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Declines in Unintended Pregnancy in the United States, 2008–2011

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Abstract

BACKGROUND—The rate of unintended pregnancy in the United States increased slightly between 2001 and 2008 and is higher than that in many other industrialized countries. National trends have not been reported since 2008.

METHODS—We calculated rates of pregnancy for the years 2008 and 2011 according to women's and girls' pregnancy intentions and the outcomes of those pregnancies. We obtained data on pregnancy intentions from the National Survey of Family Growth and a national survey of patients who had abortions, data on births from the National Center for Health Statistics, and data on induced abortions from a national census of abortion providers; the number of miscarriages was estimated using data from the National Survey of Family Growth.

RESULTS—Less than half (45%) of pregnancies were unintended in 2011, as compared with 51% in 2008. The rate of unintended pregnancy among women and girls 15 to 44 years of age declined by 18%, from 54 per 1000 in 2008 to 45 per 1000 in 2011. Rates of unintended pregnancy among those who were below the federal poverty level or cohabiting were two to three times the national average. Across population subgroups, disparities in the rates of unintended pregnancy persisted but narrowed between 2008 and 2011; the incidence of unintended pregnancy declined by more than 25% among girls who were 15 to 17 years of age, women who were cohabiting, those whose incomes were between 100% and 199% of the federal poverty level, those who did not have a high school education, and Hispanics. The percentage of unintended pregnancies that ended in abortion remained stable during the period studied (40% in 2008 and 42% in 2011). Among women and girls 15 to 44 years of age, the rate of unintended pregnancies that ended in birth declined from 27 per 1000 in 2008 to 22 per 1000 in 2011.

CONCLUSIONS—After a previous period of minimal change, the rate of unintended pregnancy in the United States declined substantially between 2008 and 2011, but unintended pregnancies remained most common among women and girls who were poor and those who were cohabiting. (Funded by the Susan Thompson Buffett Foundation and the National Institutes of Health.)

The rate of unintended pregnancy in a population is a central measure of reproductive health; it indicates the extent to which women and couples can determine freely whether and when they have children. In addition to supporting individual autonomy, there is also a clear public

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health justification for reducing the rate of unplanned pregnancy: women and girls who have unintended pregnancies that result in births are more likely than those who intended to become pregnant to have inadequate or a delayed initiation of prenatal care, to smoke and drink during pregnancy, and to have premature and low-birth-weight infants; they are also less likely to breast-feed. Increased risks of physical and mental health problems have also been reported in children of women who have unplanned pregnancies.[1–9] Many U.S. policies and programs have recognized these relationships and focus on reducing the rate of unintended pregnancy and associated adverse health outcomes.[10–12]

Although the rate of unintended pregnancy in the United States decreased between the late 1980s and the mid-1990s,[13] it plateaued by 2001[14] and increased slightly between 2001 and 2008, the most recent year for which estimates are available.[15] The rate of unintended pregnancy in the United States is substantially higher than that in other highly industrialized regions such as Western Europe.[16] We used U.S. data on pregnancy intentions, released in December 2014 by the National Center for Health Statistics (NCHS), to calculate the incidence of unintended pregnancy in 2011.

METHODS

STUDY DESIGN AND KEY MEASURES

The methods we used for this analysis are similar to those used in previously published studies.[15,17] Among all U.S. females and key population subgroups, we determined the total number of pregnancies that ended in birth, miscarriage (i.e., fetal loss or stillbirth), and induced abortion and calculated the percentages of each of these pregnancy outcomes that were unintended; we then divided the total number of unintended pregnancies by the population of women and girls 15 to 44 years of age to obtain a rate of unintended pregnancy per 1000 in this age group.

DATA SOURCES AND DEFINITIONS

The numbers of U.S. births, miscarriages, and abortions reported or estimated in 2011 and 2008 were derived from several sources. The numbers of births were obtained from NCHS,[18,19] which tabulates data from birth certificates to obtain birth counts at the national level. Because there is no recognized best estimate of the number — or method to obtain the number — of miscarriages in a given year, we followed a procedure that was established by researchers at NCHS [20] using that center's National Survey of Family Growth (NSFG), a nationally representative in-home survey that collects information on pregnancy and childbearing: we calculated the ratio of miscarriages to births that were reported in the NSFG and multiplied that ratio by the actual number of U.S. births to obtain our estimates of the number of miscarriages. The total number of abortions, including both surgical and medication abortions, for each year was obtained from a periodic census of all known abortion providers that was conducted by the Guttmacher Institute.[21] This census is considered to be the most comprehensive source of data on the incidence of abortion in the United States.[22]

Pregnancy intention was defined according to a respondent's answers to a series of retrospective survey questions about her desire to become pregnant right before each pregnancy occurred. If she reported that she did not want to become pregnant at the time the pregnancy occurred, but wanted to become pregnant in the future, the pregnancy was categorized as mistimed. If a respondent reported that she did not want to become pregnant then or at any time in the future, the pregnancy was categorized as unwanted. We classified a pregnancy as unintended if it was either mistimed or unwanted; an intended pregnancy was one that was desired at the time it occurred or sooner.

Data on pregnancy intentions (often called intendedness) were obtained from two nationally representative sources. The percentages of births and miscarriages that resulted from unintended pregnancies were calculated from the 2011–2013 NSFG. We evaluated 1975 pregnancies that ended between 2009 and 2013 (with 2011 as the central or reference year), as reported by the respondents; a respondent could report more than one pregnancy. The percentages of abortions that followed unintended conceptions were calculated from the 2008 Abortion Patient Survey that was conducted by the Guttmacher Institute.[23] This paper-and-pencil survey gathered information from a representative sample of 9493 women who had abortions in the United States and is the most recent data set available of its kind. The questions about pregnancy intention in the Abortion Patient Survey were modeled on those in the NSFG. For both data sets, the pregnancy outcomes were weighted to represent all pregnancies in the United States in 2011.

STATISTICAL ANALYSIS

The percentages of births, miscarriages, and abortions that resulted from unintended pregnancies were applied to the counts of each respective pregnancy outcome and then summed to determine the total number of unintended pregnancies. To calculate rates, we obtained population counts according to age and according to race and ethnic group from the U.S. Census Bureau.[24] All other distributions of population subgroups were derived from the Annual Social and Economic Supplements of the U.S. Census Bureau's Current Population Survey,[25] except for religious affiliation, which was derived from the NSFG. Poor females were defined as those with incomes below 100% of the federal poverty level, and low-income females were those whose incomes were between 100% and 199% of the federal poverty level.

When calculating the percentage of unintended pregnancies that ended in abortion, we excluded miscarriages in order to assess only pregnancies in which the outcome was determined by the respondent. The rates of unintended pregnancy according to educational attainment were limited to women 20 years of age or older; this age cutoff excluded most females who had not yet completed schooling, yet still included young women, who have had historically high rates of unintended pregnancy. We also updated the rates of unintended pregnancy for 1981, 1987, 2001, and 2008 — years that the NSFG was fielded — to take into account updated population estimates and recent improvements in our analytic approach. Data on pregnancy intendedness were also collected in the 1995 survey of the NSFG but were excluded owing to concerns about the accuracy of the pregnancy intendedness data from that year.[26]

We performed analyses at an aggregate level and separately for each population subgroup: we combined data on pregnancy intention, pregnancy outcomes, and populations from several different sources to calculate rates, which made it difficult to assess the reliability of our estimates and of the change over time. Because most of the uncertainty around the rate estimates was attributable to the percentage of pregnancies that were unintended (since the numbers of pregnancies and population denominators are based largely on generally complete census data), we performed a supplementary analysis to calculate 95% confidence intervals for the percentage of pregnancies that were unintended using a merged data set that combined the sample of births and miscarriages from the NSFG with the sample of abortions from the Abortion Patient Survey. We then used this range of percentages to calculate the 95% confidence intervals around the rate estimates. Although these percentages are expected to be less accurate than the ones calculated in the aggregate manner, the 95% confidence intervals around these percentages should represent the variance around the rate estimates.

The above approach uses two different data sources for pregnancy intention. We also used a single data set, the NSFG, to calculate a test statistic for the change between 2008 and 2011 in the percentage of pregnancies that were unintended. Using the NSFG alone for all pregnancy outcomes allows for a simple calculation of the test statistic. Abortions are underreported in the NSFG, and therefore the percentages calculated using this approach were expected to be lower than those in our main analysis. Nonetheless, we considered this analysis of trends to be reasonable, because the underreporting of abortions has not changed substantially over time.[27,28]

RESULTS

FINDINGS AT THE NATIONAL LEVEL

In 2011, a total of 6.1 million pregnancies occurred in the United States (Table 1); 45% of these pregnancies (2.8 million) were unintended, as compared with 51% of the pregnancies in 2008. There were 45 unintended pregnancies for every 1000 women and girls 15 to 44 years of age in 2011, as compared with a rate of 54 per 1000 women and girls 15 to 44 years of age in 2008, which corresponds to an 18% decline over this period (Table 1). This was the first substantial decline since at least 1981 (Fig. 1). The rate of intended pregnancy increased slightly from 51 to 53 per 1000 women and girls 15 to 44 years of age (data not shown); as a result, the overall rate of pregnancy decreased from 106 to 98 per 1000 women and girls 15 to 44 years of age.

In 2011, the percentage of unintended pregnancies (excluding miscarriages) that ended in abortion was 42% (Table 2). This percentage changed little from 2008, when it was 40%. The rate of births that resulted from unintended pregnancies declined from 27 to 22 per 1000 women and girls 15 to 44 years of age during the period studied.

FINDINGS FOR POPULATION SUBGROUPS

The decline in rates of unintended pregnancy was seen in almost every demographic group we examined (Table 1). For example, the rate declined in every age group. However, the

highest rate of unintended pregnancy in 2011 was seen among women 20 to 24 years of age, followed by women 18 to 19 and women 25 to 29 years of age. The percentage of unintended pregnancies that ended in abortion did not vary substantially according to age group, although the percentage increased between 2008 and 2011 among girls 15 to 17 years of age; as a result, the pattern of births that resulted from unintended pregnancies reflected that of unintended pregnancy, with the highest rates observed among women 18 to 29 years of age and declines in every age group.

The rate of unintended pregnancy varied according to relationship status. Women who were married had the lowest rate of unintended pregnancy in 2011; by contrast, the rate among those who were unmarried but cohabiting was more than quadruple that among those who were married. However, the rate declined sharply between 2008 and 2011 among women who were cohabiting and to a lesser extent among those who were married or never married; those who were formerly married were the only group that had an increase in the rate of unintended pregnancy between 2008 and 2011. When an unintended pregnancy occurred, women who were married were much less likely to have an abortion than were those who were unmarried.

We found a strong inverse association between both income level and educational attainment and the rate of unintended pregnancy. However, the rate of unintended pregnancy declined between 2008 and 2011 in every income and education group, with the largest declines occurring among poor females and those who did not have a high school education. As a result, the absolute differences by income and education narrowed between 2008 and 2011. In addition to having higher rates of unintended pregnancy, poor and less-educated females were less likely to have induced abortions to end unintended pregnancies; as a result, the income and education disparities in the rate of unintended pregnancies that ended in birth were even greater than the disparities in the unintended pregnancy rate. Nevertheless, the rate of births that resulted from unintended pregnancies declined in virtually every income and education group.

There were substantial disparities in the rates of unintended pregnancy in 2011 according to race and ethnic group, even after income was accounted for (Fig. 2). However, the rate of unintended pregnancy declined between 2008 and 2011 in all racial and ethnic groups, with the largest decline among Hispanics. In 2011, the percentage of unintended pregnancies that ended in abortion was highest among blacks, and the rate of birth resulting from unintended pregnancies was lower among whites than among both blacks and Hispanics.

The rates of unintended pregnancy and of births resulting from unintended pregnancies also declined between 2008 and 2011 among women and girls of every religious affiliation assessed. In both years, these rates were highest among mainline Protestants and among those with no religious affiliation.

Figure 3 shows that there have been declines in rates of unintended pregnancy in the most recent period across all strata of age, income, and race and ethnicity; this represents a change in the overall pattern since 1981. The greatest reductions were noted among women 20 to 24 years of age, poor and low-income women and girls, and Hispanics.

SUPPLEMENTARY ANALYSIS

In the supplementary analysis to assess the variance around our estimates (Table S1 in the Supplementary Appendix, available with the full text of this article at NEJM.org), we found a decline in the percentage of reported pregnancies that were unintended, from 46% in 2008 to 39% in 2011 (P = 0.01). Similarly, the supplementary analysis yielded a point estimate and a 95% confidence interval for the rate of unintended pregnancies of 45 (95% confidence interval [CI], 41 to 49) per 1000 women and girls 15 to 44 years of age in 2011, as compared with a rate of 54 (95% CI, 51 to 58) per 1000 women and girls 15 to 44 years of age in 2008. The confidence intervals do not overlap, which corroborates the finding of a decline.

Population subgroups with larger point estimates for the rate of unintended pregnancy generally had wider 95% confidence intervals. The results of the supplementary analysis supported the finding of differences in rates of unintended pregnancy across strata of age, relationship status, income, education, and race and ethnicity; the results did not support a finding of clear differences in the rates across strata of religious affiliation.

DISCUSSION

After a long period of minimal change, the rate of unintended pregnancy in the United States declined substantially between 2008 and 2011. The rate of 45 unintended pregnancies per 1000 in 2011 was the lowest level seen in at least three decades. The decline occurred in nearly all demographic groups, including those defined by age, income, education, race and ethnicity, and religious affiliation.

The decline we observed corroborates the findings of a recent study [29] that examined rates of unintended pregnancy at the state level; this study used a different source for girls' and women's reports of pregnancy intention — the Pregnancy Risk Assessment Monitoring System of the Centers for Disease Control and Prevention — to produce state-specific estimates. In that study, declines of 5% or more between 2006 and 2010 occurred in 28 of 41 states that had data for both years.

Our analysis did not address factors that might explain the decline between 2008 and 2011, but several possible factors should be considered. Changes in sexual behavior are unlikely to have been a major driver. The incidence of sexual activity tends not to change much among adults,[30] and among women 18 to 19 years of age, the decline in the rate of unintended pregnancy occurred despite virtually no change over the course of the period studied in the percentage who reported ever having sex [31]; because younger teens have relatively few pregnancies, any change in their behavior would have relatively little effect on the overall rate of unintended pregnancy. Changes in the composition of the population are also not likely to explain the decline in the rate of unintended pregnancy; in fact, there is evidence that the percentage of the population composed of women and girls with higher rates of unintended pregnancy, such as those who were poor or Hispanic, increased over time,[24,25,32] and the decline in the rate of unintended pregnancy occurred despite this increase.

Change in the desire for pregnancy may have contributed to the decline in the rate of unintended pregnancies. Surveys of women in 2009 during the recession indicated that many

women intended to reduce or delay their childbearing because of changing economic conditions.[33] As Americans recovered from the recession, it is possible that there was a corresponding increase in desired pregnancy, which would have led to a shift away from unplanned pregnancies; our analyses show that there was a small increase in the rate of intended pregnancy between 2008 and 2011.

A likely explanation for the decline in the rate of unintended pregnancy is a change in the frequency and type of contraceptive use over time. Evidence shows that the overall use of any method of contraception among women and girls at risk for unintended pregnancy increased slightly between 2008 and 2012.[34,35] More important, the use of highly effective long-acting methods, particularly intrauterine devices, among U.S. females who used contraception increased from 4% to 12% between 2007 and 2012,[36] and this increase occurred in almost all demographic groups.[37,38] In a 2012 study, women and girls at high risk of unintended pregnancy who had free access to and used highly effective methods of contraception had much lower rates of unintended pregnancy than did those who used other methods, including commonly used methods such as the oral contraceptive pill.[39]

Although the differences in rates of unintended pregnancy across demographic groups narrowed over time, large disparities were still present in 2011. In particular, poor, black, and Hispanic women and girls continued to have much higher rates of unintended pregnancy than did whites and those with higher incomes. Much more progress can be made in eliminating these disparities. The rate of unintended pregnancy in Western Europe is 40% lower than the rate in the United States,[16] and the rate associated with higher incomes in the United States is similar to the rate among all women in Western Europe.

The observed decrease in the rate of unintended pregnancy preceded the implementation of several provisions in the Affordable Care Act that should improve coverage for contraceptive services, including the option for young people up to 26 years of age to remain on their parents' health insurance plans and a provision that requires insurance plans to cover contraception at no out-of-pocket cost. If these provisions lead to greater use of contraception overall or to increased use of highly effective methods among those who want them, the rate of unintended pregnancy could continue to decline.

A limitation of our study is that we used socioeconomic and other demographic information on women and girls from the 2008 Abortion Patient Survey to estimate both the 2008 and 2011 counts of women and girls who had abortions by characteristic. These counts might have changed through 2011. For example, the percentage of abortion patients who were poor increased from 2000 to 2008,[23] and it is possible that this percentage continued to increase from 2008 to 2011. If an increase in this percentage occurred from 2008 to 2011, the number of poor women and girls who had an unintended pregnancy in 2011, as well as the rate of unintended pregnancy, could have been underestimated; thus, the decline in the rate of unintended pregnancy among poor women and girls would be overestimated, and the decline in the rate of unintended pregnancy among those with higher incomes would be underestimated.

Our findings show a substantial decline in the rate of unintended pregnancy in the United States between 2008 and 2011, to a historic low. Nonetheless, nearly half of all pregnancies in 2011 were still unintended, and major disparities remained among women and girls according to socioeconomic status and race and ethnic group.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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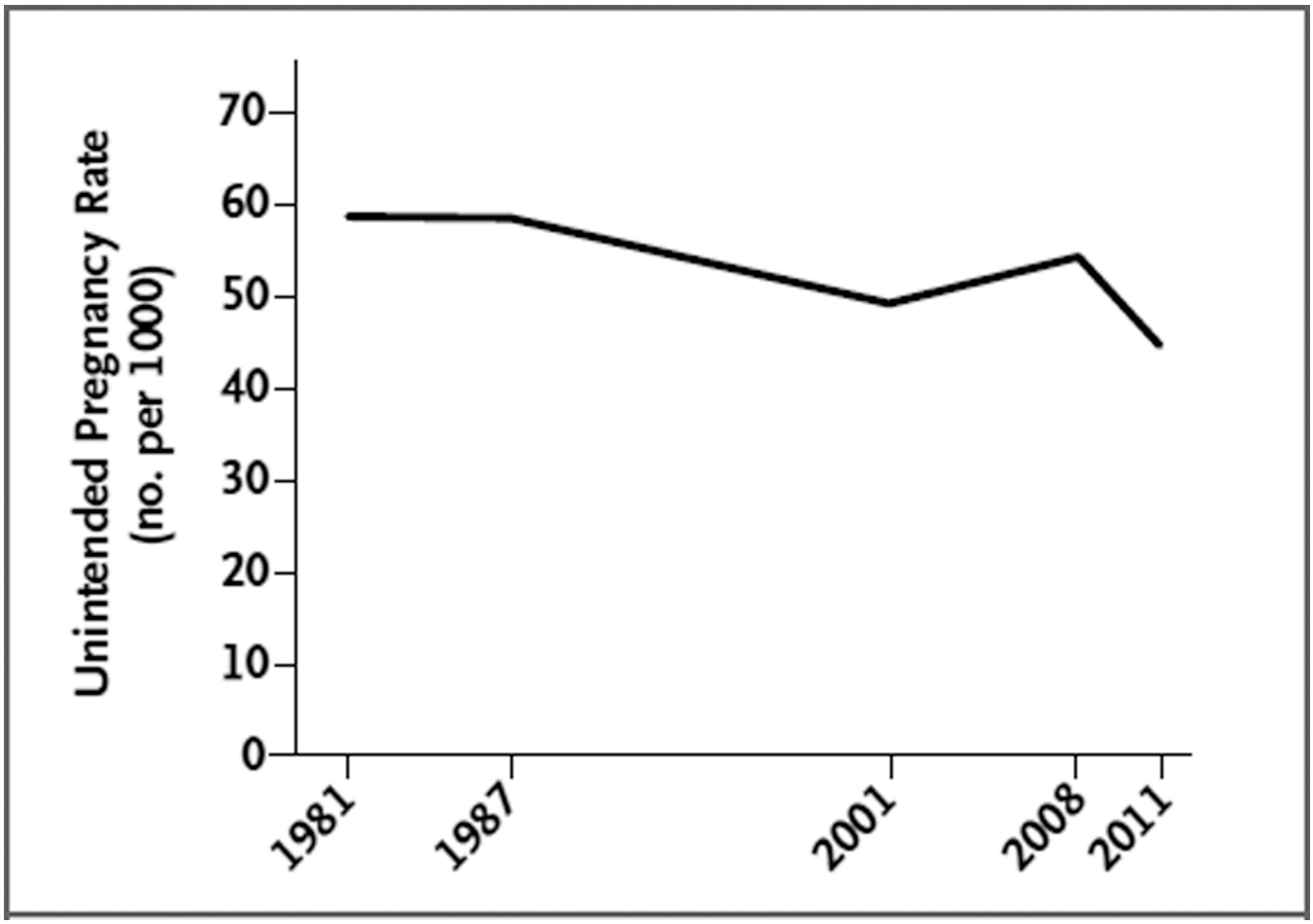

Figure 1. Rates of Unintended Pregnancy, 1981–2011

Rates are reported as the number of unintended pregnancies per 1000 women and girls 15 to 44 years of age.

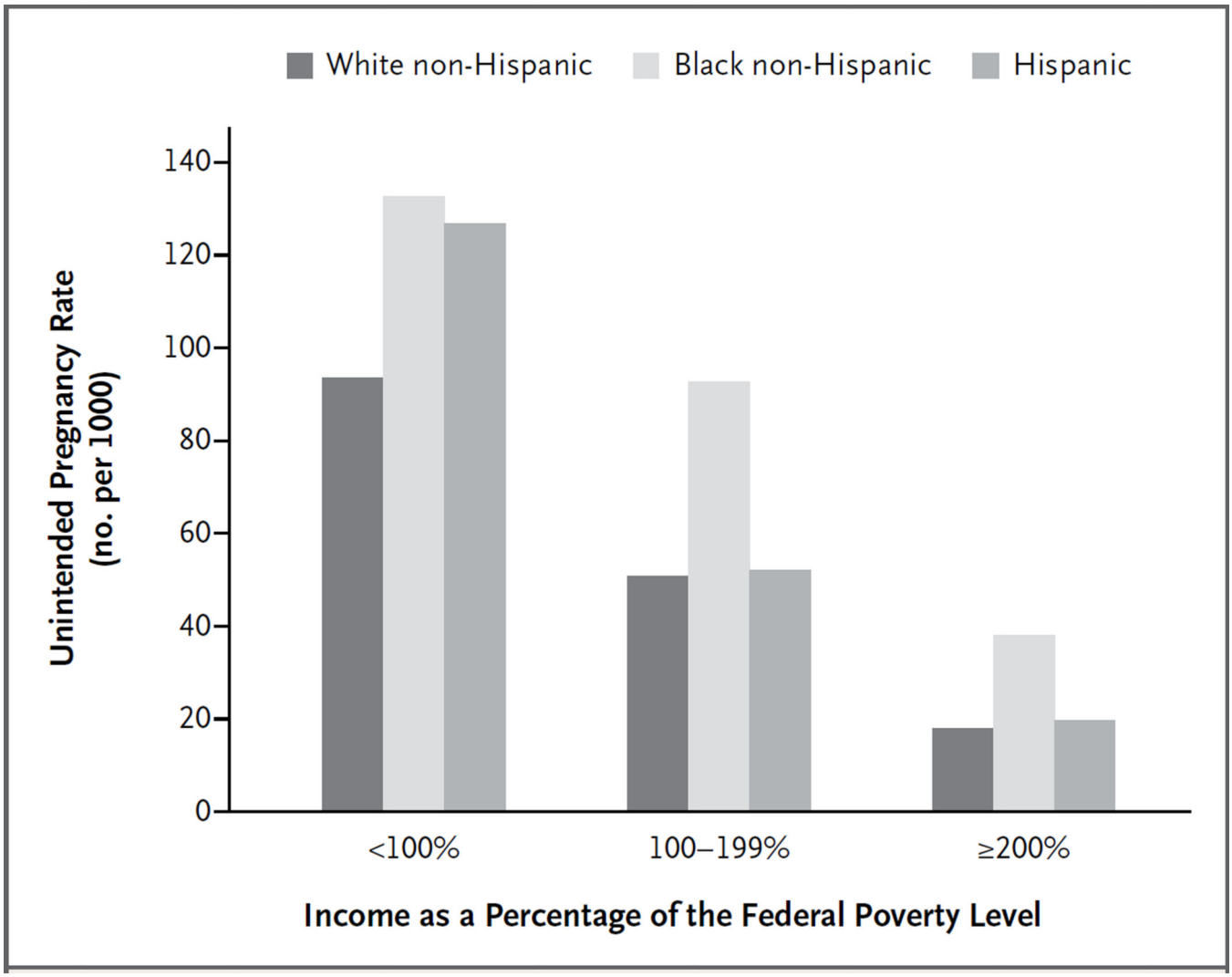

Figure 2. Rates of Unintended Pregnancy According to Income and Race and Ethnic Group, 2011

Rates are reported as the number of unintended pregnancies per 1000 women and girls 15 to 44 years of age.

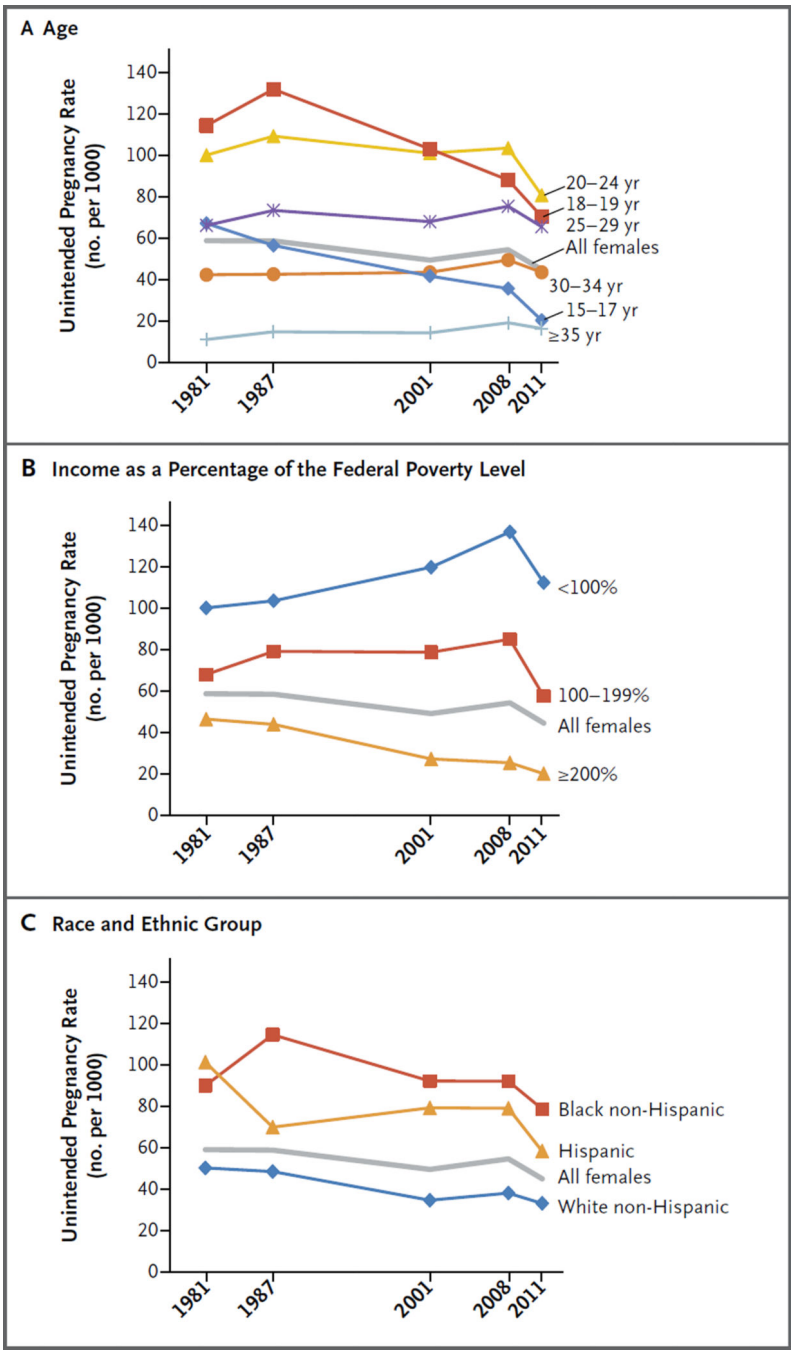

Figure 3. Rates of Unintended Pregnancy According to Key Sociodemographic Characteristics, 1981–2011

Rates are reported as the number of unintended pregnancies per 1000 women and girls 15 to 44 years of age.

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Table 1

Number of Pregnancies, Percentage That Were Unintended, Pregnancy Rates, and Percentage Change in the Rate of Unintended Pregnancies among All U.S. Females, 2008 and 2011.*

Characteristic	No. of Pregnancies, 2011 (in Thousands)		Percentage of Pregnancies That Were Unintended		Pregnancy Rate†				% Change in Rate of Unintended Pregnancy 2008 to 2011
	Total	Unintended			Total		Unintended		
			2008	2011	2008	2011	2008	2011	
All females	6138	2779	51	45	106	98	54	45	−18
Age group‡									
15–19 yr	574	430	82	75	70	55	57	41	−28
15–17 yr	173	124	91	72	39	28	36	20	−44
18–19 yr	402	305	77	76	115	93	88	71	−20
20–24 yr	1494	878	64	59	163	138	104	81	−22
25–29 yr	1650	691	45	42	168	157	76	66	−13
30–34 yr	1440	444	35	31	141	141	49	43	−12
≥35 yr	967	328	39	34	48	47	19	16	−15
Relationship status									
Currently married	3084	731	31	24	119	121	36	29	−21
Never married, not cohabiting	1181	954	82	81	54	45	43	36	−16
Formerly married, not cohabiting	378	262	68	69	67	77	46	54	17
Cohabiting	1494	831	63	56	320	254	198	141	−29
Income as a percentage of the federal poverty level									

Characteristic	No. of Pregnancies, 2011 (in Thousands)		Percentage of Pregnancies That Were Unintended		Pregnancy Rate†				% Change in Rate of Unintended Pregnancy 2008 to 2011
	Total	Unintended			Total		Unintended		
			2008	2011	2008	2011	2008	2011	
<100%	2131	1286	65	60	209	184	137	112	−18
100–199%	1373	709	55	52	152	111	85	58	−32
≥200%	2635	784	38	30	67	68	26	20	−20
Educational attainment§									
Not a high school graduate	813	363	54	45	187	162	101	73	−28
High school graduate or GED equivalent	1358	738	52	54	116	109	60	59	−2
Some college or associate’s degree	1785	813	53	46	105	101	55	46	−16
College graduate	1595	428	31	27	94	95	29	25	−14
Race and ethnic group¶									
White non-Hispanic	3190	1201	42	38	89	86	38	33	−13
Black non-Hispanic	1101	699	69	64	132	122	92	79	−15
Hispanic	1387	691	56	50	140	116	79	58	−26
Religious affiliation									
Protestant	2803	1274	50	45	103	93	52	43	−19
Mainline Protestant	1329	703	53	53	106	95	57	51	−11
Evangelical Protestant	1473	571	48	39	101	91	48	35	−27
Catholic	1427	661	49	46	109	102	54	48	−11
Other	598	205	44	34	94	109	42	38	−10

Characteristic	No. of Pregnancies, 2011 (in Thousands)		Percentage of Pregnancies That Were Unintended		Pregnancy Rate†				% Change in Rate of Unintended Pregnancy 2008 to 2011
	Total	Unintended			Total		Unintended		
			2008	2011	2008	2011	2008	2011	
None	1311	639	59	49	113	101	68	50	−26

*Numbers may not sum to group totals because of rounding. GED denotes General Educational Development.

†Rates are reported as the number of pregnancies per 1000 women and girls 15 to 44 years of age.

‡Girls younger than 15 years of age were excluded because of insufficient data. For the category 35 years of age or older, the numerator is the number of pregnancies among women 35 years of age or older and the population denominator is the number of women 35 to 44 years of age.

§Calculations by educational attainment were limited to women 20 years of age or older.

¶Race and ethnic group were self-reported. Data from women and girls who reported their race or ethnic group as “other” are not included here.

Table 2

Percentage of Unintended Pregnancies That Ended in Abortion and Rate of Unintended Pregnancies That Ended in Birth for All U.S. Females, 2008 and 2011.

Characteristic	Percentage of Unintended Pregnancies That Ended in Abortion*		Rate of Unintended Pregnancies That Ended in Birth†	
	2008	2011	2008	2011
All females	40	42	27	22
Age group‡				
15–19 yr	37	38	30	21
15–17 yr	35	43	19	10
18–19 yr	38	37	47	37
20–24 yr	41	44	53	40
25–29 yr	42	42	38	33
30–34 yr	41	42	24	21
≥35 yr	45	46	8	7
Relationship status				
Currently married	20	23	24	18
Never married, not cohabiting	57	56	16	14
Formerly married, not cohabiting	67	54	12	19
Cohabiting	39	41	101	72
Income as a percentage of the federal poverty level				
<100%	41	38	70	60
100–199%	37	44	45	28
≥200%	43	48	12	9
Educational attainment§				
Not a high school graduate	27	35	61	40
High school graduate or GED equivalent	40	38	31	31
Some college or associate’s degree	48	49	24	20
College graduate	48	47	13	11

Characteristic	Percentage of Unintended Pregnancies That Ended in Abortion*		Rate of Unintended Pregnancies That Ended in Birth†	
	2008	2011	2008	2011
Race and ethnic group¶				
White non-Hispanic	36	36	20	17
Black non-Hispanic	50	50	40	33
Hispanic	37	40	43	31
Religious affiliation				
Protestant	34	36	28	23
Mainline Protestant	40	39	29	26
Evangelical Protestant	27	32	28	20
Catholic	44	48	26	22
Other	39	39	20	19
None	49	49	29	22

*Pregnancies that ended in miscarriage were excluded.

†Rates are reported as the number of unintended pregnancies per 1000 women and girls 15 to 44 years of age.

‡Girls younger than 15 years of age were excluded because of insufficient data. For the category 35 years of age or older, the numerator is the number of pregnancies among women 35 years of age or older and the population denominator is the number of women 35 to 44 years of age.

§Calculations by educational attainment were limited to women 20 years of age or older.

¶Race and ethnic group were self-reported. Data from women and girls who reported their race or ethnic group as “other” are not included here.