



Rising nonmarital first childbearing among college-educated women: Evidence from three national studies

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Levels of nonmarital first childbearing are assessed using recent administrations of the National Longitudinal Survey of Youth, 1997 Cohort; the National Longitudinal Study of Adolescent to Adult Health; and the National Survey of Family Growth. Results confirm that the higher a woman's educational attainment, the less likely she is to be unmarried at the time of her first birth. A comparison over time shows increases in nonmarital first childbearing at every educational level, with the largest percentage increase occurring among women with college degrees at the BA or BS level or higher. This article projects that 18 to 27% of college-educated women now in their thirties who have a first birth will be unmarried at the time. In addition, among all women who are unmarried at first birth, women with college degrees are more likely to be married at the time of their second birth, and, in a majority of cases, the other parent of the two children was the same person. A growing proportion of well-educated women, and their partners, may therefore be pursuing a family formation strategy that proceeds directly to a first birth, and then proceeds, at a later point, to marriage, followed by a second birth. Possible reasons for the increase in nonmarital first births among the college-educated include the stagnation of the college wage premium; the rise in student debt; decreasing selectivity; and the growing acceptability of childbearing within cohabiting unions, which have become a common setting for nonmarital childbearing, and among single parents.

fertility | marriage | education | cohabitation

Over the past half-century, the family patterns of young adults in the United States have diverged according to the amount of education that they have attained (1). An analysis of data from the US Vital Statistics System found that, by 2016, 10% of births to women who had attained bachelor's degrees occurred outside of marriage, compared to 43% for mothers with associate of arts degrees—commonly conferred after 2 y of study—and 59% among women with high school degrees (2). This divergence by education occurs during the period of life that scholars are calling emerging adulthood: the late teenage years to the early thirties (3, 4). The divergence has been much noted in the literature, and there is general agreement that the dividing line is a bachelor of arts or bachelor of science degree (1, 5, 6).^{*} American students typically achieve a bachelor's degree through four or more years of study at a college or university. In a review of research on pathways to parenthood, Guzzo and Hayford (ref. 5, p. 119) wrote, "The largest differences in family behaviors are between women with and without a 4-year college degree." They cited differences in age at first birth, unintended births, and marital status at first birth. In a review article on family inequality, Lundberg et al. (ref. 1, p. 80) wrote, "Compared with college graduates, less-educated women are more likely to enter into cohabiting partnerships early and bear children while cohabiting, are less likely to transition quickly into marriage, and have much higher divorce rates."

As these quotations suggest, one of the distinguishing characteristics of the transition to parenthood among college graduates has been the low percentage of first children that are born outside

of marriage. Although college-educated young adults tend to marry at older ages than non-college-educated young adults, they have tended to wait until after marriage to have children. Previous estimates, however, may understate the lifetime experience of nonmarital births to the college-educated women who are currently in their reproductive years. Because college-educated women tend to delay childbearing, period-based statistics can reflect not just the marital context of childbearing but also the timing of childbearing. If college-educated women are currently postponing childbearing and will, at later ages than in the past, have children outside of marriage, then the period-based statistics could underestimate lifetime experiences of nonmarital childbearing.

In this article, I will present data on the marital context of childbearing drawn from recent administrations of three widely cited national studies that were conducted in fieldwork periods that overlapped and that obtained information from women in comparable age groups. The studies are Wave 18 of the National Longitudinal Survey of Youth, 1997 cohort (NLSY97), conducted in 2017–2018; Wave 5 of the National Longitudinal Study of Adolescent to Adult Health, better known as Add Health, conducted in 2016–2018; and the pooled 2015–2017 interviews in the National Survey of Family Growth (NSFG).[†] At Wave 18, the women in the NLSY97 were ages 32 y to 38 y. At Wave 5, the

Significance

Until recently, one key way in which family formation in the United States was distinctive among college-educated young adults was their tendency to wait until after marriage to have a first birth. Even as nonmarital first childbearing became common among less-educated adults, levels among the college-educated remained very low. These levels now appear to be rising, according to data from three national surveys. The data suggest a change in the role of marriage in family formation among the college-educated population, although not necessarily a decline. Rather, the place of marriage in the sequence of life events that compose emerging adulthood may be shifting among college graduates: for a growing share, marriage may occur after a first birth rather than before.

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^{*}A bachelor's degree corresponds to level 6 in the International Standard Classification of Education. I will employ the general terms "college graduates" or "college educated" to refer to all individuals who have obtained bachelor's degrees. They can be divided into two groups: those with a bachelor's degree only and those who also have obtained a higher degree at the master's, doctoral, or professional level.

[†]Additional data will be presented from the earlier study, NLSY79.

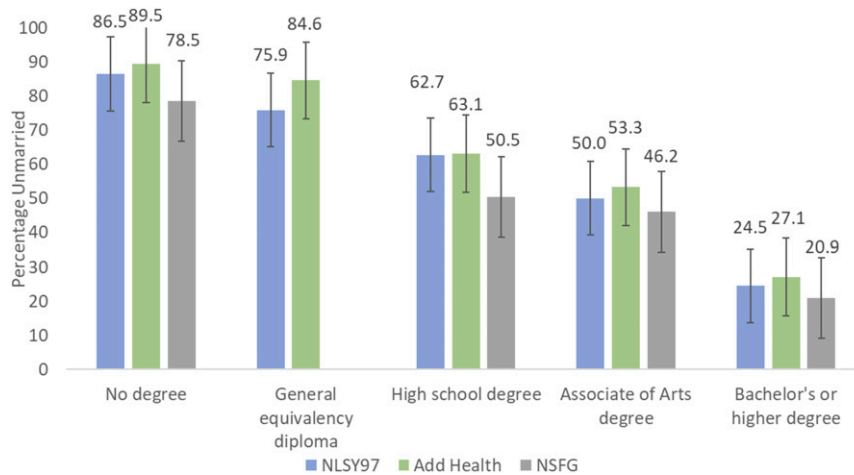


Fig. 1. Percentage of women unmarried at the time of first birth in three national studies conducted in overlapping fieldwork periods, by highest educational degree attained. The subjects and studies are 1) women aged 32 y to 38 y in the NLSY97, interviewed in 2017–2018; 2) women aged 34 y to 40 y in Wave 5 of the National Longitudinal Study of Adolescent to Adult Health, interviewed in 2016–2018; and 3) women aged 32 y to 38 y in the NSFG, interviewed in 2015–2017. (The NSFG did not collect information on the general equivalency diploma.) The three studies yield comparable estimates. SEs are shown.

women in Add Health were ages 34 y to 42 y; I retained those who were 34 y to 40 y, to be as comparable as possible with the NLSY97. The 2015–2017 NSFG included women ages 15 y to 45 y; I retained those who were 32 y to 38 y, for comparability. Data from these studies confirm the well-known finding that the higher the educational attainment of a woman, the more likely she is to be married at the time of her first birth, although increases in nonmarital childbearing have occurred at all educational levels (7). In addition, the data show that the greatest percentage increase in the share of first births that occurred outside of marriage took place among those who had attained at least a bachelor's degree. Based on these data and on assumptions to be discussed later in this article, I will project that, among college-educated women currently in their thirties who will ever have a first child, 18 to 27% will be unmarried at the time of the birth.

I will present further analyses on the marital and partnership context of having a second child among women who have had a first child outside of marriage. Data from the three studies show that being married at the time of the second child was more common among women with at least a bachelor's degree than among women who had not attained a bachelor's degree. Forty-six to 54%, depending on the study, of college-educated women in their thirties who had a first birth outside of marriage were married at the time of their second birth, compared to 25 to 33% of women with less than a college degree. Additional data from the NLSY97 show that, among the same group of college-educated women, the other parent of the first and second children was the same person in 54% of the cases. These patterns suggest that marriage may continue to be salient for college graduates during the transition to parenthood but that, for a nonnegligible minority of them, a first birth may precede the marriage.

Although a sizeable increase in the proportion of nonmarital first births among college graduates may be unexpected, there are plausible causes of such a shift. Together, these causes may be weakening the restriction of childbearing to marital unions among the college educated. Although I cannot offer new evidence for them in this article, I will consider them briefly. They could reflect economic constraints on some college-educated young adults' perceived ability to marry; decreasing selectivity as the college-educated share of the population has grown; or cultural change in the relationship between childbearing and marriage, including the growing acceptability of living as an unmarried, cohabiting couple.

Results

Fig. 1 displays the percentage of women who were unmarried at the time of their first birth, by highest degree ever attained, for women in the 2017–2018 round of the NLSY97, ages 32 y to 38 y; women in the 2016–2018 round of Add Health, ages 34 y to 40 y; and women in the pooled 2015–2017 NSFG, ages 32 y to 38 y. The three studies produce comparable estimates: At every level of education, the SEs for each study overlap the SEs of the other two. The results from all three studies are consistent with the noted finding (7, 8) that the percentage of women who are unmarried at the time of their first birth declines sharply as educational attainment increases. The overwhelming majority of women without a high school degree or a general equivalency diploma were unmarried at first birth. Women with a high school degree were less likely to be unmarried than were women with no degree, yet the estimates suggest that at least half of the high school–educated women were unmarried at first birth. Women with an associate of arts degree were somewhat less likely to be unmarried, and women with a bachelor's or higher degree were the least likely to be unmarried.

Comparisons with earlier data show that the proportion of first births that are nonmarital has increased at all educational levels but that the increase has been greatest, in percentage terms, among women with college degrees. We can see this historical shift by comparing the estimates for the NLSY97 sample with estimates from an earlier, similar study conducted by the same research organization with a similar design: the NLSY, 1979 Cohort (NLSY79). In the 1996 survey wave, the NLSY79 women were aged 31 y to 39 y. By trimming the age range to 32 y to 38 y, we can match the ages of the NLSY97 women in the 2017–2018 round. We can thus assess the growth of nonmarital first childbearing among comparably aged women in similar studies over a 21- to-22-y period. Fig. 2 presents the percentage of 32- to 38-y-old women who were unmarried at the time of their first birth by highest degree received in the two studies.[‡] The percentages are substantially higher in 2017–2018 than in 1996 for all educational categories, reflecting a large, general increase in nonmarital first childbearing. But note that the 1996 percentage for women with

[‡]Because the NLSY79 study did not collect detailed information on the timing of cohabitations in its early years—an omission that reflects the smaller role of cohabitation in the young adult life course in the 1980s—I could not disaggregate the unmarried category into cohabiting and single.

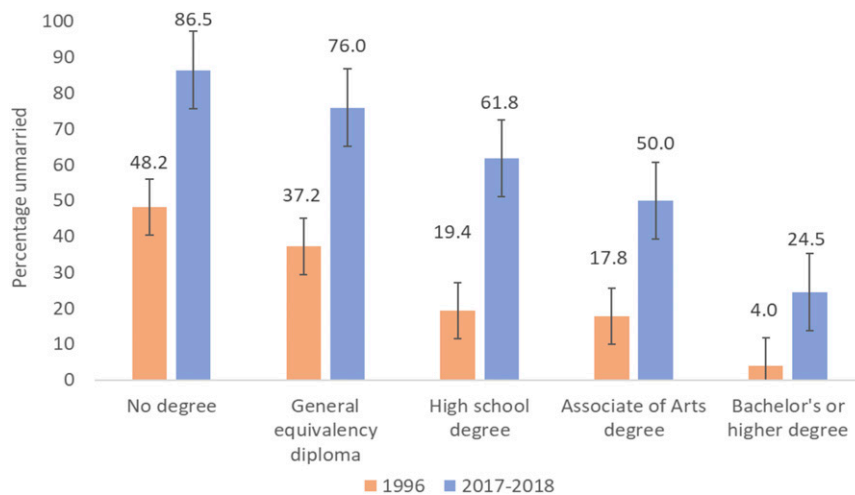


Fig. 2. Percentage of women who were unmarried at the time of first birth, for women aged 32 y to 38 y, 1996 and 2017–2018, by highest degree attained. The figure shows the percentage of women in the age range of 32 y to 38 y who were unmarried at the time of their first birth, by the highest educational degree they had attained at that time, at two time points. The 1996 information is taken from interviews with the respondents in the NLSY79. The 2017–2018 information is taken from interviews with the respondents in a later study, the NLSY97. The figure shows large increases in all educational categories. In 1996, only 4% of women with a bachelor's degree or a higher degree, such as an MA, PhD, or MD, were unmarried at first birth. The 2017–2018 percentage is 24.5%, a sixfold increase. SEs are shown.

bachelor's or higher degrees was only 4%—low enough to be seen as negligible. That is no longer the case: The percentage increased sixfold to 24.5% in 2017–2018, which is the largest percentage increase among any educational category. The magnitude of the percentage of unmarried births among bachelor's degree recipients is now large enough to warrant a different view of them than in the past.

The probability of having a nonmarital first birth is also associated with factors that are correlated with educational attainment and that could produce a spurious correlation between education and nonmarital births. To control better for correlates in the NLSY97 and NLSY79 data, I estimated logistic regression models of whether or not a woman's first birth occurred outside of marriage as a function of the highest degree that she received and the following plausibly exogenous characteristics: her race/ethnicity, whether she lived with both of her biological parents at the start of the study in 1997 (for the NLSY97) or at age 14 y (for the NLSY79), the region of the country in which she resided at the start of the study, and her age. From these results, I derived the average predicted probabilities of having a first child outside of marriage for categories of education. The patterns remain the same (*SI Appendix, Tables S5 and S6 and Fig. S1*).

All of the figures presented so far provide information on women's first birth experiences prior to the interview dates. Yet some will have a future first birth in their thirties or forties. Women with a college education tend to start their childbearing at later ages than do less-educated women (9, 10). In the 2017–2018 NLSY97, 65.5% of college-graduate women reported having had a first birth; the comparable percentages were 70.0% for college-graduate women in Wave 5 of Add Health and 69.9% in the NSFG (*SI Appendix, Table S1*). Guzzo and Schweizer (11), using Current Population Survey data for 2018, reported that 82% of American women with a college degree had ever given birth by age 40 y to 44 y. Nor is marrying complete for this cohort. Studies show that women with a bachelor's or higher degree tend to marry at older ages than do less-educated women (12) and that lifetime levels of marriage are higher for college graduates (13). Therefore, percentages based on recent survey waves of college-educated women in their thirties do not represent the completed picture of the marital context of first births for this cohort.

To project lifetime levels of nonmarital first childbearing for women with a bachelor's or higher degree, we must establish plausible upper and lower bounds on the percentage of all first births that will be nonmarital when the cohort has reached the end of their childbearing years. To establish an upper bound, let us assume that the probability that a first birth is nonmarital is a nonincreasing function of the mother's age; that is, it is either decreasing or stable as age at first birth increases. (*SI Appendix, Fig. S2*, which is based on data from the fertility supplements to the Current Population Survey, shows a steep drop in the probability that a first birth is nonmarital between the teenage years and the thirties for women who attained a bachelor's or higher degree. There is some indication that the probability may rise somewhat in the late thirties and early forties, but the CIs are so wide that one cannot reject the assumption that the probability is nonincreasing. Under this assumption, the lifetime upper bound is simply the currently observed percentages displayed in Fig. 1. In other words, the observed percentages constitute an upper bound because the percentage of first births that are nonmarital will either decrease or be stable as the women live through the remainder of their childbearing years.

To establish a lower bound on the lifetime percentage of nonmarital first births among women with a bachelor's or higher degree, let us make two assumptions. First, assume that none of the first births in the future will occur outside of marriage—all will be marital births. This assumption limits the lifetime number of nonmarital births to those that have already been observed. Second, assume that 82% of all women with bachelor's or higher degrees will have first births by the end of their reproductive years, following Guzzo and Schweizer (11). Then we can compute the estimated lower bound for each study as follows. Let n be the percentage who have ever given birth to date (*SI Appendix, Table S1*, column 7). Let x be the percentage of births to date that were nonmarital (*SI Appendix, Table S1*, column 9). Let y be the unknown percentage of future births that will be nonmarital. Then we can write

$$\begin{aligned} &\text{Completed-cohort percentage of nonmarital births} \\ &= [nx + (82 - n)y]/82. \end{aligned}$$

But, under the assumption that all future births are assumed to occur within marriage, $y = 0$, and the equation simplifies to

Completed-cohort percentage of nonmarital births = $nx/82$.

The lower and upper bounds generated by these assumptions are displayed in Table 1. Rounding the percentages to the nearest integers (which is prudent given the limited precision of survey responses), we can project that the lifetime percentage of mothers with college degrees who will have nonmarital first births will be between 18% and 21% according to the NSFG, between 23% and 27% according to Add Health, and between 20% and 25% according to the NLSY97. If we take the lowest estimate of the lower bound and the highest estimate of the upper bound across all three studies, we would project that 18 to 27% of the first births of women with bachelor's or higher degrees currently in their thirties will occur outside of marriage by the time that they are at the end of their reproductive years.

We can learn more about the context of nonmarital births for college-educated women by examining second births to women whose first births occurred outside of marriage and who have had at least two children. It is of interest to know, first, whether such women were married at the time of their second births, and, second, whether the other parent of their second child was the same as the other parent of their first child. Fig. 3 displays marital status at second birth for women in the three studies whose first birth occurred outside of marriage. Because of a smaller sample size, I included women ages 25 y to 49 y in the NSFG totals in Fig. 3. For all three datasets, the information is presented separately for women with and without a bachelor's or higher degree. The figure shows that, among all women who had a nonmarital first birth, those with a bachelor's or higher degree were more likely to have a second birth within a marriage than were those without a bachelor's degree: About half of those with bachelor's degrees were married at the time of their second birth, compared to one-quarter to one-third among those without bachelor's degrees. Moreover, among those who were not married at the time of their second birth, a majority of both college-educated and non-college-educated women were cohabiting rather than single at the time of the second birth (*SI Appendix, Table S3*). As for partner status, among women with bachelor's or higher degrees who subsequently had a second birth, the same person was the other parent of both children 55% percent of the time among women with a bachelor's degree or higher, compared to 46% among non-college-educated women according to the NLSY97, the only study that collected this information (*SI Appendix, Table S4*). Overall, then, women with bachelor's or higher degrees were more likely to have been married at the time of the birth of the second child and somewhat more likely to have had the same partner for both children compared to women without bachelor's

Table 1. Lower and upper bounds of the projected lifetime levels of first childbearing outside of marriage, for women who had attained a bachelor's or higher degree by the time of their first birth

	Lower bound, %	Upper bound, %
NLSY97	19.6	24.5
Add Health	23.1	27.1
NSFG	17.8	20.9

The upper bound is the observed percentage of births that occurred outside of marriage by ages 32 y to 38 y (NLSY97 and NSFG) or 34 y to 40 y (Add Health). The lower bound is estimated under the assumption that lifetime levels of nonmarital childbearing are likely to fall below currently observed levels because many college-educated women will marry in their mid-to-late thirties or early forties and to have first births after they marry. The estimated lower bound assumes that all subsequent first births will occur in marriage and that 82% of the cohort will have first births by the end of their reproductive years.

degrees. And more than half of those with nonmarital births were cohabiting at the time of the birth.

Discussion

Within an overall societal increase in nonmarital first childbearing, why might the proportion of college-educated women who have a first birth outside of marriage have increased so greatly in percentage terms? There are several developments that may have weakened support for marriage among college graduates in recent decades. And studies of less-educated women show that, when the actual or perceived support for marriage declines, some women postpone marriage but still have a first birth (14, 15). This same dynamic could be emerging among better-educated women. The first development is the recent slowing of the growth in the economic returns to a college degree. The gap between the average wage that a college graduate earns and the average wage that a high school graduate earns is known in the literature as the college wage premium (16). Between 1979 and 2000, the premium for those with a bachelor's degree but no higher degree rose from 42.3 to 78.7%. During the same period, the premium for those with degrees beyond the bachelor's level rose from 62.6 to 123.3% (17). The standard explanation for these increases focuses on the changing distribution of occupations that are in demand: first, a growth in the demand for jobs that require advanced cognitive skills, as the information technology revolution proceeded; and second, a reduced demand for middle-skill jobs in industries such as manufacturing that have been outsourced or automated (18).

During this same period, marriage patterns began to diverge by education. Lundberg et al. (1) showed that, until about 1980, the percentage of people in their thirties and early forties who were currently married was similar across all levels of education. After 1980, however, the percentage who were currently married dropped much more among people without college degrees than among those with college degrees. Similarly, Martin (19) showed that, during the 1960s and 1970s, the probability that a first marriage would end in separation or divorce within 10 y was rising across the educational distribution, but, beginning about 1980, the probability of a divorce began to drop for college graduates while remaining high for those without a college degree.

Yet the wage premium for those with bachelor's degrees but no higher degrees, which may have fueled the divergence in family patterns in the 1980s and 1990s, rose by only a modest amount between 2000 and 2010 and has been essentially flat since then (17, 20). Explanations for the flattening of the wage premium vary. One explanation is that, as information technology has matured, new investment by firms has slowed, and the surge in demand for high-skill workers at the bachelor's-only level has abated (20, 21). Other analysts suggest that the still-growing supply of college graduates has now outstripped the demand for them. Oreopoulos and Petronijevic (22) demonstrate that, until the early 2000s, there were more high school graduates than college graduates among full-time workers in the age range of 30 y to 50 y; after that point, however, college graduates became more numerous. The continued increase in the relative supply of workers with college degrees, during a period in which demand may have moderated, could have produced the plateauing of the college wage premium. During the same period, the wage premium for those with degrees above the bachelor's level (such as a master's or doctoral degrees) continued to rise, although at a slower pace than prior to 2000 (17, 20). Further research might address whether the marriage and fertility patterns of those with higher degrees are diverging from those with only bachelor's degrees.

A second relevant development is the rise in student debt. In recent decades, college graduates have become more likely to have received educational loans. The percentage of bachelor's degree recipients who had taken out loans increased from 62% in the period 1999–2000 to 69% in 2015–2016 (ref. 23, table 331.95). Many bachelor's degree graduates take out loans for graduate

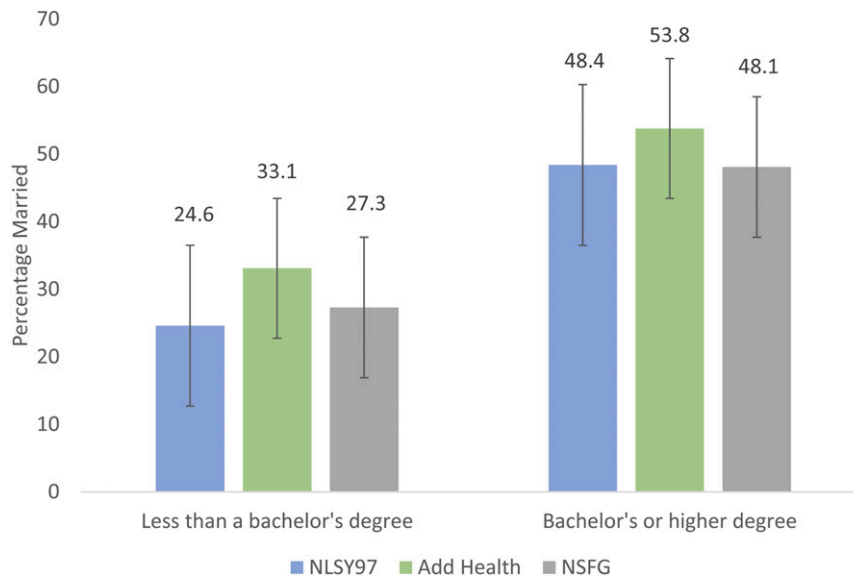


Fig. 3. Percentage married at the time of second birth for women who were unmarried at the time of first birth, by highest educational degree attained. The figure is limited to women in each of the three studies who had been unmarried at the time of their first birth and later had a second birth. It shows that, in all three studies, the percentage who were married at the time of the second birth was higher for women with a bachelor's degree or advanced degrees than for women with lesser attainment than a bachelor's degree. SEs are shown.

school too. The percentage of students who completed a master's degree and had taken out loans increased from 40% in the period 1999–2000 to 53% in the 2015–2016 period (23). Counting both their undergraduate and graduate loans, 60% of master's degree recipients had taken out loans in 2015–2016, compared to 47% in 1998–2000. These loan obligations sometimes last throughout emerging adulthood. Consider people who began college in 1995–1996 and took on student loans. Twenty years later, 41% had paid off their loans, while 45% were still paying or deferring (due to hardship or further studies), and 14% had defaulted. Among the more recent class of students who began college in 2003–2004, 24% of those who took out loans had paid them off 12 y later, whereas 60% were still paying or deferring, and 16% had defaulted (24). Educational debt tends to remain a financial obligation to emerging adults during the years when they are likely to be making decisions about having children, cohabiting, and marrying.

In fact, studies have found that individuals who have student debt obligations are less likely to marry in a given time period (25, 26) or to transition from being single to directly marrying (without cohabiting first) (27). Others have found that student debt reduces the likelihood of having children, particularly for Whites and Hispanics (28). It is possible, however, that loan debt could discourage marital childbearing more than nonmarital childbearing. If accumulated debt were to make it harder to find a suitable marriage partner, those who had a strong desire to have children might do so without marrying. An analysis of the NLSY97 found some evidence that educational debt led to an increased risk of a nonmarital birth, although sample sizes were modest (29).

A third reason why we might expect a weakening of the restriction of childbearing to marital unions is that the selectivity of the college-educated population is decreasing as the attainment of a college degree has become more common. In 1970, 16.4% of 25- to 29-y-olds had attained a college degree. The percentage increased steadily to 29.1% in 2000, plateaued for about 5 y, and then increased again to 37.0% in 2018 (23). Studies suggest that educational attainment is affected not only by cognitive skills but also by often-unmeasured noncognitive skills such as planfulness, self-regulation, trust, and perseverance (30). In the literature on nonmarital childbearing, these characteristics are sometimes

subsumed under the concept of “efficacy”: the ability to organize one's behavior in the service of one's goals. One study found that women with higher efficacy were more likely to use contraceptives consistently (31). Let us assume that efficacy roughly follows a normal distribution in the population of young adults. During a period in which the percentage of young adults who achieve bachelor's degrees is small, one would expect an overrepresentation of high-efficacy individuals if, as seems likely, this trait also helps young adults attain a college degree. If these same characteristics also increased the likelihood that an individual would successfully plan childbearing or find a marriage partner (32), then having a college degree would be associated with a lower rate of nonmarital or unintended childbearing than among those without a college degree, due, in part, to a higher level of efficacy. But, as the percentage of young adults who attend college increased, the proportion of graduates with lesser levels of efficacy would likely rise, causing the overall level of efficacy in the college graduate population to decline. To be sure, we cannot be certain that selection with respect to efficacy has declined; but, if it has, we might predict that nonmarital or unintended childbearing would begin to rise among the expanded share of the population with college degrees. Nonmarital childbearing among college graduates would therefore become more similar to the corresponding percentages among those without college degrees.

A fourth explanation is that college-educated young adults are having more children outside of marriage because it is more culturally acceptable to do so than in the past. In 1988 and 2012, the General Social Survey asked a national sample of adults whether they agreed or disagreed with the statement, “People who want children should get married.” The percentage of college-educated adults aged 25 y to 44 y who agreed that people should get married decreased from 70% in 1988 to 53% in 2012.⁵ During a similar period, living in an unmarried cohabiting relationship became more common among college-educated emerging adults: Over the past three decades, increases in cohabitation have been greater among college-educated emerging adults than among the less educated, creating a convergence in the experience of cohabitation by

⁵This represents the author's calculation.

educational attainment (33). Studies suggest that emerging adults may postpone or forgo marriage until and unless they have attained certain economic markers such as home ownership or an income comparable to the married couples around them (34, 35). Yet they may not apply these economic standards to the decision to cohabit (34, 36). Indeed, most of the increase in the proportion of births that are nonmarital since the 1980s has been the result of increases in births to cohabiting women rather than to women living as single parents (37). In the three datasets analyzed for this article, roughly equal proportions of college-educated women with nonmarital first births were cohabiting versus living as single parents in the NLSY97, somewhat more were single rather than cohabiting in Add Health, and somewhat more were cohabiting in the NSFG (*SI Appendix, Table S2*).

This cultural shift toward first births within cohabiting unions or as single parents could make college-educated American women more similar to their western European counterparts. Americans have long differed from comparably educated Europeans in the marital context of their childbearing: The percentage of children born outside of marriage is greater in European countries such as Sweden, Norway, France, and Belgium than in the United States (38); but the vast majority of nonmarital births in these countries occur to cohabiting couples, many of whom do marry eventually (38). For example, among all children born to cohabiting couples, over 50% in Sweden and Germany see their parents marry by the time they are 15 y old, as do over 40% in Norway, France, or Spain (38). A study of demographic surveys from 15 European countries found that a woman's pattern of cohabitation followed by delayed marriage was associated with higher education in all except one of them (39). Similarly, a growing number of college-educated young adults in the United States could have a first child outside of marriage but could marry prior to having a second birth—in many cases, with the same parental partner for both births. That is to say, their family life courses would eventually result in marriage, but, for increasing numbers, marriage would follow a first birth rather than precede it. In European countries, most such women are cohabiting at the time of the first birth; in an American context, where single parenthood is more common, it is plausible that a larger share than in Europe may be single.

In sum, as the perceived financial prerequisites of marriage become harder to achieve and the acceptability of nonmarital childbearing grows, beginning one's reproductive career in a cohabiting union, or as a lone parent, and subsequently marrying, could become a more normative life course for the college educated (36). More broadly, the increase in nonmarital childbearing suggests a potential change in the role of marriage in family formation among college-educated emerging adults—although not necessarily a decline. Marriage remains more central to the family lives of college-educated Americans than to those without college educations, as the literature suggests. Indeed, this disparity has been viewed as an important component of family inequality (1). A higher percentage of college graduates marry during their lifetimes than do less-educated adults; and a lower percentage of college-educated married couples ever divorce, compared to less-educated married couples. Yet the place of marriage in the sequence of life events that compose emerging adulthood may be shifting among college graduates: For a growing share, it may occur after a first birth rather than before. Given this development, it may be of interest to monitor other demographic aspects of emerging adulthood among college graduates, such as rates of unplanned pregnancies, to see whether they also begin to increase and, consequently, whether the role of marriage shows additional signs of evolving among the college educated.

Materials and Methods

The findings in this article are drawn from three well-known national studies that fortuitously collected information on individuals in comparable age groups between 2015 and 2018. To be consistent with nearly all of the existing literature, I restricted the analyses to women. The NLSY97 began in 1997 as a

survey of 8,984 young people who were aged 12 y to 16 y as of December 31, 1996. These individuals were interviewed annually from 1997 to 2011 and have been interviewed biennially since then. I used information from the eighteenth survey round, which occurred in 2017 and 2018. In 2017, all members of the cohort were between the ages of 32 and 38 y (40). The NLSY97 sample is therefore representative of 32- to 38-y-olds in 2017 and 2018 who were in the United States in 1997, at the start of the study. It does not represent the experiences of recent immigrants in this age group. I also present some comparative information from the older NLSY79. It began in 1979 as a survey of 12,686 individuals who were ages 14 y to 22 y when first interviewed (41). I used the 1996 survey wave, when the panel members were ages 31 y to 39 y. I retained respondents who were ages 32 y to 38 y. The 1996 wave of the NLSY79 and the 2017–2018 wave of the NLSY97 provide a comparison of two cohorts with the same age range, with data collected by the same research organization, CHHR at The Ohio State University, 21 y to 22 y apart.[†]

The second source is the National Longitudinal Study of Adolescent to Adult Health, better known as Add Health, which began as a survey of over 20,000 adolescents who were enrolled during the school year of 1994–1995 in grades 7 through 12. They have been followed through five survey waves. I tabulated information from Wave 5, which was conducted in 2016–2018, when the panel members were mainly ages 34 y to 42 y, with a small number who were 33 y or 43 y (42). To be as comparable as possible with the 32- to 38-y age range of the NLSY97, I restricted the age range to 34 y to 40 y. As is the case with the NLSY97 study, the Add Health cohort does not represent the experience of recent immigrants. Moreover, as a sample of seventh through twelfth grade students, it does not represent the experiences of children who were not enrolled in school in the 1994–1995 period, most notably, adolescents who had dropped out of high school without graduating.

The third data source is the NSFG, which provides pooled cross-sections of women—and, in recent years, men—in their reproductive ages, defined in recent administrations as ages 15 y to 49 y. It collects detailed information on fertility and family histories. I used the 2015–2017 public data release (43), which pools the cross-sectional interviews conducted during those 3 y. In order to be consistent with the other data sources used in this paper, I restricted the analyses to women aged 32 y to 38 y.[‡] Unlike recent waves of the NLSY97 or Add Health studies, the 2015–2017 NSFG is a fully representative sample of the current civilian noninstitutionalized US population within its age range. In particular, it includes recent immigrants and individuals who left high school without graduating. Its limitation is that it is cross-sectional; it consists of information from only one interview per person. It relies on retrospective information on fertility and family life as reported during a single interview.

In sum, the three data sources provide comparable, although not identical, national samples of women in their thirties from whom interviewers, during overlapping periods of fieldwork, obtained information on union statuses at the times of births and on the highest educational degree attained. Columns 1 through 5 of *SI Appendix, Table S1* summarize the relevant characteristics of the studies and the age ranges that were analyzed.

The key measures for the analyses presented here consist of the marital contexts of first and second births and the highest educational degree that the respondent obtained. The marital context variable for the first and second births for all three data sources has three categories: 1) married at the time of the birth, 2) cohabiting at the time of the birth, and 3) single (that is, neither married nor cohabiting) at the time of the birth.^{||} In addition, in the NLSY97, the other parent of each child was given a unique identification number. This information allowed the creation of an indicator of whether or not the other parent of the first child was the same as the other parent of the second child. (Neither Wave 5 of Add Health nor the NSFG collected this information.)

For the NSFG, staff programmers provided the three-category marital context variable for the public use dataset based on the reported dates of relevant events (marriages, cohabiting unions, first births). For the NLSY97, I created the three-category variable based on a comparison of monthly reports of living arrangements with the reported dates of first birth. For the Add Health study, respondents were asked the following question for each birth that they reported: "Which of the following statements best describes your

[†]See <https://chrr.osu.edu/about-us/our-name-and-history>.

[‡]Although the age ranges of the NLSY97 and NSFG subsamples used in this paper are the same, and are similar to the age range for the Add Health subsample, they are not identical, because the single-year-of-age distributions within these age ranges are different among each of the three studies.

^{||}A small number of women who were unmarried at the time of their first birth had been married previously. For instance, in the NSFG, 6.6% of women who were single at the time of their first birth had been previously married, and 11.4% of the women who were cohabiting at the time of their first birth had been previously married.

relationship with your pregnancy partner at the time of this child's birth?" The first statement was "we were married," and the second was "we were not married, but living together." The third through seventh categories described degrees of closeness ranging from "we were not living together, but romantically involved" to "we did not see or talk to each other," all of which I collapsed into the category "single."

Thus, the method of determining the respondent's marital context history varied for each of the three surveys. The variation is most problematic for comparisons across the three surveys of the share who were cohabiting at birth. Manning et al. (44) compared reports of cohabitation histories in the 2007–2008 administrations of the NSFG, NLSY97, and Add Health and found that the percentage who had ever cohabited was higher in Add Health than in the other two surveys. They demonstrated that the differences were more likely due to variations in measurement than in the compositions of the samples. For instance, the NLSY97 questions about cohabitation asked about a "marriage-like relationship," which may have resulted in an underreporting of less-stable cohabiting unions. The relevant set of questions in the NSFG was also centered around questions of marital status. These variations suggest that comparisons of the percentage cohabiting in Add Health versus the other studies may not be precise.

As for educational attainment, I coded the highest degree received by the respondents into six categories for the NLSY97 and Add Health data: 1) no degree; 2) general equivalency diploma, known as GED; 3) high school degree; 4) associate of arts degree, which is usually awarded after two years of college; 5) bachelor of arts or bachelor of science degree; and 6) master's degree such as an MA or MBA or a doctoral or a professional degree such as

a PhD, MD, or JD. I frequently collapsed categories five and six into a single category, bachelor's or higher degree. For the NSFG data, the process was the same except that the study did not collect information about the GED.

In all of the data that I present, cross-tabulations were conducted using cross-sectional weights (rather than the longitudinal weights) because the analyses were confined to individuals who were present in a single wave of the study. To calculate average predicted probabilities of a nonmarital first birth in the NLSY97 and NLSY79 studies, I used a standard logistic regression model estimated for all women who had a first birth (*SI Appendix, Tables S5 and S6*). The left-hand-side variable was whether or not the first birth occurred prior to first marriage. The covariates were as follows: highest degree received (coded as above), race–ethnicity (Black non-Hispanic, White non-Hispanic, Hispanic, and other), whether the individual lived with both parents at the beginning of the study (for the NLSY97) or at age 14 y (for the NLSY79), region of residence at the beginning of the study (Northeast, Midwest, South, and West), and single year of age. The results are displayed in *SI Appendix, Fig. S1*.

Data Availability. Programs and data files used for analyses of the NLSY97 (40), NLSY79 (41), and NSFG (43) studies are available through the Open Source Framework at <https://osf.io/j9p7x>. Output files from the analyses of Add Health (42) are also available at the same source. However, access to the data from Add Health, Wave 5, is restricted and requires a contract between the Carolina Population Center and an institution. It cannot therefore be provided on a public server. Interested analysts could apply for a restricted-access contract.

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