

## PRECONCEPTION HEALTH

Efforts to improve pregnancy outcomes and the health of mothers and infants should begin prior to conception, whether before a first or a subsequent pregnancy.<sup>53</sup> It is important to establish health and healthy behaviors well before pregnancy as most women do not become aware of their pregnancy, until several weeks or more after conception. Key indicators of preconception health include not smoking or drinking prior to pregnancy, taking a daily multivitamin, and achieving a healthy weight prior to pregnancy.<sup>54</sup>

Frequent drinking, especially early in pregnancy, can cause fetal alcohol syndrome and alcohol-related birth defects.<sup>54,55</sup> Smoking also increases the risk of pregnancy complications, preterm birth, and low birth weight.<sup>53</sup> In 2007–2009, about 1 in 5 recent mothers in a 32-State area reported binge drinking (consumed 5 or more drinks in a sitting) at least once within 3 months prior to pregnancy (21.1 percent) and 23.6 percent reported smoking. Binge drinking and smoking in the 3 months prior to pregnancy tend to be higher among younger mothers. For example, among 20- to 24-year-old women, 25.5 percent reported preconception binge drinking and 34.2 percent reported preconception smoking compared to 15.3 and 12.4 percent, respectively, among women aged 40 years and older.

Daily use of multivitamins containing folic acid can reduce the risk of neural tube defects

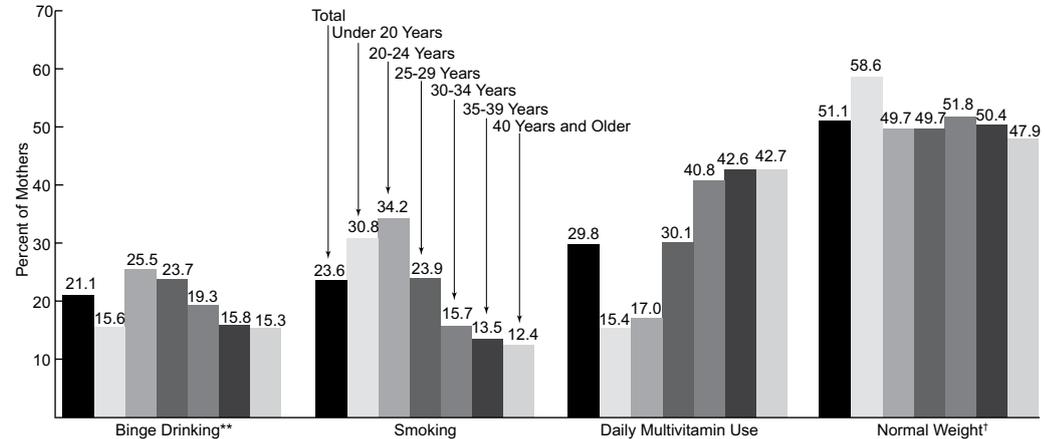
in infants by two-thirds.<sup>53</sup> In 2007–2009, only 29.8 percent of recent mothers reported daily multivitamin use in the month prior to pregnancy. Daily preconception multivitamin use increased with maternal age. Over 40 percent of women aged 30 years and older reported taking a daily multivitamin in the month prior to pregnancy compared with less than 20 percent of women younger than 25 years of age.

Women should also attain a healthy weight prior to pregnancy to prevent complications, such as diabetes and hypertension, which may necessitate preterm delivery.<sup>53</sup> Only about

half of new mothers (51.1 percent) reported a healthy or normal pre-pregnancy weight for their height. This proportion did not vary by maternal age with the exception of teenage mothers who were more likely to have had a normal pre-pregnancy weight (58.6 percent). With regard to race and ethnicity, non-Hispanic Asian mothers were most likely to have attained a healthy pre-pregnancy weight (66.4 percent), while non-Hispanic Black mothers were least likely (40.4 percent; data not shown). See *Women's Health USA 2011* for additional estimates by race and ethnicity.

### Selected Preconception Health Indicators Among Recent Mothers, by Age, 2007–2009\*

Source II.20: Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System



\*Includes data from a total of 32 States and New York City; 25 states contributed all 3 years; mothers completed surveys between 2 and 9 months postpartum. \*\*Defined as drinking five or more alcohol drinks in one sitting at least once in the 3 months prior to pregnancy. †Defined as a pre-pregnancy body mass index (ratio of weight to height) between 18.5 and 24.9.

## UNINTENDED PREGNANCY AND CONTRACEPTION

Unintended pregnancy is a pregnancy that is mistimed (occurred too soon) or unwanted (occurred when the woman wanted no future pregnancies) at the time of conception. Unintended pregnancies that lead to births are associated with both short and long-term negative outcomes for both mother and child, including delayed prenatal care, maternal depression, increased risk for intimate partner violence, and poor developmental and educational outcomes for children.<sup>56</sup> Historically, it has been difficult to estimate the rate of unintended pregnancy due to reporting issues specifically related to the underreporting of pregnancies ending in abortion. However, in 2006–2010 women reported that 37.1 percent of live births occurring in the

past 5 years were unintended at the time of conception. This includes 13.8 percent of pregnancies that were unwanted and 23.3 that were mistimed. Of births that were mistimed at the time of conception, 14.0 percent were reported by the mother to have occurred 2 or more years too soon (data not shown). Overall, the proportion of births that were unintended has not changed significantly since 1982.<sup>57</sup>

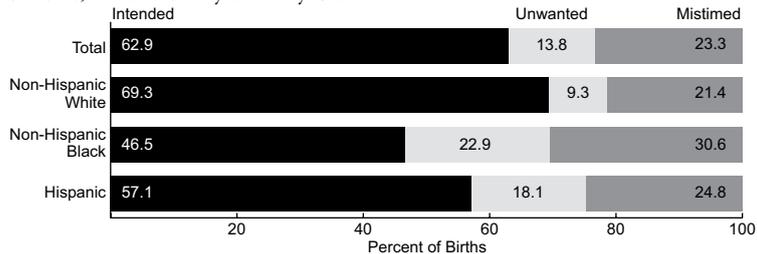
Unintended pregnancy varies by a variety of factors including age, as well as race and ethnicity. In 2006–2010, over three-quarters (77.2 percent) of births in the past 5 years to mothers aged 15–19 years were unintended at the time of conception. The same was true for half (50.1 percent) of births to women aged 20–24 years and one-quarter (25.4 percent) among those aged 25–44 (data not shown). Births to non-

Hispanic Black and Hispanic women were more likely than those to non-Hispanic White women to have been unintended (53.5 and 42.9 versus 30.7 percent, respectively). Of births to non-Hispanic Black women that were mistimed, 21.8 percent were 2 or more years too soon, which is two times higher than for births to non-Hispanic White women (10.8 percent; data not shown).

Unintended pregnancies can be averted with proper use of effective contraceptives. In 2006–2010, 4.7 million or 11.0 percent of women at risk of unintended pregnancy—who were having intercourse and not sterile, pregnant, or trying to get pregnant—reported that they were not using contraception. Younger women were more likely to not be using contraception while at risk for unintended pregnancy.

### Intendedness of Births at Conception\* Among Women Aged 15–44, by Race/Ethnicity,\*\* 2006–2010

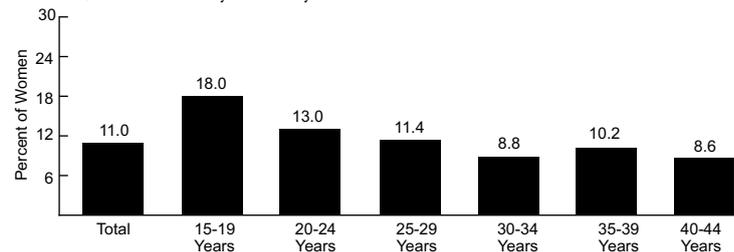
Source II.21: Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Family Growth



\*Reported for all births occurring in the 5-year period prior to the interview. Percentages may not add to 100 due to rounding. \*\*Samples of non-Hispanic persons of other races and those reporting two or more race or origin groups were too small to produce reliable results.

### No Current Contraceptive Use Among Women Aged 15–44 at Risk of Unintended Pregnancy,\* by Age, 2006–2010

Source II.22: Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Family Growth



\*At risk of unintended pregnancy is defined as having had intercourse in the last 3 months among those who were not currently pregnant, trying to get pregnant, or sterile for health reasons.

### SMOKING DURING PREGNANCY

Smoking during pregnancy can have a negative impact on the health of women, infants, and children by increasing the risk of fertility problems and pregnancy complications, as well as preterm birth, low birth weight, and sudden infant death syndrome—some of the leading causes of infant mortality.<sup>6</sup> Smoking cessation prior to and any time during pregnancy carries benefits, especially considering the many additional risks of postnatal tobacco smoke exposure for infants and children including respiratory infections, ear infections, and asthma.<sup>6</sup>

In 2007–2009, 12.5 percent of recent mothers in a 32-State area reported that they had smoked in the last 3 months of pregnancy.

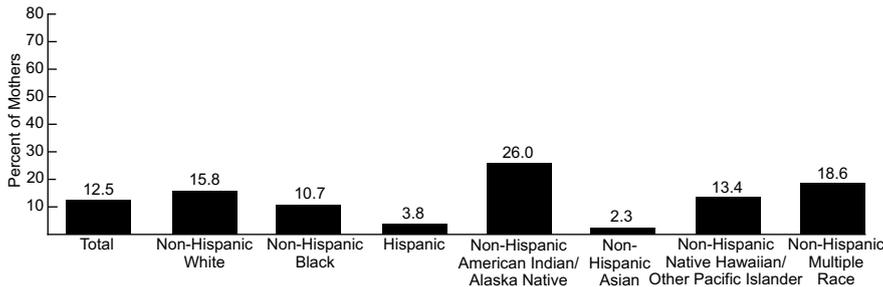
Smoking in the last 3 months of pregnancy varied significantly by race and ethnicity. About one-quarter of non-Hispanic American Indian/Alaska Native mothers (26.0 percent) reported having smoked in the last 3 months of pregnancy, while less than 5 percent of non-Hispanic Asian and Hispanic mothers reported doing so (2.3 and 3.8 percent, respectively). Smoking in the last 3 months of pregnancy also varied by maternal education, ranging from 2.3 percent among mothers with at least 16 years of education to about 20 percent among mothers with 12 or fewer years of education (data not shown).

Due to awareness of the neonatal health consequences of smoking, pregnancy may be a time of heightened motivation to quit. In 2007–2009,

47.3 percent of mothers in a 32-State area who reported smoking in the 3 months prior to pregnancy had not smoked in the last 3 months of pregnancy. Prenatal smoking cessation rates increased with maternal education, ranging from 32.2 percent among mothers with less than 12 years of education to 74.5 percent among mothers with 16 or more years of education. Hispanic and non-Hispanic Asian mothers had the highest rates of smoking cessation at about 67 percent, while fewer than half of mothers of other racial and ethnic groups had quit smoking during pregnancy (data not shown). In addition to clinical screening and counseling,<sup>58</sup> increases in State tobacco taxes and smoke-free laws have been shown to improve prenatal smoking cessation.<sup>59</sup>

### Cigarette Smoking in the Last 3 Months of Pregnancy, by Race/Ethnicity, 2007–2009\*

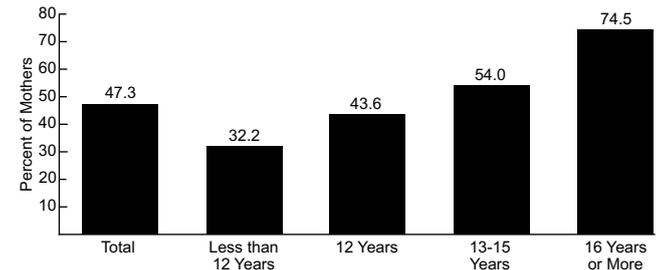
Source II.20: Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System



\*Includes data from a total of 32 States and New York City; 25 States contributed all 3 years; mothers completed surveys between 2 and 9 months postpartum.

### Smoking Cessation During Pregnancy,\* by Maternal Education, 2007–2009\*\*

Source II.20: Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System



\*Defined as the proportion of mothers who reported not smoking in the last 3 months of pregnancy among those who reported smoking in the three months prior to pregnancy.

\*\*Includes data from a total of 32 States and New York City; 25 States contributed all 3 years; mothers completed surveys between 2 and 9 months postpartum.

## LIVE BIRTHS AND DELIVERY TYPE

In 2010, there were 4 million live births in the United States and the birth rate among women aged 15–44 years was 64.1 births per 1,000, a decrease of 3 percent from 2009 and the lowest rate reported in over a decade.<sup>60</sup> Overall birth rates were highest among mothers aged 25–29 years (108.3 live births per 1,000 women), followed by those aged 30–34 years (96.5 births per 1,000 women). Between 2009 and 2010, the birth rate declined or remained unchanged in every age group except for 40–44 years, which increased 2 percent to the highest level since 1967.<sup>60,61</sup> The birth rates among

teens aged 15–19 years and young women aged 20–24 years declined to the lowest levels ever reported (34.2 and 90.0 per 1,000, respectively). Only birth rates among women aged 30 years and older are higher now than in 1990.

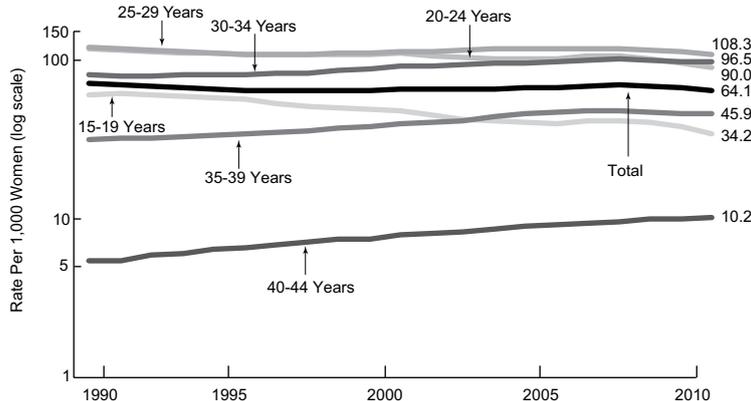
The average age at first birth increased to 25.4 in 2010, an increase of 4 years since 1970.<sup>61,62</sup> Asian/Pacific Islander women had the highest average age at first birth while American Indian/Alaska Native women had the lowest (29.1 and 22.3 years, respectively; data not shown).<sup>60</sup>

The proportion of births delivered by cesarean section declined slightly from 32.9 percent in 2009 to 32.8 percent in 2010. This represents

the first decline in cesarean delivery since 1996, when 20.7 percent of births were delivered by cesarean section. The U.S. cesarean delivery rate far exceeds the upper limit of 15 percent recommended by the World Health Organization.<sup>63</sup> *Healthy People 2020* has set national objectives to reduce the cesarean delivery rate by 10 percent among low-risk women giving birth for the first time and among low-risk women with a prior cesarean section.<sup>54</sup> In 2010, 27.3 percent of low-risk women giving birth for the first time and 89.9 percent of low-risk women with a prior cesarean section delivered by cesarean (data not shown).<sup>64</sup>

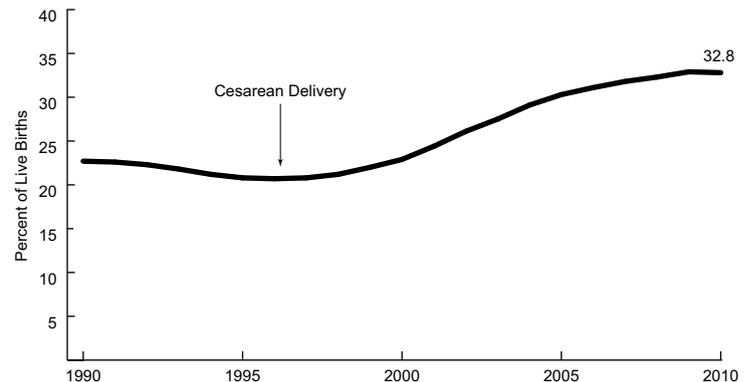
### Live Births per 1,000 Women, by Age, 1990–2010

Source II.23: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



### Births by Cesarean Delivery, 1990–2010

Source II.23: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



## MATERNAL MORBIDITY AND MORTALITY

Diabetes and hypertension are the most commonly reported health conditions among pregnant women. Diabetes, both chronic and gestational (developing only during pregnancy), may pose health risks to a woman and her baby. Women with gestational diabetes are at increased risk for developing diabetes later in life.<sup>65</sup> In 2010, among the 33 States that collected this information on the revised birth certificate, chronic or pre-existing diabetes occurred at a rate of 7.0 per 1,000 live births while gestational diabetes was a complication in 44.2 per 1,000 live births. Both chronic and gestational diabetes increase significantly with maternal age to a peak among mothers aged 40 years and older of 16.7 and 97.0

per 1,000 live births, respectively.

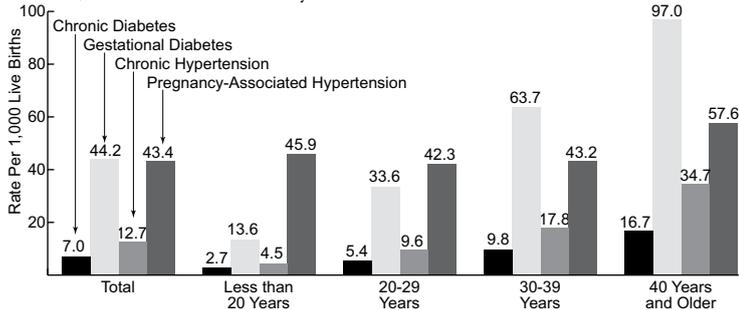
Hypertension during pregnancy can also be either chronic in nature or gestational. Severe hypertension during pregnancy can result in preeclampsia, fetal growth restriction, and early delivery.<sup>66</sup> In 2010, in the 33 States that used the revised birth certificate, chronic and pregnancy-associated hypertension were present in 12.7 and 43.4 per 1,000 live births, respectively. Chronic and pregnancy-associated hypertension were highest among mothers aged 40 or older (34.7 and 57.6 per 1,000, respectively). These conditions also varied by race and ethnicity (data not shown, see *Women's Health USA 2011*).

In 2006–2007, there were 1,294 deaths found to be pregnancy-related (15.1 per 100,000 live

births), which are defined as deaths related to or aggravated by pregnancy and occurring during or within one year after the end of the pregnancy.<sup>67</sup> This definition includes more deaths than the traditional definition of maternal mortality, which counts pregnancy-related deaths only up to 42 days after the end of pregnancy. Cardiovascular disease was the leading cause of pregnancy-related mortality (13.5 percent) and other chronic conditions including heart muscle diseases (12.6 percent) and non-cardiovascular diseases (11.8 percent) also contributed substantially. The maternal mortality ratio among Black women was roughly 3 times the rate among White women (34.8 versus 11.0 per 100,000 live births – see *Child Health USA 2012*).

### Selected Maternal Morbidities and Risk Factors in Pregnancy, by Maternal Age, 2010\*

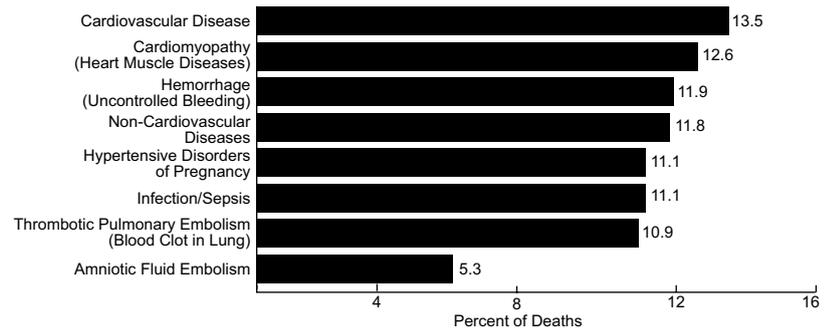
Source II.24: Centers for Disease Control and Prevention, National Center for Health Statistics, National Vital Statistics System



\*Data are from 33 States that implemented the 2003 revision of the death certificate as of January 1, 2010, representing 76 percent of all U.S. births.

### Leading Causes of Pregnancy-Related Death,\* 2006–2007

Source II.25: Centers for Disease Control and Prevention, Division of Reproductive Health, Pregnancy Mortality Surveillance System



\*The cause of death was unknown for 5.6 percent of all pregnancy-related deaths in 2006–2007.

## POSTPARTUM DEPRESSIVE SYMPTOMS

The birth of a child is a major life event that can be joyous, but also stressful in its new demands and responsibilities. Hormonal changes and lack of sleep can contribute to “baby blues” or mild depressive symptoms, such as occasional sadness, crying, irritability, and trouble concentrating, which are common and transient.<sup>68</sup> Depression occurs when these symptoms, including depressed mood and loss of interest in activities, are severe and last for more than two weeks.<sup>69</sup> Other symptoms can include changes in appetite, feelings of worthlessness or guilt, and suicidal thoughts.

In 2009, 11.9 percent of recent mothers in a 29-State area reported postpartum depres-

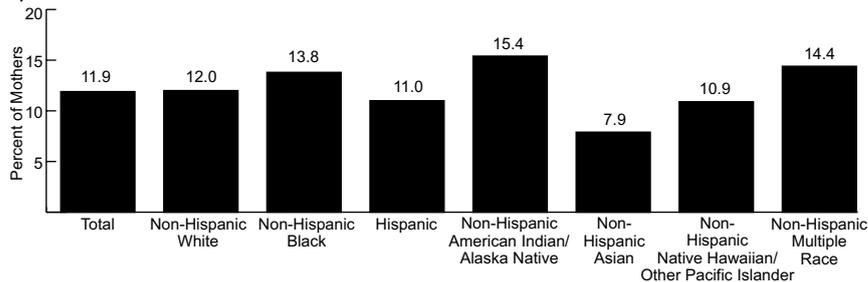
sive symptoms since the birth of their child in the previous 2–9 months. Postpartum depressive symptoms varied significantly by race and ethnicity. The proportion of mothers reporting postpartum depressive symptoms was highest among non-Hispanic American Indian/Alaska Natives, non-Hispanic mothers of multiple races, and non-Hispanic Black mothers (15.4, 14.4, and 13.8 percent, respectively), and was lowest among non-Hispanic Asian mothers (7.9 percent). Postpartum depressive symptoms also varied greatly by level of maternal education, from 6.9 percent among mothers with at least 16 years of education to 22.2 percent among mothers with less than 12 years of education (data not shown). Factors that may increase the risk of postpartum depression include previous

depressive episodes, stressful life events, and limited social support.<sup>68,69</sup>

Early diagnosis and treatment are important as postpartum depression can interfere with maternal-infant bonding and child development.<sup>69</sup> Screening for depression is encouraged by the American College of Obstetricians and Gynecologists both during and after pregnancy. In 2007–2009, 76.6 percent of recent mothers in a 10-State area reported that a health care provider talked with them about “baby blues” or postpartum depression during or after their most recent pregnancy; this ranged from 73.0 percent of mothers with less than 12 years of education to 79.2 percent of mothers with 16 or more years of education (see *Women's Health USA 2011* for estimates by race and ethnicity).

### Postpartum Depressive Symptoms\* Among Mothers with a Recent Live Birth, by Race/Ethnicity, 2009\*\*

Source II.26: Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System

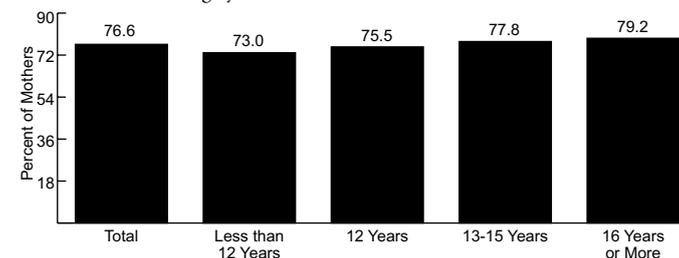


\*Defined as a sum of 10 or higher in response to 3 questions of how often the mom reported feeling down, depressed, or sad; hopeless; or slowed down since the birth of the baby, where 1=never, 2=rarely, 3=sometimes, 4=often, 5=always.

\*\*Includes data from a total of 29 States; mothers completed surveys between 2 and 9 months postpartum.

### Women with a Recent Live Birth Who Reported That a Health Care Provider Discussed Postpartum Depression, by Maternal Education,\* 2007–2009\*\*

Source II.20: Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System



\*\*Includes data from a total of 10 States and New York City; 4 States contributed all 3 years; mothers completed surveys between 2 and 9 months postpartum.

## BREASTFEEDING

Breast milk benefits the health, growth, immunity, and development of infants, and mothers who breastfeed may have a reduced risk of Type 2 diabetes and breast and ovarian cancer.<sup>70</sup> Among infants born in 2008, 74.6 percent were reported to have ever been breastfed, representing a significant increase over the 70.9 percent of infants ever breastfed in 2000.<sup>71</sup> The American Academy of Pediatrics recommends that infants be exclusively breastfed—without supplemental solids or liquids—for the first 6 months of life; however, only 44.3 percent of infants born in 2008 were breastfed at 6 months of age and only 14.8 percent were exclusively breastfed through the first 6 months.

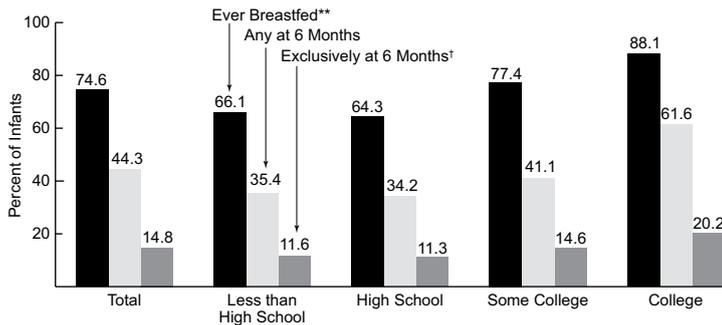
Breastfeeding practices vary considerably by a number of factors, including maternal race and ethnicity, education, age, and income. With respect to education, infants born to mothers with a college education were most likely to have ever been breastfed (88.1 percent), while infants born to mothers with a high school degree or less were least likely (64.3 and 66.1 percent, respectively). With respect to race and ethnicity, Asian infants were most likely to ever be breastfed (86.7 percent) while non-Hispanic Black infants were the least likely to ever be breastfed (59.0 percent). Infants born to older mothers and those with higher household incomes were also more likely to be breastfed (data not shown). These sociodemographic pat-

terns generally persist with regard to the duration and exclusivity of breastfeeding.

Maternal employment can also affect whether and for how long an infant is breastfed; mothers working full-time are less likely to breastfeed at 6 months than those working part-time or not at all.<sup>72</sup> In 2011, more than half of all mothers with children under 1 year of age were employed, and two-thirds of those mothers were employed full-time (data not shown).<sup>73</sup> The Affordable Care Act of 2010 helps to support breastfeeding among working women by requiring break time and a private, sanitary place for nursing mothers to express breast milk during the workday.<sup>74</sup>

### Infants\* Who Are Breastfed, by Maternal Education and Duration, 2008

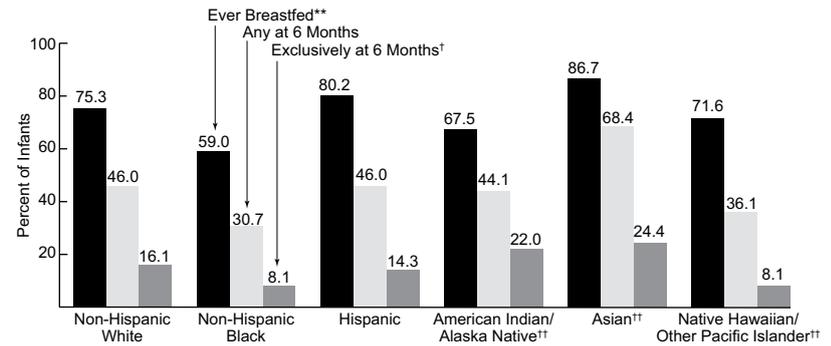
Source II.27: Centers for Disease Control and Prevention, National Immunization Survey



\*Includes only infants born in 2008; data are provisional. \*\*Reported that child was ever breastfed or fed human breast milk. \*Exclusive breastfeeding is defined as only human breast milk—no solids, water, or other liquids.

### Infants\* Who Are Breastfed, by Race/Ethnicity and Duration, 2008

Source II.27: Centers for Disease Control and Prevention, National Immunization Survey



\*Includes only infants born in 2008; data are provisional. \*\*Reported that child was ever breastfed or fed human breast milk. \*Exclusive breastfeeding is defined as only human breast milk—no solids, water, or other liquids. \*\*Includes Hispanics.

## IMPAIRED FECUNDITY AND FERTILITY SERVICES

Infertility generally refers to difficulties in becoming pregnant after trying for 1 year, whereas impaired fecundity includes problems either in becoming pregnant or carrying a pregnancy to term.<sup>75</sup> Factors that can increase a women's risk for infertility or impaired fecundity include older age, smoking, excessive alcohol use, stress, poor diet, being severely over- or underweight, a history of sexually transmitted infections, and certain health conditions such as polycystic ovarian syndrome (PCOS) which can interfere with ovulation.<sup>75</sup>

In 2006–2010, 10.9 percent of women aged 15–44 had impaired fecundity (data not shown). Impaired fecundity varied by maternal age and

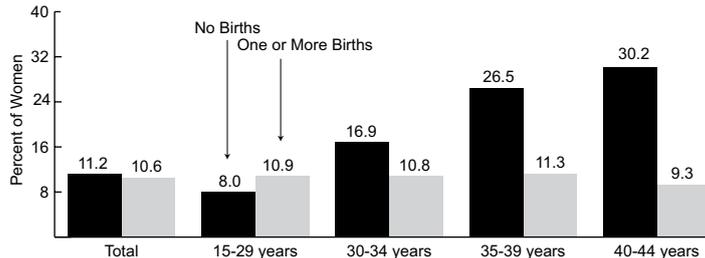
parity (the number of children a woman has had). Among nulliparous women—or those without a previous birth—prevalence of impaired fecundity increased with age from only 8.0 percent of women aged 15–29 to more than one in four women aged 35–44. In contrast, impaired fecundity did not vary greatly with age among women with a previous birth, ranging from 9 to 11 percent across age groups. Among women with a previous birth, the proportion who are surgically sterile (i.e., tubal ligation or hysterectomy) increases to over 50 percent of women by age 40–44, and thus a smaller proportion are at risk of impaired fecundity (data not shown).

Difficulties having a baby can be addressed with medications, surgery, artificial insemination and assisted reproductive technol-

ogy (ART).<sup>75</sup> In 2006–2010, 11.9 percent of women aged 15–44 years reported that they or their spouses or partners had ever received some form of infertility service and 4.9 percent had received medical help to prevent a miscarriage (data not shown). The most common type of infertility service received was advice (6.5 percent), followed by infertility testing (5.0 percent) and medications to improve ovulation (4.0 percent). Between one-fifth and one-quarter of nulliparous women aged 35–39 and 40–44, respectively, had ever received infertility services. Levels of infertility service use were also higher among non-Hispanic White women (13.4 percent) than non-Hispanic Black and Hispanic women (8.6 and 9.6 percent, respectively; data not shown).

### Impaired Fecundity\* Among Women Aged 15–44, by Age and Parity, 2006–2010

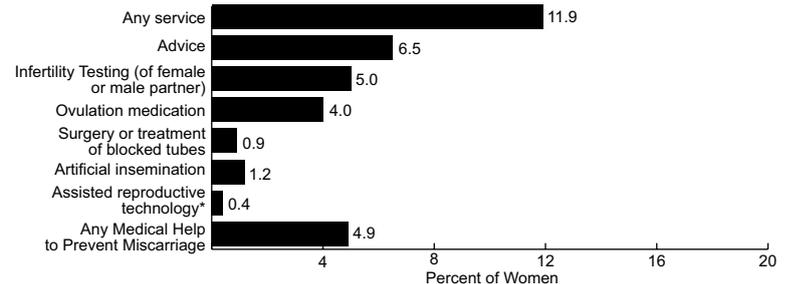
Source II.4: Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Family Growth



\*Impaired fecundity is defined as being not surgically sterile and having problems getting pregnant or carrying a baby to term.

### Types of Infertility Services Received by Women Aged 15–44, 2006–2010

Source II.4: Centers for Disease Control and Prevention, National Center for Health Statistics, National Survey of Family Growth



\*Assisted reproductive technology (ART) works by removing eggs from a woman's body. The eggs are then mixed with sperm to make embryos. The embryos are then put back in the woman's body.