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Trends in Ages at Key Reproductive Transitions in the United States, 1951–2010

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A B S T R A C T

Background: Key sexual and reproductive health milestones typically mark changing life stages with different fertility intentions and family planning needs. Knowing the typical ages at such events contributes to our understanding of changes in family formation and transition to adulthood and helps inform needs for reproductive health services.

Methods: We used data from the 1982–2010 National Surveys of Family Growth and the 1995 National Survey of Adolescent Males and event history methods to examine trends over time for women and men in the median ages at several reproductive and demographic events.

Findings: Women's reports indicate that age at menarche has changed little since 1951. Women's and men's median ages at first sex declined through the 1978 birth cohort, but increased slightly since then, to 17.8 years for women and 18.1 for men. The interval from first sex to first contraceptive use has narrowed, although Hispanic women have a longer interval. Age at first union (defined as the earlier of first marriage or first cohabiting relationship) has remained relatively stable, but the time between median age at first sex and median age at first birth has increased to 9.2 years for women and 11.4 for men. For some women and men born in the late 1970s, median age at first birth was earlier than median age at first marriage for the first time in at least the past several decades.

Conclusion: The large majority of the reproductive years are spent sexually active. Thus, women have a lengthy period during which they require effective methods. In particular, the period between first sex and first childbearing has lengthened, but long-acting method use, although increasing, has not kept up with this shift. Moving the contraceptive method mix toward underutilized but highly effective contraceptive methods has the potential to reduce the unintended pregnancy rate.

Women's and men's lives contain a number of milestones that mark changing life stages with different health and social needs. Specific events, such as the initiation of sexual intercourse and the completion of childbearing, often mark the beginning or end of stages during which different needs predominate. For example, menarche marks the beginning of the biological capacity to bear children, and first intercourse marks the beginning of the period of risk for pregnancy and sexually transmitted diseases (although risk of the latter can be incurred before vaginal intercourse occurs). First marriage closes a period at which an individual is at risk for a nonmarital birth, although risk for sexually transmitted infections still exists if individuals have other partners. Completion of desired childbearing often brings a change in a person's priorities regarding contraception.

Fussell and Furstenberg (2005) argue that the transition to adulthood is "culturally scripted" and that the sequence of events is constrained by norms that "may be altered" very rapidly. Moreover, reproductive trajectories, particularly during adolescence and young adulthood, are "dense, diverse, blurred, and sometimes out of order," and the activities on either side of transitions are as important as the transitions themselves (Rindfuss, 1991). Individual lives are certainly more complex and variable than what is implied by a "typical" order and timing of events. Nevertheless, ordering the median ages at which these events occur can be helpful for understanding how individuals progress through these stages, and also enables us to compare various subgroups on the events of interest. Generational differences in the amount of time between these events, their order, and their frequency are important markers

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of social change that allow us to track and predict demographic trends, economic and societal inequality, and changes in social norms.

Finally, knowledge of the typical ages at these events is valuable from a service provision perspective (Forrest, 1988). Observing differences in the timing of events between demographic groups can help to identify subpopulations who face a higher risk for certain events or who have greater need for specific types of services; when differences in the stability and timing of family formation coincide with indicators such as education or family income, they can provide researchers and policy makers with important clues to the causes and consequences of economic inequality (Mincieli et al., 2007; McLanahan & Percheski, 2008; Musick, 2007). Combined with research on the impact of adult behavior on child well-being, data on the timing of key life events and how timing differs by group can even help plan services for future generations, such as children born to couples in cohabiting or noncoresidential unions (Manlove et al, 2012; Smock, 2010).

Past research has noted changes in specific demographic transitions. A number of studies have noted declines in age at menarche during the past century. For example, a recent study using the National Health and Nutrition Examination Survey (NHANES) found that women born in the 1980s experienced menarche nearly a year earlier than those born before 1920. However, almost all of the decline took place between the earliest birth cohorts studied and the 1940s cohort (McDowell, Brody, & Hughes, 2007). The rise in age at first intercourse in the 1990s (often described as a decline in proportion of adolescents who have had sex) has received a great deal of attention from researchers (Abma, Chandra, Mosher, Peterson, & Piccinino, 1997; Kann et al., 2000).

Researchers and the general public have also noted a growing delay of first marriage, which has been offset by increasing levels and duration of nonmarital cohabitation (Bumpass, Sweet, & Cherlin, 1991; U.S. Census Bureau, 2006). The trend toward later fertility has long been recognized (Bloom, 1982), whereas the relatively recent increase in nonmarital fertility has been the subject of much attention from researchers—and no small amount of concern from the general public (DeParle, 2012; Smock, 2010).

The gap between first sex and first use of contraception is particularly important, because it may represent a period of heightened vulnerability to unintended pregnancy. Research showing continuing increases in the proportion of adolescents using contraception both at first sex and at most recent sex (Eaton et al, 2006; Finer and Philbin, 2013; Kann et al., 1998) suggests that the gap between first sex and first method use may have narrowed.

Most research in this area has generally focused on single transitions. However, a comprehensive assessment of the full reproductive life cycle has not been performed since data from the 1988 National Survey of Family Growth (NSFG) were available (Forrest, 1993). Stages have shifted; new patterns have emerged, and with them new needs. As a result, an up-to-date examination of the timing of these stages is overdue. The release of the 2006–2010 NSFG means that these new data can be used to update past published figures. Moreover, both the 2002 and 2006–2010 rounds have data for men that are highly comparable with data for women. The goal of this study was to examine the timing of, and trends in, key reproductive and related events, using nationally representative data.

Methods

The primary source of data for this analysis was the NSFG, an in-home survey conducted by the U.S. National Center for Health Statistics. The NSFG is arguably the best source of data on U.S. women's and men's sexual, contraceptive, and childbearing behaviors, and contains detailed information on relationship histories as well. Nationally representative data were collected from women aged 15 to 44 in 1982, 1988, 1995, 2002, and 2006–2010; sample size ranged from 7,643 to 12,279. The 2002 dataset surveyed 4,926 men aged 15 to 44 for the first time, and the 2006–2010 wave surveyed 10,403 men. A second source of information on men used in this analysis was the National Survey of Adolescent Males, which was conducted in 1995 and surveyed 1,729 men 15 to 19 on risk behaviors related to HIV, sexually transmitted diseases, and pregnancy (Urban Institute, 1998). The National Survey of Adolescent Males was designed to parallel the NSFG (Abma & Sonenstein, 2001), so the responses should be comparable across the two surveys.

The 1982 cycle of the NSFG interviewed women 15 to 44 years old at that time—in other words, those born between 1938 and 1967; the 2006–2010 cycle interviewed women and men born between 1962 and 1995. Rather than comparing results from each of the five datasets, we combined them and used a birth cohort approach to look at changes over time in median ages. In the cases where data sets overlapped, women from two, three, four or five datasets were used. (Women born between 1962 and 1967 were represented in all five cycles.) To smooth trendlines, figures reported are typically 5-year centered moving averages. So, for example, the median age at menarche indicated for the 1949 birth cohort actually represents the experience of women who were born from 1947 to 1951.

The NSFG is a cross-sectional survey that collects retrospective data. Women were asked to report many salient reproductive events,[1] including age at menarche, the date of their first sexual intercourse, and the date of their first use of any contraceptive method. If first contraceptive use occurred before first sex, which can occur when methods are initiated for non-contraceptive reasons (Jones, 2011), women were coded as initiating contraception at the same time as sexual activity. Women were also asked the date that their first cohabitation (if any) began, the date of first marriage, and the date of each of their births, if any. Using information on cohabitation and marriage, we calculated the date of first union (defined as the earlier of first cohabitation and first marriage). For men, the NSFG contains information on the dates of first sex (data from the National Survey of Adolescent Males contributed to this measure as well), first cohabitation, first marriage, and first birth. (Although the NSFG has asked men about contraceptive use since 2002, we decided not to examine this information because respondents' knowledge about their female partners' method use is likely incomplete.) Respondents reported all ages and dates in years and months except for age at menarche, which was reported in whole years (as it was in the NHANES, the source of data for another published report [McDowell et al., 2007]).

[1] Because most of the women surveyed in the National Survey of Family Growth had not yet experienced menopause, it is impossible to use these data to calculate a median age for this event. Nevertheless, menopause is a key reproductive health event, since it represents the natural end of a woman's fertile period. Estimates from the published literature (Krailo & Pike, 1983; Kato, Toniolo, & Akhmedkhanov, 1998) suggest that the median age at menopause is about 51. Fecundity is known to decline with maternal age, particularly after 35 (Leridon, 2004); nonetheless, women are at risk of unintended pregnancy for a substantial period after this age.

The primary statistical technique used was event history analysis (also known as survival analysis), which allows one to incorporate the experience of all respondents, including those who reached the interview without experiencing a particular event. It also allows one to calculate the median age for any event for which at least 50% of individuals in a birth cohort have experienced the event. We used Kaplan–Meier life table techniques to determine the proportion of individuals who had experienced each event by each age and to calculate the median age at each event for the population as a whole and (for selected events) by subgroup. In addition, to describe "current" behaviors, we present a timeline of median ages at each event for the most recent birth cohort for whom data are available.

Most Americans initiate sex during their teen years (Abma, Martinez, Mosher, & Dawson, 2004), and among teens, almost all pregnancies are unintended (Finer & Henshaw, 2006). In addition, contraceptive use at first sex has been recognized as an indicator of later consistency of use (Shafii, Stovel, Davis, & Holmes, 2004). Because of this, we paid additional attention to the interval between first sex and first contraceptive use.

To look at influences on the timing of reproductive behaviors in a multivariate context, we performed Cox proportional hazards regression analyses of the likelihood of first sex, contraceptive use after first sex, first marriage, and first birth. In such a model, the outcome variable is the "risk" or "hazard" of experiencing the event, and the odds ratios for each independent variable represent the likelihood of experiencing the event for a particular group compared with the reference group.

In each case, we grouped all the NSFG birth cohorts into three sets based on observed changes in the timing of events, which allowed us to examine shifts over a period of time more substantial than just 1 year. We included as independent variables a variety of demographic characteristics that were time-invariant or preceded most of these events: Race/ethnicity, mother's completed level of education, family structure when the respondent was 14, respondent's religious attendance at age 14, and age at first sex. To look at changes over time, we estimated a second set of models including interactions between birth cohort and demographic characteristics; most of these interactions were significant, but to facilitate interpretation, we instead show a separate model for each group of birth cohorts.

Finally, to assess the amount of time spent in each reproductive "stage," we used an NSFG variable summarizing each woman's current sexual activity, pregnancy status, fecundity, and use of contraception. We performed cross-tabulations by age to create synthetic cohorts that would represent the experience of a woman throughout her reproductive life if her contraceptive use each year was equivalent to that of women of each age in 1982, 1995, and 2008.

All analyses were conducted using Stata statistical software version 13.0 (StataCorp, College Station, TX), and account for the NSFG's complex multistage sampling design.

Results

In Figures 1 and 2, each set of points that can be connected by a vertical line represents the typical experience of a single-year birth cohort.

Age at Menarche

Women's reports indicate that age at menarche has changed little since 1939 (Figure 1). The median age of onset of menses for women born in 1939 (and turning 15 in 1954) was 12.5; it peaked at 12.6 for the 1963 birth cohort and declined to 12.3 for women born in 1993 (and turning 15 in 2008; Figure 3). The 1963–1993 decline represented about 0.01 years of age per cohort year. The 25th percentile (not shown) was also stable over the period studied, ranging from 11.2 to 11.6 with no discernible trend, and the 75th percentile ranged from 13.1 to 13.6, also with no clear trend.

Age at First Sex

The median age at first sex declined among women born in the 1950s and 1960s, but beginning with women born in the
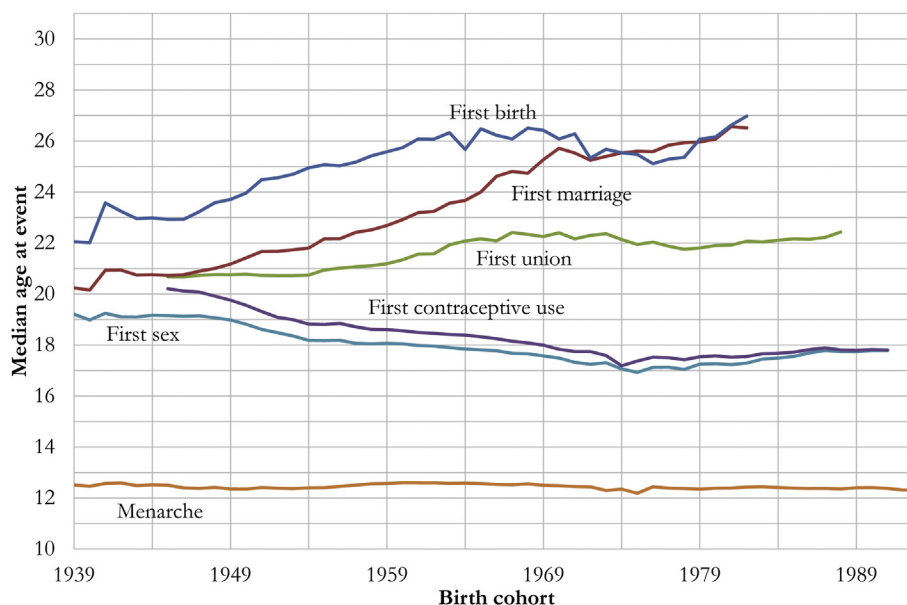

Figure 1. Women's median ages at various reproductive events.
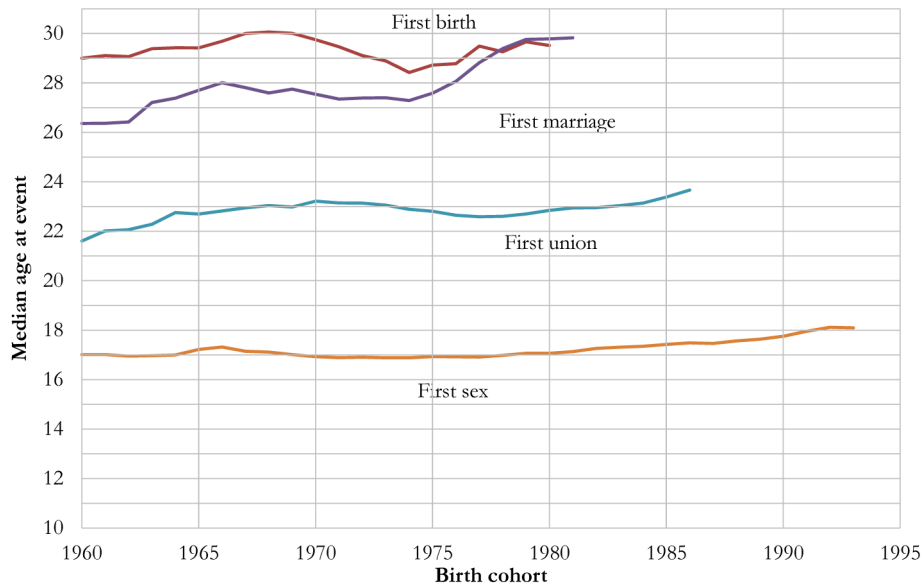
Figure 2. Men's median ages at various reproductive events.

1970s, this trend halted at about 17.0 years of age, and the median age actually increased by almost a year among cohorts coming of age in the late 1990s. Accordingly, the "current" median age (i.e., the median for the most recent cohort for which a median can be calculated) at first sex is 17.8 for women.

A similar increase beginning with the 1982 birth cohort was seen for men (Figure 2), although median age at first sex was stable for those born between 1960 and 1985, at about 17.0. The "current" median age at first sex for men is 18.1.

In multivariate models, compared with White women, Black women initiate sex sooner (Table 1). The propensity of Hispanic women to initiate sex later seems to have diminished over time. Family structure, adolescent religious attendance, and mother's education all are significantly associated with sexual initiation, and the magnitude of family structure's relationship with age at first sex seems to have increased.

Age at First Contraceptive Use and Time From First Sex to First Contraceptive Use

Among women, increases in contraceptive use at first sex are reflected in the convergence of the first sex and first contraceptive use trend lines (Figure 1). The median age at first

contraceptive use declined to 17.2 for those who were born in 1978, and then increased (along with age at first sex) to 17.8 for those born in 1991.

In the 2006–2010 NSFG, almost three quarters of all sexually active women reported using contraception at or before their first sexual encounter (Figure 4), but the percentage varied by race and ethnicity. Hispanic women lagged significantly and substantially behind women of other racial/ethnic groups in their use of contraception at first sex. However, the gap narrowed over time; by 5 years after coitarche, more than 90% of women of all ethnicities had used contraception.

In a multivariate model, White women, women with more educated mothers, and women who initiated sex later all begin contracepting sooner after first sex than their counterparts (Table 2). Although differences in contraceptive uptake persist for non-White women and those who begin having sex earlier, these differences have decreased over time. (Recent work on the behavior of the youngest 10 birth-year cohorts in the 2006–2010 NSFG found no significant difference in time to contraceptive use between those who initiated sex at ages 15–16 and those who did so at 19 and older, confirming the trend toward greater contraceptive uptake among teens [Finer & Philbin, 2013]).
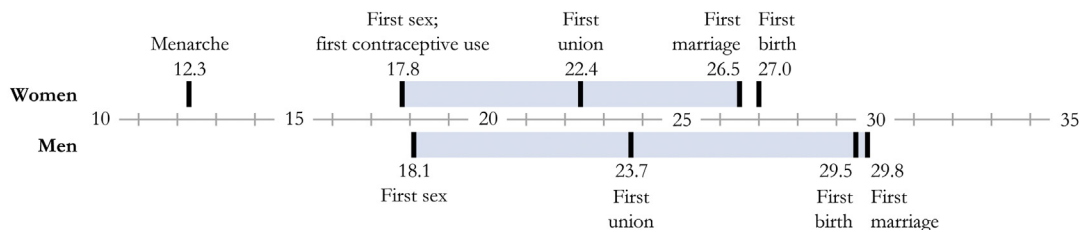
Shaded area represents period of high risk for nonmarital birth.

Birth cohort for each estimate:

Women: Menarche 1993, first sex and first contraceptive use 1991, first union 1988, first marriage and first birth 1982.

Men: First sex 1993, first union 1986, first marriage 1981, first birth 1980.

Figure 3. "Current" median ages at reproductive events (i.e., median age at event for most recent cohort for whom data are available).

Table 1
Cox Proportional Hazards Models Predicting Women's Risk of First Sex by Demographic Characteristics and Birth Cohort

Characteristic	Birth Cohort (Odds Ratio)		
	1937–1960	1961–1971	1972–1995
Race/ethnicity			
White	1.00	1.00	1.00
Hispanic	0.70***	0.77***	0.91
Black	1.38***	1.21**	1.29***
Other	0.45***	0.54***	0.65***
Mother's education			
Less than HS diploma	1.00	1.00	1.00
HS diploma or GED	0.93	0.94	1.01
Some college	0.79***	0.78***	0.86
Bachelor's degree or more	0.79***	0.71***	0.67***
Family structure			
Two parents from birth	1.00	1.00	1.00
Anything else	1.29***	1.31***	1.54***
Religious attendance			
Never	1.00	1.00	1.00
Less than once per month	0.86	0.90	0.90
1–3 times per month	0.81*	0.92	0.80**
Once per week or more	0.66***	0.71***	0.59***

Abbreviations: GED, graduate equivalency diploma; HS, high school.
*p < .05.
**p < .01.
***p < .001.

Age at First Union and First Marriage

The trend of women's increasing age at first marriage has continued through the 1982 birth cohort; the median for that cohort was 26.5 years (Figure 1). However, increases in the number and proportion of cohabiting couples over time mean that the median age at first union has not changed much since the cohort of women born in 1965. For the most recent cohort with available data, those who were born in 1988, it was 22.4 years. Race and mother's education are important factors associated with women's likelihood to marry (Table 3), with Blacks and women with more educated mothers being far less likely to marry, associations that have strengthened over time.

The median age at first union for the most recent cohort of men, those born in 1986, was 23.7. There is evidence of an increase in men's median age at union and marriage, starting with men born around 1975. The most recent median age at marriage for men was 29.8.

Age at First Birth

The median age at first birth increased for women born through the 1960s, reaching a plateau at about age 26. Since then, however, it seems to have declined and then increased again (Figure 1). For women born in 1975, median age at first birth was earlier than median age at first marriage for the first time since these data have been collected.

For men, the median age at first birth has hovered around 29 over the 20-year period examined; the figure was 29.5 for the most recent cohort for whom a median could be calculated. A similar crossing of the marriage and birth lines is evident.

In Table 4, we can see that race/ethnicity, family structure, and mother's education have long been factors in timing of first birth, and the degree of each factor's influence has increased over time. The difference between White women and Black women is especially notable: Black women in the latest birth cohorts (1972–1995) were more than twice as likely to begin childbearing at any point in time as were White women. Although the role of religious attendance was not a significant predictor of "risk" for a first birth in the past, in the latest birth cohorts, women who attended religious services frequently (once per week or more) as adolescents were less likely to have initiated childbearing. Finally, although the role of mother's education has and continues to be associated with delaying births, the strength of the association with mother's college education has increased.

Time Spent in Each Reproductive Stage

The current sexual activity and contraceptive status of all female respondents in three rounds of the NSFG (i.e., at three points in time) is shown in Figure 5. "Sexually active" is defined
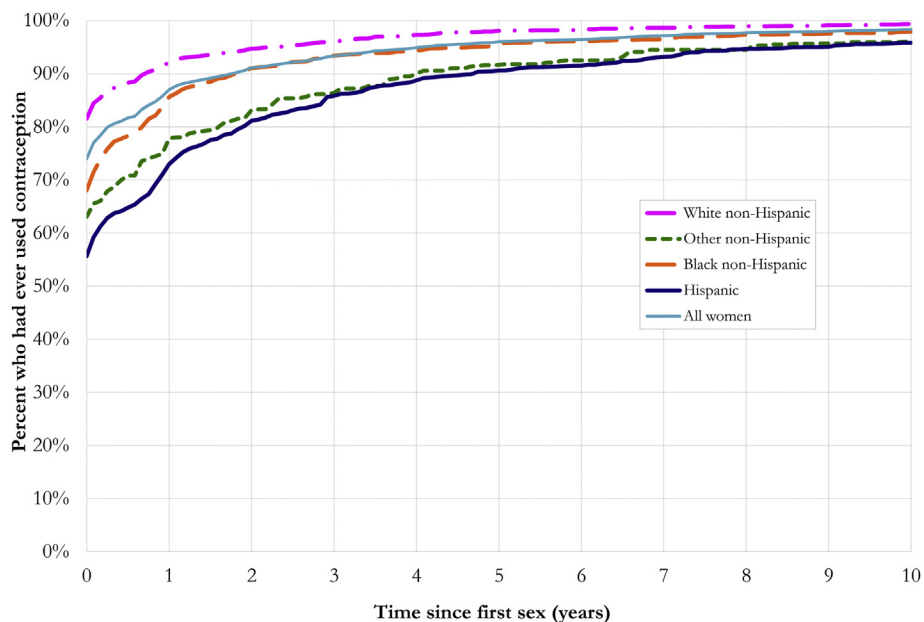
Figure 4. Time from first sex to first contraceptive use, by race/ethnicity, women, National Survey of Family Growth, 2006 to 2010.

Table 2
Cox Proportional Hazards Models Predicting Women's Risk of Contraceptive Use at or After First Sex by Demographic Characteristics and Birth Cohort

Characteristic	Birth Cohort (Odds Ratio)		
	1937–1960	1961–1971	1972–1995
Race/ethnicity			
White	1.00	1.00	1.00
Hispanic	0.60***	0.70***	0.82***
Black	0.76***	0.90**	0.90***
Other	0.55***	0.59***	0.93
Mother's education			
Less than HS diploma	1.00	1.00	1.00
HS diploma or GED	1.27***	1.34***	1.14***
Some college	1.34***	1.45***	1.19***
Bachelor's degree or more	1.21***	1.47***	1.18***
Family structure			
Two parents from birth	1.00	1.00	1.00
Anything else	0.92**	0.96	1.01
Religious attendance			
Never	1.00	1.00	1.00
Less than once per month	1.08	1.09	1.08*
1–3 times per month	1.11	1.03	1.04
Once per week or more	1.09	1.02	1.01
Age at first sex (y)			
≥19	1.00	1.00	1.00
17–18	0.94	0.96	0.98
15–16	0.81***	0.87***	0.94*
<15	0.58***	0.77***	0.79***

Abbreviations: GED, graduate equivalency diploma; HS, high school.
*p < .05.
**p < .01.
***p < .001.

as having had sex in the past 3 months; "contracepting" is defined as having used a form of contraception during the month of interview. Contraception includes both sterilization and all reversible methods, including natural family planning, withdrawal, and male methods. A small proportion of women reported that they were sterile for reasons other than contraceptive use (e.g., because of a hysterectomy); these women are shown separately in Figure 5.

Table 3
Cox Proportional Hazards Models Predicting Women's Risk of First Marriage by Demographic Characteristics and Birth Cohort

Characteristic	Birth Cohort (Odds Ratio)		
	1937–1960	1961–1971	1972–1995
Race/ethnicity			
White	1.00	1.00	1.00
Hispanic	0.81**	0.83	1.00
Black	0.49***	0.40***	0.35***
Other	0.59***	0.50**	0.71
Mother's education			
Less than HS diploma	1.00	1.00	1.00
HS diploma or GED	0.83***	0.79*	0.72**
Some college	0.68***	0.55***	0.49***
Bachelor's degree or more	0.56***	0.39***	0.38***
Family structure			
Two parents from birth	1.00	1.00	1.00
Anything else	1.09	1.23*	1.12
Religious attendance			
Never	1.00	1.00	1.00
Less than once per month	1.12	0.71*	0.75*
1–3 times per month	1.04	0.60**	0.96
Once per week or more	1.00	0.69**	1.15

Abbreviations: GED, graduate equivalency diploma; HS, high school.
*p < .05.
**p < .01.
***p < .001.

Table 4
Cox Proportional Hazards Models Predicting Women's Risk of First Birth by Demographic Characteristics and Birth Cohort

Characteristic	Birth Cohort (Odds Ratio)		
	1937–1960	1961–1971	1972–1995
Race/ethnicity			
White	1.00	1.00	1.00
Hispanic	1.30***	1.44***	1.82***
Black	1.26***	1.43***	2.05***
Other	0.79*	0.89	1.16
Mother's education			
Less than HS diploma	1.00	1.00	1.00
HS diploma or GED	0.75***	0.70***	0.66***
Some college	0.65***	0.48***	0.48***
Bachelor's degree or more	0.45***	0.38***	0.24***
Family structure			
Two parents from birth	1.00	1.00	1.00
Anything else	1.07	1.20***	1.58***
Religious attendance			
Never	1.00	1.00	1.00
Less than once per month	0.99	0.86	0.69**
1–3 times per month	0.98	0.90	0.82
Once per week or more	0.99	0.89	0.75***

Abbreviations: GED, graduate equivalency diploma; HS, high school.
*p < .05.
**p < .01.
***p < .001.

At each of the three time points, the large majority of the reproductive years were spent sexually active and using contraception. More than 55% of women in each cohort from age 20 to 44 fell into this category at each time. Slightly less than 1 in 10 women of each age from 25 to 44 were not sexually active, and 5% to 11% of women 15 and older (and 6%–8% of women 25 and older) were sexually active but not using any form of contraception. The proportion pregnant, trying to become pregnant, or postpartum peaks in the 25 to 29 age group at each time.

A decline in the proportion of young teens who were pregnant was accompanied by an increase in teen contraceptive use. Twice as many 15- to 17-year-olds were pregnant, trying to become pregnant, or postpartum in 1982 as in 2006–2010. In 2006–2010, 20% of young teens were sexually active and contracepting, compared with 13% in 1982; the proportion not sexually active was about the same in the two periods. Among all age groups except for teens, declines between 1982 and 1995 in the proportion who were sexually active but not using contraception were offset by increases between 1995 and 2006–2010. The proportion of women who report noncontraceptive sterility has decreased substantially over time.

Limitations

The data presented here represent the overall experience of entire cohorts. The timing of these events varies substantially across population subgroups and among individuals, but our aggregate analyses tend to mask these variations. Figures 2 and 3 and the multivariate analyses provide some hints of the heterogeneity.

Because this is a retrospective study, recall bias might have influenced the results if any of the events reported were difficult to remember. However, these are highly salient events, which may minimize this concern. Also, men may underreport children they have fathered (Rendall et al., 2006). Assuming they have unreported births, the true median age at first birth for men may be lower than that reported here.
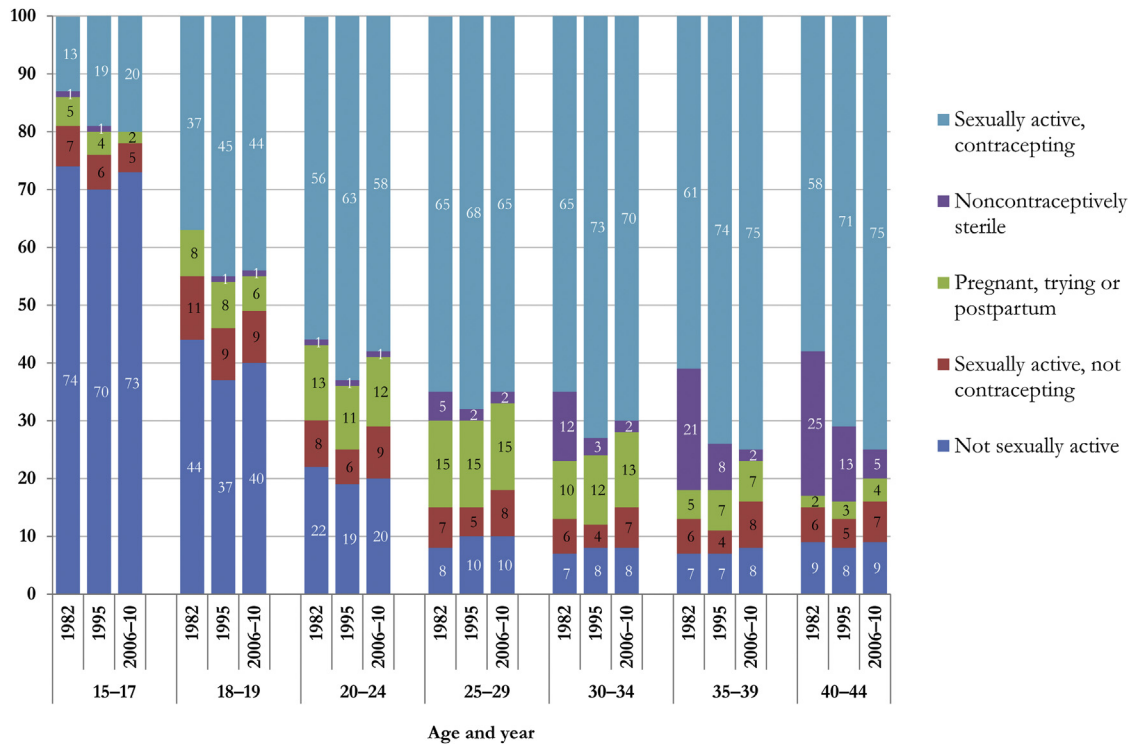
Figure 5. Percentage of women age 15 to 44 who were in various reproductive stages at each age.

Discussion

Our analysis of representative data from several decades of American women's and men's lives showed measurable changes in their reproductive life stages over the past quarter century. Several of these have clear implications for reproductive health.

One change we did not see, however, was in age at menarche. Previously published findings using data from NHANES suggested clear decreases in age at menarche between the pre-1920 birth cohorts and the 1930s birth cohort, and smaller declines since then. Our findings for birth cohorts beginning with 1939 indicate that age at menarche has changed little over the period covered in this analysis. Although our results do not suggest any substantial changes in age at menarche among women as a whole, other studies have noted differences in age at menarche by race (Chumlea et al., 2003). The NHANES study suggested an additional decrease between the 1960s cohort and the 1980s cohort, but the confidence interval for the 1980s cohort was large. We see a small decline of 0.3 years between the 1969 and 1993 birth cohorts, but additional data are required to determine whether this is a real decrease.

Although there have been slight declines in age at first sex over the entire time period, median age at first sex for women turning 15 in the mid-2000s was roughly equal to that of women 35 years earlier. More notable is the clear shortening of the time from first sex to first contraceptive use, which bodes well for prevention of unintended pregnancy (and has in fact been re-flected in declines in the teen pregnancy rate).

Unlike women, men reported little change in age at first sex over time. As a result, the gap between women's and men's sexual initiation has narrowed. Indeed, in the most recent cohorts, age at first sex is now virtually equal across genders. This convergence in men's and women's timelines may be attributable to social changes that have delayed marriage for women without causing a similar delay for men, such as expanded labor market and educational opportunities. The wide availability of effective contraception and the acceptability of premarital sex may also have contributed to the lengthier gap between first sex and first union for women.

For some recent cohorts of women and men, median age at first birth is earlier than median age at first marriage for the first time in the last several decades. This result is in line with findings from the Current Population Survey and national vital statistics reports. Although a majority of births occur to married couples (Hamilton, Martin, & Ventura, 2012) and most births still occur in the context of a union, marital or otherwise, this finding none-theless represents a milestone. Child health and social outcomes are generally more positive when a child is born into a stable, two-parent union (Fomby & Cherlin, 2007; Najman et al., 1997), and ordering childbearing first has the potential to affect union stability and the likelihood of subsequent marriage and divorce (Graefe & Lichter, 2002). Thus, this trend warrants additional investigation.

The decline in the proportion of women who report non-contraceptive sterility may be owing to delayed childbearing, technological advances to correct impaired fecundity, and a documented decrease in sterilization procedures—some of which were done for noncontraceptive purposes—performed through the 1990s and early 2000s (Chan & Westhoff, 2010; Chandra, Copen, & Stephen, 2013).

Implications for Practice and Policy

Reproductive health patterns have long been characterized by racial and ethnic disparities, and our data show evidence of this. Black women initiate sex earlier, and Hispanic women in particular lag behind women of other races in terms of initiating

contraceptive use. At the same time, a greater proportion of Hispanic teens may desire pregnancy at earlier ages (Braveman et al., 2011). Educators and health programmers should take these patterns among women of color into account to provide the most effective services.

The large majority of women's and men's reproductive years are spent sexually active. The increase in the windows between first sex and first marriage, and between first sex and first birth for women, is one of the clearest findings of our study. Although factors contributing to this lengthier interval were beyond the scope of this analysis, other research suggests it is a result of broad societal changes, such as increases in educational attainment and women's increased participation in the labor force (Goldin & Katz, 2002). The result is that American adults now face a lengthy period before childbearing during which they require effective contraceptive methods. Despite increases in contraceptive use at first sex, the pill and condoms continue to predominate among women who have not yet had children. Use of long-acting reversible methods—the most effective ways to prevent pregnancy (Winner et al., 2012)—among all women has increased from 2.4% in 2002 to 8.5% in 2009 (Finer et al., 2012), but remains low among teens and underutilized by women in their 20s. Some reproductive health professionals have taken note; the American Congress of Obstetricians and Gynecologists now describes long-acting reversible methods as "first-line options" for young women and those without children (American College of Obstetricians and Gynecologists, 2012). Our findings highlight the importance of dispelling longstanding myths that hinder acceptance of underutilized methods such as the intrauterine device, and of continuing the encouraging pattern of new method development and introduction that has characterized the late 1990s through the current decade, to reduce the nation's continuing high rate of unintended pregnancy.

Acknowledgments

References

Abma, J. C., Chandra, A., Mosher, W. D., Peterson, L. S., & Piccinino, L. J. (1997). Fertility, family planning, and women's health: New data from the 1995 National Survey of Family Growth. *Vital and Health Statistics*, 23(19), 1–114.

Abma, J. C., & Sonenstein, F. L. (2001). Sexual activity and contraceptive practices among teenagers in the United States, 1988 and 1995. *Vital and Health Statistics*, 23(21), 1–79.

Abma, J. C., Martinez, G. M., Mosher, W. D., & Dawson, B. S. (2004). Teenagers in the United States: Sexual activity, contraceptive use, and childbearing, 2002. *Vital and Health Statistics*, 23(24), 1–48.

American College of Obstetricians and Gynecologists. (2012, October). Adolescents and long-acting reversible contraception: Implants and intrauterine devices. Committee Opinion No. 539. Available at: http://www.acog.org/~/media/Committee%20Opinions/Committee%20on%20Adolescent%20Health%20Care/co539.pdf.

Bloom, D. E. (1982). What's happening to the age at first birth in the United States? A study of recent cohorts. *Demography*, 19(3), 351–370.

Braveman, P., Brindis, C., Biggs, A., Marchi, K., Minnis, A., Ralph, L., et al. (2011). *Latina voices: Findings from a study of Latina teen childbearing in the Fresno and Los Angeles Areas*. San Francisco: Bixby Center for Global Reproductive Health and Center on Social Disparities in Health. Available

at: http://bixbycenter.ucsf.edu/publications/files/Latina_Teen_Childbearing_March_2011.

Bumpass, L. L., Sweet, J. A., & Cherlin, A. J. (1991). The role of cohabitation in declining rates of marriage. *Journal of Marriage and the Family*, 53(4), 913–927.

Chan, L. M., & Westhoff, C. L. (2010). Tubal sterilization trends in the United States. *Fertility and Sterility*, 94(1), 1–6.

Chandra, A., Copen, C. E., & Stephen, E. H. (2013). *Infertility and impaired fecundity in the United States, 1982 – 2010: Data from the National Survey of Family Growth. National Health Statistics Reports 67*. Washington, DC: National Center for Health Statistics.

Chumlea, W. C., Schubert, C. M., Roche, A. F., Kulin, H. E., Lee, P. A., Himes, J. H., et al. (2003). Age at menarche and racial comparisons in US girls. *Pediatrics*, 111(1), 110–113.

DeParle, J. (2012). Two classes in America, divided by "I do." New York Times. Available at: http://www.nytimes.com/2012/07/15/us/two-classes-in-america-divided-by-i-do.html.

Eaton, D. K., Kann, L., Kinchen, S., Ross, J., Hawkins, J., Harris, W. A., et al. (2006). Youth risk behavior surveillance — United States, 2005. *Journal of School Health*, 76(7), 353–372.

Finer, L. B., & Henshaw, S. K. (2006). Disparities in rates of unintended pregnancy in the United States, 1994 and 2001. *Perspectives on Sexual and Reproductive Health*, 38(2), 90–96.

Finer, L. B., Jerman, J., & Kavanaugh, M. L. (2012). Changes in use of long-acting contraceptive methods in the U.S., 2007–2009. *Fertility and Sterility*, 98(4), 893–897.

Finer, L. B., & Philbin, J. M. (2013). Sexual initiation, contraceptive use, and pregnancy among young adolescents. *Pediatrics*, 131(5), 1–6.

Fomby, P., & Cherlin, A. J. (2007). Family instability and child well-being. *American Sociological Review*, 72(2), 181–204.

Forrest, J. D. (1988). Contraceptive needs through stages of women's reproductive lives. *Contemporary Ob/Gyn*, 32, 12–22.

Forrest, J. D. (1993). Timing of reproductive life stages. *Obstetrics & Gynecology*, 82(1), 105–111.

Fussell, E., & Furstenberg, F. (2005). The Transition to Adulthood during the Twentieth Century: Race, Nativity, and Gender. In F. Furstenberg, R. G. Rumbaut, & R. A. Setterson (Eds.), *On the Frontier of Adulthood: Theory, Research, and Public Policy*. Chicago: The University of Chicago Press.

Goldin, C., & Katz, L. F. (2002). The power of the pill: Oral contraceptives and women's career and marriage decisions. *Journal of Political Economy*, 110(4), 730–770.

Graefe, D. R., & Lichter, D. T. (2002). Marriage among unwed mothers: Whites, blacks and Hispanics compared. *Perspectives in Sexual and Reproductive Health*, 34(6), 286–293.

Hamilton, B. E., Martin, J. A., & Ventura, S. J. (2012). *Births: Preliminary data for 2011. National Vital Statistics Reports 61(5)*. Hyattsville, MD: National Center for Health Statistics.

Jones, R. K. (2011). *Beyond birth control: The overlooked benefits of oral contraceptive pills*. New York: Guttmacher Institute. Available at. http://www.guttmacher.org/pubs/Beyond-Birth-Control.pdf. Accessed August 18, 2013.

Kann, L., Kinchen, S. A., Williams, B. I., Ross, J. G., Lowry, R., Grunbaum, J. A., et al. (2000). Youth risk behavior surveillance — United States, 1999. *MMWR CDC Surveillance Summaries*, 49(5), 1–32.

Kann, L., Kinchen, S. A., Williams, B. I., Ross, J. G., Lowry, R., Hill, C. V., et al. (1998). Youth risk behavior surveillance — United States, 1997. *MMWR CDC Surveillance Summaries*, 47(3), 1–89.

Kato, I., Toniolo, P. A., & Akhmedkhanov, K. L. (1998). Prospective study of factors influencing the onset of natural menopause. *Journal of Clinical Epidemiology*, 51(12), 1271–1276.

Krailo, M. D., & Pike, M. C. (1983). Estimation of the distribution of age at natural menopause from prevalence data. *American Journal of Epidemiology*, 117(3), 356–361.

Leridon, H. (2004). Can assisted reproduction technology compensate for the natural decline in fertility with age? A model assessment. *Human Reproduction*, 19(7), 1548–1553.

Manlove, J., Wildsmith, E., Welti, K., Scott, M. E., & Ikramullah, E. (2012). Relationship characteristics and the relationship context of nonmarital first births among young adult women. *Social Science Quarterly*, 93(2), 506–520.

McDowell, M. A., Brody, D. J., & Hughes, J. P. (2007). Has age at menarche changed? Results from the National Health and Nutrition Examination Survey (NHANES) 1999–2004. *Journal of Adolescent Health*, 40(3), 227–231.

McLanahan, S., & Percheski, C. (2008). Family structure and the reproduction of inequalities. *Annual Review of Sociology*, 34, 257–276.

Mincieli, L., Manlove, J., McGarrett, M., Moore, K., & Ryan, S. (2007). The Relationship Context of Births Outside of Marriage: the Rise of Cohabitation. *Child Trends Research Brief*, 2007–13.

Musick, K. (2007). Cohabitation, nonmarital childbearing, and the marriage process. *Demographic Research*, 16(9), 249–286.

Najman, J. M., Behrens, B. C., Andersen, M., Bor, W., O'Callaghan, M., & Williams, G. M. (1997). Impact of family type and family quality on child

behavior problems. *Journal of the American Academy on Child and Adolescent Psychiatry*, 36, 1357–1365.

Rendall, M. S., Admiraal, R., Handcock, M. S., & Joyner, K. (2006). Early entry to fatherhood estimated from men's and women's survey reports in combination. *National Survey of Family Growth Research Conference*. Available at. ftp://ftp.cdc.gov/pub/health_Statistics/NCHS/Publications/nsfg/confpresentations/S3.Fatherhood/Rendall-Earlyentrytofatherhood.pdf. Accessed August 18, 2013.

Rindfuss, R. R. (1991). The young adult years: Diversity, structural change, and fertility. *Demography*, 28(4), 493–512.

Shafii, T., Stovel, K., Davis, R., & Holmes, K. (2004). Is condom use habit forming? Condom use at sexual debut and subsequent condom use. *Sexually Transmitted Diseases*, 31(6), 366–372.

Smock, P. J., & Manning, W. D. (2010). New couples, new families: The cohabitation revolution in the United States. In B. Risman (Ed.), *Families as They Really Are.*. New York: WW Norton & Co.

Urban Institute. (1998). 1995 National Survey of Adolescent Males (NSAM). Available at: http://www.urban.org/publications/900460.html.

U.S. Census Bureau. (2006, September 21). Estimated median age at first marriage, by sex: 1890 to the present (Table MS-2). Available at: http://www.census.gov/population/socdemo/hh-fam/ms2.pdf.

Winner, B., Peipert, J. F., Zhao, Q., Buckel, C., Madden, T., Allsworth, J. E., et al. (2012). Effectiveness of long-acting reversible contraception. *New England Journal of Medicine*, 366(21), 1998–2007.

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