

Factors Associated with an Unmet Need for Contraception in the United States, 2002-2017

JOSEPH MOLITORIS

LUND PAPERS IN ECONOMIC DEMOGRAPHY 2019:6

Centre for Economic Demography
Lund University School of Economics and Management
P.O. Box 7083
SE-220 07 Lund, Sweden

www.ed.lu/publications/Lund-Papers-in-Economic-Demography/



CENTRE FOR ECONOMIC DEMOGRAPHY

The Centre for Economic Demography (CED), established in 2006 as a Linnaeus Centre of Excellence, is a multidisciplinary research centre at Lund University with members from the School of Economics and Management, the Faculty of Medicine and the Faculty of Social Sciences. The mission of CED is to promote research and training in population studies. Researchers at the Centre study demographic issues from different perspectives and in a variety of contexts across time and space. More information at www.ed.lu.

Factors Associated with an Unmet Need for Contraception in the United States, 2002-2017

Joseph Molitoris¹

ABSTRACT

This study investigates the association between individual-level characteristics and the risk of having an unmet need for contraception in the United States between 2002 and 2017 for women who were sexually active, not pregnant or postpartum, fecund, and wanted no more children. Using data from the National Survey of Family Growth, logistic regression models are used to estimate the association between demographic, socioeconomic, and reproductive characteristics and the probability of having an unmet need for any contraception and for modern methods. The results show that 6.8% of the women at risk did not use any form of contraception and 12.1% did not use any modern method. Women who were black, Catholic, insured by Medicaid or uninsured, nulliparous, and who had not used contraception at their first sex had the greatest odds of having an unmet need, suggesting that specific groups are disproportionately vulnerable to unwanted pregnancy in the United States.

Keywords: Unmet need; contraception; inequality; United States

¹ Contact: joseph.molitoris@ekh.lu.se;

Centre for Economic Demography, Department of Economic History, Lund University; Hungarian Demographic Research Institute, Budapest, Hungary

INTRODUCTION

Nearly half of all pregnancies in the United States are unintended (Finer and Zolna 2016), and these can have significant implications for health and socioeconomic outcomes of women and children. Women experiencing unintended pregnancy are slower to obtain antenatal care (Kost, Landry, and Darroch 1998b), more likely to experience preterm birth or low birth weight (Mohllajee et al. 2007, Kost and Lindberg 2015), less likely to breastfeed (Korenman, Kaestner, and Joyce 2002), and have higher rates of postpartum depression (Mercier et al. 2013, Barber, Axinn, and Thornton 1999).

Unintended pregnancy can result from either contraceptive failure/misuse or the absence of contraception entirely. In the United States, the latter is the predominant proximate cause of unintended pregnancy. In 2001, 60% of unintended births and 52% of unintended pregnancies were conceived during a month in which a woman used no contraception (Finer and Henshaw 2007). Unintended pregnancies can be decomposed into those that are mistimed, but wanted, and those that are completely unwanted. The difference between these is not purely academic, as women having unwanted births are less likely to breastfeed and more likely to experience premature birth than those that had only mistimed births (Dye et al. 1997, Kost, Landry, and Darroch 1998a, Mohllajee et al. 2007). Furthermore, some evidence suggests that there may also be important socioeconomic consequences of unwanted childbearing. A recent study has shown that women with unwanted pregnancies who were barred from having an abortion due to gestational limits were, even four years after denial, more likely to be in poverty, less likely to be employed, and more likely to receive public assistance than women who were able to have an abortion (Foster et al. 2018). Beyond its health implications, unwanted pregnancy may therefore

also reinforce existing socioeconomic inequalities in health and other outcomes, as rates of unintended pregnancy are disproportionately higher among poor, low-educated, and black women (Finer and Zolna 2016).

When a woman is at risk of pregnancy, but does not use contraception, despite having no desire for future childbearing, she is considered to have an unmet need for contraception (Cleland, Harbison, and Shah 2014). While many studies have investigated the factors associated with contraceptive use and non-use in the United States (e.g. Daniels and Abma 2018, Dehlendorf et al. 2014, Frost and Darroch 2008, Frost, Singh, and Finer 2007, Kavanaugh and Jerman 2018, Mosher, Jones, and Abma 2015), there is much less research examining variation in unmet need within this context (see Grady et al. 2015, Wu et al. 2008, Upson et al. 2010). The key distinction here is that studies focusing simply on contraceptive use typically have not incorporated women's subjective views of whether or not they wish to become pregnant. Taking women's fertility desires into account allows us to distinguish between those at risk of an unintended pregnancy from those at risk of an unwanted pregnancy and provides a broad metric of reproductive autonomy in a society.

Understanding disparities in unmet need in the United States is becoming increasingly important. Groups that have higher rates of unwanted pregnancy, such as poor, low-educated, and minority women, also have been shown to rely more heavily on induced abortion for regulating family size (Jones and Jerman 2017). Yet recent proposals from the government aim to greatly restrict the availability of abortion services by altering regulations relating to Title X, a federal funding program designed in part to cover family planning costs of low-income and uninsured individuals (Janiak, O'Donnell, and Holt 2018). In this vein, it is of special importance to understand disparities in unmet need for highly-effective modern contraception, as modern

contraceptive prevalence has been shown to be strongly negatively correlated to national abortion rates (Westoff 2008). It is therefore crucial that we understand who are the most susceptible to unwanted pregnancy.

The aim of this study is to document socioeconomic and demographic variation in unmet need in the United States between 2002 and 2017 for women aged 15-44. Nationally representative data from the last five waves of the National Survey of Family Growth (NSFG) are used to calculate the percentage of women who were fecund, sexually active, and wanted no (more) children who were not using contraception in the month preceding the survey. Then, logistic regressions are used to estimate the adjusted odds of having an unmet need for any contraception and an unmet need for modern contraception according to socioeconomic and demographic characteristics and previous reproductive behavior.

This study contributes to the literature on unmet need in several ways. First, it is one of the few to focus on a low-fertility population in a developed country. Most research on unmet need has focused on developing countries, but there is evidence that the gap in unmet need between developed and many less-developed countries is not large (Alkema et al. 2013). Furthermore, despite high levels of unintended pregnancy in the United States and internationally (Singh, Sedgh, and Hussain 2010), we have little understanding of how unmet need may contribute to these patterns in developed countries. Second, it is among the first to study unmet need for all women of reproductive ages in the United States, as previous work has focused exclusively on older women (Upson et al. 2010). Third, by combining data from several recent surveys, this study is able to analyze a larger sample of women than those used in previous research on unmet need in the United States. This is important, because the data restrictions that must be imposed in order to study unmet need can greatly reduce the number of

women who can be included in an analysis. As a result, this make it difficult to explore heterogeneity of many characteristics simultaneously without a substantial loss of statistical power.

BACKGROUND

Studies of unmet need have predominantly focused on developing countries, as the indicator has served as a key metric informing and guiding family planning programs aiming to reduce fertility, improve reproductive health, and enhance reproductive autonomy (Cleland, Harbison, and Shah 2014). Yet unmet need is not exclusively an issue of countries with high fertility and/or low economic development. Recent worldwide estimates for married/in-union women have shown that even in wealthy, low-fertility countries there can be high levels of unmet need (Alkema et al. 2013). Relatively high levels of unmet need were found in, for example, Japan (17.2%), Austria (14.4%), Lithuania (15.2%), and Spain (13.1%). Another study also found that 15.2% of Swedish women had an unmet need for contraception (Hellström, Gemzell Danielsson, and Kopp Kallner 2019), and a recent study of American women regardless of marital status estimated an unmet need of 8.8%, which is near the average for developed countries (Grady et al. 2015). Evidence from the international comparison showed that the difference in the average level of unmet need between developing and developed countries was small (12.8% versus 9.3%, respectively) (Alkema et al. 2013). Nevertheless, there is little research into the prevalence and correlates of unmet need in more developed countries despite the fact that unintended pregnancies account for over half of all births even in these populations (Singh, Sedgh, and Hussain 2010).

Many studies have examined the factors associated with contraceptive use in the United States, in general. They have typically found that women with lower levels of education, who were black, or were covered by public health insurance or uninsured have comparatively lower rates of any contraceptive use (Frost, Singh, and Finer 2007, Dehlendorf et al. 2014, Mosher, Jones, and Abma 2015). There are not just disparities in contraception use, however, but also in the methods women adopt and how consistently they employ them. Among contraceptive users, Dehlendorf et al. (2014) documented lower odds of using highly-effective versus less-effective methods among minority women and those with more than a high school degree, and Wu et al. (2008) showed that black women use contraception less consistently than white women. A drawback of these studies, however, is that they focused on all women rather than those wishing to avoid pregnancy, and therefore could not identify the demand for contraception, i.e. the percentage of women who are fecund, sexually active, and do not want to become pregnant (Bongaarts 2014).

Only a few studies have focused specifically on the individual-level correlates of unmet need in the United States. One study of women in 2002 found higher levels of unmet need among women who were black, foreign-born, and low-educated, but was only focused on women between the aged 35-44 (Upson et al. 2010). A more recent study focused on women of all reproductive ages for the period 2006-2010 and also found increased odds of having an unmet need for contraception among black women compared to white women as well as women below age 26 compared to women aged 36-44 (Grady et al. 2015). These are the only studies to my knowledge that have specifically analyzed unmet need and its associated factors in the United States.

Although it is beyond the scope of this study to explain variation in unmet need, it is worthwhile to discuss why contraceptive use may vary between groups, even when women wish to avoid pregnancy, in terms of the supply of and demand for contraception. Supply-side factors refer to the costs, availability, and access to contraceptives and contraceptive services. The cost of contraception has proven to be an especially important barrier to contraceptive use in the United States, and may differentially affect specific groups of women. For example, a study of women veterans found that black and Hispanic women were more likely than white women to consider low cost as an important characteristic of contraceptives (Callegari et al. 2017). The Contraceptive CHOICE Project provided no-cost contraception as well as information on contraceptive methods to women in the St. Louis area who did not want to become pregnant and were not using any form of contraception. The results of the study showed that 67% of enrolled women chose long-acting reversible contraceptive (LARC) methods once financial and information barriers were removed and that there were no racial differences in this regard (Secura et al. 2010). Another study from the same project showed that the removal of these barriers was associated with reductions in the teenage birth rate, repeat abortion rate, and overall abortion rates (Peipert et al. 2012).

Costs are not the only important supply-side barrier, however. Institutional discrimination, whether perceived or real, can also impede contraceptive use and lead to differences in unmet need for contraception. If poor, low-educated, or minority women disproportionately believe that they are discriminated against by family planning providers, they may feel that they will not have access to the same quality or range of services as other women. In a survey of 500 black women, more than two-thirds of those who had seen a health care provider for family planning services reported experiencing racial discrimination either in the

form of poorer service or racial stereotypes, and these perceptions were stronger among lower income women (Thorburn and Bogart 2005a). Another study of women's experiences during antenatal care, labor, and delivery showed that women who were below age 20, unmarried, poor, and uninsured were more likely to report experiencing discrimination (De Marco, Thorburn, and Zhao 2008). Feelings of discrimination can be bolstered by the fact that minority women are disproportionately exposed to lower quality maternal care, in general. For example, a recent study of women in New York City showed that hospitals which have greater proportions of black babies born also have higher rates of severe maternal morbidities (Howell et al. 2016). Socioeconomic and racial discrimination at both the individual and institutional level may therefore cause some women to be more likely to avoid adopting contraceptives that require greater interaction with the health care sector.

Differentials in unmet need can also arise out of differences in the demand for contraception. Demand-side factors include feelings towards various forms of contraception, perceptions of pregnancy risks, household preferences, and community cultural norms (Ensor and Cooper 2004). The perception of contraceptives in terms of their health effects has been shown to vary according to socioeconomic and demographic characteristics. A study of unmarried women below age 30 showed that black women and those with less than a high school diploma were more likely to believe that hormonal contraceptives reduce sexual desire. Furthermore, black women were more likely to believe that hormonal contraceptives can lead to serious health problems, like cancer (Guzzo and Hayford 2012). There is also evidence of racial and ethnic differences in the importance of contraceptive attributes. Black women have been shown to have a greater interest than white women in contraceptive methods that are easy to use, do not contain hormones, are acceptable to their partners, do not interrupt sex, and that can

prevent sexually transmitted infections and to assign a lower priority to method effectiveness (Callegari et al. 2017). Many of these preferences were also present among Hispanic women. These findings are consistent with the findings that black women have been found to be less likely to use LARC than white women and to have higher rates of discontinuation of hormonal methods (Shih et al. 2011, Littlejohn 2012).

Another important factor which can differentially influence the demand for contraception is the perception of pregnancy risks. A study using data from 2006-2010 found that among women who had unplanned pregnancies due to not using contraception, less educated women were more likely to report that they had not used contraception because they did not think they could become pregnant (Mosher, Jones, and Abma 2015). Even among women who use contraception, differential experiences of contraceptive failure may lead some women to underestimate the protection that contraception can offer. For example, black and poor women have been shown to have higher rates of contraceptive failure in their first two years of use than white and higher income women (Ranjit et al. 2001). The authors showed that even for highly effective methods, like oral contraceptives, black and Hispanic women, as well as women living below the poverty line, have higher rates of failure. Groups that are more likely to experience contraceptive failure when using highly effective methods may therefore be prone to have preferences for less-effective methods, such as condoms or withdrawal, which are more difficult to practice consistently and require the participation of a male partner, or to have fatalistic attitudes towards pregnancy (Jones, Frohwirth, and Blades 2016).

Socioeconomic and cultural variation in reproductive autonomy may also influence the demand for contraception. A recent systematic review found that reproductive and pregnancy coercion were more prevalent among low-income, unmarried, black, and Hispanic women in the

United States (Grace and Anderson 2018). For example, one study found that black women had twice the probability of white women of having a child if her male partner desired one but she did not (Williams 1994). Another study found that black women were twice as likely as white women to have a partner involved with their receipt of contraceptive services and that greater levels of involvement were associated with greater interference with birth control (Kavanaugh, Lindberg, and Frost 2012). There is also qualitative evidence that black women are more likely than white women to experience reproductive coercion in the form of contraceptive sabotage and verbal pressure to promote pregnancy or specific pregnancy outcomes (Nikolajski et al. 2015). Evidence from nationally representative data showed that women who had unintended births and had less than a high school degree, were under age 20, and lived below the poverty line were less likely to have used contraception because of their male partners' opposition (Mosher, Jones, and Abma 2015).

Finally, a woman's demand for contraception can be also be shaped by group norms. One influential source of cultural/communal pressure can come from religion. Generally, greater religiosity has been found to be correlated with lower levels of temporary, highly-effective contraceptive use, and higher levels of permanent sterilization (Jones, Mosher, and Daniels 2012). Because permanent sterilization is not a realistic solution for achieving the reproductive goals of many younger women, religious influences may bolster the level of unmet need among groups that have a stronger attachment to religion. A study of women in Texas, for instance, found that Hispanic women were more than twice as likely to state that contraception was against their religion than white women (Sangi-Haghpeykar et al. 2006). The influence of culture on contraception is not restricted to religion, however. Some research has highlighted a general apprehension towards contraception among black Americans stemming from

institutional mistrust and historical abuses, such as the forced sterilization of black women during the 1960s (Roberts 2000). For example, a study of 500 black men and women found that one-third of women believed that medical institutions experimented with birth control methods on minorities and nearly 20% believed the government's family planning policies are meant to limit the number of black people in the country (Thorburn and Bogart 2005b). In addition, stronger beliefs in conspiracies relating to the safety of contraception were found to be negatively associated with contraceptive use among men.

As the discussion above suggests, there are numerous supply-side and demand-side factors that may lead to inequalities in unmet need in the United States. While this study cannot explicitly test the importance of these individual factors, they can inform the discussion of the results presented in the remainder of this study.

METHODS

This study uses data from the five most recent waves of the National Survey of Family Growth, a nationally representative survey of American families that collects information on individuals' health, contraceptive behavior, fertility, relationships, and socioeconomic characteristics. These waves cover the years 2002, 2006-2010, 2011-2013, 2013-2015, and 2015-2017. The participants included in this study come from the women's survey, which covers women aged 15-44 at the time of the interview.

In order for a woman to have been considered to be at risk of having an unmet need for contraception, she must have met several criteria. First, she must have been fecund. Fecundity was determined through respondents' answers to the question, "As far as you know, is it physically possible for you, yourself, to have a(nother) baby?". Women who were non-surgically

sterile were omitted from the population at risk, but those who were surgically sterilized were included. Second, she must have been sexually active. A woman was considered sexually active if she reported having sex within one month of the interview date. Third, she was neither pregnant at the interview date nor postpartum at the time of the last sex. A woman was considered to be postpartum if she had given birth less than two months before the date of her most recent sexual intercourse in the month preceding the interview. Pregnant and postpartum amenorrheic women are typically included in aggregate estimates of unmet need, as their most recent pregnancy may have not have been wanted and they will soon reenter the risk set for unwanted pregnancy once fecundity has been reestablished (Nortman 1982). They have been excluded from this analysis, however, because their contraceptive needs can only be identified with respect to their most recent pregnancy. This means that the unmet need for pregnant/amenorrheic women will refer to a different point in time than for the non-pregnant/non-amenorrheic population, which carries the implicit assumption of constant effects of covariates on unmet need over time (Bradley and Casterline 2014). Finally, a woman must have stated that she wanted to have no (more) children. Women's fertility desires were obtained through their answers to the question, "Looking to the future, do you want to have a(nother) baby at some time?". For women who were uncertain of their desires, an additional question probed if they would probably want or probably not want a(nother) child in the future. In this study, women are considered to have wanted no more children if they either stated so directly in response to the first question or if they had stated that they probably would not want another in response to the second question.

A woman was considered to have an unmet need for contraception if she met all of the above criteria and had not used any form contraception during her most recent sexual intercourse

in the month preceding the survey. She was considered to have an unmet need for *modern* contraception if she had either used no form of contraception or if she had exclusively relied on traditional methods, which include withdrawal, rhythm or ‘safe period’ methods. Women who were surgically sterile were considered to be using a modern contraceptive. In addition, women who were not using any method, but stated that they were trying to become pregnant, were not considered to have an unmet need. It should be noted that this operationalization only identifies if a woman had an unmet need for limiting births, but not an unmet need for spacing births.

Two logistic regression models were used to estimate the association between demographic, socioeconomic, and reproductive characteristics and the probability of having an unmet need for contraception. The first model predicts a woman’s probability of having an unmet need for *any* of contraception, and the second predicts her probability of having an unmet need for *modern* contraception. In the former model, the dependent variable indicates if a woman who was fecund, sexually active, not pregnant or postpartum, and did not want any more children did not use any form of contraception during her last sexual intercourse. In the latter, the dependent variable indicates if the same women did not use any modern contraception during her last sexual intercourse.

The models included three sets of covariates for demographic, socioeconomic, and reproductive characteristics. The demographic characteristics included the age of the woman at the time of the survey, race/ethnicity, nativity, religion, and marital status. The socioeconomic characteristics included a woman’s highest education, total family income as a percentage of the federal poverty line, current employment status, and form of health insurance coverage. Reproductive characteristics included her current parity, if she had used contraception at her first ever sexual intercourse, if she had ever had an unwanted pregnancy, and her sexual frequency in

the month preceding the survey. In addition, the models also controlled for the wave of the NSFG in which the woman was recorded to account for differences in reporting or collection procedures, as well as time trends.

Table 1 compares the distributions of covariates for all women and those considered at risk of having an unmet need for contraception (i.e. the analysis sample). The most significant difference between the two groups was that women at risk of having an unmet need were older than the general population. About 47% of the total population was below age 30, compared to 21% for the population at risk. This difference can be explained by the fact that this study is focused specifically on women who want no more children, which effectively excludes a large number of younger women. Because the age distribution skews towards older ages, the at-risk population was also more likely to be married (61% versus 38%), to have had children (12% with no children versus 38%), to have previously had an unwanted pregnancy (63% versus 51%), and to have a higher frequency of sex. There were virtually no differences between the general population and the women at risk with regards to their race/ethnicity, nativity, religion, education, employment status, health insurance coverage, or contraceptive use at first sex.

TABLE 1 HERE

RESULTS

Table 2 shows the numbers of women who were fecund, not pregnant or postpartum, sexually active within the month preceding the survey, and who wanted no (more) children. The final two columns present the percentage of women with an unmet need for contraception and the percentage with an unmet need for modern contraception, respectively. For the total population

of women aged 15-44, 6.8% were classified as having an unmet need for any contraception between 2002 and 2017, and this figure is similar to recent estimates (Alkema et al. 2013).

TABLE 2 HERE

The level of unmet need was found to vary according to some individual-level characteristics. With respect to demographic characteristics, higher levels of unmet need for any form of contraception were identified for women who were in their early twenties (9.3%), non-Hispanic black (10.6%), and cohabiting (8.9%). Lower socioeconomic status was also correlated with higher levels of unmet need. Women who had less than a high school degree (10.3%), living below the poverty line (9.6%), were unemployed (8.2%), and were either underinsured/uninsured (8.4%), on Medicare (8.2%), or Medicaid (9.8%) less often used contraception despite not wanting to become pregnant. Concerning reproductive characteristics, higher levels of unmet need were found among women with no children (9.6%), those who did not use contraception at their first sex (9.6%), and those having sex between one and four times in the last month (8.6%). We can also see that the overall level of unmet need declined from 8.7% in 2002 to 4.4% in 2013. After 2013, the level of unmet need has been increasing and in the latest wave of the survey pertaining to the period 2015-2017 it was 7.4%.

The patterns of unmet need for modern contraception were largely similar to those described above. Overall, 12.1% of women had an unmet need for modern methods. Across ages, the highest levels of unmet need were for women aged 20-24 (17%). Hispanic (13.1%) and non-Hispanic black (14.7%) women had higher levels than non-Hispanic white women (10.9%). With respect to marital status, higher levels of unmet need for modern methods were found among cohabiting (16.4%) and never married women (14.3%) compared to married women (10.9%). Women having less than a high school degree (15%), a household income below the

poverty line (15.1%), who were unemployed (13.7%), and who were either underinsured/uninsured (14.9%) or relying on Medicaid (15.3%) were also less likely to be using modern contraception. Concerning reproductive factors, disproportionately high levels of unmet need for modern methods were found among nulliparous women (17.8%), women who had not used contraception at their first sex (15.1%), and women reporting having sex between one and four times (14%). Across time, the level of unmet need for modern methods was fairly stable, ranging from 11.2% to 13.4%.

The results from the logistic regressions may be found in Table 3. With respect to age, women aged 15-19 had about 70% lower odds of having an unmet need for any contraception than women aged 25-29. This was the only group with a significantly different level of unmet need compared to the reference group. The most noteworthy result from this model was that non-Hispanic black women had more than twice the odds of having an unmet need than non-Hispanic white women. This finding is consistent with previous studies of unmet need in the United States for earlier years (Grady et al. 2015). Hispanic women's odds were not significantly different than those of white women. Catholics and women of other religions had 56% and 69% higher odds, respectively, of having an unmet need than women with no religion. Never married and divorced women had about 40% lower odds of unmet need than married women.

TABLE 3 HERE

Two of the measures of socioeconomic status were significantly associated with having an unmet need for contraception. Women who had a total family income exceeding 250% of the federal poverty line had about 30% lower odds of having an unmet need compared to those below the federal poverty line, and those insured by Medicaid had 55% higher odds of having an unmet need than women with private insurance. Given the potentially important supply-side

barrier of the cost of contraception described earlier, this finding is significant, as many states' Medicaid programs do not cover over-the-counter contraceptives, including Plan B, condoms, spermicides, and sponges (Walls et al. 2016).

Reproductive characteristics were some of the most consistent predictors of having an unmet need for any contraception. Women who had no children were by far the most likely to have an unmet need, followed by women with one child, whose odds were about 40% lower. Women with two or more children consistently had the lowest odds of having an unmet need, about 60-70% lower than those with no children. Contraceptive use at a woman's first sexual intercourse was also strongly associated with the odds of having an unmet need. Women who had not used any contraception at their first intercourse had 75% higher odds of having an unmet need for contraception than those who had, suggesting that there may be strong persistence in contraceptive behaviors over the life course. Finally, the frequency of sexual intercourse in the month preceding the survey was strongly negatively associated with an unmet need for contraception. Women who reported having sex more than four times in a month had about 35% lower odds of having an unmet need than women who reported between one and four sexual encounters.

Turning to the factors associated with an unmet need for modern methods, age was not generally associated with unmet need, other than for the age group 30-34, who had 24% lower odds of having an unmet need for modern contraception compared to women aged 25-29. Racial differences remained large, as black women had 40% higher odds of having an unmet need for modern methods compared to white women. This estimate is likely lower than in the previous model because white women tend to rely more on traditional methods, like withdrawal (Frost and Darroch 2008). Catholics were also more likely to have an unmet need for modern

contraception, having 36% higher odds than unaffiliated women. This was a surprising finding, as recent studies have found no differences in unmet need based on religious affiliation (Upson et al. 2010, Grady et al. 2015).

There was no association between any of the socioeconomic factors and the odds of having an unmet need for modern methods. It should be noted, however, that the estimates for women insured by Medicaid and those who were underinsured/uninsured were on the border of the 5% significance threshold, and suggest 28% and 24% higher odds of having an unmet need for modern methods, respectively.

Reproductive characteristics continued to be strong predictors of unmet need in this model. Parity was again negatively associated with unmet need, with nulliparous women having the highest odds, followed by uniparous women. The magnitudes of the associations were similar to those in the previous model. Women who did not use contraception at their first sex also were 51% more likely to have an unmet need for modern methods compared to women who had used contraception. Sexual frequency continued to be a strong predictor, as well. Women having sex more than four times in the month preceding the survey had about 25% lower odds of having an unmet need for modern methods than women reporting having sex between one and four times.

DISCUSSION

The results presented here have shown that although the level of unmet need for contraception among the total population is fairly low by international standards (7%), there is considerable variation in unmet need in the United States. The most striking disparity was that non-Hispanic black women have a substantially higher level of unmet need for both any contraception and

highly-effective, modern contraception. This finding is in agreement with previous research on the subject (Grady et al. 2015). What remains unclear is why this is the case. Some supply-side factors, such as the costs of contraception, should have been captured by the various measures of socioeconomic status included in the model. It was not possible, however, to control for institutional barriers that may disproportionately influence black women, such as perceived or real discrimination when interacting with family planning services. If these women are more likely to feel that they will not receive the same quality of service or range of options, they may be less likely to use modern contraceptives and more likely to rely on methods that are less effective and more difficult to use consistently.

There may also be important demand-side factors that differentially influence black women's contraceptive use, particularly of modern methods. Due to a combination of a disproportionate perception of negative health effects, relatively high failure rates, and a suspicion of family planning, in general, black women in the United States may have a greater mistrust of highly-effective hormonal methods. Taken together, these factors may therefore push black women away from using modern methods and towards either choosing less-effective, less-consistent methods or none at all. This is compounded by the fact that black women may also have less reproductive autonomy within relationships than other groups (Nikolajski et al. 2015), which may disproportionately interfere with their ability to effectively use traditional methods as well, as these typically demand greater cooperation from partners.

The results of the analysis also revealed previously unidentified differences in unmet need. Catholics, Medicaid recipients, nulliparous women, and women who had not used contraception at their first sex were also less likely to use contraception, despite not wanting any (more) children. Although most recent scholarship has not found a relationship between religious

affiliation and contraceptive use (Jones and Dreweke 2011, Kramer, Rowland Hogue, and Gaydos 2007), this study found that Catholics were substantially more likely to have an unmet need for any contraception and for modern contraception after controlling for other covariates. This was a surprising finding, because, despite doctrinal opposition towards most forms of contraception, there is little evidence that American Catholics actually follow these prescripts. Generally, Catholic women have been found to have fairly similar contraceptive patterns as women of other religions or without a religious affiliation (Jones, Mosher, and Daniels 2012). This finding is therefore difficult to explain and needs to be explored further in future work.

The disproportionately high level of unmet need among women relying on Medicaid and those who are underinsured or without insurance deserves special attention. Although health insurance is not required to obtain some forms of contraception, underinsured and uninsured women will have less access to highly-effective modern forms of contraception. A study of contraceptive patterns in the United States in 2010 showed that women without insurance were about half as likely to use the pill, for instance, as women with private insurance, and women with either no insurance or on public insurance were about twice as likely to rely on female sterilization (Jones, Mosher, and Daniels 2012). Although the results showed no statistical difference in modern contraceptive use between the types of insurance coverage, the estimates for Medicaid recipients and women without insurance were near the threshold for statistical significance, and suggest there may be important barriers preventing these women from using highly-effective methods. Because women without insurance or those covered by public insurance may be disproportionately negatively affected by an additional birth, it is plausible that they may be more likely to prefer highly-effective methods. This preference may be reinforced by the fact that, compared to women with incomes 250% or more above the poverty line, poorer

women have been shown to have about double the rate of contraceptive failure for all methods other than LARC methods (Ranjit et al. 2001), which may cause them to view other methods as unreliable. If poor women are less able to gain access to such methods, they may be more prone to use no contraceptive methods at all.

A surprising finding was that nulliparous women were the most likely to have an unmet need for contraception, as one would expect that this group would be comprised of women who are more determined contraceptors. One potential explanation for this pattern is that nulliparous women may also have a higher variability of sexual intercourse. That is, although the models control for the frequency of intercourse, they do not control for the regularity of intercourse. If nulliparous women are less likely to have sex on a regular basis, they may also be less likely to consistently use any form of contraception, despite not wanting any children. In the sample analyzed in this study, nulliparous women had the lowest frequency of sexual intercourse and were far more likely to be single, both of which are suggestive of less predictable contraceptive needs. The regularity of intercourse may therefore be an important omitted variable mediating this association.

Finally, the results showed that contraceptive nonuse at first sex was strongly associated with having an unmet need for contraception later in life, suggesting that contraceptive behavior may correlate across the life course. If this is indeed the case, the result should provide even further support for promoting effective sex education in schools and the wider dissemination of contraceptive information among teenage women, as adopting effective contraceptive habits early may help to avert unwanted pregnancies later in life. This finding could provide fertile ground for future research.

CONCLUSION

This study has used survey data from the past five waves of the NSFG to study the factors associated with having an unmet need for contraception. It has contributed to the literature by being one of the few studies focusing specifically on unmet need in the United States, rather than only on contraceptive use more generally, and by combining multiple waves of the NSFG, including the latest available wave from 2015-2017. Making use of multiple waves of the survey allowed this study to have a larger sample size than previous studies. This is important, as the restrictions required to study unmet need can greatly reduce the number of women who can be studied and, as a result, make it difficult to explore heterogeneity of many characteristics simultaneously without losing substantial statistical power. In doing so, the results showed that some groups, like non-Hispanic black women, Catholics, those without private health insurance, nulliparous women, and women who did not use contraception at their first sexual intercourse consistently had higher odds of having an unmet need for any contraception and an unmet need for modern contraception.

The strengths of this study notwithstanding, several limitations must be addressed. First, the data are derived from self-reported contraceptive behavior, and if misreporting of contraceptive use is correlated with any of the variables that were found to be associated with unmet need, the results may be biased upward. For example, if Catholic women who were using contraception were more likely to report that they were not due to its incompatibility with official doctrine, this may cause an association to appear where there is none.

Second, the definition of unmet need used in this study was only relevant to women who wished to have no more children, but excluded women who may have an unmet need for spacing their births, as there was no information available in the data on whether or not women would

like to delay future childbearing. Evidence from developing countries has shown that the level of unmet need for spacing is typically much greater than for limiting births (Bradley et al. 2012). As a result, the estimates presented here are most likely very conservative. There is also no guarantee that the same factors associated with unmet need for limiting would be associated with an unmet need for spacing in the same ways.

Third, the definition of unmet need used here was also ambivalent to women's preferences for specific kinds of contraception (see Rominski and Stephenson 2019). This is especially relevant for the results concerning modern methods, as many women may have an opportunity to use many or all modern methods, but choose not to because of method dissatisfaction. It is therefore plausible that a woman who does not use hormonal methods or condoms, for instance, and instead relies on traditional methods may not have an unmet need for modern contraception, because she prefers using less disruptive methods. Likewise, a woman who uses condoms as a primary source of contraception may actually prefer to use an IUD, but would not be considered as having an unmet need, even if her risk of method discontinuation is significantly higher when relying on condoms.

Despite these limitations, this study's findings highlight several pathways for future research. First, there is a need for more research on the factors associated with unmet need in other developed, low fertility countries. Other studies have shown far higher levels of unmet need in parts of Europe and Asia than those found in the United States, but we know little about differentials in unmet need and how they may contribute to inequalities in unwanted pregnancies in these contexts. Second, in order to address the substantial racial/ethnic inequalities in unmet need in the United States, much more work is needed to understand why black women, in particular, are less likely to use any contraception, despite not wanting any more children.

Although several potential explanations were outlined above, more qualitative work comparing women of different races with an unmet need is needed to understand the relative importance of supply-side and demand-side factors in the decision to not use contraception. Having a better understanding of these factors can help policymakers and researchers determine if there are effective measures that can be taken to reduce racial disparities in contraceptive use and pregnancy among women who do not want to become pregnant. Finally, future work both on the United States and other wealthy populations ought to extend the definition of unmet need to incorporate birth spacing. Unmet need for spacing accounts for a much larger share of the total unmet need than does limiting, yet there is virtually no research into this aspect of unmet need in high-income populations.

Unmet need is often thought of as a problem of developing countries struggling to reduce fertility rates, but this and other recent studies have shown that relatively high levels of unmet need can be found among sub-populations of developed countries as well. More research is needed to help us understand the barriers that prevent women from using contraception, even when it is widely available, and what the long-term implications of unmet need are in these societies.

REFERENCES

- Alkema, Leontine, Vladimira Kantorova, Clare Menozzi, and Ann Biddlecom. 2013. "National, regional, and global rates and trends in contraceptive prevalence and unmet need for family planning between 1990 and 2015: A systematic and comprehensive analysis," *The Lancet* 381(9878):1642-1652. doi: 10.1016/S0140-6736(12)62204-1.
- Barber, Jennifer S, William G Axinn, and Arland Thornton. 1999. "Unwanted childbearing, health, and mother-child relationships," *Journal of Health and Social Behavior* 40(3):231-257.
- Bongaarts, John. 2014. "The impact of family planning programs on unmet need and demand for contraception," *Studies in Family Planning* 45(2):247-262. doi: 10.1111/j.1728-4465.2014.00387.x.
- Bradley, Sarah EK, and John B Casterline. 2014. "Understanding unmet need: History, theory, and measurement," *Studies in Family Planning* 45(2):123-150.
- Bradley, Sarah EK, Trevor N. Croft, Joy D. Fishel, and C. F. Westoff. 2012. "Revising unmet need for family planning," DHS Analytical Studies 25, Calverton, MD: Macro International, MEASURE DHS.
- Callegari, Lisa S, Xinhua Zhao, Eleanor Bimla Schwarz, Elian Rosenfeld, Maria K Mor, and Sonya Borrero. 2017. "Racial/ethnic differences in contraceptive preferences, beliefs, and self-efficacy among women veterans," *American Journal of Obstetrics and Gynecology* 216(5):504.e1-504.e10.
- Cleland, John, Sarah Harbison, and Iqbal H. Shah. 2014. "Unmet need for contraception: Issues and challenges," *Studies in Family Planning* 45(2):105-122. doi: 10.1111/j.1728-4465.2014.00380.x.
- Daniels, Kimberly, and Joyce C Abma. 2018. "Current contraceptive status among women aged 15-49: United States, 2015-2017," NCHS Data Brief 327, US Department of Health and Human Services, Centers for Disease Control and Prevention.
- De Marco, Molly, Sheryl Thorburn, and Weiyi Zhao. 2008. "Perceived discrimination during prenatal care, labor, and delivery: An examination of data from the Oregon Pregnancy Risk Assessment Monitoring System, 1998-1999, 2000, and 2001," *American Journal of Public Health* 98(10):1818-1822.
- Dehlendorf, Christine, Seo Young Park, Chetachi A. Emeremni, Diane Comer, Kathryn Vincett, and Sonya Borrero. 2014. "Racial/ethnic disparities in contraceptive use: Variation by age and women's reproductive experiences," *American Journal of Obstetrics and Gynecology* 210(6):526.e1-526.e9. doi: 10.1016/j.ajog.2014.01.037.
- Dye, Timothy D, Martha A Wojtowycz, Richard H Aubry, Jacqueline Quade, and Harold Kilburn. 1997. "Unintended pregnancy and breast-feeding behavior," *American Journal of Public Health* 87(10):1709-1711.
- Ensor, Tim, and Stephanie Cooper. 2004. "Overcoming barriers to health service access: Influencing the demand side," *Health Policy and Planning* 19(2):69-79.
- Finer, Lawrence B., and Stanley K. Henshaw. 2007. "Disparities in rates of unintended pregnancy in the United States, 1994 and 2001," *Perspectives on Sexual and Reproductive Health* 38(2):90-96. doi: 10.1363/3809006.

- Finer, Lawrence B., and Mia R. Zolna. 2016. "Declines in unintended pregnancy in the United States, 2008–2011," *New England Journal of Medicine* 374(9):843-852. doi: 10.1056/NEJMs1506575.
- Foster, Diana Greene, M Antonia Biggs, Lauren Ralph, Caitlin Gerdt, Sarah Roberts, and M Maria Glymour. 2018. "Socioeconomic outcomes of women who receive and women who are denied wanted abortions in the United States," *American Journal of Public Health* 108(3):407-413.
- Frost, Jennifer J., and Jacqueline E. Darroch. 2008. "Factors associated with contraceptive choice and inconsistent method use, United States, 2004," *Perspectives on Sexual and Reproductive Health* 40(2):94-104. doi: 10.1363/4009408.
- Frost, Jennifer J., Susheela Singh, and Lawrence B. Finer. 2007. "Factors associated with contraceptive use and nonuse, United States, 2004," *Perspectives on Sexual and Reproductive Health* 39(2):90-99. doi: 10.1363/3909007.
- Grace, Karen Trister, and Jocelyn C Anderson. 2018. "Reproductive coercion: A systematic review," *Trauma, Violence, & Abuse* 19(4):371-390.
- Grady, Cynthia D., Christine Dehlendorf, Elan D. Cohen, E. Bimla Schwarz, and Sonya Borrero. 2015. "Racial and ethnic differences in contraceptive use among women who desire no future children, 2006–2010 National Survey of Family Growth," *Contraception* 92(1):62-70. doi: 10.1016/j.contraception.2015.03.017.
- Guzzo, Karen Benjamin, and Sarah Hayford. 2012. "Race-ethnic differences in sexual health knowledge," *Race and Social Problems* 4(3):158-170. doi: 10.1007/s12552-012-9076-4.
- Hellström, Anna, Kristina Gemzell Danielsson, and Helena Kopp Kallner. 2019. "Trends in use and attitudes towards contraception in Sweden: Results of a nationwide survey," *The European Journal of Contraception & Reproductive Health Care* 24(2):154-160. doi: 10.1080/13625187.2019.1581163.
- Howell, Elizabeth A., Natalia Egorova, Amy Balbierz, Jennifer Zeitlin, and Paul L. Hebert. 2016. "Black-white differences in severe maternal morbidity and site of care," *American Journal of Obstetrics and Gynecology* 214(1):122.e1-122.e7. doi: 10.1016/j.ajog.2015.08.019.
- Janiak, Elizabeth, Jenny O'Donnell, and Kelsey Holt. 2018. "Proposed Title X regulatory changes: Silencing health care providers and undermining quality of care," *Women's Health Issues* 28(6):477-479. doi: 10.1016/j.whi.2018.08.003.
- Jones, Jo, William Mosher, and Kimberly Daniels. 2012. "Current contraceptive use in the United States, 2006–2010, and changes in patterns of use since 1995," *Natl Health Stat Report* 60(60):1-25.
- Jones, Rachel K, and Joerg Dreweke. 2011. "Countering conventional wisdom: New evidence on religion and contraceptive use," New York, NY: Alan Guttmacher Institute.
- Jones, Rachel K, and Jenna Jerman. 2017. "Population group abortion rates and lifetime incidence of abortion: United States, 2008–2014," *American Journal of Public Health* 107(12):1904-1909.
- Jones, Rachel K., Lori F. Frohwirth, and Nakeisha M. Blades. 2016. "'If i know i am on the pill and i get pregnant, it's an act of god': Women's views on fatalism, agency and pregnancy," *Contraception* 93(6):551-555. doi: 10.1016/j.contraception.2016.02.005.
- Kavanaugh, Megan L., and Jenna Jerman. 2018. "Contraceptive method use in the United States: Trends and characteristics between 2008, 2012 and 2014," *Contraception* 97(1):14-21. doi: 10.1016/j.contraception.2017.10.003.

- Kavanaugh, Megan L., Laura D. Lindberg, and Jennifer Frost. 2012. "Factors influencing partners' involvement in women's contraceptive services," *Contraception* 85(1):83-90. doi: 10.1016/j.contraception.2011.04.018.
- Korenman, Sanders, Robert Kaestner, and Ted Joyce. 2002. "Consequences for infants of parental disagreement in pregnancy intention," *Perspectives on Sexual and Reproductive Health*:198-205.
- Kost, Kathryn, David J Landry, and Jacqueline E Darroch. 1998a. "The effects of pregnancy planning status on birth outcomes and infant care," *Family Planning Perspectives*:223-230.
- Kost, Kathryn, David J Landry, and Jacqueline E Darroch. 1998b. "Predicting maternal behaviors during pregnancy: Does intention status matter?," *Family Planning Perspectives*:79-88.
- Kost, Kathryn, and Laura Lindberg. 2015. "Pregnancy intentions, maternal behaviors, and infant health: Investigating relationships with new measures and propensity score analysis," *Demography* 52(1):83-111. doi: 10.1007/s13524-014-0359-9.
- Kramer, Michael R., Carol J. Rowland Hogue, and Laura M. D. Gaydos. 2007. "Noncontracepting behavior in women at risk for unintended pregnancy: What's religion got to do with it?," *Annals of Epidemiology* 17(5):327-334. doi: 10.1016/j.annepidem.2006.10.016.
- Littlejohn, Krystale E. 2012. "Hormonal contraceptive use and discontinuation because of dissatisfaction: Differences by race and education," *Demography* 49(4):1433-1452. doi: 10.1007/s13524-012-0127-7.
- Mercier, R. J., J. Garrett, J. Thorp, and A. M. Siega-Riz. 2013. "Pregnancy intention and postpartum depression: Secondary data analysis from a prospective cohort," *BJOG: An International Journal of Obstetrics and Gynaecology* 120(9):1116-1122. doi: 10.1111/1471-0528.12255.
- Mohllajee, A P, K M Curtis, Brian Morrow, and P A Marchbanks. 2007. "Pregnancy intention and its relationship to birth and maternal outcomes," *Obstetrics and Gynecology* 109(3):678-686.
- Mosher, William, Jo Jones, and Joyce Abma. 2015. "Nonuse of contraception among women at risk of unintended pregnancy in the United States," *Contraception* 92(2):170-176. doi: 10.1016/j.contraception.2015.05.004.
- Nikolajski, Cara, Elizabeth Miller, Heather L. McCauley, Aletha Akers, Eleanor Bimla Schwarz, Lori Freedman, Julia Steinberg, Said Ibrahim, and Sonya Borrero. 2015. "Race and reproductive coercion: A qualitative assessment," *Women's Health Issues* 25(3):216-223. doi: 10.1016/j.whi.2014.12.004.
- Nortman, Dorothy L. 1982. "Measuring the unmet need for contraception to space and limit births," *International Family Planning Perspectives* 8(4):125-134. doi: 10.2307/2948132.
- Peipert, Jeffrey F, Tessa Madden, Jenifer E Allsworth, and Gina M Secura. 2012. "Preventing unintended pregnancies by providing no-cost contraception," *Obstetrics and Gynecology* 120(6):1291-1297.
- Ranjit, Nalini, Akinrinola Bankole, Jacqueline E Darroch, and Susheela Singh. 2001. "Contraceptive failure in the first two years of use: Differences across socioeconomic subgroups," *Family Planning Perspectives* 33(1):19-27.

- Roberts, Dorothy. 2000. "Black women and the pill," *Family Planning Perspectives* 32(2):92-92.
- Rominski, Sarah D., and Rob Stephenson. 2019. "Toward a new definition of unmet need for contraception," *Studies in Family Planning* 50(2):195-198. doi: 10.1111/sifp.12084.
- Sangi-Haghpeykar, Haleh, Nina Ali, Sam Posner, and Alfred N Poindexter. 2006. "Disparities in contraceptive knowledge, attitude and use between Hispanic and non-Hispanic whites," *Contraception* 74(2):125-132.
- Secura, Gina M., Jenifer E. Allsworth, Tessa Madden, Jennifer L. Mullersman, and Jeffrey F. Peipert. 2010. "The contraceptive choice project: Reducing barriers to long-acting reversible contraception," *American Journal of Obstetrics and Gynecology* 203(2):115.e1-115.e7. doi: 10.1016/j.ajog.2010.04.017.
- Shih, Grace, Eric Vittinghoff, Jody Steinauer, and Christine Dehlendorf. 2011. "Racial and ethnic disparities in contraceptive method choice in California," *Perspectives on Sexual and Reproductive Health* 43(3):173-180.
- Singh, Susheela, Gilda Sedgh, and Rubina Hussain. 2010. "Unintended pregnancy: Worldwide levels, trends, and outcomes," *Studies in Family Planning* 41(4):241-250.
- Thorburn, Sheryl, and Laura M Bogart. 2005a. "African American women and family planning services: Perceptions of discrimination," *Women and Health* 42(1):23-39.
- Thorburn, Sheryl, and Laura M Bogart. 2005b. "Conspiracy beliefs about birth control: Barriers to pregnancy prevention among African Americans of reproductive age," *Health Education and Behavior* 32(4):474-487.
- Upson, Kristen, Susan D. Reed, Sarah W. Prager, and Melissa A. Schiff. 2010. "Factors associated with contraceptive nonuse among US women ages 35–44 years at risk of unwanted pregnancy," *Contraception* 81(5):427-434. doi: 10.1016/j.contraception.2009.12.013.
- Walls, J, K Gifford, U Ranji, A Salganicoff, and I Gomez. 2016. "Medicaid coverage of family planning benefits: Results from a state survey," The Henry J. Washington: Kaiser Family Foundation.
- Westoff, C. F. 2008. "A new approach to measuring abortion rates," DHS Analytical Studies 13, Calverton, MD: Macro International, MEASURE DHS.
- Williams, Lindy B. 1994. "Determinants of couple agreement in US fertility decisions," *Family Planning Perspectives* 26(4):169-173.
- Wu, Justine, Sean Meldrum, Ann Dozier, Nancy Stanwood, and Kevin Fiscella. 2008. "Contraceptive nonuse among US women at risk for unplanned pregnancy," *Contraception* 78(4):284-289. doi: 10.1016/j.contraception.2008.04.124.

Table 1. Distribution of covariates for all women and women at risk of having an unmet need for contraception.

	Total Population	Population at-risk
Age:		
15-19	9.2	1.4
20-24	17.2	5.7
25-29	20.2	13.9
30-34	19.2	20.4
35-39	16.7	26.3
40+	17.6	32.4
Race/Ethnicity:		
Hispanic	23.7	23.0
Non-Hispanic white	53.3	57.8
Non-Hispanic black	23.0	19.2
Nativity:		
Foreign-born	14.9	16.7
US-born	85.1	83.3
Religion:		
None	20.0	19.4
Catholic	24.2	25.1
Protestant	49.9	50.3
Other	6.0	5.3
Marital status:		
Married	37.8	61.2
Cohabiting	13.9	14.2
Widowed	0.5	0.4
Divorced	7.7	7.2
Separated	4.1	2.8
Never married	36.0	14.2
Highest education:		
<HS	18.7	16.2
HS	27.8	29.7
Some college	22.2	19.8
AA	8.3	9.7
BA	16.0	16.5
Graduate	7.0	8.2
Income (% of poverty line):		
<100%	28.1	23.2
100-249%	32.3	32.4
≥250%	39.7	44.4
Currently employed:		

Yes	67.5	69.2
No	32.5	30.8
Health insurance:		
Private	54.9	60.5
Medicaid	20.9	16.2
Medicare	4.8	4.4
None	19.3	18.9
Parity:		
0	35.7	11.9
1	21.3	15.6
2	22.9	36.8
3	12.8	22.7
4+	7.3	12.9
Used Contraception at first sex:		
Yes	68.4	65.4
No	31.6	34.6
Ever had unwanted pregnancy:		
No	49.1	37.2
Yes	50.9	62.9
Frequency of sex in last month:		
1 to 4	57.0	44.2
5 to 9	20.6	28.6
10+	22.4	27.3
NSFG wave:		
2002	20.7	22.6
2006-2010	33.4	32.3
2011-2013	15.4	13.6
2013-2015	15.3	14.7
2015-2017	15.2	16.7
N	29 501	6 589

Note: Women were considered at risk of having an unmet need for contraception if they were fecund, not pregnant or less than two months postpartum, sexually active, and stated that they desired no (more) children.

Table 2. Sample selection according to inclusion criteria and calculation of unmet need for contraception by selected characteristics.

	Total women	Fecund	Not Pregnant or Postpartum	Sexually active in past month	Wants no more children	Unmet need for contraception	Unmet need for modern contraception
Total	26550	26036	24328	15971	6589	6.8	12.1
Age:							
15-19	2493	2469	2275	1071	91	4.4	15.4
20-24	4760	4702	4237	2757	376	9.3	17
25-29	5520	5450	4965	3398	917	8.2	14.7
30-34	5157	5072	4688	3223	1341	5.4	10.5
35-39	4315	4230	4084	2808	1732	6.3	12.1
40+	4305	4113	4079	2714	2132	7.1	11
Race/Ethnicity:							
Hispanic	6319	6186	5728	3824	1516	7.1	13.1
Non-Hispanic white	14238	13977	13156	8993	3806	5.4	10.9
Non-Hispanic black	5993	5873	5444	3154	1267	10.6	14.7
Nativity:							
Foreign-born	3928	3853	3559	2476	1103	7.5	13.6
US-born	22622	22183	20769	13495	5486	6.7	11.8
Religion:							
None	5337	5238	4926	3181	1276	6	12.2
Catholic	6449	6316	5909	4007	1651	7.8	13.5
Protestant	13212	12959	12081	7815	3313	6.5	11.2
Other	1552	1523	1412	968	349	8	13.2
Marital status:							
Married	10781	10546	9751	7722	4032	6.3	10.9
Cohabiting	3996	3918	3543	2891	937	8.9	16.4
Widowed	98	96	96	46	29	6.9	6.9
Divorced	1699	1661	1605	854	474	4.9	9.9
Separated	997	974	932	374	183	7.7	10.9
Never married	8979	8841	8401	4084	934	7.8	14.3
Highest education:							

<HS	4986	4881	4488	2680	1068	10.3	15
HS	7420	7240	6740	4438	1954	7.3	12.6
Some college	5919	5820	5487	3570	1301	5.4	12.1
AA	2158	2110	1992	1372	637	6	11.1
BA	4212	4161	3903	2751	1090	5.3	9.4
Graduate	1855	1824	1718	1160	539	5.6	10.9
Income							
(% of poverty line):							
<100%	7365	7211	6607	3900	1527	9.6	15.1
100-249%	8523	8353	7829	5227	2136	6.8	12.5
≥250%	10662	10472	9892	6844	2926	5.4	10.3
Currently employed:							
Yes	17866	17540	16590	11024	4560	6.2	11.4
No	8684	8496	7738	4947	2029	8.2	13.7
Health insurance:							
Private	14670	14410	13672	9254	3984	5.4	10.4
Medicaid	5536	5431	4727	2781	1070	9.8	15.3
Medicare	1278	1246	1140	714	291	8.2	11.7
None	5066	4949	4789	3222	1244	8.4	14.9
Parity:							
0	9257	9035	8457	5084	785	9.6	17.8
1	5643	5528	4970	3223	1029	8.5	14.5
2	6241	6145	5808	4096	2425	5.4	10.8
3	3459	3405	3263	2320	1498	5.7	9.2
4+	1950	1923	1830	1248	852	8.2	12.8
Contraception at first sex:							
Yes	18256	17941	16757	10980	4309	5.3	10.5
No	8292	8093	7569	4990	2280	9.6	15.1
Ever had unwanted pregnancy:							
No	12859	12604	12008	7726	2448	6.7	12.1

Yes	13691	13432	12320	8245	4141	6.8	12.1
Frequency of sex in last month:							
1 to 4 times	15136	14809	13774	6583	2910	8.6	14
5 to 9	5468	5370	5094	4399	1881	5.2	10.2
10+	5946	5857	5490	4989	1798	5.7	11.1
NSFG wave:							
2002	5485	5371	4987	3430	1491	8.7	12.2
2006-2010	8903	8760	8188	5373	2131	6.3	11.5
2011-2013	4112	4036	3750	2361	899	4.4	11.2
2013-2015	4065	3975	3696	2379	969	6.4	13.4
2015-2017	3985	3894	3707	2428	1099	7.4	12.7

Notes: Unmet need for any contraception was calculated by dividing the number of women not using any form of contraception at their last sexual intercourse in the month preceding the survey by the total number who were fecund, not pregnant or less than two months postpartum, sexually active in the month preceding the survey, and who wanted no (more) children multiplied by 100. Unmet need for modern contraception was calculated similarly, but the numerator included women who were either using no contraception or who were only relying on traditional methods, such as withdrawal, natural family planning, or rhythm methods.

^a Under-/uninsured includes those with only single-service plans or without any health insurance

Table 3. Estimates from logistic regression of the odds of having an unmet need for any contraception and the odds of having an unmet need for modern contraception.

	Unmet Need for Any Contraception		Unmet Need for Modern Contraception	
	OR	95% CI	OR	95% CI
Age:				
15-19	0.27*	(0.09-0.80)	0.69	(0.37-1.30)
20-24	0.97	(0.63-1.51)	1.01	(0.72-1.42)
25-29	(ref)		(ref)	
30-34	0.73	(0.52-1.04)	0.76*	(0.59-0.99)
35-39	0.87	(0.63-1.21)	0.91	(0.71-1.17)
40+	0.95	(0.69-1.31)	0.79	(0.61-1.02)
Race/Ethnicity:				
Hispanic	1.05	(0.75-1.45)	0.99	(0.78-1.27)
Non-Hispanic white	(ref)		(ref)	
Non-Hispanic black	2.14***	(1.64-2.80)	1.40**	(1.13-1.73)
Nativity:				
Foreign-born	(ref)		(ref)	
US-born	1.20	(0.86-1.68)	1.01	(0.78-1.30)
Religion:				
None	(ref)		(ref)	
Catholic	1.56**	(1.12-2.16)	1.36*	(1.07-1.74)
Protestant	1.06	(0.79-1.42)	1.04	(0.83-1.29)
Other	1.69*	(1.06-2.70)	1.35	(0.93-1.94)
Marital status:				
Married	(ref)		(ref)	
Cohabiting	0.98	(0.73-1.31)	1.14	(0.91-1.43)
Widowed	0.56	(0.13-2.45)	0.42	(0.10-1.79)
Divorced	0.55**	(0.35-0.86)	0.72*	(0.52-1.00)
Separated	0.82	(0.45-1.47)	0.76	(0.46-1.23)
Never married	0.61**	(0.43-0.85)	0.79	(0.61-1.02)
Highest education:				
<HS	1.30	(0.98-1.73)	1.06	(0.84-1.34)
HS	(ref)		(ref)	
Some college	0.83	(0.61-1.12)	1.02	(0.82-1.27)
AA	0.99	(0.68-1.46)	1.02	(0.76-1.37)
BA	0.97	(0.68-1.37)	0.88	(0.67-1.15)
Graduate	1.02	(0.65-1.60)	1.03	(0.74-1.44)
Income (as % of poverty line):				
<100%	(ref)		(ref)	
100-249%	0.83	(0.64-1.08)	0.92	(0.75-1.14)
≥250%	0.69*	(0.50-0.95)	0.78	(0.61-1.00)
Currently employed:				

Yes	(ref)		(ref)	
No	1.15	(0.93-1.44)	1.12	(0.95-1.33)
Health insurance:				
Private	(ref)		(ref)	
Medicaid	1.55**	(1.13-2.13)	1.28	(1.00-1.64)
Medicare	1.36	(0.86-2.16)	1.01	(0.69-1.49)
None	1.28	(0.96-1.71)	1.24	(0.99-1.55)
Parity:				
0	(ref)		(ref)	
1	0.62**	(0.43-0.88)	0.64**	(0.49-0.85)
2	0.37***	(0.26-0.52)	0.45***	(0.35-0.58)
3	0.33***	(0.22-0.49)	0.33***	(0.24-0.45)
4+	0.38***	(0.25-0.58)	0.41***	(0.29-0.58)
Contraception at first sex:				
Yes	(ref)		(ref)	
No	1.75***	(1.41-2.16)	1.51***	(1.28-1.78)
Ever had unwanted pregnancy:				
No	(ref)		(ref)	
Yes	0.95	(0.75-1.20)	1.03	(0.86-1.23)
Frequency of sex in last month:				
1 to 4 times	(ref)		(ref)	
5 to 9	0.64***	(0.50-0.82)	0.75**	(0.62-0.90)
10+	0.65***	(0.51-0.84)	0.77**	(0.64-0.93)
NSFG wave:				
2002	(ref)		(ref)	
2006-2010	0.68**	(0.52-0.88)	0.91	(0.74-1.12)
2011-2013	0.46***	(0.31-0.67)	0.89	(0.68-1.16)
2013-2015	0.71*	(0.51-0.98)	1.11	(0.87-1.43)
2015-2017	0.83	(0.61-1.13)	1.10	(0.86-1.41)
N	6589		6589	
Pseudo R2	0.07		0.04	
Chi2	216.0		175.5	

* $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$ ^a Under-/uninsured includes those with only single-service plans or without any health insurance