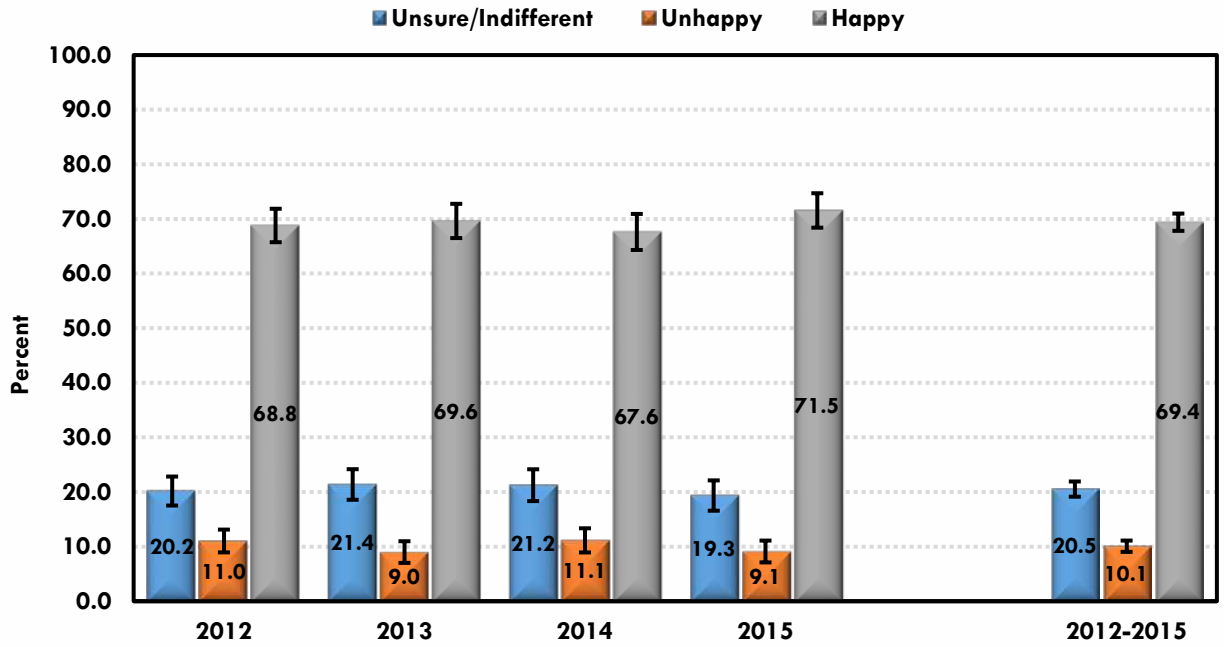
3.8 Spiritual wellness

The importance of spiritual wellness was described earlier. No specific proxy variables were available in PRAMS data to gauge spiritual wellness.

3.9 Other experiences during pregnancy

Other experiences that do not fall under the pregnancy wellness domain are captured here. These experiences relate to a mother's feelings about pregnancy (Figure 85), fetal kick counts, quality of care (i.e. satisfaction with services/advice), information and/or services received (i.e., counseling, smoking cessation, vaccination etc.).

Figure 85. Percentage of Mothers who Indicated Feeling "Happy" about being Pregnant in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**How did you feel when you found out you were pregnant with your new baby?* Response options: 1) very unhappy to be pregnant; 2) unhappy to be pregnant; 3) not sure; 4) happy to be pregnant; 5) very happy to be pregnant. Responses 1 and 2 combined to indicate "unhappy" and 4 and 5 combined to indicate "happy."

A critical maternal experience during pregnancy is fetal movement, which is an indicator of fetal health. Kick counts or (fetal movement counting) is one way a mother can monitor the movements of an unborn and typically most women are able to feel the infant's movements between 16 to 20 weeks of gestation. Delaware initiated an awareness campaign on Kick Counts in 2012. These data are captured in the answers to the PRAMS survey question: "*During any of your prenatal care visits, did a doctor, nurse, or other health care worker talk with you about fetal (baby) kick counts and how to do them?*" with a response option of "yes" or "no." Approximately 89 percent of Delaware mothers indicated "yes" to the question of whether a health care provider talked about kick counts (Figure 86). Maternal age, income, race and ethnicity, and county of residence were not associated with those answers. However, maternal education (i.e. mothers with less than 12

years of schooling) was associated with whether or not mothers recalled their health care providers talking about kick counts.

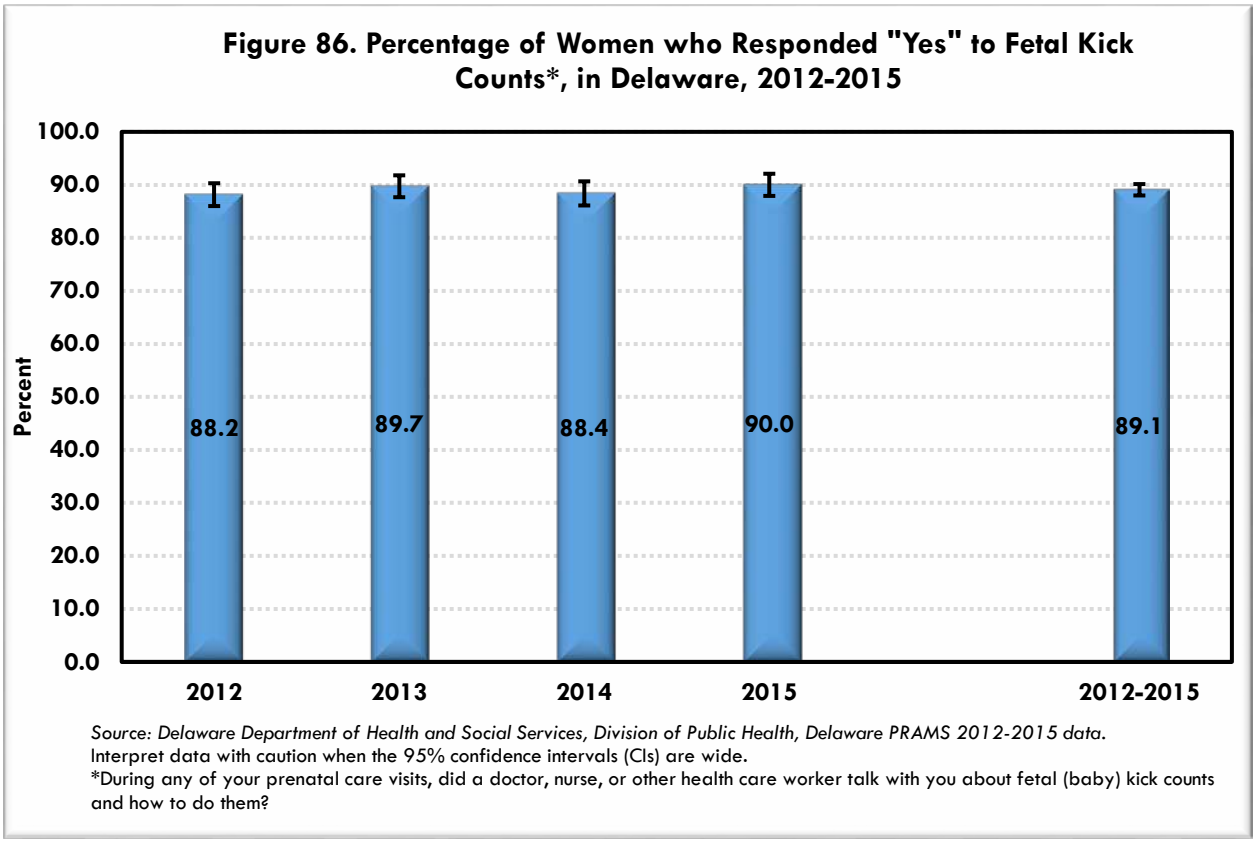
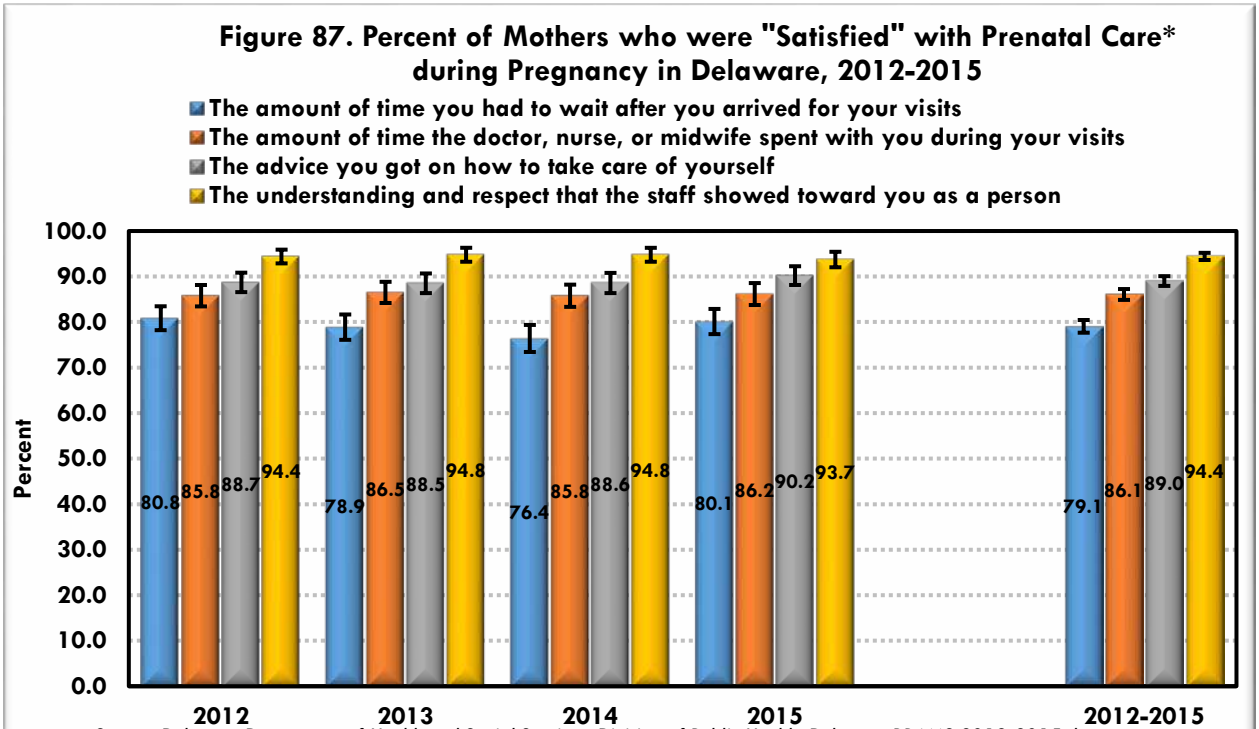
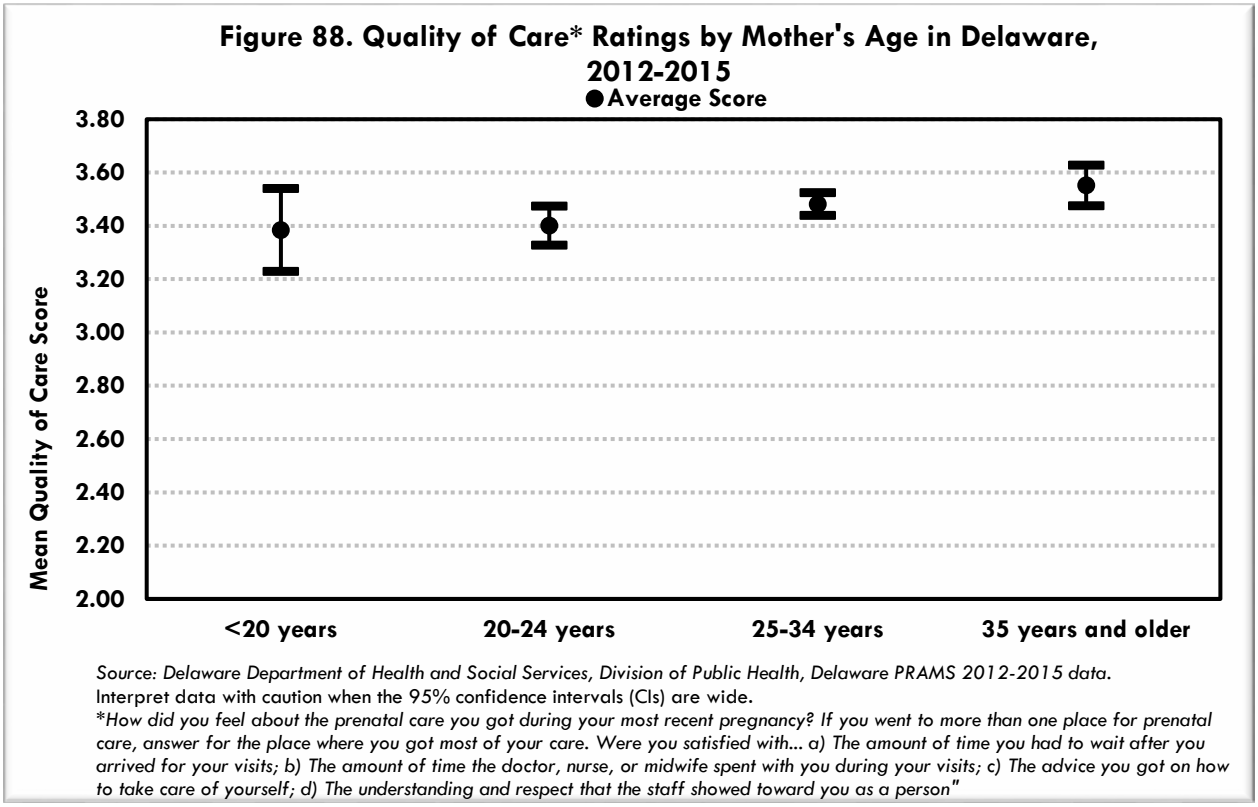


Figure 87 provides an overview of Delaware mothers' prenatal care experiences, which can be viewed as a proxy to quality of care. These four items were combined to create a scale (Cronbach alpha = 0.70) with moderate reliability. Quality of care ratings were stratified by maternal age, education, income, race and ethnicity, county of residence. A *post hoc* analysis adjusting for multiple comparisons was performed using one-way ANOVA with Bonferroni correction to test differences in average quality of care ratings. Although there were no significant differences in quality of care ratings by maternal education, income, and race and ethnicity, there were significant differences in quality of care ratings during pregnancy for mothers who were younger and mothers who lived in Sussex County (Figures 88 and 89). For instance, mothers who were less than 20 years of age on average had lowest score (M = 3.38; 95% CI: 3.23-3.54), followed by mothers who were 20-24 years of age (M = 3.40; 95% CI: 3.33-3.47), 25-34 years of age (M = 3.48; 95% CI: 3.44-3.52), and 35 and older (M = 3.55; 95% CI: 3.48-3.63).

Similarly, mothers who indicated their county of residence as Sussex had lower ratings of quality of care (M = 3.36; 95% CI: 3.28-3.53); followed by mothers who indicated their county of residence as Kent (M = 3.46; 95% CI: 3.39-3.53); and those who indicated their county of residence as New Castle (M = 3.51; 95% CI: 3.47-3.55) who rated their quality of care highest.

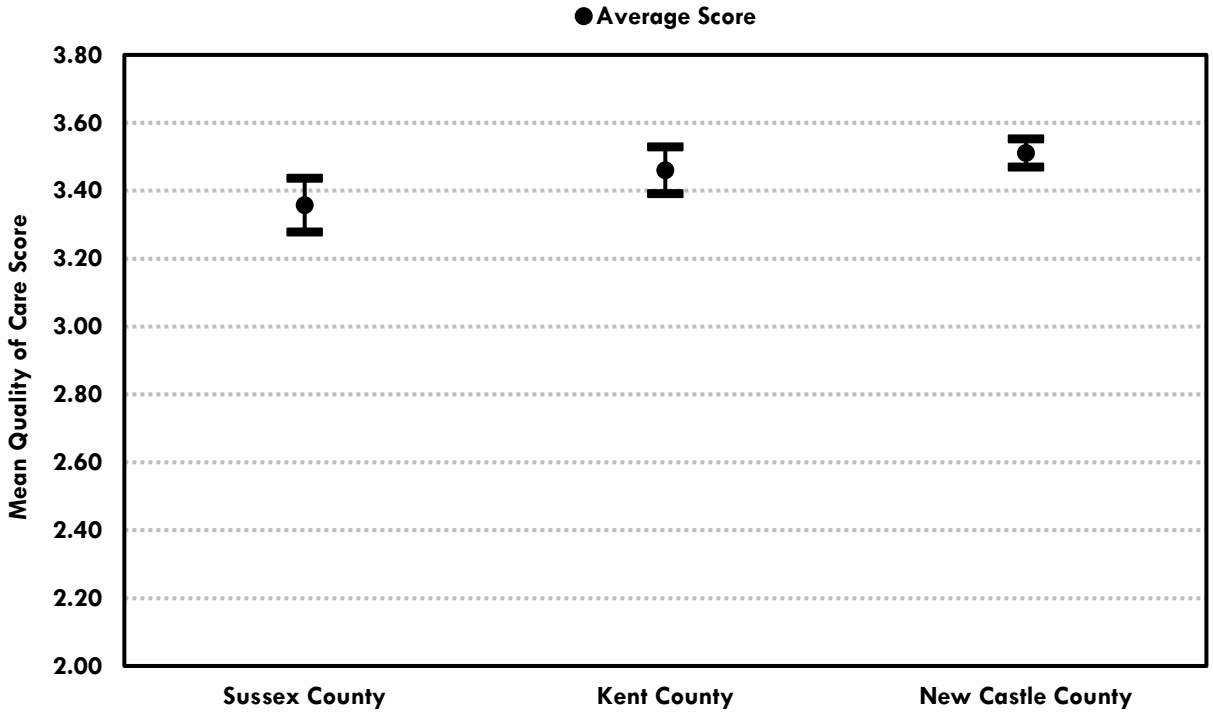


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*How did you feel about the prenatal care you got during your most recent pregnancy? If you went to more than one place for prenatal care, answer for the place where you got most of your care. Satisfied indicated by a "yes" or "no" response.



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**How did you feel about the prenatal care you got during your most recent pregnancy? If you went to more than one place for prenatal care, answer for the place where you got most of your care. Were you satisfied with... a) The amount of time you had to wait after you arrived for your visits; b) The amount of time the doctor, nurse, or midwife spent with you during your visits; c) The advice you got on how to take care of yourself; d) The understanding and respect that the staff showed toward you as a person"*

Figure 89. Quality of Care* Ratings by Mother's County of Residence in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**How did you feel about the prenatal care you got during your most recent pregnancy? If you went to more than one place for prenatal care, answer for the place where you got most of your care. Were you satisfied with... a) The amount of time you had to wait after you arrived for your visits; b) The amount of time the doctor, nurse, or midwife spent with you during your visits; c) The advice you got on how to take care of yourself; d) The understanding and respect that the staff showed toward you as a person"*

POST-PREGNANCY WELLNESS

Post-pregnancy wellness is conceptualized as wellness after the pregnancy (i.e., postpartum) and is one of the most crucial stages as it enables a mother's body and mind to heal so she can care for the newborn. Typically postpartum care occurs during the six weeks after childbirth; however, the process is contingent upon the mother's health prior to childbirth, during childbirth, and the associated morbidities that may be part of childbearing. For instance, postpartum depression is one of the most common complications of childbearing; a meta-analytic review found that approximately 13 percent of women experience a major depressive episode during the first postpartum year.[9] In addition, the mode of delivery (i.e., vaginal or cesarean) may add and/or exacerbate existing morbidities (i.e., postpartum hemorrhage, venous thromboembolic disease etc.), substantially impacting the quality of life. Like prepregnancy and pregnancy wellness, post-pregnancy wellness focuses on the eight dimensions of emotional, environmental, financial, intellectual, occupational, physical, social, and spiritual wellness. While wellness is a multidimensional concept and measuring it is complex, the term serves as a tool to understand how these eight dimensions may impact well-being.

4.1 Emotional wellness

Postpartum depression is perhaps one of the core indicators of emotional wellness as postpartum depression (PPD) is an important mental health issue that impacts 7-13 percent[9,10] of women and if untreated may impact infant development and family. The PRAMS questionnaire contains two specific questions on postpartum depression. The first question asks a mother, "*Since your new baby was born, how often have you felt down, depressed, or hopeless*?" with response options as: a) always; b) often; c) sometimes; d) rarely; and never. The second question asks the mother, "*Since your new baby was born, how often have you had little interest or little pleasure in doing things*?" with the same response options. Women responding "always" or "often" to either question were classified as experiencing PPD.

In Delaware, 13 percent (95% CI: 12.2-14.6) of mothers who gave birth experienced postpartum depression, which approximates to about 1,366 women (95% CI: 1,246-1,486) annually (Figure 90). During this period, the prevalence has been relatively stable. The Delaware PPD rate for each year was higher than the 2012 national rate of 11.5.[11] There were significant differences in PPD when stratified by maternal age, education, income, and race and ethnicity.

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[9] O'hara MW, Swain AM. Rates and risk of postpartum depression-a meta-analysis. *International Review of Psychiatry*. 1996;8:37-54.

[10] Davis K, Pearlstein T, Stuart S, O'Hara M, Zlotnick C. Analysis of brief screening tools for the detection of postpartum depression: Comparisons of the PRAMS 6-item instrument, PHQ-9, and structured interviews. *Archives of Women's Mental Health*. 2013;16:271-277.

[11] Ko JY, Rockhill KM, Tong VT, Morrow B, Farr SL. Trends in Postpartum Depressive Symptoms — 27 States, 2004, 2008, and 2012. *MMWR Morb Mortal Wkly Rep*. 2017; 66:153–158. DOI: http://dx.doi.org/10.15585/mmwr.mm6606a1

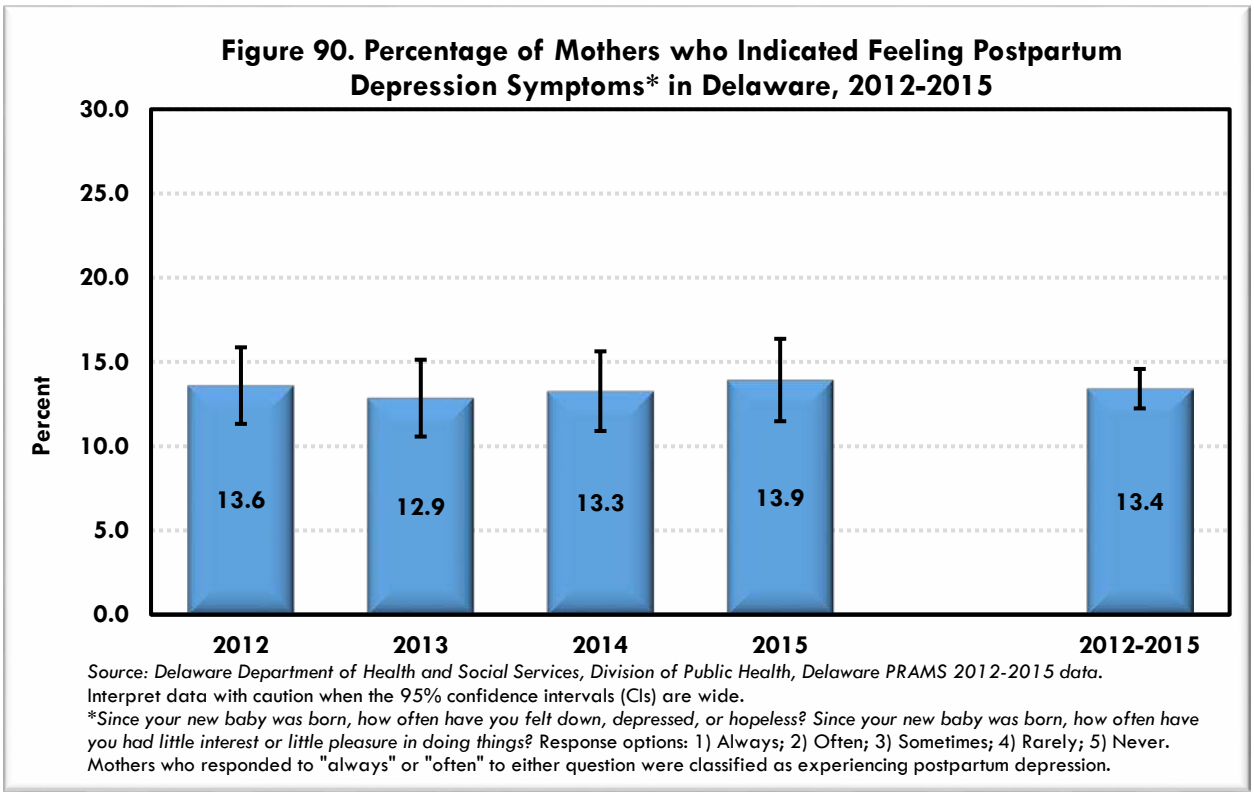


Figure 90. Percentage of Mothers who Indicated Feeling Postpartum Depression Symptoms* in Delaware, 2012-2015
Percent
30.0
25.0
20.0
15.0
10.0
5.0
0.0
13.6
12.9
13.3
13.9
13.4
2012
2013
2014
2015
2012-2015
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Since your new baby was born, how often have you felt down, depressed, or hopeless? Since your new baby was born, how often have you had little interest or little pleasure in doing things? Response options: 1) Always; 2) Often; 3) Sometimes; 4) Rarely; 5) Never.
Mothers who responded to "always" or "often" to either question were classified as experiencing postpartum depression.

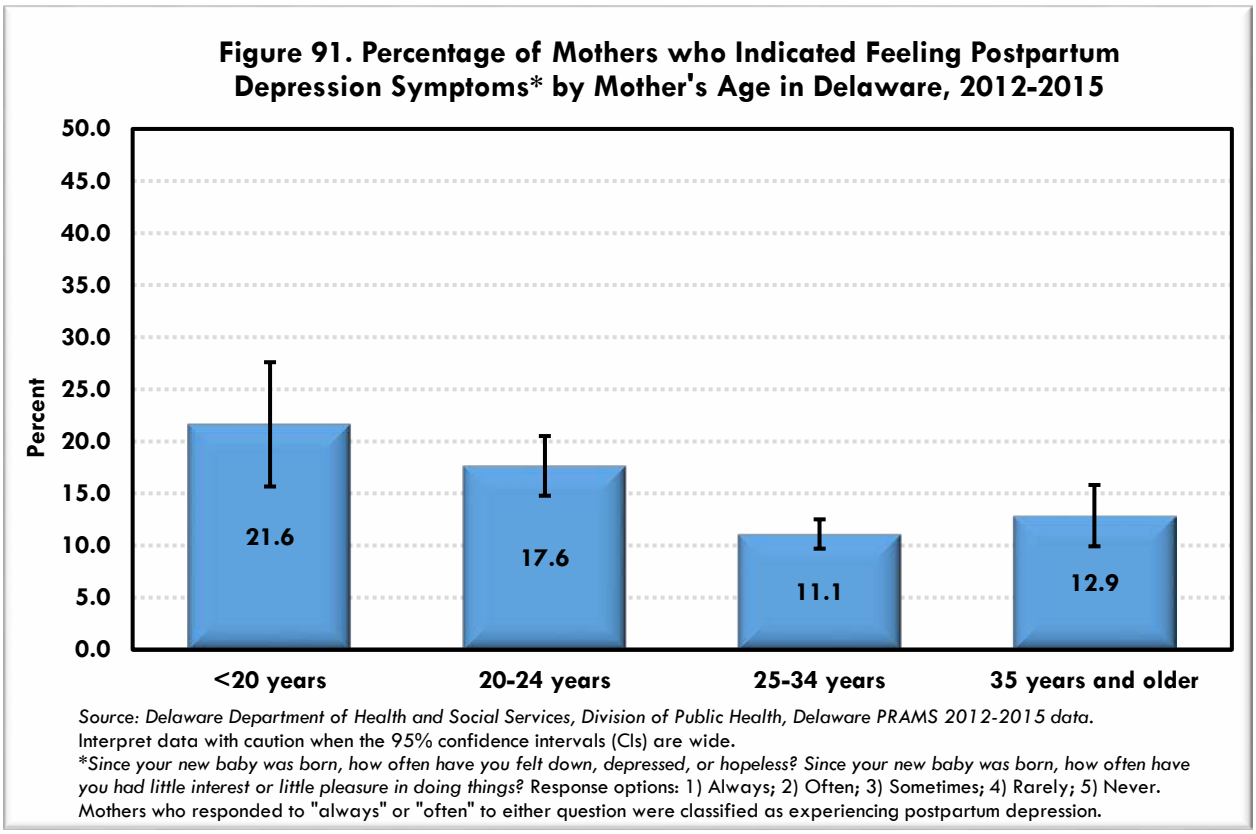
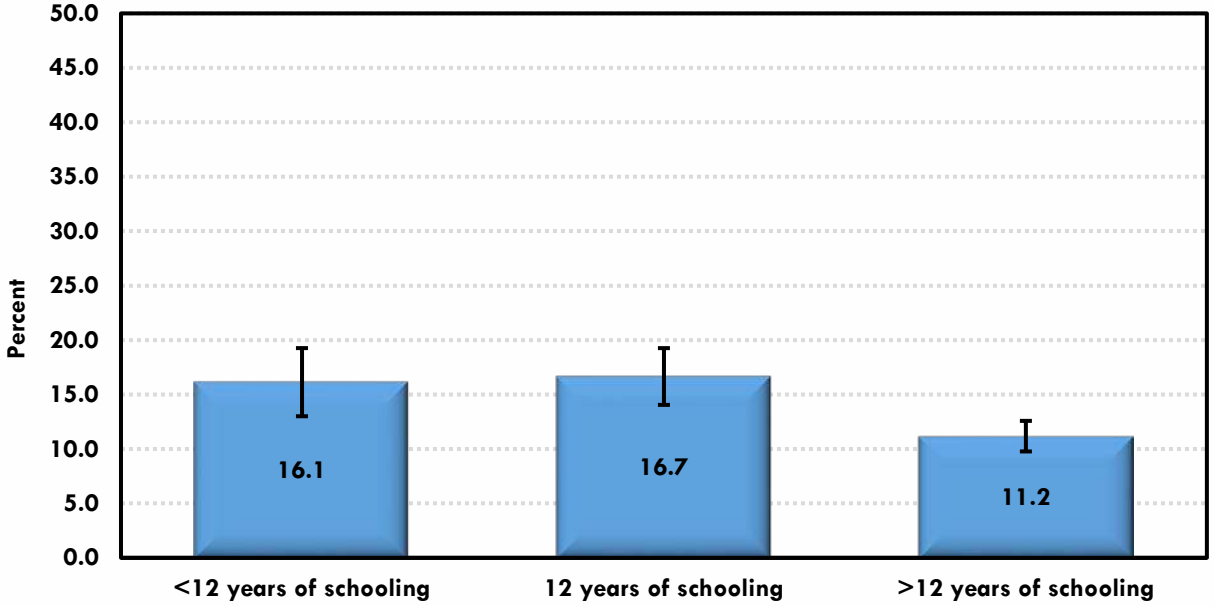


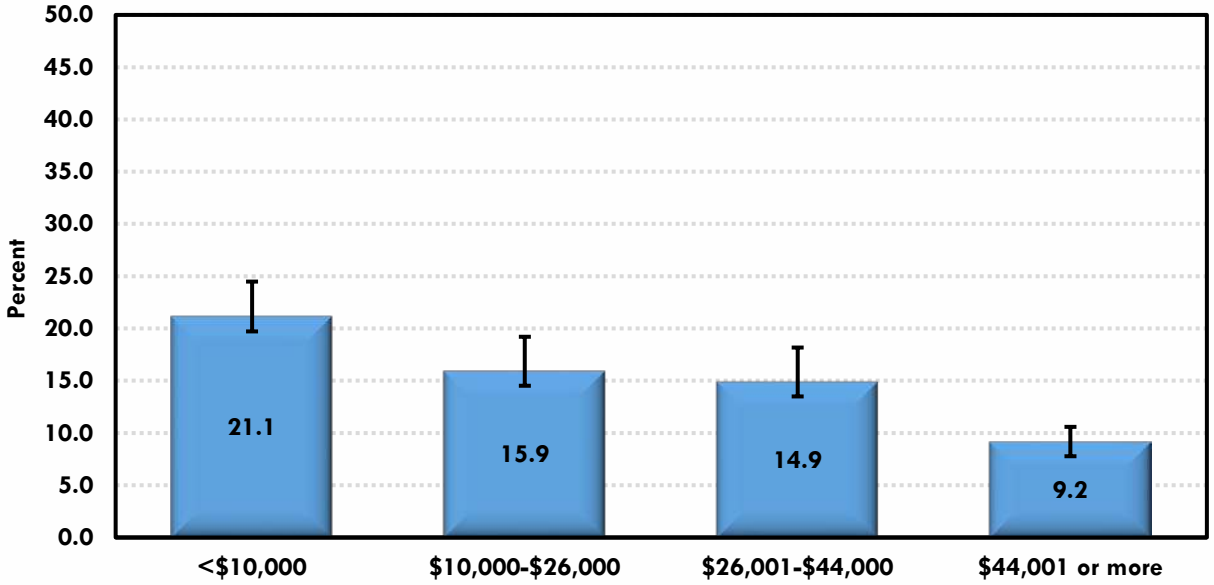
Figure 91. Percentage of Mothers who Indicated Feeling Postpartum Depression Symptoms* by Mother's Age in Delaware, 2012-2015
Percent
50.0
45.0
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
21.6
17.6
11.1
12.9
<20 years
20-24 years
25-34 years
35 years and older
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Since your new baby was born, how often have you felt down, depressed, or hopeless? Since your new baby was born, how often have you had little interest or little pleasure in doing things? Response options: 1) Always; 2) Often; 3) Sometimes; 4) Rarely; 5) Never.
Mothers who responded to "always" or "often" to either question were classified as experiencing postpartum depression.

Figure 92. Percentage of Mothers who Indicated Feeling Postpartum Depression Symptoms* by Mother's Education in Delaware, 2012-2015



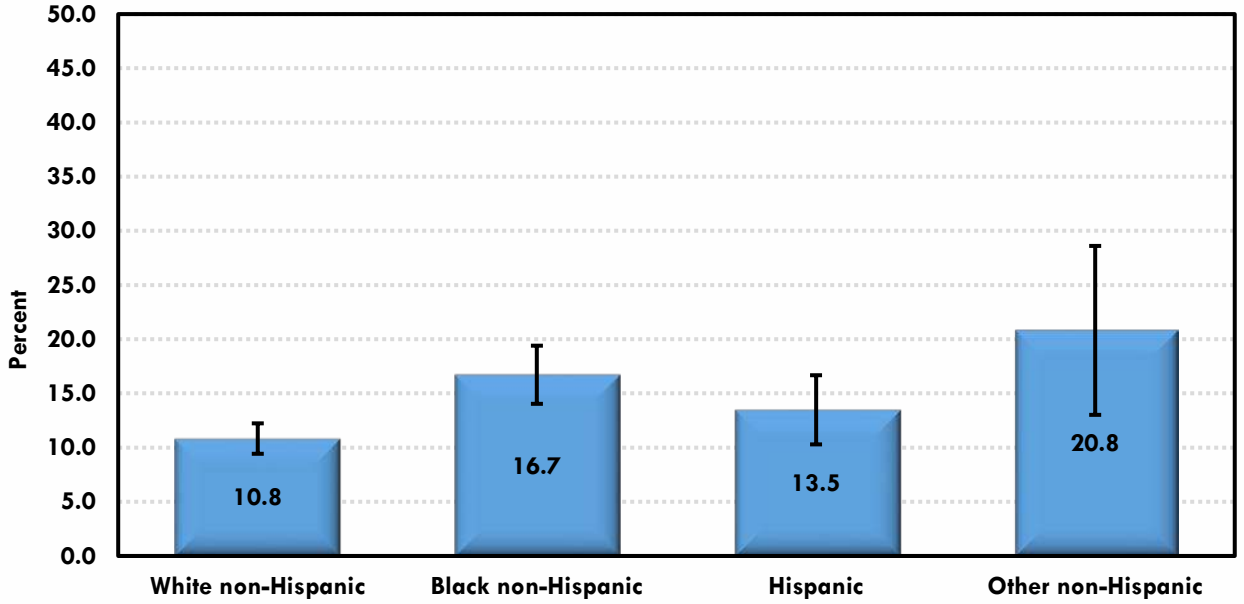
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Since your new baby was born, how often have you felt down, depressed, or hopeless? Since your new baby was born, how often have you had little interest or little pleasure in doing things?* Response options: 1) Always; 2) Often; 3) Sometimes; 4) Rarely; 5) Never. Mothers who responded to "always" or "often" to either question were classified as experiencing postpartum depression.

Figure 93. Percentage of Mothers who Indicated Feeling Postpartum Depression Symptoms* by Mother's Income in Delaware, 2012-2015



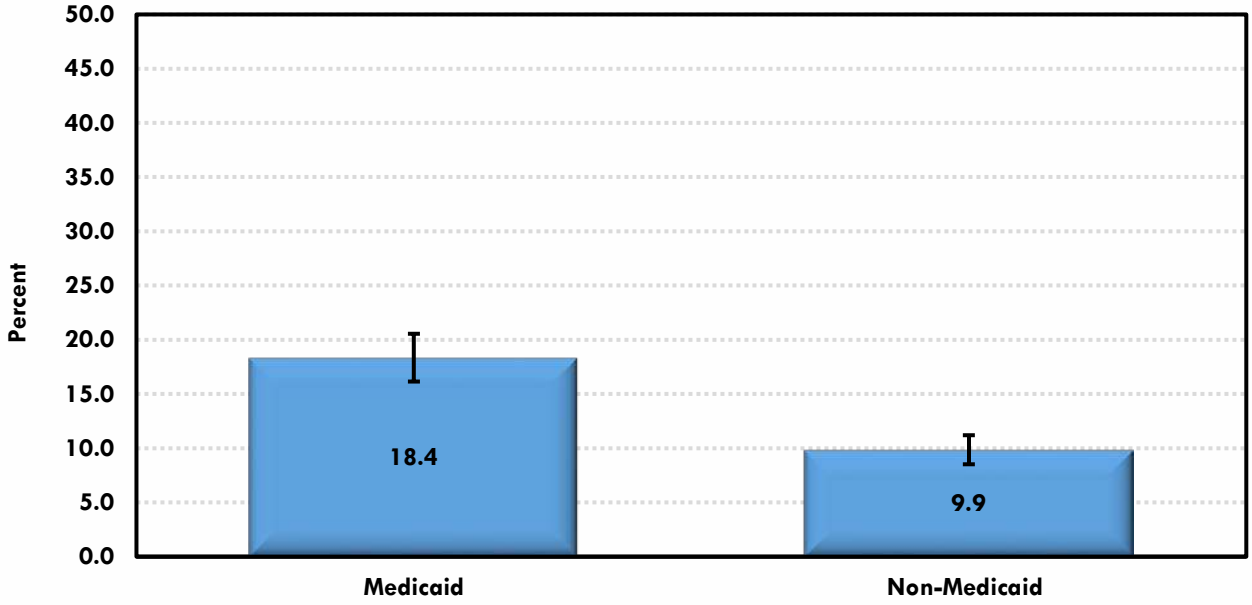
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Since your new baby was born, how often have you felt down, depressed, or hopeless? Since your new baby was born, how often have you had little interest or little pleasure in doing things?* Response options: 1) Always; 2) Often; 3) Sometimes; 4) Rarely; 5) Never. Mothers who responded to "always" or "often" to either question were classified as experiencing postpartum depression.

Figure 94. Percentage of Mothers who Indicated Feeling Postpartum Depression Symptoms* by Mother's Race and Ethnicity in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Since your new baby was born, how often have you felt down, depressed, or hopeless? Since your new baby was born, how often have you had little interest or little pleasure in doing things?* Response options: 1) Always; 2) Often; 3) Sometimes; 4) Rarely; 5) Never. Mothers who responded to "always" or "often" to either question were classified as experiencing postpartum depression.

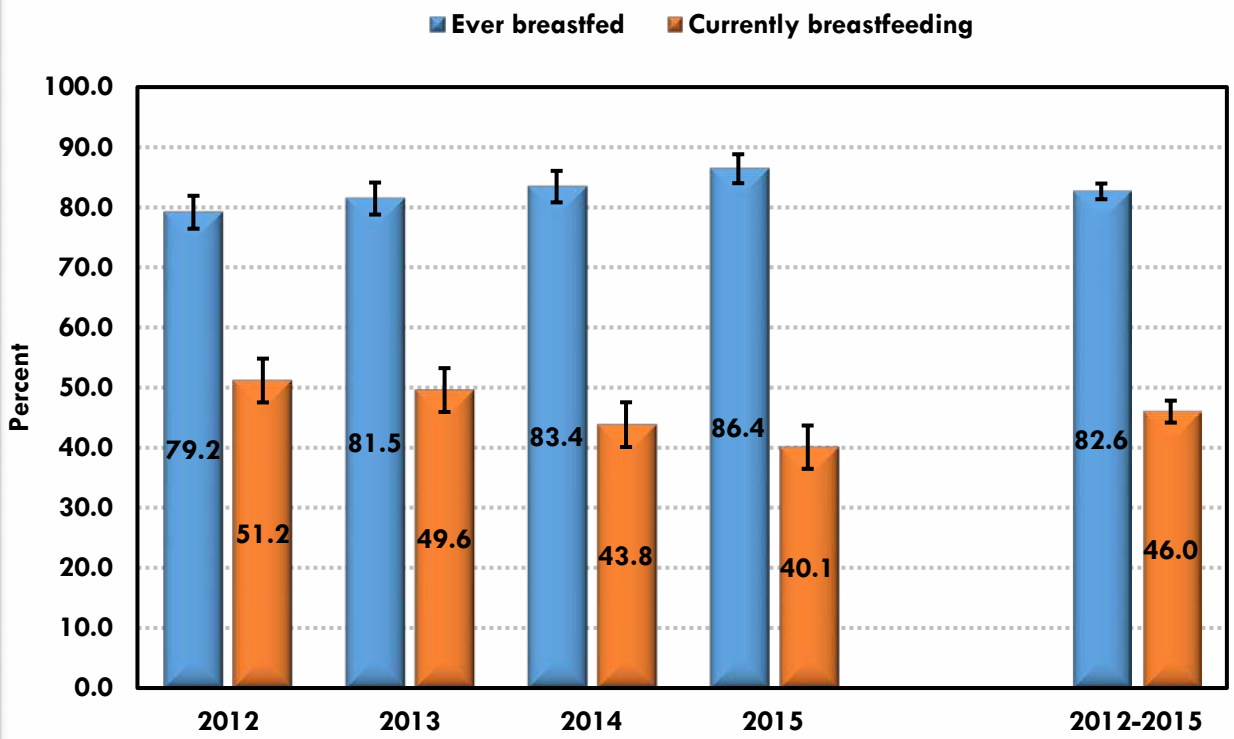
Figure 95. Percentage of Mothers who Indicated Feeling Postpartum Depression Symptoms* by Medicaid Status in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
Since your new baby was born, how often have you felt down, depressed, or hopeless? Since your new baby was born, how often have you had little interest or little pleasure in doing things? Response options: 1) Always; 2) Often; 3) Sometimes; 4) Rarely; 5) Never. Mothers who responded to "always" or "often" to either question were classified as experiencing postpartum depression.

While there were no differences in PPD by county of residence, mothers who indicated Medicaid as their primary insurer had twice the rate of PPD as compared to non-Medicaid mothers. The estimated prevalence among mothers on Medicaid during 2012-2015 was 18.4 percent (95% CI: 16.1-20.6), compared to non-Medicaid 9.9 (95% CI: 8.5-11.2). Another measure for emotional wellness was breastfeeding, which entails mother and child bonding. One longitudinal study on breastfeeding suggests that "women who breastfeed their children longer exhibit more maternal sensitivity well past the infant and toddler years" where maternal sensitivity was defined the "synchronous timing of a mother's responsiveness to her child, her emotional tone, her flexibility in her behavior, and her ability to read her child's cues."[12] Two questions are captured in PRAMS that relate to breastfeeding: "*Did you ever breastfeed or pump breast milk to feed your new baby, even for a short period of time?*" and "*Are you currently breastfeeding or feeding pumped milk to your new baby?*" with response options of "yes" or "no." While the prevalence of "ever breastfed" increased during 2012-2015, "currently breastfeeding" prevalence declined. "Currently" can be anywhere from two to four months after birth.

Figure 96. Percentage of Mothers who Indicated Breastfeeding* in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Did you ever breastfeed or pump breast milk to feed your new baby, even for a short period of time?" and "Are you currently breastfeeding or feeding pumped milk to your new baby?"* with response options of "yes" or "no."

[12] Weaver J, Schofield T, Papp L. Breastfeeding Duration Predicts Greater Maternal Sensitivity Over the Next Decade. *Developmental Psychology*. 2018;54:220-227.

Table 8. Post-pregnancy Wellness Indicators and Breastfeeding among Delaware Mothers, 2012-2015

Respondent characteristics	Ever Breastfed†		Currently Breastfeeding‡	
	Yes (95%CI)	No (95%CI)	Yes (95%CI)	No (95%CI)
Maternal Age***				
<20 years	73.6 (67.0-80.2)	26.4 (19.8-33.0)	21.0 (14.4-27.7)	79.0 (72.3-85.6)
20-24 years	79.8 (76.9-82.8)	20.2 (17.2-23.1)	39.0 (35.0-43.0)	61.0 (57.0-65.0)
25-34 years	84.7 (83.1-86.4)	15.3 (13.6-16.9)	60.1 (57.7-62.4)	39.9 (37.6-42.3)
35 years and older	82.2 (78.8-85.5)	17.8 (14.5-21.2)	63.6 (59.1-68.1)	36.4 (31.9-40.9)
Education***				
<12 years of schooling	74.2 (70.6-77.8)	25.8 (22.2-29.4)	40.5 (35.9-45.0)	59.5 (55.0-64.1)
12 years of schooling	73.6 (70.4-76.7)	26.4 (23.3-29.6)	36.4 (32.6-40.2)	63.6 (59.8-67.4)
>12 years of schooling	88.8 (87.4-90.2)	11.2 (9.8-12.6)	64.1 (61.8-66.3)	35.9 (33.7-38.2)
Income***				
<$10,000	70.7 (67.0-74.4)	29.3 (25.6-33.0)	27.1 (23.0-31.2)	72.9 (68.8-77.0)
$10,000-$26,000	79.8 (76.1-83.4)	20.2 (16.6-23.9)	44.1 (39.3-49.0)	55.9 (51.0-60.7)
$26,001-$44,000	84.5 (81.1-87.9)	15.5 (12.1-18.9)	58.4 (53.5-63.3)	41.6 (36.7-46.5)
$44,001 or more	87.7 (86.1-89.3)	12.3 (10.7-13.9)	65.2 (62.7-67.6)	34.8 (32.4-37.3)
Race/Ethnicity***				
White non-Hispanic	81.5 (79.7-83.2)	18.5 (16.8-20.3)	57.0 (54.6-59.4)	43.0 (40.6-45.4)
Black non-Hispanic	78.6 (75.7-81.6)	21.4 (18.4-24.3)	40.4 (36.6-44.2)	59.6 (55.8-63.4)
Hispanic	89.8 (87.0-92.6)	10.2 (7.4-13.0)	56.1 (51.3-60.9)	43.9 (39.1-48.7)
Other non-Hispanic	89.4 (83.3-95.5)	10.6 (4.5-16.7)	64.1 (54.5-73.6)	35.9 (26.4-45.5)
County				
Kent County	81.2 (78.2-84.1)	18.8 (15.9-21.8)	51.0 (47.0-55.0)	49.0 (45.0-53.0)
New Castle County	83.6 (81.9-85.3)	16.4 (14.7-18.1)	55.4 (53.0-57.8)	44.6 (42.2-47.0)
Sussex County	81.5 (78.5-84.5)	18.5 (15.5-21.5)	53.1 (49.0-57.2)	46.9 (42.8-51.0)

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

†*Did you ever breastfeed or pump breast milk to feed your new baby, even for a short period of time?*

‡*Are you currently breastfeeding or feeding pumped milk to your new baby?*

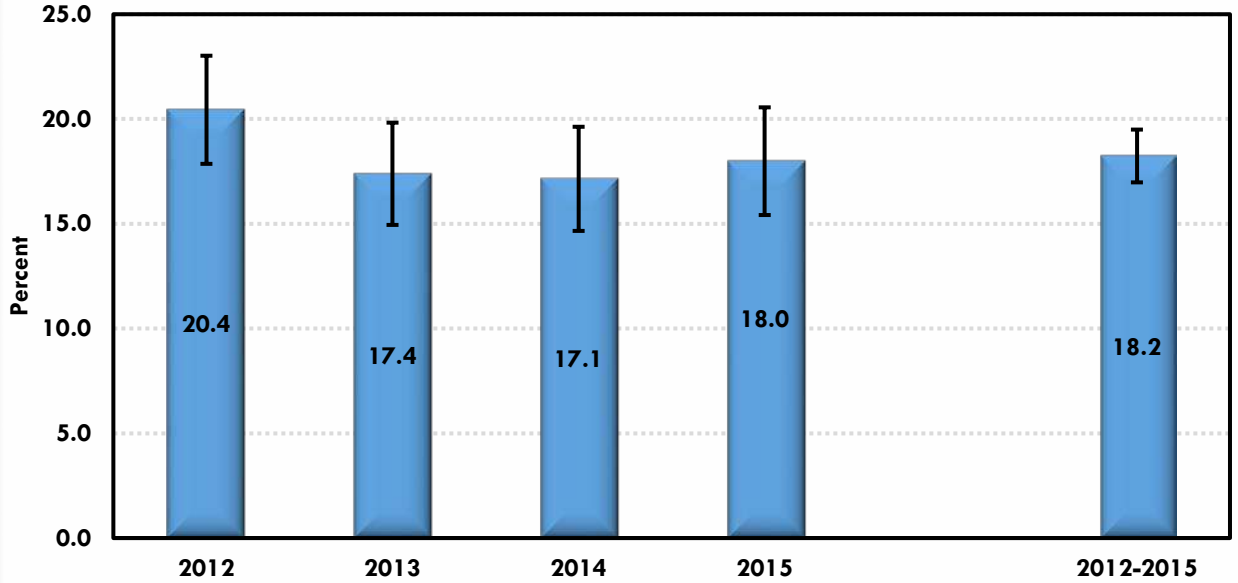
***p < .001

Breastfeeding prevalence was lower among younger mothers, those with 12 years of schooling, those with low income levels, and lowest among non-Hispanic blacks (Table 8). Although there were no statistically significant differences by mother's county of residence, in general New Castle County had higher rates of breastfeeding. In addition, mothers who indicated their payer was Medicaid were also likely to report lower rates of breastfeeding. For instance, the ever breastfed prevalence was 73.6 percent (95% CI: 71.1-76.1), compared to the non-Medicaid rate of 88.6 percent (95% CI: 87.2-90.2). Similarly, the current breastfeeding rate for Medicaid was 32.3 percent (95% CI: 29.3-35.2), compared to the non-Medicaid prevalence of 65 percent (95% CI: 63.4-67.9).

4.2 Environmental wellness

Environmental wellness distal measures such as home visiting, infant sleep position, and bed sharing were used from PRAMS data because they provide some perspective on the overall home environment. During 2012-2015, approximately 18 percent (95% CI: 17.0-19.5) or approximately 1,854 (95% CI: 1,725-1,983) of mothers indicated having a home visitor postpartum (Figure 97). The percentage of home visiting declined between 2012 and 2015.

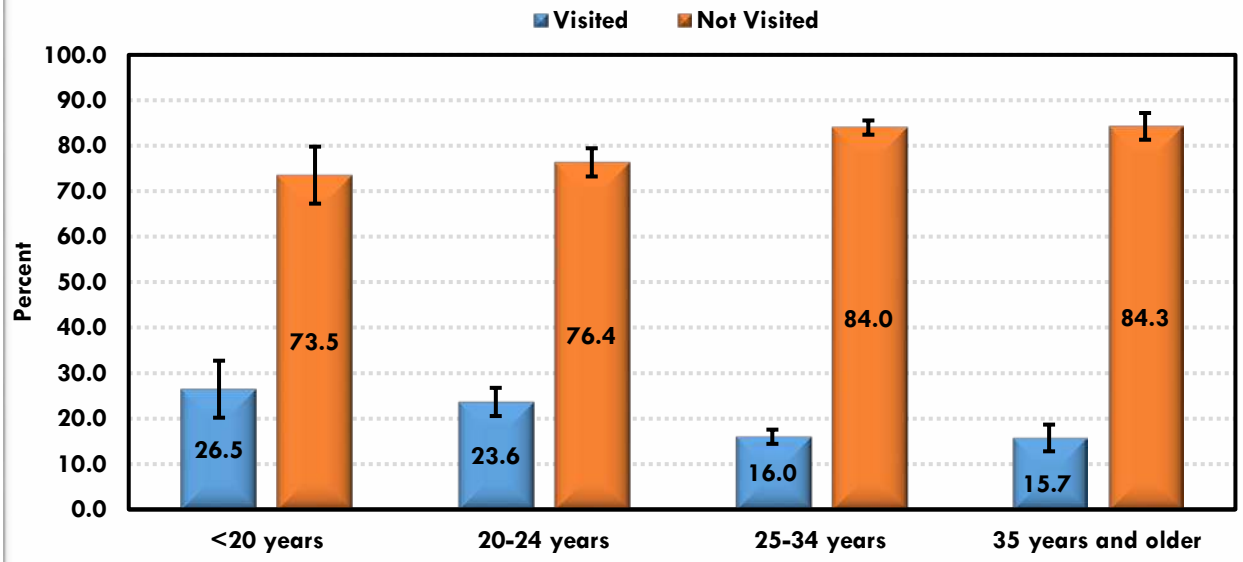
Figure 97. Percentage of Mothers who Indicated a Home Visitor came to visit* Postpartum in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Since your new baby was born, has a home visitor come to your home to help you learn how to take care of yourself or your new baby? A home visitor is a nurse, a health care worker, a social worker, or other person who works for a program that helps mothers of newborns.*

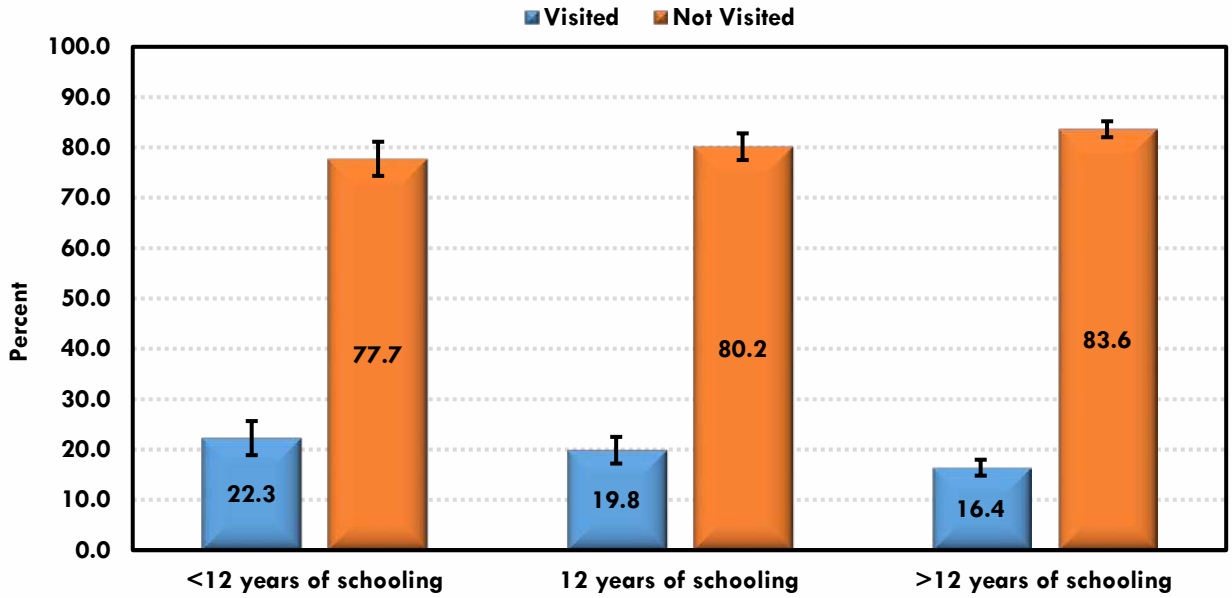
Since home visiting is geared towards the most vulnerable, and the eligible population contains those who meet high need criteria, it is essential to stratify them by maternal age, education, income, race and ethnicity, and maternal county of residence (Figures 98-102). Home visiting rates were higher among younger mothers, those with low levels of education, low income levels, and among non-Hispanic blacks and other race and ethnicities, and those living in New Castle County. Prevalence of home visiting rates were also higher among mothers who indicated their payer was Medicaid (23.7%; 95% CI: 21.3-26.0) as compared to non-Medicaid payers (14.5%; 95% CI: 13.0-16.0).

Figure 98. Percentage of Mothers who Indicated a Home Visitor came to visit* Postpartum by Mother's Age in Delaware, 2012-2015

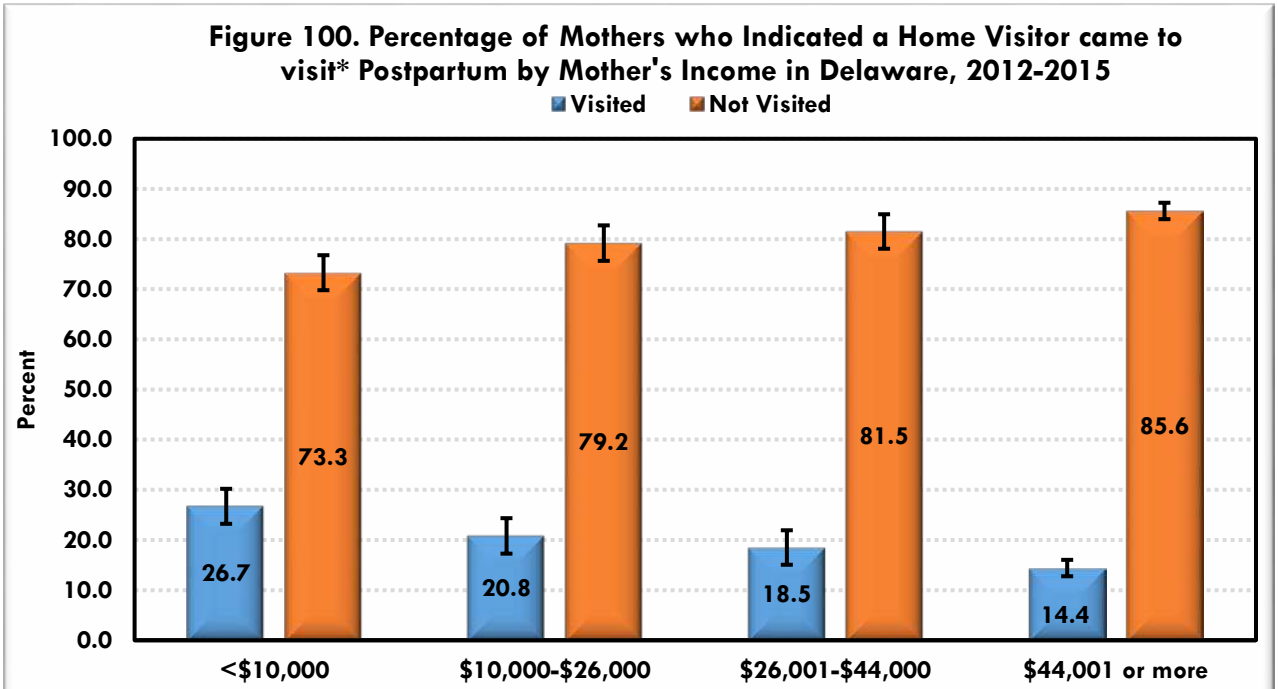


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Since your new baby was born, has a home visitor come to your home to help you learn how to take care of yourself or your new baby? A home visitor is a nurse, a health care worker, a social worker, or other person who works for a program that helps mothers of newborns.*

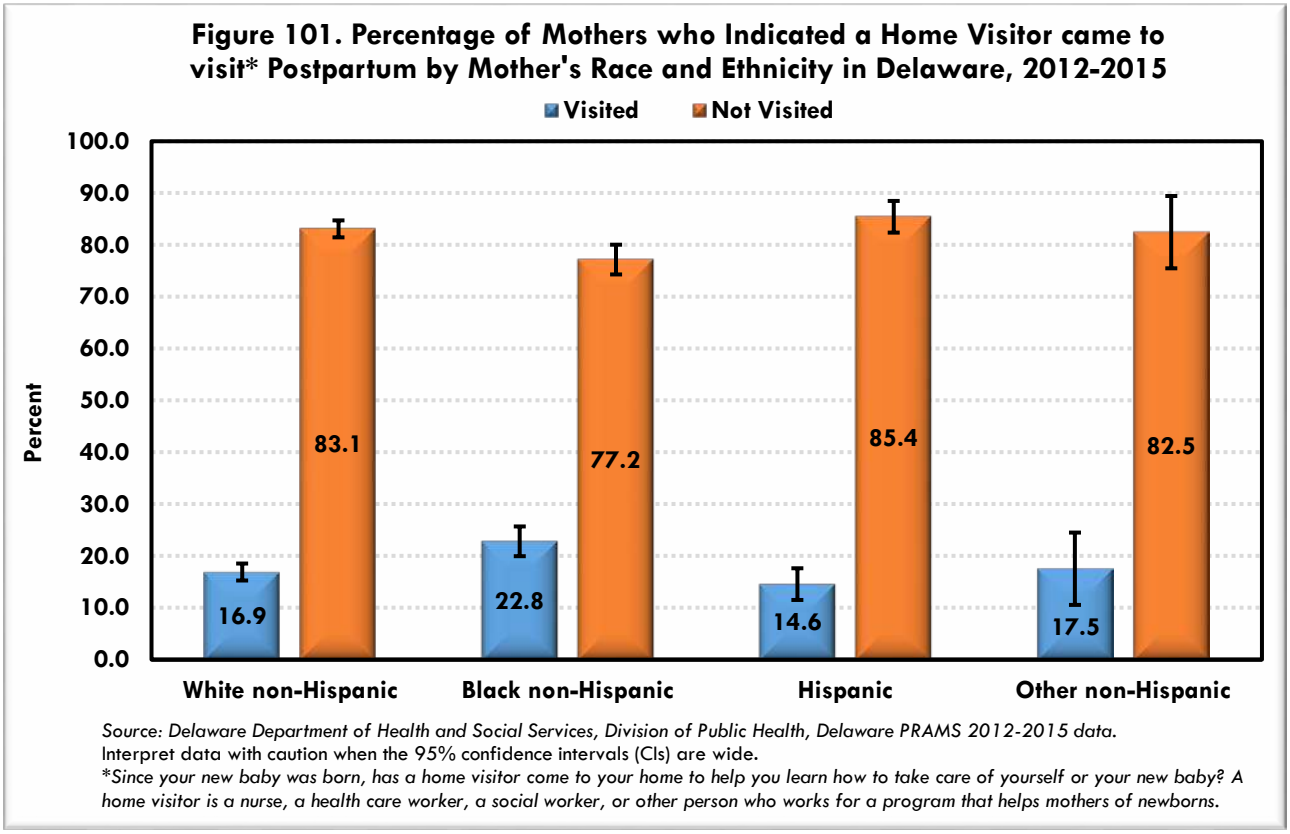
Figure 99. Percentage of Mothers who Indicated a Home Visitor came to visit* Postpartum by Mother's Education in Delaware, 2012-2015



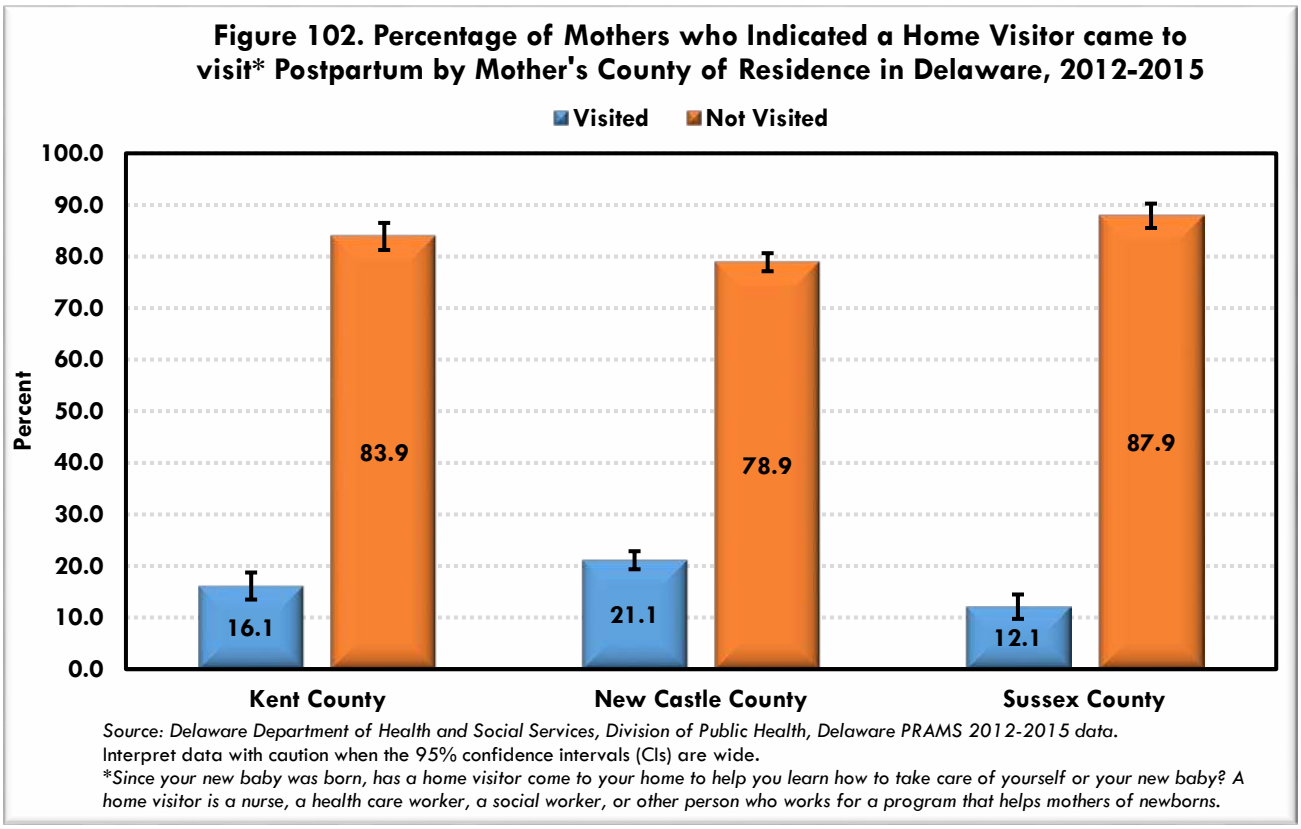
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Since your new baby was born, has a home visitor come to your home to help you learn how to take care of yourself or your new baby? A home visitor is a nurse, a health care worker, a social worker, or other person who works for a program that helps mothers of newborns.*



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Since your new baby was born, has a home visitor come to your home to help you learn how to take care of yourself or your new baby? A home visitor is a nurse, a health care worker, a social worker, or other person who works for a program that helps mothers of newborns.*



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Since your new baby was born, has a home visitor come to your home to help you learn how to take care of yourself or your new baby? A home visitor is a nurse, a health care worker, a social worker, or other person who works for a program that helps mothers of newborns.*



Every year, approximately 3,500 infants die from sleep-related infant mortality which includes sudden infant death syndrome (SIDS), ill-defined deaths, and accidental suffocation.[13] The American Academy of Pediatrics recommends these safe sleep practices:

1) Place the infant in the supine sleep position (placing the infant on his or her back) on a firm sleep surface such as a mattress in a safety-approved crib or bassinet.
2) Have infant and caregivers share a room, but not the same sleeping surface.
3) Avoid the use of soft bedding (e.g., blankets, pillows, and soft objects) in the infant sleep environment.[14]

Figure 103 displays the sleep position of infants as reported by mothers from 2012 to 2015. Figures 104-108 stratify the responses by maternal age, education, income, race and ethnicity, and maternal county of residence. In general, Delaware saw a 5 percent increase in the percentage of mothers who indicated putting their infants "on back" to sleep, from 77.6 percent (95% CI: 74.9-80.4) in 2012 to 81.4 percent (95% CI: 78.6-84.2) in 2015. The prevalence of other infant sleep positions (i.e., "other than back) was higher among younger mothers, those with low levels of education, lower income, among African Americans/Blacks, and among mothers of Kent and Sussex counties.

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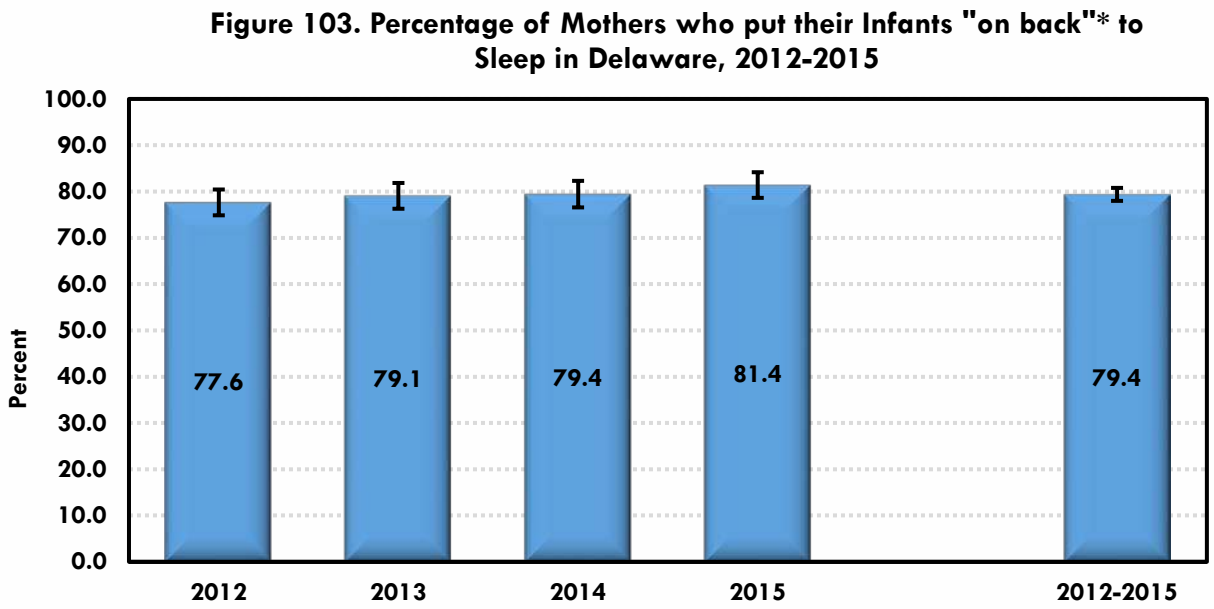
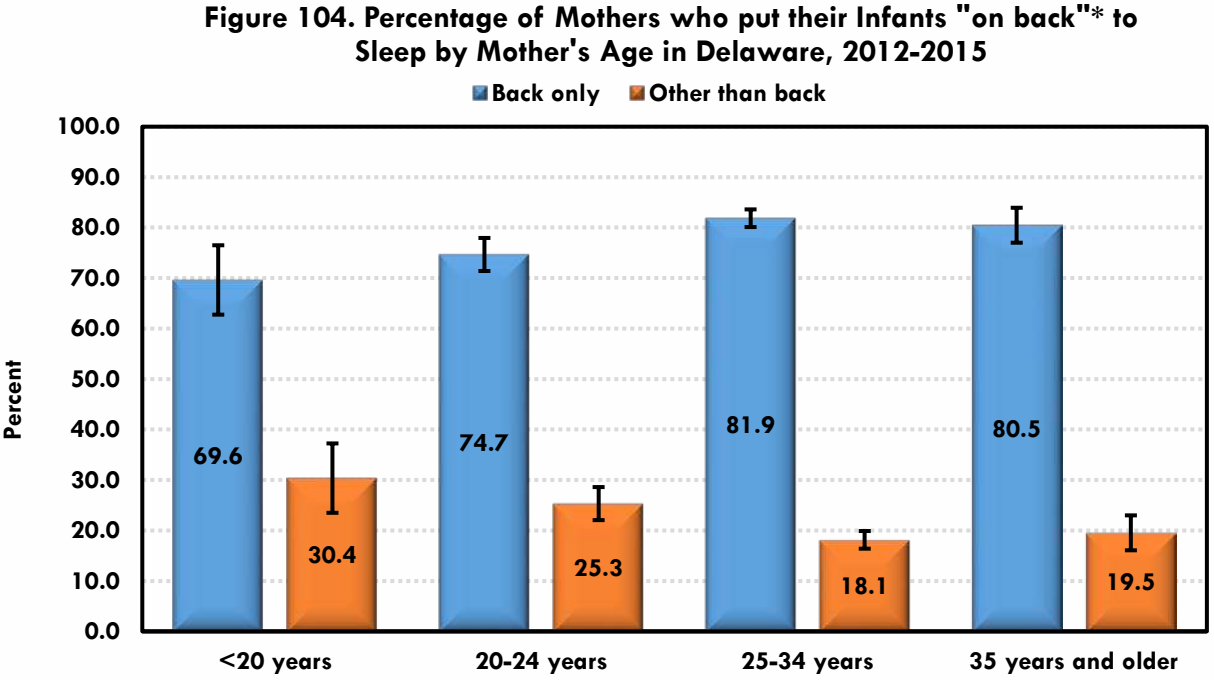
[13] Moon RY and AAP TASK FORCE ON SUDDEN INFANT DEATH SYNDROME. SIDS and Other Sleep-Related Infant Deaths: Evidence Base for 2016 Updated Recommendations for a Safe Infant Sleeping Environment. *Pediatrics*. 2016;138(5): e20162940

[14] Bombard JM, Kortsmit K, Warner L, et al. Vital Signs: Trends and Disparities in Infant Safe Sleep Practices — United States, 2009–2015. *MMWR Morb Mortal Wkly Rep* 2018;67:39-46. DOI: http://dx.doi.org/10.15585/mmwr.mm6701e1

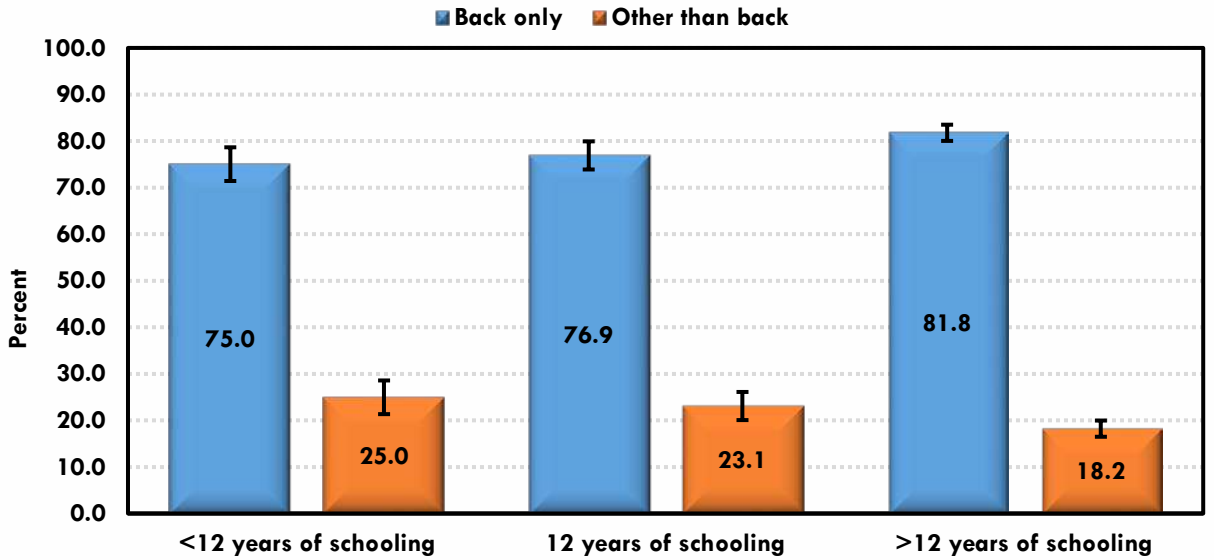


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**In which one position do you most often lay your baby down to sleep now?... 1) On his or her side 2) On his or her back 3) On his or her stomach.* Responses 1 and 3 coded as "other than back".



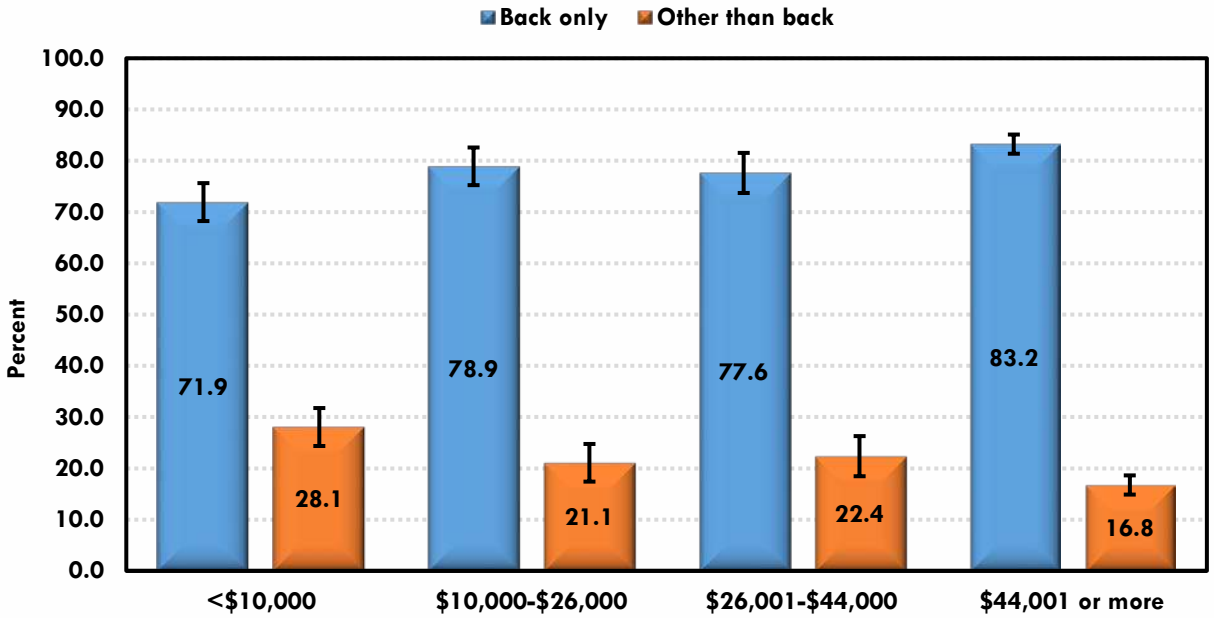
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**In which one position do you most often lay your baby down to sleep now?... 1) On his or her side 2) On his or her back 3) On his or her stomach.* Responses 1 and 3 coded as "other than back".

Figure 105. Percentage of Mothers who put their Infants "on back"* to Sleep by Mother's Education in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**In which one position do you most often lay your baby down to sleep now?... 1) On his or her side 2) On his or her back 3) On his or her stomach.* Responses 1 and 3 coded as "other than back".

Figure 106. Percentage of Mothers who put their Infants "on back"* to Sleep by Mother's Income in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**In which one position do you most often lay your baby down to sleep now?... 1) On his or her side 2) On his or her back 3) On his or her stomach.* Responses 1 and 3 coded as "other than back".

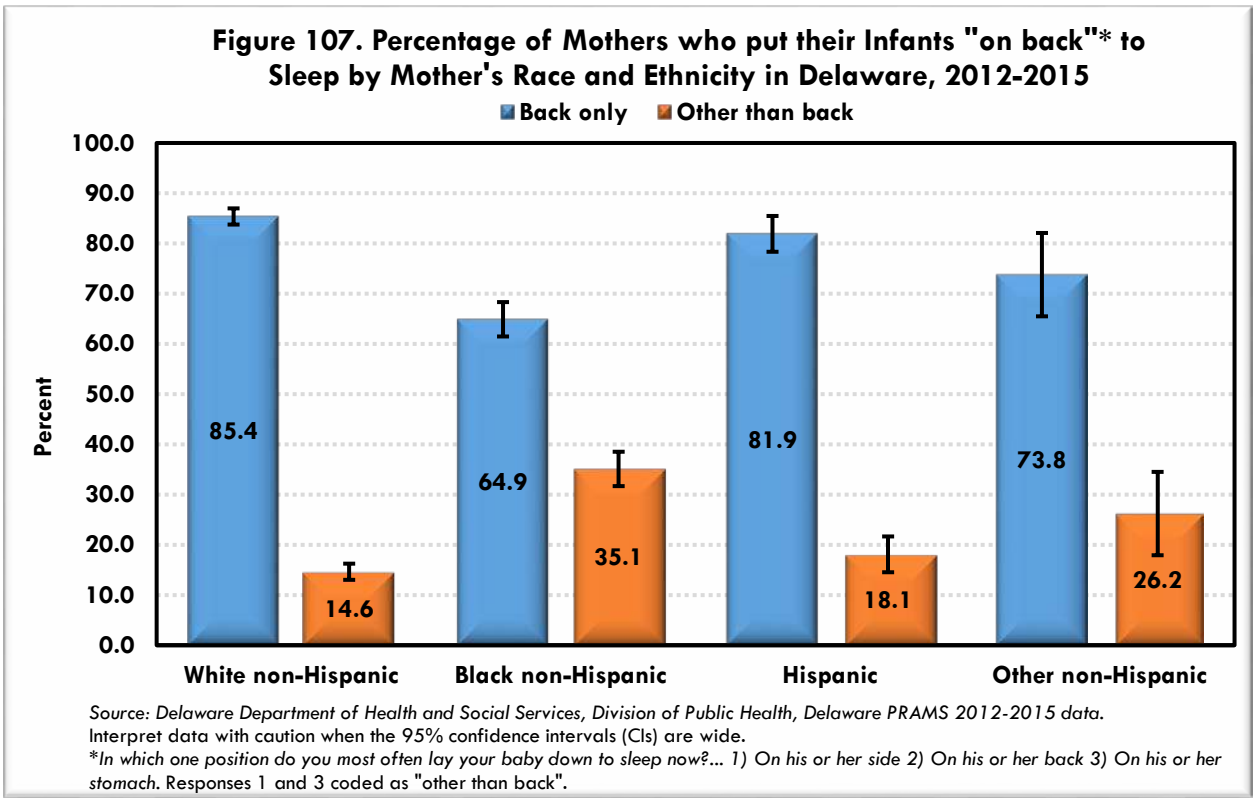


Figure 107. Percentage of Mothers who put their Infants "on back"* to Sleep by Mother's Race and Ethnicity in Delaware, 2012-2015

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**In which one position do you most often lay your baby down to sleep now?... 1) On his or her side 2) On his or her back 3) On his or her stomach.* Responses 1 and 3 coded as "other than back".

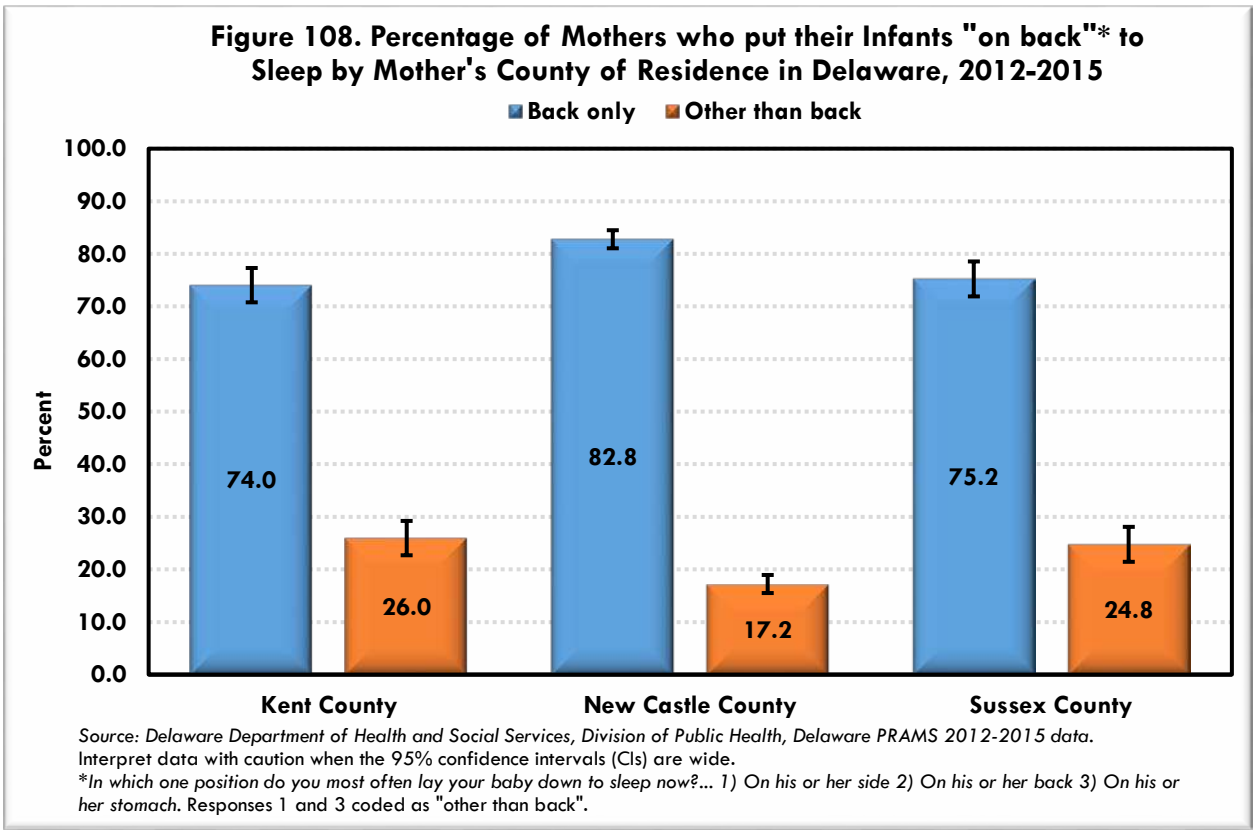
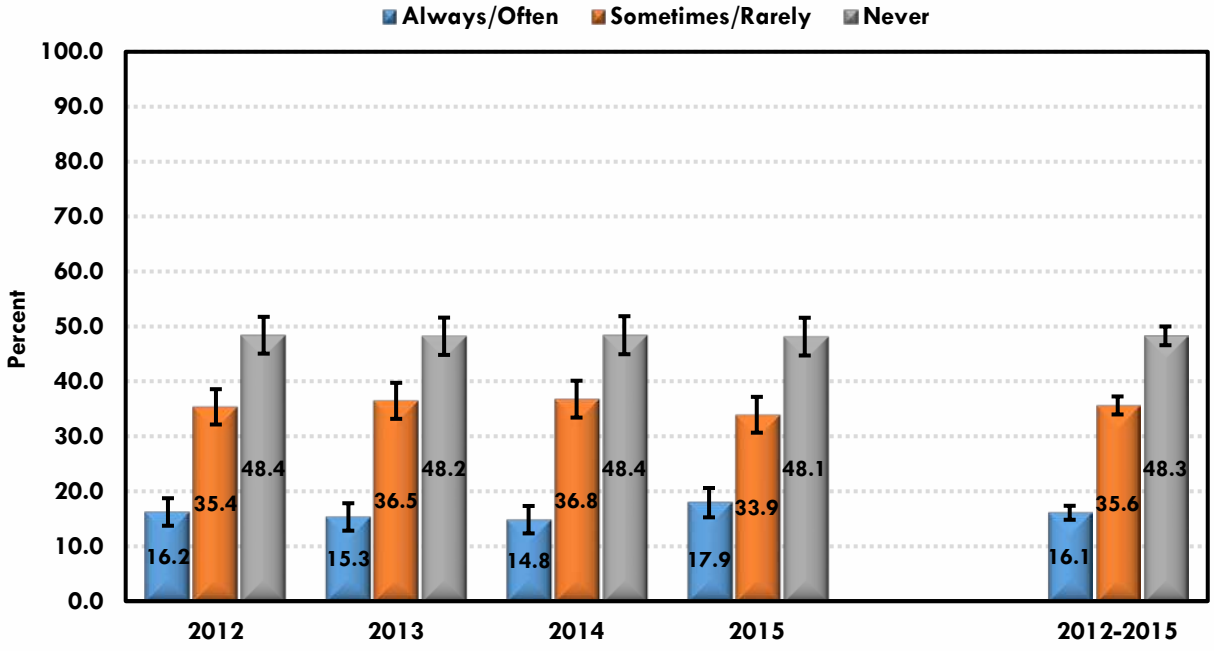


Figure 108. Percentage of Mothers who put their Infants "on back"* to Sleep by Mother's County of Residence in Delaware, 2012-2015

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**In which one position do you most often lay your baby down to sleep now?... 1) On his or her side 2) On his or her back 3) On his or her stomach.* Responses 1 and 3 coded as "other than back".

Figure 109 provides the estimated prevalence of mothers who indicate their newborn shares a bed with someone. The percentage of mothers who never shared bed with an infant has remained stable in Delaware at 48 percent (95% CI: 46.6-50.0). Approximately 5,000 mothers (5,249; 95% CI: 5,071-5,427) indicated that their newborn shared a bed (i.e., always, often, sometimes, or rarely) in some form. Analyses of 14 states data from CDC[15] indicates that the prevalence estimate for those who never shared bed was at 38.6 percent (95% CI: 37.2-40.1). Clearly, Delaware has a better bed sharing practice as compared to the 14 states. However, when we stratify bed sharing practices by maternal age, education, income, race and ethnicity, maternal county of residence we find significant differences.

Figure 109. Percent of Mothers who Indicated how often the Newborn Shares Bed* in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**How often does your new baby sleep in the same bed with you or anyone else?* Response options: 1) Always; 2) Often; 3) Sometimes; 4) Rarely; 5) Never. Responses 1 and 2 combined for "always/often" and responses 3 and 4 combined for "sometimes/rarely." Response 5 is denoted "never shares bed."

[15] Bombard JM et al. Vital Signs: Trends and Disparities in Infant Safe Sleep Practices — United States, 2009–2015. *Morbidity and Mortality Weekly Report*. January 2018; 67(1).

Table 9. Bed sharing among mothers and infants in Delaware, 2012-2015

Respondent characteristics	Bed Shared†	
	Never (95%CI)	Any¶ (95%CI)
Maternal Age***		
<20 years	43.0 (35.7-50.4)	57.0 (49.6-64.3)
20-24 years	41.2 (37.5-44.9)	58.8 (55.1-62.5)
25-34 years	51.6 (49.3-53.8)	48.4 (46.2-50.7)
35 years and older	48.1 (43.8-52.4)	51.9 (47.6-56.2)
Education		
<12 years of schooling	48.3 (44.1-52.5)	51.7 (47.5-55.9)
12 years of schooling	47.2 (43.7-50.7)	52.8 (49.3-56.3)
>12 years of schooling	48.7 (46.5-50.9)	51.3 (49.1-53.5)
Income***		
<$10,000	45.2 (41.2-49.3)	54.8 (50.7-58.8)
$10,000-$26,000	45.4 (40.9-49.9)	54.6 (50.1-59.1)
$26,001-$44,000	45.9 (41.2-50.5)	54.1 (49.5-58.8)
$44,001 or more	51.0 (48.5-53.4)	49.0 (46.6-51.5)
Race/Ethnicity***		
White non-Hispanic	56.2 (54.0-58.4)	43.8 (41.6-46.0)
Black non-Hispanic	35.5 (32.1-38.9)	64.5 (61.1-67.9)
Hispanic	46.9 (42.3-51.5)	53.1 (48.5-57.7)
Other non-Hispanic	34.4 (25.4-43.4)	65.6 (56.6-74.6)
County***		
Kent County	44.4 (40.8-48.1)	55.6 (51.9-59.2)
New Castle County	51.1 (48.8-53.3)	48.9 (46.7-51.2)
Sussex County	44.4 (40.6-48.2)	55.6 (51.8-59.4)

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

†*How often does your new baby sleep in the same bed with you or anyone else?* Response options: 1) always; 2) often; 3) sometimes; 4) rarely; 5) never. Responses 1 and 2 combined for "always/often" and responses 3 and 4 combined for "sometimes/rarely." Response 5 is denoted "never shares bed."

¶ Any refers to responses "always," "often," "sometimes," or "rarely"

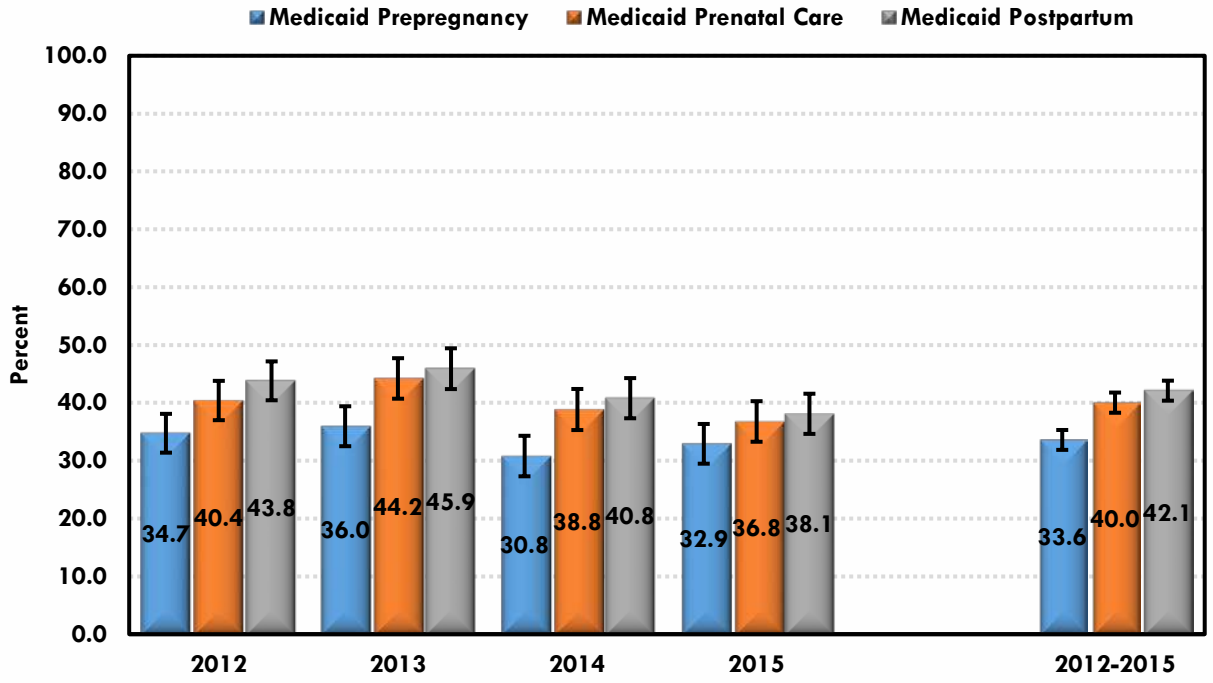
***p < .05

Mothers with low levels of income, non-Hispanic blacks, other race and ethnicities, younger mothers' age, and those who indicated they lived in Kent or Sussex County had a higher prevalence of bed sharing practices (Table 9).

4.3 Financial wellness

Financial wellness in the postpartum period indicates access to care such as well-woman visits, well-child visits, quality child care etcetera and the PRAMS survey measures it by insurance. Respondents were asked, "*What kind of health insurance do you have now?*" Figure 110 displays the postpartum Medicaid status during 2012-2015 along with Medicaid status a month prior to pregnancy, Medicaid status during pregnancy, and Medicaid during the postpartum period. Postpartum mothers with Medicaid decreased from 44 percent (95% CI: 40.4-47.2) in 2012 to 38.1 percent (95% CI: 34.6-41.6) in 2015: a 13 percent decline. The estimated number of mothers who indicated having Medicaid during 2012-2015 was about 4,000 women (95% CI: 3,836-4,185). Table 10 stratifies the percent of mothers who indicated having Medicaid at various stages by age, education, income, race and ethnicity, and county of residence.

Figure 110. Percentage of Mothers who are Postpartum and their Medicaid Status* in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**What kind of health insurance do you have now?* A unique category of Medicaid was created using response options: *1) I do not have health insurance now; 2) Private health insurance from my job or the job of my husband, partner, or parents; 3) Private health insurance purchased directly from an insurance company; 4) Medicaid (Diamond State Partners, Unison, or Delaware Physicians Care); 5) Delaware Healthy Children Program (DHCP/SCHIP); 6) CHAP—Community Healthcare Access Program; 7) TRICARE or other military health care; 8) Some other kind ofhealth insurance.*

The percentage of postpartum mothers with Medicaid was higher among younger mothers, those with low levels of education, those with low levels of income, higher among non-Hispanic blacks, and higher in Sussex and Kent counties (Table 9).

Table 10. Self-reported Medicaid Status among Mothers before, during, and after Pregnancy in Delaware, 2012-2015

Respondent characteristics	Medicaid Status†		
	Prepregnancy (95%CI)	Prenatal (95%CI)	Postpartum (95%CI)
Maternal Age			
<20 years	63.2 (55.8-70.5)	71.6 (64.8-78.5)	74.3 (67.8-80.8)
20-24 years	50.4 (46.4-54.5)	60.0 (56.3-63.8)	63.8 (60.1-67.5)
25-34 years	28.8 (26.6-31.0)	34.0 (31.9-36.2)	35.0 (32.8-37.2)
35 years and older	16.6 (13.2-19.9)	21.9 (18.2-25.6)	24.4 (20.6-28.3)
Education			
<12 years of schooling	61.2 (56.5-65.9)	64.1 (59.8-68.4)	66.9 (62.6-71.2)
12 years of schooling	57.1 (53.4-60.9)	64.8 (61.4-68.2)	67.3 (63.9-70.7)
>12 years of schooling	17.6 (15.8-19.4)	23.2 (21.3-25.1)	25.4 (23.4-27.4)
Income			
<$10,000	73.2 (69.4-77.1)	81.2 (78.0-84.4)	82.4 (79.3-85.5)
$10,000-$26,000	56.4 (51.4-61.4)	62.8 (58.4-67.3)	68.6 (64.2-73.0)
$26,001-$44,000	30.8 (26.0-35.5)	40.2 (35.5-45.0)	43.4 (38.6-48.2)
$44,001 or more	12.9 (11.2-14.7)	16.8 (14.9-18.7)	18.1 (16.1-20.0)
Race/Ethnicity			
White non-Hispanic	25.0 (23.0-27.1)	31.9 (29.8-34.1)	32.9 (30.8-35.1)
Black non-Hispanic	52.8 (49.1-56.5)	59.0 (55.4-62.5)	63.8 (60.3-67.3)
Hispanic	36.7 (31.4-42.1)	42.8 (38.0-47.7)	44.9 (39.7-50.1)
Other non-Hispanic	38.2 (28.1-48.4)	40.4 (30.5-50.3)	45.8 (35.8-55.7)
County			
Kent County	37.8 (34.0-41.6)	42.7 (39.0-46.4)	45.7 (41.9-49.5)
New Castle County	30.1 (27.9-32.3)	37.1 (34.9-39.4)	39.4 (37.1-41.6)
Sussex County	39.5 (35.5-43.6)	45.6 (41.7-49.5)	46.3 (42.4-50.3)

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

†What kind of health insurance do you have now? A unique category of Medicaid was created using response options: 1) I do not have health insurance now; 2) Private health insurance from my job or the job of my husband, partner, or parents; 3) Private health insurance purchased directly from an insurance company; 4) Medicaid (Diamond State Partners, Unison, or Delaware Physicians Care); 5) Delaware Healthy Children Program (DHCP/SCHIP); 6) CHAP—Community Healthcare Access Program; 7) TRICARE or other military health care; 8) Some other kind ofhealth insurance

4.4 Intellectual wellness

There were no proxy measures for intellectual wellness for post pregnancy in the PRAMS dataset.

4.5 Occupational wellness

One of the most critical indicators during post pregnancy wellness is the availability of paid leave or the ability to take time off under the Family Medical Leave Act. Occupational wellness proxy measures such as parental leave policies provide economic support for those with young children. Research on the health impact of parental leave policies unequivocally suggests that such policies benefit maternal and child health as they contribute to fewer low birthweight babies, fewer infant deaths, higher rates of breastfeeding, longer parental lifespan, improved mental health, and long-term positive impacts on children.[16] In addition, parental leave policies promote gender equity in the labor market and at home and increased parental involvement that promotes critical growth and development in early childhood, resulting in significant long-term impacts.[17] Despite the demonstrated impact of parental leave, according to Organization for Economic Cooperation and Development (OECD):

> "The United States is the only country in the OECD that does not offer paid maternity leave at the national level, and one of nine OECD countries that does not have a paid leave entitlement reserved for fathers. Furthermore, only about 60% of American workers are eligible for twelve weeks of unpaid employment protection around childbirth (see: Adema, Clarke, & Frey, 2015, p. 3)."

There were no proxy measures for occupational wellness for post pregnancy in the PRAMS dataset.

4.6 Physical wellness

Part of physical wellness during postpartum is being able to recover and heal from childbirth. The mode of delivery (i.e., vaginal or cesarean section) can differentially affect recovery. However, the associated morbidities can also affect physical wellness. Since PRAMS data are linked with vital statistics data that contain information on the mode of delivery, these measures were used to gauge one element of physical wellness. In Figure 111, primary cesareans and repeat cesarean sections for Delaware mothers during 2012-2015 were combined to arrive at the prevalence of cesareans, similar to combining vaginal deliveries and vaginal births after c-section to arrive at vaginal deliveries.

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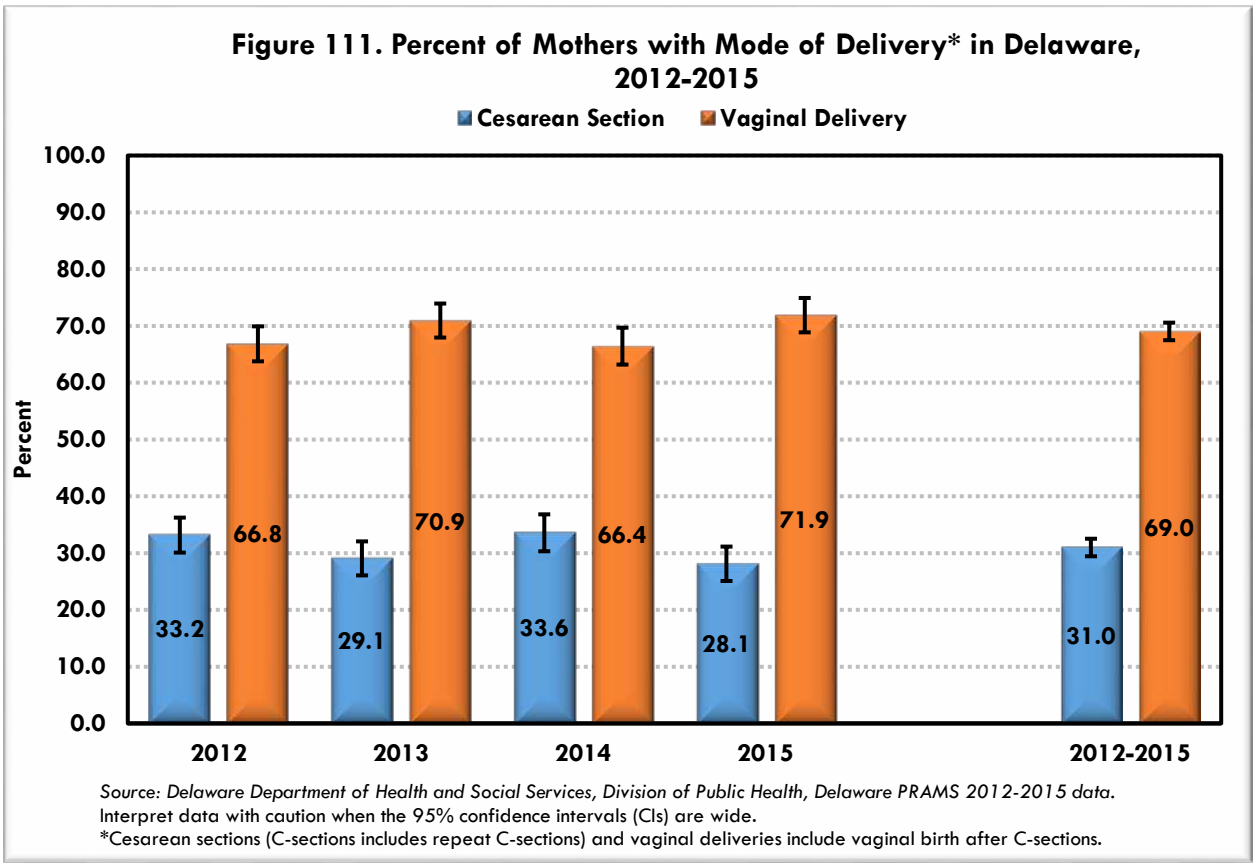
[16] Burtle A, Bezruchka S. Population health and paid parental leave: What the United States can learn from two decades of research. *Healthcare* (Basel, Switzerland), 2016; 4(2), 30. doi:10.3390/healthcare4020030

[17] Kamerman SB, Moss P, 1945, ProQuest (Firm). *The Politics of Parental Leave Policies: Children, Parenting, Gender and the Labour Market*. Bristol: Policy Press; 2009; 2010.



Based on PRAMS data, cesarean rates have generally fluctuated around 30 percent between 2012 and 2015; stated another way, one in every three births are typically cesarean births. The C-section rate in 2012 was 33.2 percent and the rate dropped to 28.1 percent by 2015, a decline of 15 percent. Vital statistics data, which provide a better population estimate, indicate that the 2012 C-section rate of 33.1 percent declined by 4 percent in 2015 to 31.9 percent. There has been a decline in these rates during the 2012-2015 period. According to Delaware Health Statistics Center, Delaware's 2016 cesarean rate is 31.8 percent, representing approximately 3,500 cesareans in the state. Maternal age is one of the key risk factors associated with cesareans.

These delivery modes were stratified by maternal age, education, income, race and ethnicity, and county of residence (Table 11).

Table 11. Delivery Characteristics among Mothers in Delaware, 2012-2015

Respondent characteristics	Method of Delivery	
	Cesarean Sections† (95%CI)	Vaginal Deliveries‡ (95%CI)
Maternal Age***		
<20 years	15.9 (10.8-21.0)	84.1 (79.0-89.2)
20-24 years	24.7 (21.5-27.8)	75.3 (72.2-78.5)
25-34 years	32.0 (30.0-34.1)	68.0 (65.9-70.0)
35 years and older	42.2 (38.0-46.4)	57.8 (53.6-62.0)
Education***		
<12 years of schooling	25.3 (21.8-28.9)	74.7 (71.1-78.2)
12 years of schooling	30.1 (26.9-33.2)	69.9 (66.8-73.1)
>12 years of schooling	33.1 (31.1-35.2)	66.9 (64.8-68.9)
Income		
<$10,000	30.8 (27.2-34.5)	69.2 (65.5-72.8)
$10,000-$26,000	28.2 (24.3-32.2)	71.8 (67.8-75.7)
$26,001-$44,000	30.7 (26.5-34.9)	69.3 (65.1-73.5)
$44,001 or more	32.7 (30.4-35.0)	67.3 (65.0-69.6)
Race/Ethnicity		
White non-Hispanic	30.9 (28.9-32.9)	69.1 (67.1-71.1)
Black non-Hispanic	33.2 (29.9-36.5)	66.8 (63.5-70.1)
Hispanic	26.0 (22.1-30.0)	74.0 (70.0-77.9)
Other non-Hispanic	30.2 (21.5-38.9)	69.8 (61.1-78.5)
County		
Kent County	29.9 (26.6-33.2)	70.1 (66.8-73.4)
New Castle County	31.6 (29.6-33.6)	68.4 (66.4-70.4)
Sussex County	30.3 (26.9-33.8)	69.7 (66.2-73.1)

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

†Cesarean sections (C-sections) include repeat c-sections

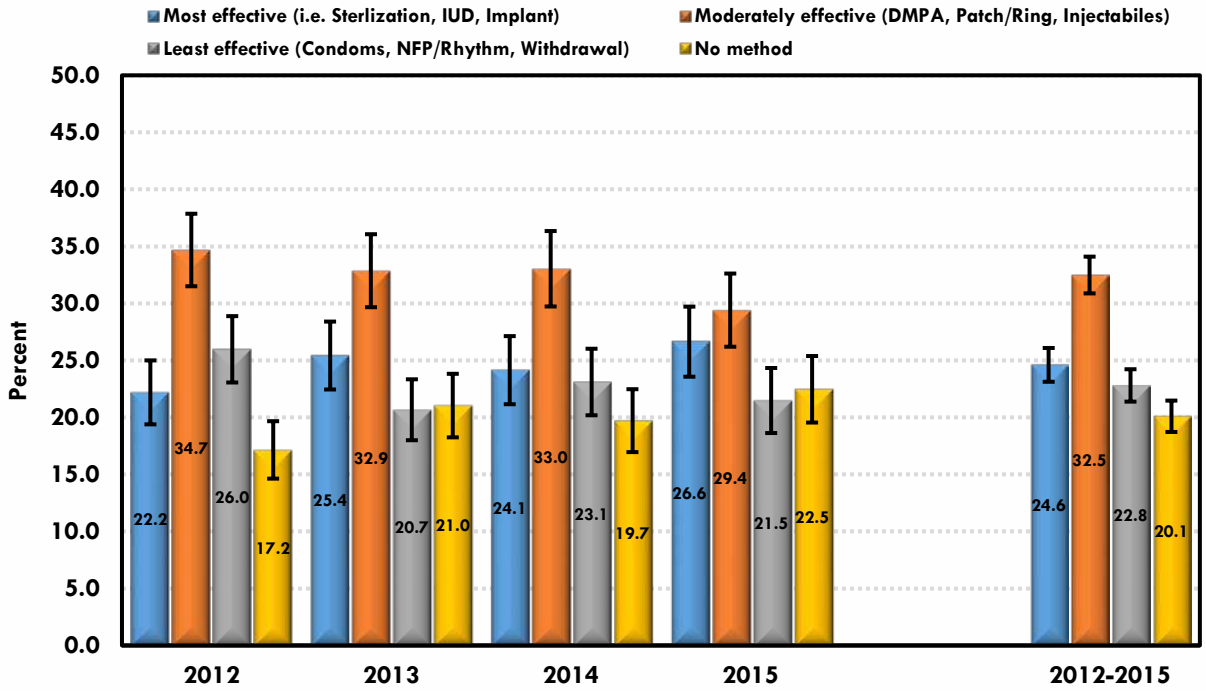
‡Vaginal deliveries include vaginal delivery after c-sections

***p < .01

In addition to mode of delivery, decisions surrounding postpartum contraception are most critical. This is because improper choice of contraception can lead to mistimed and/or unintended pregnancy during postpartum, resulting in short inter-pregnancy intervals (IPI). Short IPIs are associated with poor birth outcomes such as low birth weight, preterm birth, growth restriction,

and neonatal mortality, a major component of infant mortality.[18,19,20] PRAMS contains information on postpartum reproductive behavior and choice of contraception through three questions: *1) Are you or your husband or partner doing anything now to keep from getting pregnant? Some things people do to keep from getting pregnant include using birth control pills, condoms, withdrawal, or natural family planning. 2) What are your reasons or your husband's or partner's reasons for not doing anything to keep from getting pregnant now? 3) What kind of birth control are you or your husband or partner using now to keep from getting pregnant?* Figure 112 provides prevalence estimates of the most effective (i.e., sterilization, contraceptive implants, intrauterine devices or systems (IUD/IUS)), moderately effective (i.e., injectables, oral pills, patch, ring, or diaphragm), least effective (condoms, rhythm, or withdrawal) and no method of contraception. Figure 113 displays the percent of mothers using reversible contraceptives or long acting reversible contraceptives (LARCs, IUDs or implants).

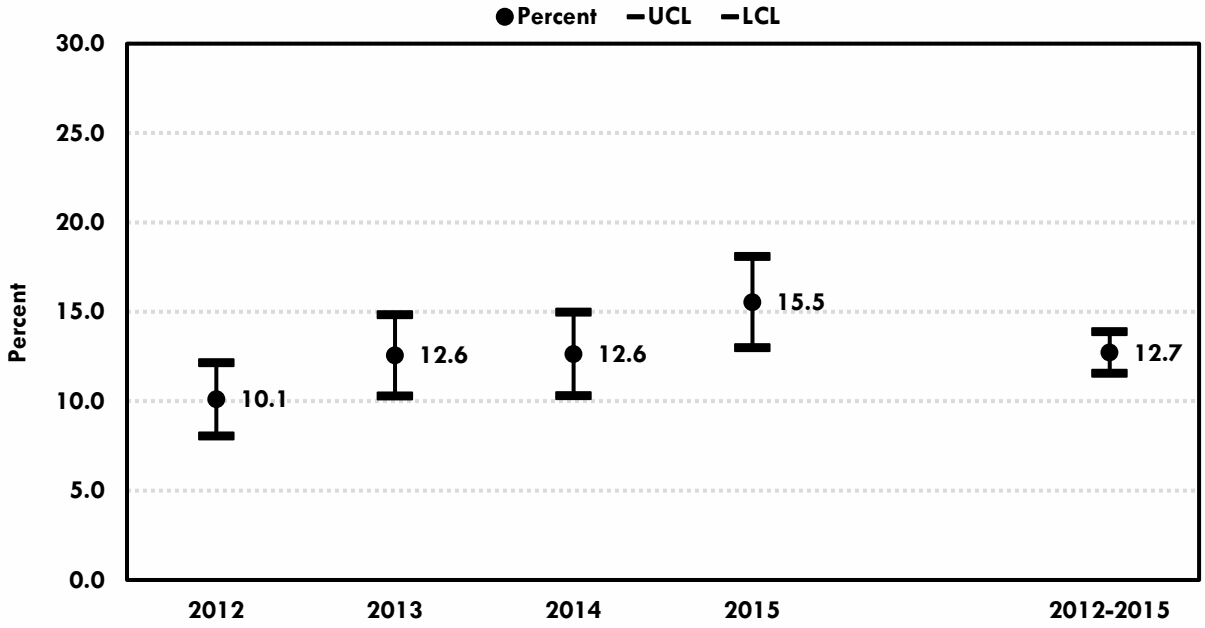
Figure 112. Percent of Mothers who Indicated using Contraception* Following Birth in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*What kind of birth control are you or your husband or partner using now to keep from getting pregnant?
Note: Denominators include the entire sample.

[18]Zhu BP, Rolfs RT, Nangle BE, Horan JM. Effect of the interval between pregnancies on perinatal outcomes. *N Engl J Med*. 1999; 340:589.
[19]Conde-Agudelo A, Rosas-Bermudez A, Kafury-Goeta, AC. Birth spacing and risk of adverse perinatal outcomes: A meta-analysis. *JAMA*, 2006; 295(15), 1809–1823. doi:10.1001/jama.295.15.1809.
[20]Hussaini, K.S., Ritenour, D. & Coonrod, D.V. Interpregnancy Intervals and the Risk for Infant Mortality: A Case Control Study of Arizona Infants 2003–2007. *Matern Child Health J* 2013;17: 646. doi:10.1007/s10995-012-1041-8

Figure 113. Percent of mothers who indicated using a reversible method of contraception* following birth in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*What kind of birth control are you or your husband or partner using now to keep from getting pregnant?
Note: Denominators include the entire sample. UCL is "Upper Confidence Limit" and LCL is "Lower Confidence Limit."

There has been a steady increase in the use of the most effective methods of contraception (Figures 112 and 113). In 2012, the percentage of mothers who had used the most effective contraception methods was 22.2 percent (95% CI: 19.4-25.0). In 2015, this percentage was 26.6 (95% CI: 23.6-29.7) – an approximately 20 percent increase. Similarly, with regards to LARCs we find that in 2012 the percentage was 10.1 (95% CI: 8.1-12.2) and by 2015 postpartum LARC prevalence was 15.5 percent (95% CI: 13.0-18.1) an over 50 percent increase in the four-year time frame.

Evident from Table 12 below, methods of contraception following birth varied by maternal age, education, income, and race and ethnicity. In particular, use of most effective methods of contraception increased with maternal age, was higher among those with 12 years of schooling, highest among those with incomes $26,001-$44,000, and among non-Hispanic blacks and Hispanics. However, the only variation in LARC use was by maternal age. In particular, LARC use was highest among mothers who were 20-24 years of age (18.2 percent; 95% CI: 15.3-21.2), followed by mothers younger than 20 years (12.4 percent; 95% CI: 7.6-17.2), followed by 25-34-year-olds (11.6 percent; 95% CI: 10.1-13.0), and those 35 years and older (9.2 percent; 95% CI: 6.7-11.7) (Not shown).

Table 12. Postpartum Contraceptive Choices among Mothers in Delaware, 2012-2015

Respondent characteristics	Method of Contraception¶			
	Most effective (i.e. Sterlization, IUD, Implant)	Moderately effective (DMPA, Patch/Ring, Injectabiles)	Least effective (Condoms, NFP/Rhythm, Withdrawal)	No method
Maternal Age***				
<20 years	13.0 (8.1-17.9)	57.7 (50.5-64.9)	13.0 (8.2-17.8)	16.3 (11.0-21.7)
20-24 years	21.7 (18.6-24.8)	38.0 (34.3-41.6)	20.1 (17.1-23.1)	20.2 (17.2-23.3)
25-34 years	24.9 (22.9-26.8)	31.2 (29.1-33.3)	24.5 (22.5-26.4)	19.4 (17.7-21.2)
35 years and older	32.7 (28.6-36.8)	18.9 (15.5-22.3)	24.3 (20.7-28.0)	24.0 (20.3-27.8)
Education***				
<12 years of schooling	21.6 (18.2-25.1)	37.0 (32.9-41.1)	22.1 (18.6-25.6)	19.3 (16.0-22.6)
12 years of schooling	27.0 (23.9-30.2)	35.7 (32.3-39.1)	17.3 (14.7-19.9)	19.9 (17.1-22.8)
>12 years of schooling	24.5 (22.5-26.4)	29.8 (27.7-31.8)	25.4 (23.5-27.3)	20.4 (18.6-22.2)
Income***				
<$10,000	25.2 (21.6-28.7)	39.1 (35.1-43.1)	13.3 (10.5-16.1)	22.4 (19.0-25.9)
$10,000-$26,000	26.5 (22.5-30.5)	37.3 (32.9-41.7)	18.6 (15.2-22.1)	17.6 (14.2-21.1)
$26,001-$44,000	27.9 (23.7-32.1)	30.1 (25.9-34.4)	22.6 (18.7-26.5)	19.3 (15.6-23.0)
$44,001 or more	23.3 (21.2-25.4)	29.0 (26.7-31.2)	27.3 (25.1-29.4)	20.5 (18.5-22.5)
Race/Ethnicity***				
White non-Hispanic	23.3 (21.4-25.2)	32.9 (30.8-35.0)	24.9 (23.0-26.9)	18.8 (17.1-20.6)
Black non-Hispanic	28.4 (25.1-31.7)	35.6 (32.2-39.1)	14.2 (11.7-16.6)	21.8 (18.8-24.8)
Hispanic	27.5 (23.4-31.6)	31.8 (27.4-36.1)	24.8 (20.8-28.8)	15.9 (12.5-19.3)
Other non-Hispanic	18.9 (11.2-26.5)	24.0 (15.8-32.3)	26.2 (17.7-34.6)	30.9 (22.1-39.8)
County				
Kent County	25.4 (22.1-28.6)	31.4 (28.0-34.9)	21.8 (18.8-24.8)	21.4 (18.3-24.4)
New Castle County	24.3 (22.4-26.2)	32.9 (30.8-35.1)	23.1 (21.3-25.0)	19.6 (17.9-21.4)
Sussex County	24.7 (21.4-28.1)	32.3 (28.7-35.9)	22.9 (19.7-26.1)	20.1 (17.0-23.1)

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

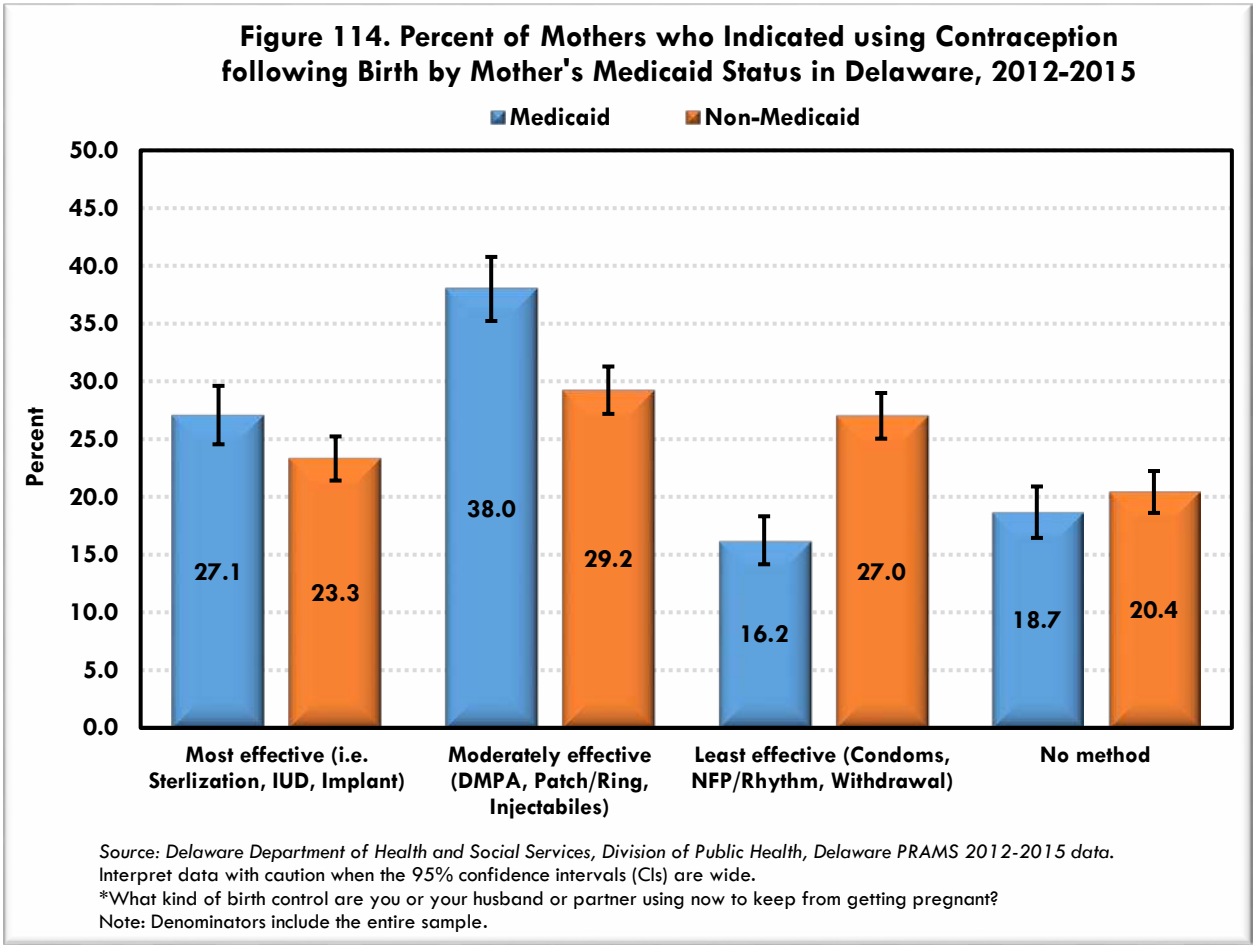
Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

¶*What kind of birth control are you or your husband or partner using now to keep from getting pregnant?*

Note: Denominators include the entire sample

***p < .01

Figure 114 displays contraception methods by mother's Medicaid status. The prevalence of using the most effective and moderately effective methods was higher among those with Medicaid. Consistent with the most effective use of contraception, mothers who indicated Medicaid as their payer also had a higher prevalence of LARC use (14.6 percent; 95% CI: 12.5-16.6) as compared to non-Medicaid (11.6 percent; 95% CI: 10.2-13.1) in the 2012-2015 period (Not shown).



4.7 Social wellness

Social wellness during postpartum is an important aspect as it assists the mother with recovery and healing after childbirth. Evidence suggests that social support provides a major buffer against postpartum depression as it also facilitates physical and emotional well-being.[21] While PRAMS data contain some proxy measures for social wellness during pregnancy, there were no measures available during postpartum.

4.8 Spiritual wellness

Similar to social wellness, spiritual wellness during postpartum enhances the mother's well-being. One study found an association between religious attendance and less risky behaviors among a nationwide sample of pregnant and postpartum women.[22] Another study found that in conjunction

[21] Negron R, Martin A, Almog M, Balbierz A, Howell EA. Social Support During the Postpartum Period: Mothers' Views on Needs, Expectations, and Mobilization of Support. *Maternal and Child Health Journal*. 2013;17:616-623.
[22] Page RL, Ellison CG, Lee J. Does religiosity affect health risk behaviors in pregnant and postpartum women? *Maternal and Child Health Journal*. 2009;13:621-632.

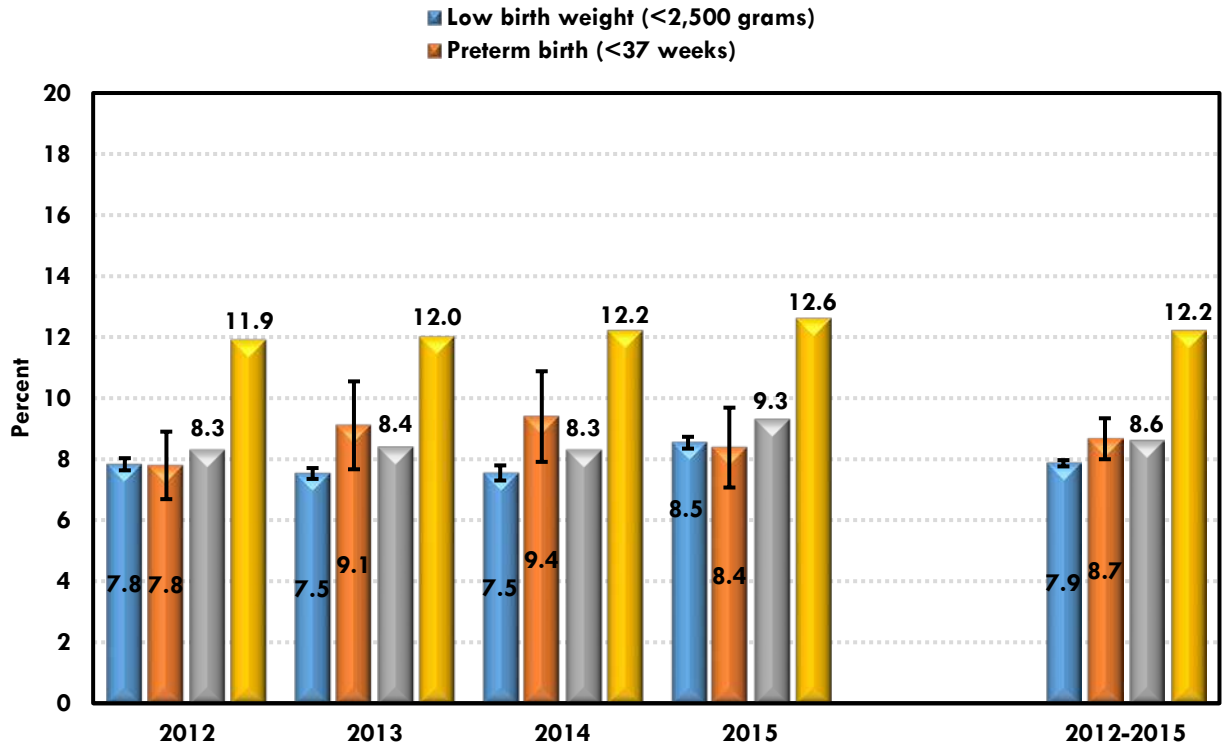
with social support, religiosity/spirituality was inversely associated with postpartum depression.[23] In another study of low income African American women, religiosity and/or spirituality predicted lower levels of depressive symptoms.[24]

[23] Clements AD, Fletcher TR, Childress LD, Montgomery RA, Bailey BA. Social support, religious commitment, and depressive symptoms in pregnant and postpartum women. *Journal of Reproductive and Infant Psychology*. 2016;34:247-259.
[24] Cheadle ACD, Dunkel Schetter C, Gaines Lanzi R, et al. Spiritual and Religious Resources in African American Women: Protection From Depressive Symptoms After Childbirth. *Clinical Psychological Science*. 2015;3:283-291.

INFANT HEALTH OUTCOMES

Since PRAMS data are derived from a sample of mothers and covers the prepregnancy, prenatal, birth event, and postpartum periods, it contains some relevant infant health outcomes. Two such outcomes strongly associated with neonatal and/or post neonatal mortality are low birth weight (<2,500 grams) and preterm birth (<37 weeks gestation). Figure 115 provides estimates of PRAMS prevalence estimates and population percentages for low birth weight and preterm births from Delaware Health Statistics Center, both of which show a secular trend with the exception of 2015. Data from Health Statistics Center for 2016 indicates the percent of low birth weight infants was 9.0 percent and the percent of preterm births was 12.7 percent.

Figure 115. Percent of Low Birth Weight and Preterm Births from PRAMS* and Vital Statistics, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**PRAMS prevalence estimates for low birth weight and preterm birth are specific to sampling variability.*

The prevalence of low birth weight and preterm birth was higher among those with low levels of education and low income (Table 13). Similarly, non-Hispanic blacks had a higher prevalence of low birth weight compared to other races and ethnicities.

Table 13. Prevalence Estimates of Infant Health Outcomes in Delaware PRAMS, 2012-2015

Respondent characteristics	Birth Outcome	
	Low birth weight† (95%CI)	Preterm birth‡ (95%CI)
Maternal Age		
<20 years	9.4 (6.8-11.9)	8.4 (5.4-11.4)
20-24 years	8.5 (7.4-9.6)	9.4 (7.6-11.2)
25-34 years	7.4 (6.9-7.8)	8.4 (7.5-9.4)
35 years and older	8.3 (7.0-9.5)	8.6 (6.8-10.3)
Education***		
<12 years of schooling	9.5 (8.2-10.9)	9.3 (7.5-11.2)
12 years of schooling	10.0 (8.9-11.1)	11.2 (9.5-12.9)
>12 years of schooling	6.4 (6.0-6.8)	7.3 (6.4-8.1)
Income***		
<$10,000	11.6 (10.2-13.1)	12.0 (10.0-14.0)
$10,000-$26,000	8.6 (7.2-9.9)	9.1 (7.2-11.1)
$26,001-$44,000	8.3 (6.9-9.7)	10.1 (7.9-12.3)
$44,001 or more	6.2 (5.7-6.7)	7.2 (6.2-8.1)
Race/Ethnicity¶***		
White non-Hispanic	6.6 (6.2-7.1)	8.4 (7.4-9.3)
Black non-Hispanic	11.3 (10.1-12.4)	9.9 (8.4-11.5)
Hispanic	6.6 (5.3-7.8)	7.0 (5.3-8.7)
Other non-Hispanic	6.4 (3.7-9.1)	9.4 (4.6-14.2)
County		
Kent County	8.1 (7.1-9.2)	8.2 (6.7-9.7)
New Castle County	8.0 (7.5-8.4)	9.1 (8.2-10)
Sussex County	7.2 (6.2-8.3)	8.0 (6.3-9.6)

Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware Pregnancy Risk Assessment Monitoring Systems (PRAMS) 2012-2015 data.

Sample size is unweighted, percent and 95% confidence intervals (CI) are weighted population estimates. Interpret data with caution when the 95% confidence intervals (CIs) are wide.

†PRAMS measure for low birth weight (<2,500 grams)

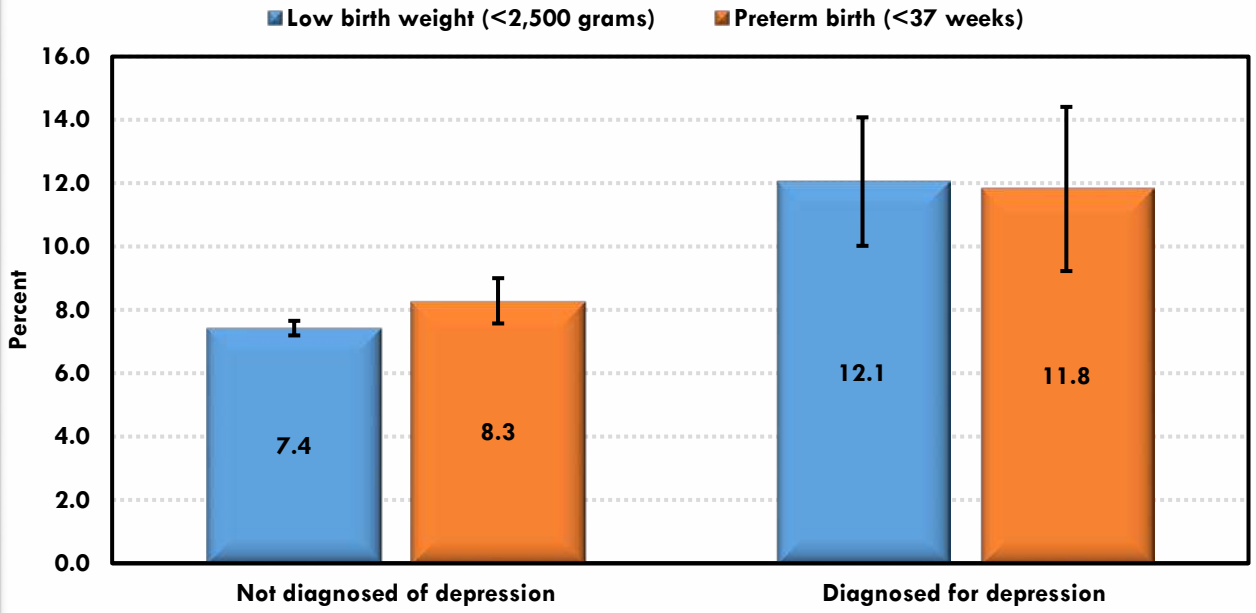
‡PRAMS measure for preterm birth (<37 weeks)

¶Significant only for low birth weight

***p < .01

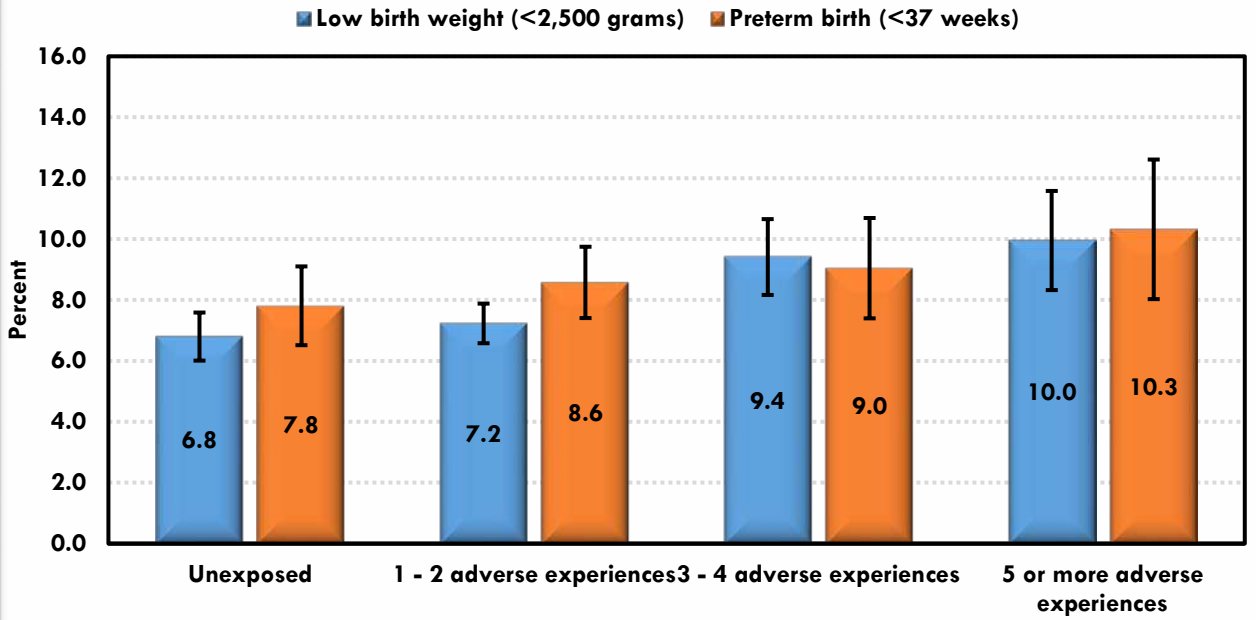
Figures 116 to 118 display birth outcomes by prepregnancy emotional wellness indicators (i.e., diagnosed for depression, maternal adverse experiences, and pregnancy intentions). Mothers diagnosed for depression prior to pregnancy were more likely to have a higher prevalence of low birth weight and preterm births compared to those who were not diagnosed. Similarly, mothers who had one or more adverse experiences were more likely to deliver low birth weight infants as compared to those who did not have any adverse experience. Finally, pregnancy intentions were associated with low birth weight.

Figure 116. Percentage of Mothers of who were Diagnosed with Depression before Pregnancy and Birth Outcomes in Delaware, 2012-2015

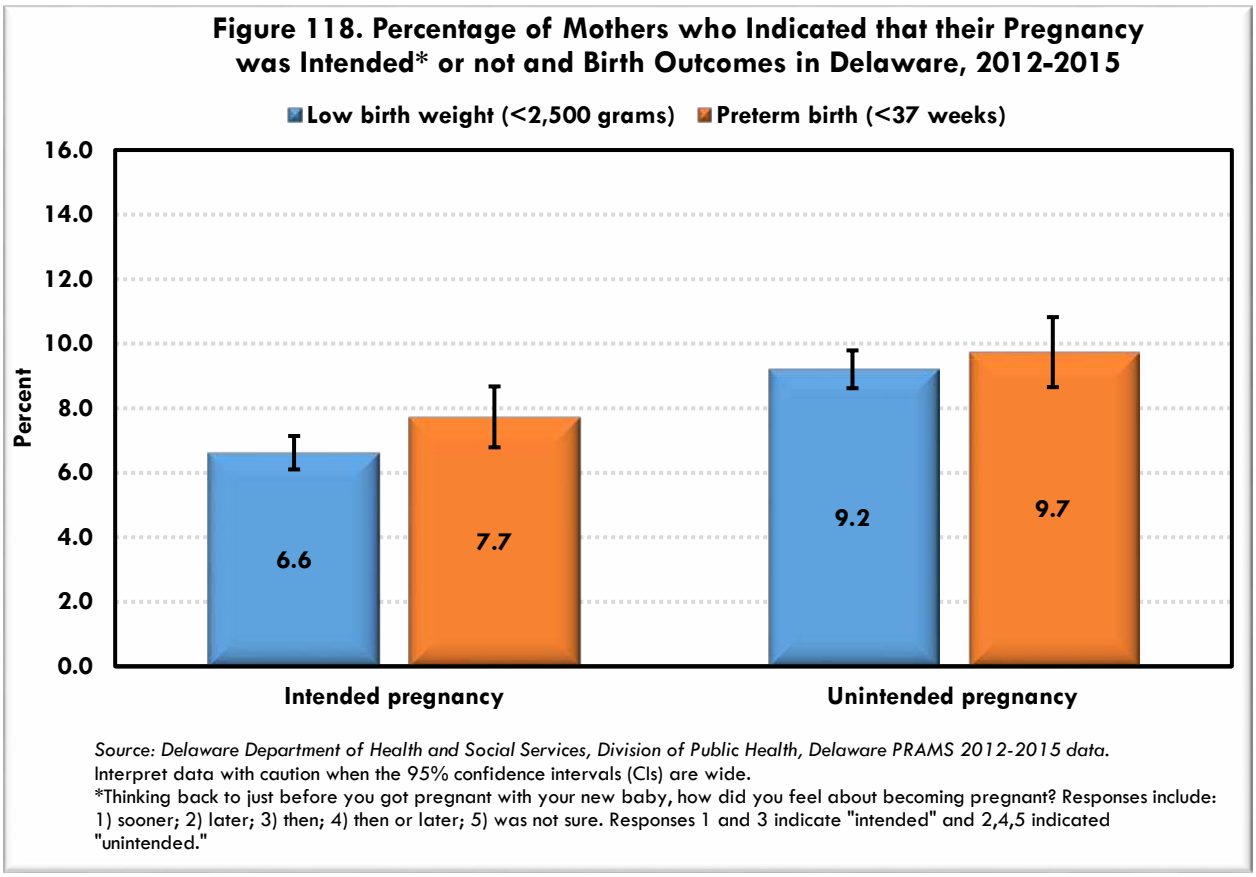


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Before you got pregnant with your new baby, did a doctor, nurse, or other health care worker tell you that you had any of the following health conditions? *Depression was an option in the list.*

Figure 117. Percentage of Mothers Exposed* to Adverse Experiences prior to Pregnancy and Birth Outcomes in Delaware, 2012-2015



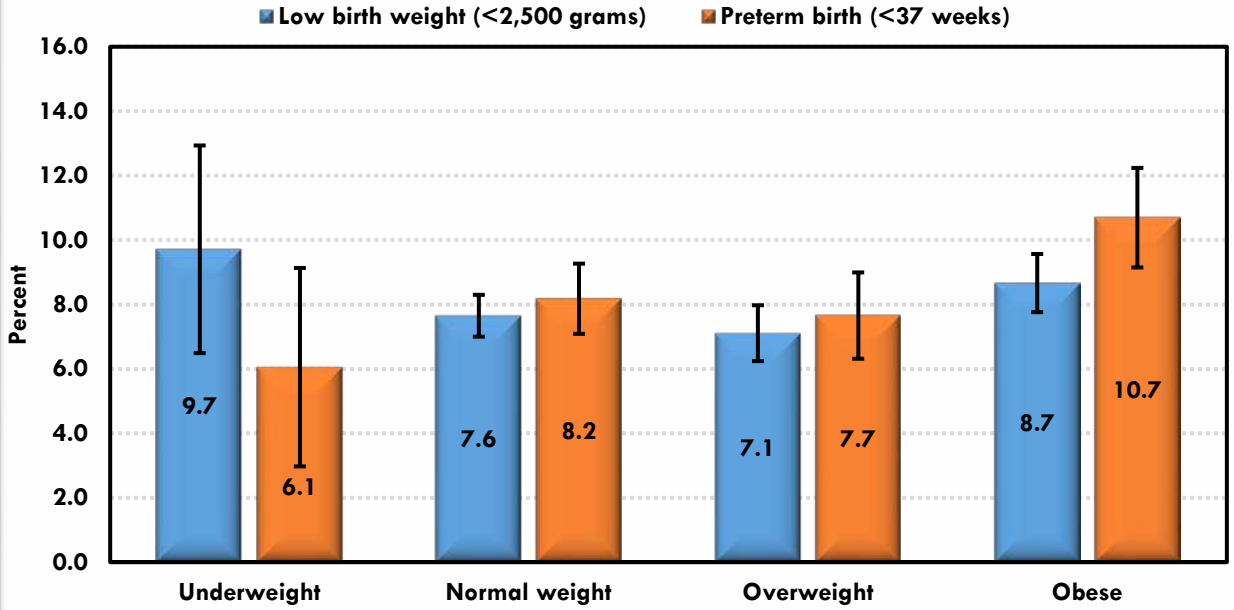
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Adverse experiences is an index of 15 variables assessed prior to pregnancy. "Exposed" is defined as having 5 or more adverse experiences.



Mothers who were diagnosed with depression, had adverse experiences, and indicated their pregnancies were unintended had poor birth outcomes. In mothers who were diagnosed with depression prior to pregnancy, the prevalence of low birth weight was higher, 12.1 percent (95% CI: 10.0-14.1), compared to those without depression, 7.4 percent (95% CI: 7.2-7.7). For those with depression the prevalence for preterm births was 11.8 percent (95% CI: 9.2-14.4), while those without depression had a prevalence of 8.3 percent (95% CI: 7.6-9.0 vs). Mothers who were exposed to adverse experiences were 40 percent (crude odds ratio COR = 1.4; 95% CI: 1.1-1.7) more likely to deliver a low birth weight baby, compared to those who were unexposed. Mothers who indicated that their pregnancy was unintended also had poor birth outcomes. For instance, mothers whose pregnancy was unintended were 40 percent (COR = 1.4; 95% CI: 1.2-1.7) more likely to deliver a low birth weight baby and 30 percent (COR = 1.3; 95% CI: 1.1-1.6) more likely to deliver a premature baby.

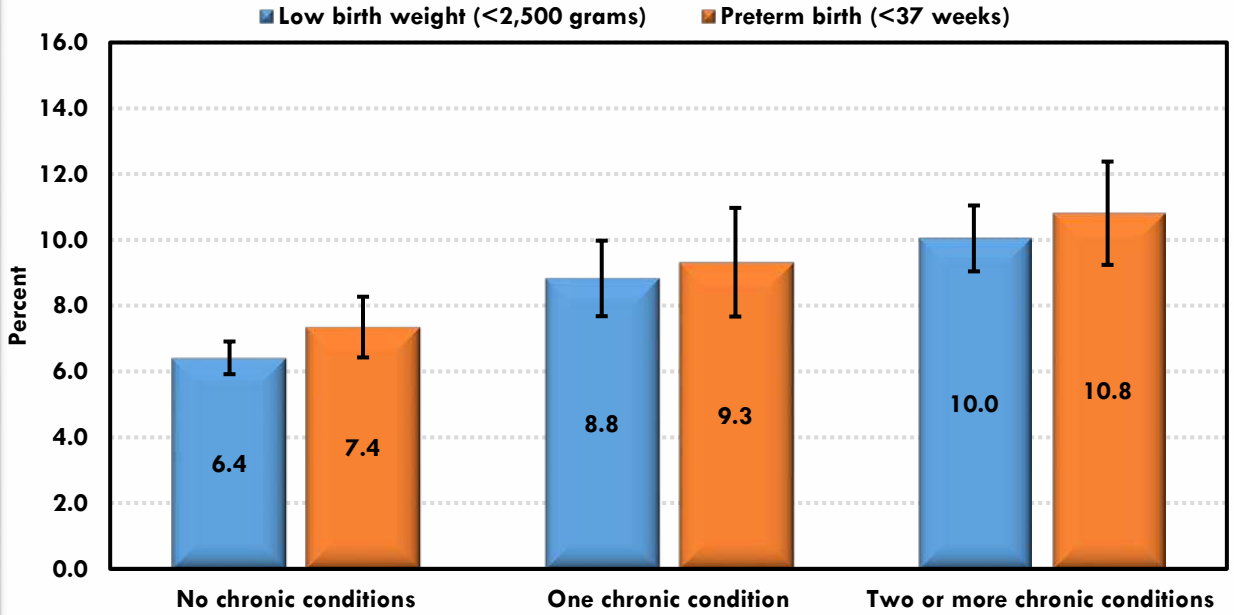
Figures 119 to 121 display birth outcomes by prepregnancy physical wellness indicators (i.e., prepregnancy BMI, chronic conditions, and smoking three months before pregnancy). As anticipated, pre-pregnancy BMI , chronic conditions, and smoking influenced birth outcomes. For instance, the prevalence of premature deliveries was higher (10.7%; 95% CI: 9.1-12.2) among mothers whose prepregnancy BMI was obese (>=30) as compared to other BMI categories. Similarly, there is a dose-response relationship in the prevalence of chronic conditions and preterm births.

Figure 119. Percentage of Mothers and their Prepregnancy Body Mass Index* and Birth Outcomes in Delaware, 2012-2015

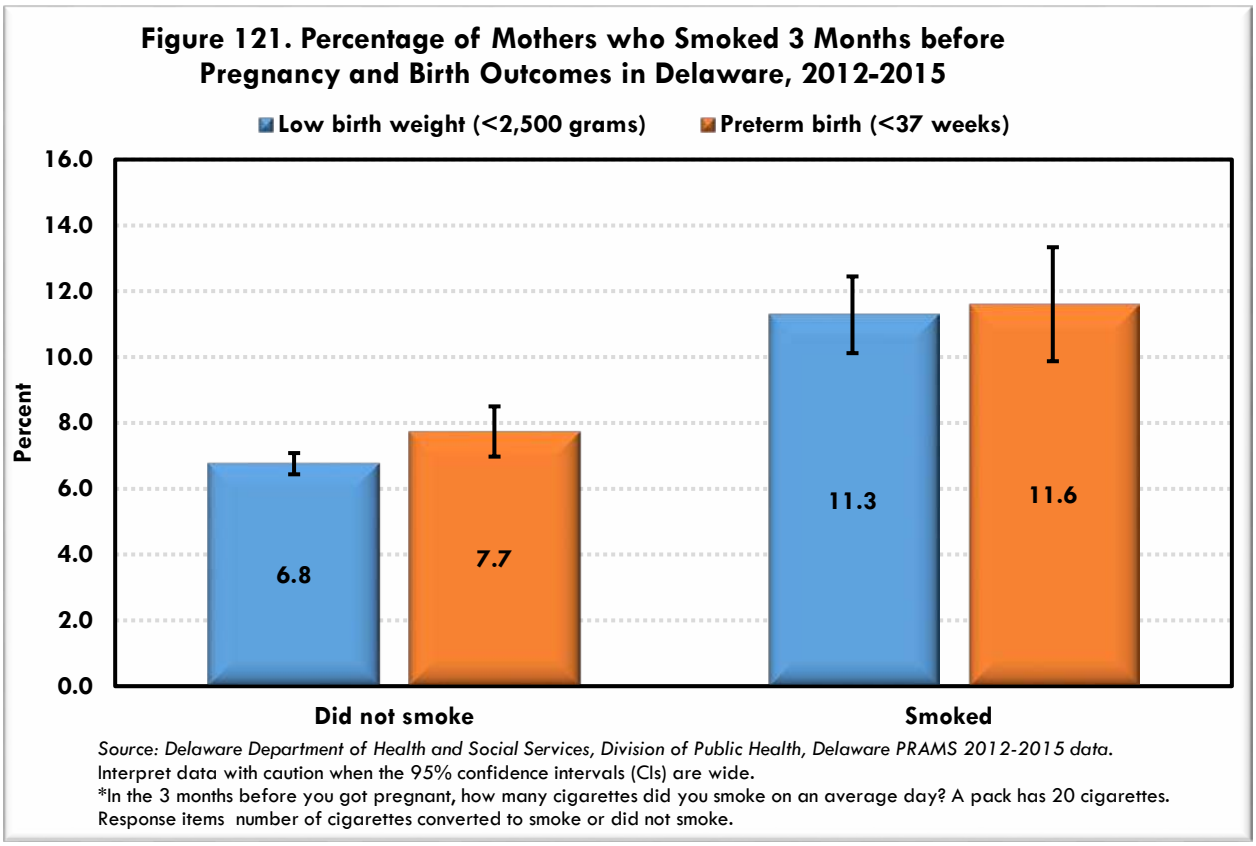


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Pre pregnancy Body Mass Index (BMI)

Figure 120. Percentage of Mothers who Indicated Having Chronic Conditions before Pregnancy and Birth Outcomes in Delaware, 2012-2015



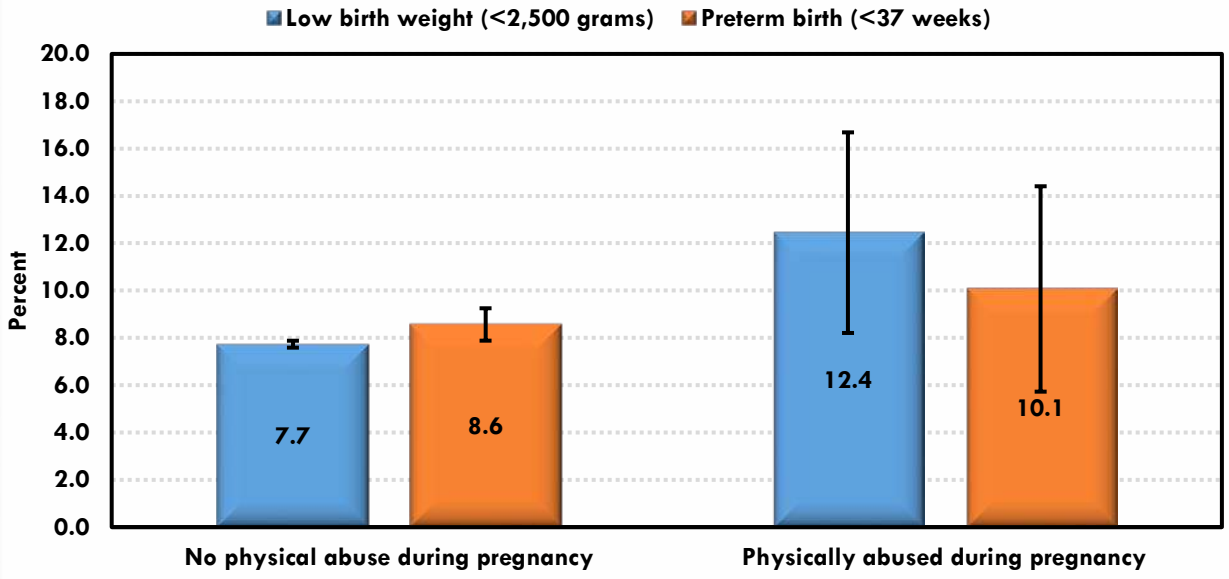
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
*Includes questions visiting health care worker and being checked for diabetes and/or high blood pressure being diagnosed with diabetes and/or high blood pressure and having asthma, anemia, heart problems, epilepsy, and/or thyroid problems 3 months before getting pregnant.



In particular, the prevalence of low birth weight deliveries with no maternal chronic conditions was about 6 percent (95% CI: 5.9-6.9), compared to 9 percent (95% CI: 7.7-10.0) for mothers with one chronic condition, and 10 percent (95% CI: 9.0-11.0) for mothers with two or more chronic conditions. Similar to low birth weight, preterm deliveries with no maternal chronic conditions was about 7 percent (95% CI: 6.4-8.3), compared to 9 percent (95% CI: 7.7-11.0) in mothers with one chronic condition, and about 11 percent (95% CI: 9.2-12.4) in mothers with two or more chronic conditions. Mothers who smoked were 75 percent (COR = 1.7; 95% CI: 1.5-2.0) more likely to deliver a low birth weight baby and 60 percent (COR = 1.6; 95% CI: 1.3-1.9) more likely to deliver a premature baby.

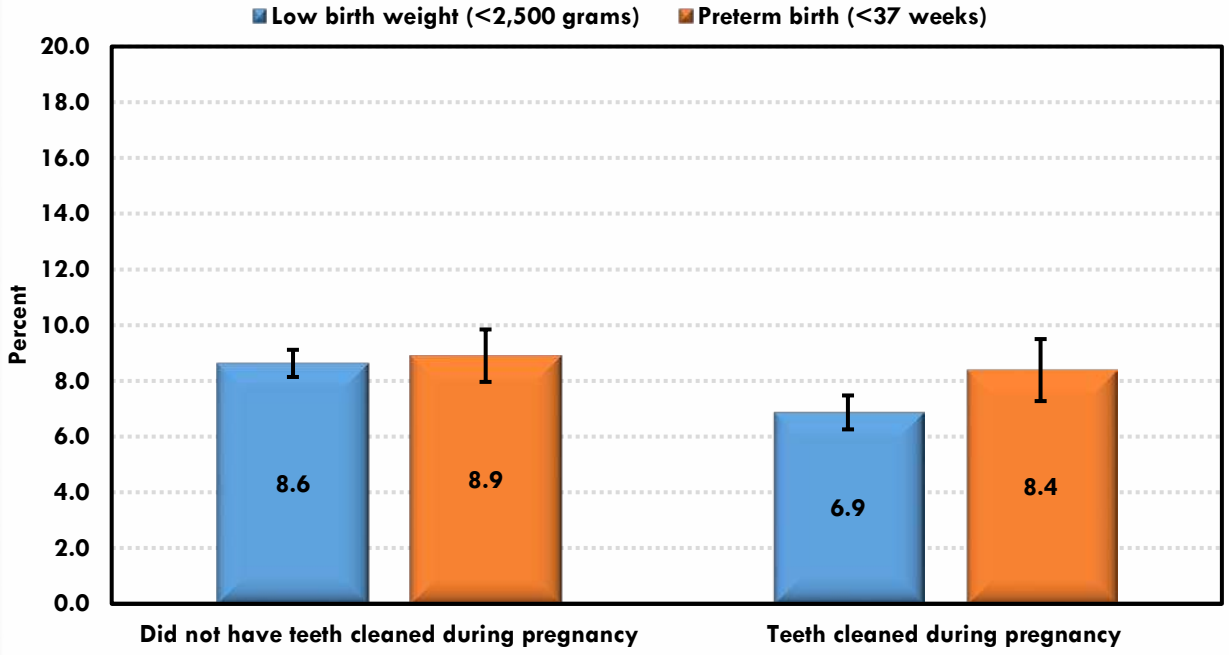
Infant health outcomes were also associated with emotional and physical pregnancy wellness indicators. Figure 121 displays differences in birth outcomes for mothers being physically abused during pregnancy, described as one plausible measure for emotional wellness. Figures 122 to 125 display physical wellness indicators (i.e., dental hygiene, blood pressure, smoking during the last three months of pregnancy, and recommended ACOG weight gain during pregnancy) and their association with birth outcomes.

Figure 122. Percentage of Mothers who Indicated that were Physically Abused during Pregnancy* and Birth Outcomes in Delaware, 2012-2015



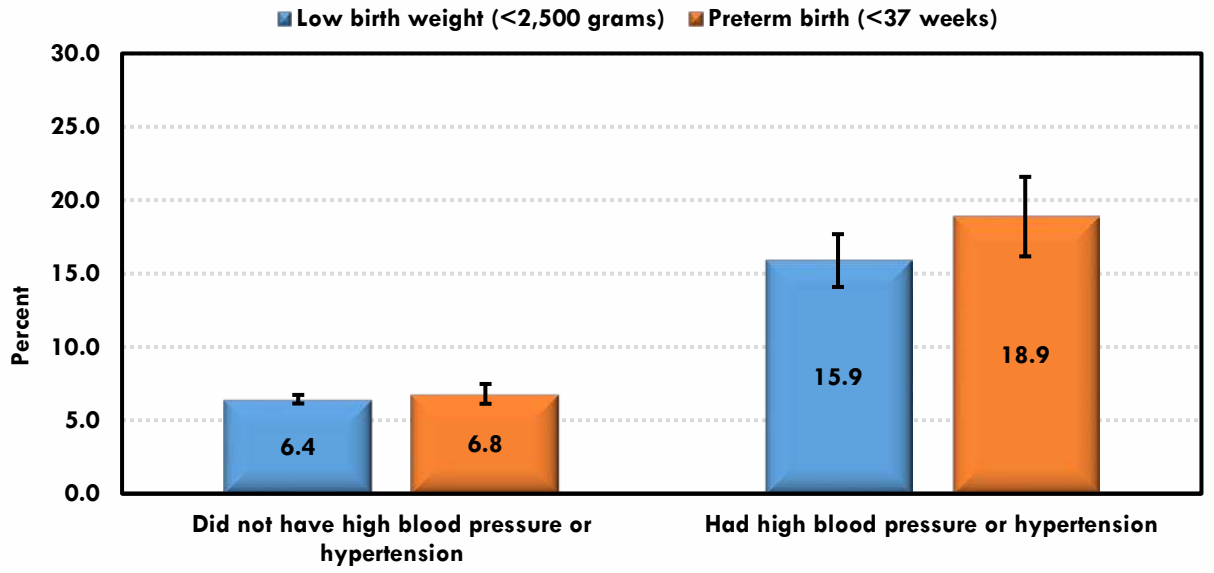
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**During your most recent pregnancy, did your husband or partner push, hit, slap, kick, choke, or physically hurt you in any other way?*

Figure 123. Percentage of Mothers who Indicated that they had their Teeth Cleaned during Pregnancy* and Birth Outcomes in Delaware, 2012-2015



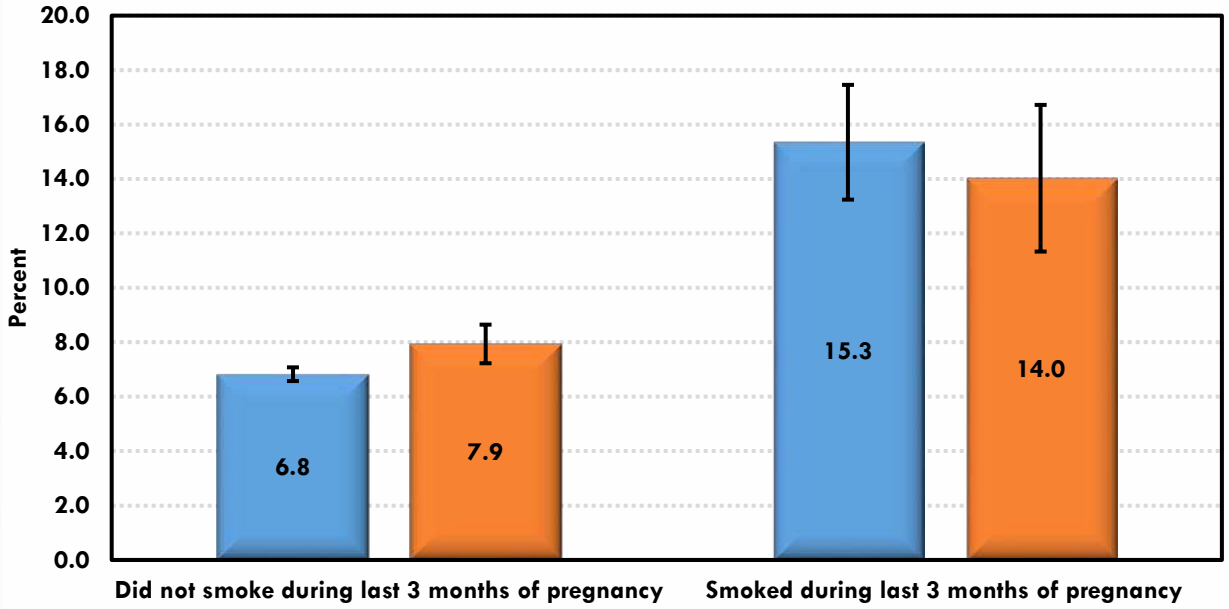
Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**This question is about the care of your teeth during your most recent pregnancy...I had my teeth cleaned by a dentist or dental hygienist*

Figure 124. Percentage of Mothers who Indicated having High Blood Pressure or Hypertension during Pregnancy* and Birth Outcomes in Delaware, 2012-2015

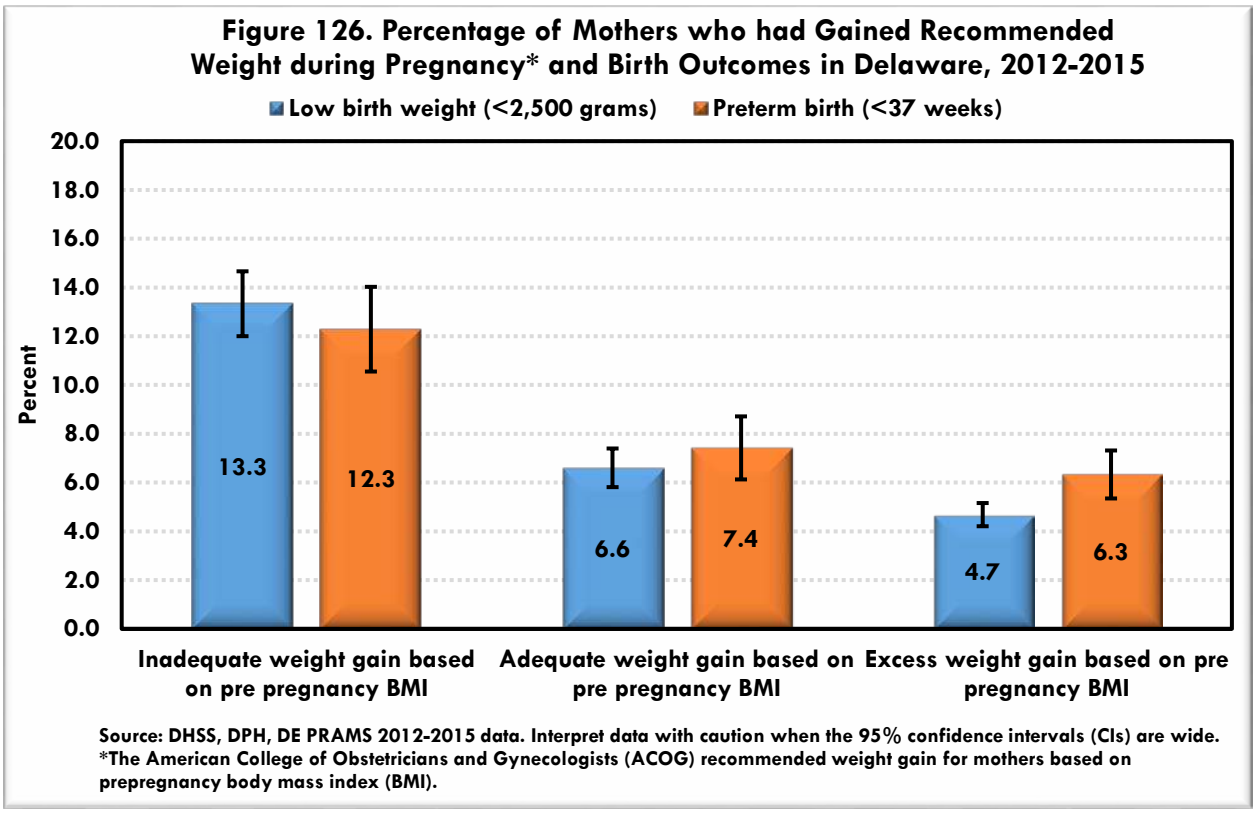


Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**Did you have any of the following problems during your most recent pregnancy? High blood pressure, hypertension (including pregnancy-induced hypertension [PIH]), preeclampsia, or toxemia*

Figure 125. Percentage of Mothers who Indicated Smoking during last 3 Months of Pregnancy* and Birth Outcomes in Delaware, 2012-2015



Source: Delaware Department of Health and Social Services, Division of Public Health, Delaware PRAMS 2012-2015 data.
Interpret data with caution when the 95% confidence intervals (CIs) are wide.
**In the last 3 months of your pregnancy, how many cigarettes did you smoke on an average day? A pack has 20 cigarettes.* Response items of number of cigarettes converted to smoke or did not smoke.



PRAMS data from 2012-2015 provides a detailed overview of the multiple factors that influence health with an underlying SDOH framework. Wellness as a concept provides us with a tool to understand how various dimensions such as emotional, environmental, financial, intellectual, occupational, physical, social, and spiritual characteristics interact during the life-course vis-à-vis pregnancy and infant health. Despite the lack of measures in every dimension, evidence from PRAMS data underscores the importance of pre-pregnancy wellness (before pregnancy), pregnancy wellness (during pregnancy) post pregnancy wellness (after pregnancy). There was some evidence of the interplay of prepregnancy and pregnancy wellness dimensions, such as emotional and physical wellness, on birth outcomes. These data can help identify and prioritize population-based interventions to maximize gains on reducing maternal and infant morbidity and mortality.

APPENDIX

A. DATA SOURCES

The primary data source for this report is the Pregnancy Risk Assessment Monitoring System (PRAMS). PRAMS was established in 1987 as part of an Infant Health Initiative through Congressional funding to CDC to establish state-based programs. Every month, in each participating state, a stratified sample of 100 to 300 women who have recently given birth to a live infant is selected from birth certificates. From 2 to 6 months after delivery, each woman in the sample is sent an explanatory letter that introduces the survey. PRAMS is administered by the Division of Reproductive Health, National Center for Chronic Disease Prevention and Health Promotion, CDC. PRAMS operates through cooperative agreements between CDC and states that have been awarded competitive grants. PRAMS surveillance currently covers about 78% of all U.S. births. Delaware PRAMS was established in 2006, and has continually collected data (2015 latest data available) on a variety of topics using a standard protocol. It is a dual-mode survey, telephone and hard copy, which utilizes a stratified sample of women who have had a recent live birth from the birth certificate records.

Census data and population estimates where applicable were also used using American Fact Finder http://factfinder.census.gov/faces/nav/jsf/pages/searchresults.xhtml?refresh=t

B. METHODS

Since PRAMS has a complex survey sampling design with a random probability sample, it requires specific analysis techniques to make proper inferences. George Yocher, PRAMS Coordinator in Family Health Systems at DPH, provided the PRAMS data for Delaware. All analyses were conducted utilizing appropriate weight variables as available in the PRAMS codebook. When multiple years of data were combined for specific analyses, a new weight variable was calculated as recommended by Korn et al.[25]

[25] Korn EL, Graubard BI. *Analysis of Health Surveys,* John Wiley and Sons.