

Age- and Relationship Status-Specific Trends in Unwanted Fertility in the United States

1995-2002

Sarah R. Hayford

Elizabeth Wildsmith

Karen Benjamin Guzzo

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Abstract: Unwanted fertility is a policy concern due to the negative outcomes of unintended births for both mothers and children. Levels of unwanted fertility in the United States are high relative to other developed countries, and in recent years, long-term trends of decline in unwanted fertility appear to have reversed. The proportion of births that were unwanted increased approximately 40% between 1990-94 and 1997-2001, according to the National Surveys of Family Growth. This analysis documents recent increases in unwanted fertility and assesses the contribution of compositional changes to these trends. We use demographic decomposition techniques to decompose increases in the proportion of births that are unwanted into changes in age- and relationship status-specific wanted and unwanted birth rates and changes in the distribution of women by age and relationship status. Results show that rates of unwanted births have increased for all groups, and that the increase in unwanted births is due to this widespread growth and not to expansion of non-marital fertility or changes in the age profile of fertility.

Unintended pregnancy and childbearing have long been used as indicators of population reproductive health (Trussell, Vaughan, and Stanford 1999). Currently, almost half of all pregnancies in the U.S. are identified as unintended (Finer and Henshaw 2006). Although some of these unintended pregnancies are terminated, roughly 38% of live births are considered unintended (Barber and Emens 2006). The level of unintended childbearing has garnered increasing attention in the political and academic arenas for a number of reasons. First, unintended fertility in the U.S. is substantially higher than that in other western industrialized countries, which contributes to our higher overall fertility rate (Morgan 2003). Second, unintended pregnancies carried to term have been associated with negative health and developmental outcomes for families, women, and children. As such, it is a goal of *Healthy People 2010*, which establishes the nation's health goals for the decade, to reduce unintended pregnancies from 49% of all pregnancies to 30% by 2010 (U.S. Department of Health and Human Services, 2000). Lastly, because unintended fertility has tended to be disproportionately concentrated among young, unmarried, minority women, there is concern that continued high levels of unintended pregnancy may exacerbate race/ethnic and socioeconomic inequalities in women's and children's wellbeing.

Unintended childbearing includes both births identified as unwanted (women wanted no more children at the time of pregnancy) and those labeled as mistimed (occurring earlier than wanted). After a decade of decline in the late 1980s and early 1990s, the proportion of pregnancies identified as unintended has since stagnated at roughly 50% (Finer and Henshaw 2006; Henshaw 1998). Furthermore, the *unwanted* pregnancy rate actually increased between 1994 and 2001 by roughly 4% overall, and by 6% for women over the age of 20 (The National Campaign to Prevent Teen and Unplanned Pregnancy). This increase is especially worrisome

because the negative outcomes associated with unintended births are largest and most consistent for unwanted (as opposed to mistimed) pregnancies (Santelli et al. 2003).

The recent increase in unwanted birth rates comes as a surprise. As the availability of contraception has expanded and teen pregnancy rates have declined (at least until very recently), we would expect continued declines in unwanted pregnancy. Social and cultural changes may have contributed to increases in unwanted fertility. Another potential explanation is much simpler: Changes in the composition of childbearing women may have produced changes in overall unwantedness. During the 1990s, the proportion of births taking place outside of marriage continued to increase, and cohabitation continued to become more common. Because births outside of marriage are less likely to be intended than marital births, these changes could produce increases in the proportion of births that are unwanted even in the absence of changes in context-specific rates of unwanted conception. Changes in the age distribution of the population may also contribute to the unwanted ratio, and overall trends in unwanted births may mask important subgroup differences. In this paper, we describe trends in age- and relationship-specific unwanted birth rates and assess the contribution of these trends to overall levels of unwanted fertility.

Consequences of unintended childbearing

Unintended pregnancies, and especially unwanted pregnancies, are associated with negative outcomes for both mothers and children. Many studies examining the association between pregnancy intendedness and wellbeing have focused on maternal health behaviors during pregnancy and infant health outcomes. Specifically, this research has found that women who identified their pregnancies as unwanted were less likely to receive timely prenatal care, to quit smoking, and to take recommended daily vitamins, and were more likely to use alcohol

during the pregnancy (Brown and Eisenberg 1995; Hellerstedt et al.1998; Joyce, Kaestner, and Korenman 2000; Weller, Eberstein, and Bailey 1987). Among pregnancies carried to term, births resulting from unwanted pregnancies are associated with a higher risk of low birth weight, shorter gestation, and higher mortality rates than are those identified as intended (Bustan and Coker 1994; Hummer et al. 1995; Marsiglio and Mott 1988). Additionally, these infants are less likely to be breastfed or to receive a well-child check by age 3 months (Hromi-Fiedler and Perez-Escamilla 2006; Kost, Landry, and Darroch 1998).

An increasing body of research suggests that pregnancy intention is associated with the health and developmental (cognitive, emotional, and behavioral) wellbeing of children later in the lifecourse and even on into adulthood. This work finds that children from pregnancies identified as unintended/unwanted were more likely to be in less than excellent health, to have undesirable activity levels, to receive below median scores on the Denver Developmental Scale, to have lower cognitive test scores, and to experience increased behavioral problems (Crissey 2005; Hummer, Hack, and Raley 2004; Joyce, Kaestner, and Korenman 2000). Among adults, recent research has found that the self rated health status of adults from unintended births is significantly lower than the health of adults from wanted pregnancies (Johnson and Schoeni 2007). The maternal health behaviors and infant health outcomes discussed above may act as mechanisms through which intendedness influences later wellbeing. In addition, unintended childbearing seems to have an independent impact on mother-child relationships, in developmentally important ways. Children aged one year and older from pregnancies identified as unwanted had fewer opportunities for skill development and experienced more authoritarian parenting styles than mistimed or wanted children (Baydar 1995). Barber, Axinn, and Thornton (1999) find that mothers with unwanted births are less likely to be happy and more likely to be

depressed. Additionally, while children are young, mothers of unwanted children are more likely to spank their children and less likely to spend quality time with them, and when children are older, mothers report poorer quality relationships with their children. Among single mothers with very low incomes, Zuravin (1991) found that unintended births increased the risk of child abuse and neglect, especially among large families.

There is substantial debate over the causal nature of the relationship between pregnancy intendedness and women and children's wellbeing. In many studies, the associations between intendedness and wellbeing weaken or disappear when sociodemographic controls are included (Joyce, Kaestner, and Korenman 2000; Hummer, Hack, and Raley 2004; Baydar 1995).

Although acknowledging that some of the controls included in multivariate models may in fact also serve as mechanisms linking intendedness to wellbeing, Joyce et al.(2000) warn that we must be careful about attributing negative outcomes directly to pregnancy intendedness. At the same time, recent research using similar methodology to that of Joyce et al. 2000 (fixed effect sibling models) did find a persistent and independent effect of pregnancy wantedness on the health status of adults, net of a wide array of sociodemographic and background characteristics (Johnson and Schoeni 2007). Regardless of whether pregnancy intendedness plays an independent causal role in later outcomes or is a marker of other potential problems, understanding trends and patterns of unwanted fertility can provide insight into population health.

Factors determining the proportion of births unwanted

The population prevalence of unwanted births is affected both by trends in reproductive behavior and by the changing composition of mothers. Clearly, an increase in unwanted birth rates would lead to an increase in the proportion of births that were unwanted, if other factors

were held equal. The proportion of births that are unwanted is also determined by wanted fertility -- if women desire fewer children and have fewer wanted births, the proportion of births that are unwanted will increase even if women conceive and carry to term unwanted pregnancies at the same rate. Finally, population composition can affect the proportion of unwanted fertility.

Unwanted birth rates vary by age, race and ethnic group, and relationship status. If the population shifts such that there are more women in age and relationship status groups with higher unwanted fertility, population levels of unwanted births will increase even if individual women's behavior does not change. Social and family change in the late 1990s suggests that multiple factors might plausibly explain increases in the unwanted birth ratio in that period.

As a policy brief by the Guttmacher Institute noted, the U.S., unlike other developed countries, does not have a universal health care system that provides easily accessible and affordable contraception (Dailard 1999). Although 9 out of 10 employer-based insurance plans currently cover a full range of prescription contraceptives (three times the proportion in the early 1990s), many women are not covered by private insurance plans or are not eligible for public health insurance programs (Dailard 1999; The Alan Guttmacher Institute 2006). As a result, some sexually active women, including those who do not actively want to get pregnant, may not be using contraception. The numbers of these women at risk of an unintended pregnancy is increasing. The percent of sexually active women 15-44 not using contraception rose from 5.4% in 1995 to 7.4% in 2002 (Mosher et al. 2004), and 11% of the roughly 42 million fertile, sexually active women who do not want to become pregnant are not using contraception (The Alan Guttmacher Institute 2006). The resolution of unintended pregnancies appears to have changed over time as well, with the proportion of unintended pregnancies ending in abortion declining

from 54% in 1994 to 48% in 2001 (Henshaw and Finer 2006). Thus, more unwanted pregnancies are likely to result in unwanted births in the late 1990s than in the early 1990s.

These changes in contraceptive and abortion behavior might explain increases in the unwanted fertility ratio. Changes in population composition and family structure might also affect unwanted birth rates. Most notably, the proportion of births to unmarried women in the United States has increased steadily and sharply, from 5.3% in 1960 to 18.4% in 1980 and 35.8% in 2004 (Martin et al. 2006). The rising proportion of nonmarital births is due in part to changing union patterns and particularly the emergence of cohabitation, which accounts for about 40-50% of nonmarital births in the 1990s (Bumpass and Lu 2000; Carlson, McLanahan, and England 2004) and up to 70% of the increase over time in nonmarital childbearing (Raley 2001).

Although not all births to unmarried women are unintended, nonmarital births, particularly those to non-cohabiting women, are far more likely to be unintended than marital births. Among women who had a birth from 1997-2002, 23.4% of married women, 41.8% of formerly married, non-cohabiting women, 51.2% of cohabiting women, and 64.7% of never-married, non-cohabiting women reported their birth as unwanted or mistimed (Chandra et al. 2005). Thus, increases in the proportion of births to unmarried women, all other things being equal, will be associated with increases in the unwanted birth ratio.

The relationship between union status and birth intendedness may have changed over time and may vary across groups. As cohabitation has become more common in the U.S., for example, it seems to have become a more acceptable family structure for childbearing (Musick 2002). A long history of informal or consensual unions among Hispanics suggests that cohabitation is especially likely to be seen as an acceptable context for childbearing for this group (Loomis and Landale 1994; Manning and Landale 1996; Musick 2002). In addition, there

is evidence to suggest that the acceptability of nonmarital childbearing varies by race/ethnicity (Geronimus 1986; Musick 2002; Stack 1974). Ethnographic research among minority and poor women in disadvantaged neighborhoods suggests that the social value of children is high; children, even if born to young mothers and out of wedlock, confer the rights and responsibilities of adulthood on women (Edin and Kefalas, 2005). Increasing cohabitation and declining time spent in marriage may therefore affect unwanted birth rates differently for different racial and ethnic groups.

If these changes in union formation and population composition explain most of the recent increase in unwanted fertility, this increase can be regarded as a statistical artifact driven by a shift in the characteristics of childbearing women. If increases in unwanted births are mostly due to increases in unwanted birth rates among particular age or relationship status groups, more focused interventions may be called for. To assess the relative contribution of compositional and behavioral changes to changes in the proportion of unwanted births, we turn to classic demographic decomposition analysis.

Specific aims

In this paper, building on the work of Finer and Henshaw (2006), we look at subgroup trends (race/ethnicity, age, and relationship status) in unwanted childbearing over the past two decades and use decomposition techniques to assess the contribution of these trends to overall levels of unwanted births. We focus specifically on *unwanted* childbearing (as opposed to unintended) because unwanted births are most consistently associated with the negative wellbeing of women and children (Santelli et al, 2003). Additionally, we focus on births rather than pregnancies. The well-known underreporting of abortion in survey data means that unintended pregnancies not carried to term are likely to be significantly underreported.

Substantively, we are interested in the consequences of unintended fertility for women and children, as well as for population birth rates.

Two measures are commonly used to examine unwanted fertility: unwanted birth ratios (the proportion of all births identified as unwanted) and unwanted fertility rates (the rate of unwanted births to all women at risk of a birth). In this paper we look at age- and relationship-specific trends in both of these measures for black, white, and U.S.-born Hispanic origin women. We focus on unwanted birth ratios because these outcomes are used to set public health goals. We decompose unwanted fertility ratios into the following components: 1) the age distribution of the population, 2) the distribution of women across relationship statuses, 3) relationship- and age-specific rates of wanted births, and 4) relationship- and age-specific rates of unwanted births. This decomposition analysis allows us to determine which factors are contributing the most to changes in the unwanted birth ratio.

We use data from two waves of the National Survey of Family Growth (1995, 2002). We perform all analyses separately by race and Hispanic origin in order to capture the effects of racial and ethnic differences in relationship formation and relationship-specific birth rates.

Data and methods

Data and sample construction

The National Survey of Family Growth (NSFG) is a series of cross-sectional surveys designed to produce comparable information on fertility and family formation in the United States over time. The surveys are nationally representative of women aged 15-44. Each survey collects full birth histories as well as marriage histories and, in recent surveys, cohabitation histories. Respondents are asked about current fertility intentions, fertility intentions at the time

of previous pregnancies, and past and current contraceptive use. We use data from the 1995 and 2002 rounds of data collection to describe trends in births in the 1990s.

We study births in the five-year period before each survey. That is, we compare births in the periods 1990-1994 and 1997-2001. We limit our analysis to births that occurred relatively recently before the surveys to reduce concerns with retrospective reporting of birth wantedness: by focusing on recent births, we minimize the period in which women can revise their assessment of intentions at the time of pregnancy. We use five-year periods rather than annual measures to ensure adequate sample sizes for all age and relationship groups. In order to ensure comparable age structures for the different time periods, we also limit our analysis to women age 15-39 in the 5-year period under study and to births to women in these age groups.

We perform all analyses separately for non-Hispanic white, African American, and U.S.-born Hispanic women in order to better capture race and ethnic group specific trends. We limit our Hispanic sample to women born in the United States in order to permit comparisons over time. Ideally, we would like to analyze Hispanic women separately by national origin; unfortunately, small sample sizes prevent further subdivision of the Hispanic population.

We divide women by age group and by relationship status. The age groups used in this analysis are 15-19, 20-24, 25-29, and 30-39, and relationship statuses are single, cohabiting, and married. Previous research indicates some differences in fertility patterns between older and younger teens, often divided into 15-17 year olds and 18-19 year olds. However, we are unable to examine these age groups separately due to small sample sizes in some relationship status groups.

The total sample sizes for the surveys are 10,847 (1995) and 7,643 (2002) women. Table 1 shows the size of our analytic sample for the two surveys, including the unweighted number of

births in the five years before the survey and the unweighted number of person-years lived by women age 15-39.

Methods

To produce the denominators for wanted and unwanted birth rates, we first constructed full relationship histories and then converted these relationship histories into person-month files. We used person-month files to calculate the amount of time spent single (not in a coresidential relationship), cohabiting, and married for women in various age and race-ethnic groups.

To produce the numerators for wanted and unwanted birth rates, we use birth history files created by the NSFG to classify births according to the age, relationship status, and race-ethnic group of the mother. We classify the wantedness of births according to women's responses to a question about fertility intentions at the time of pregnancy. The wording of this question is similar in both surveys:

1995: "At the time you became pregnant, did you yourself actually want to have (a)nother baby at some time?"

2002: "Right before you become pregnant, did you yourself want to have a(nother) baby at any time in the future?"

Unwanted births are births for which the respondent answered "no" to the question. Wanted births are all other births, including births that were mistimed (too early) and births for which the respondent replied "don't know" to the above questions.

There is a substantial body of research using this kind of question to measure unwanted fertility (see, for example, any of the articles cited above). Most of these articles begin with a discussion of the validity of these retrospective reports of pregnancy wantedness. Researchers identify several primary concerns: women may be reluctant to label a child as unwanted once the

child is born, and women's experience of parenthood may color their memories of intentions at the time of pregnancy. In addition, fertility intentions and contraceptive behavior may be inherently complex questions that are difficult to answer in closed form (Zabin 1999). Studies of data quality have found inconsistency between women's prospective reports of fertility intentions and retrospective reports of wantedness (Joyce, Kaestner, and Korenman 2002; Westoff and Ryder 1977; Williams and Abma 2000). Furthermore, women's reported intentions are not always consistent with reports of contraceptive use (Edin and Kefalas 2005; Trussell, Vaughn, and Stanford 1999).

Despite these theoretical and empirical reasons to distrust measures of unwantedness, the empirical literature consistently demonstrates strong face validity of the measures (again, see the above-cited literature), and methodological works conclude that the measures, though flawed, are reliable indicators of the underlying behavior (e.g. Bachrach and Newcomer 1999; Joyce, Kaestner, and Korenman 2002). Reporting a birth as unwanted seems to be a particularly robust measure compared to more nuanced labels such as mistimed or unplanned. For instance, unwantedness is more strongly correlated than measures of timing with other dimensions of intentionality such as women's reported happiness on learning of the pregnancy (Bachrach and Newcomer 1999).

Age- and relationship-specific rates of unwanted births are calculated by dividing the number of unwanted births to women in the age and relationship category by the number of person-months spent in the relationship category and age group. Rates are multiplied by 12 and then by 1000 to produce annual rates per thousand women. Sample weights are used in the construction of both numerators and denominators in order to produce nationally representative estimates of birth rates.

Age- and relationship-specific proportions unwanted are calculated by dividing the number of unwanted births in the age and relationship category by the total number of births in that category.

The primary analytic goal of this analysis is to explain the trends in the proportion of births that are unwanted during the 1990s. As noted above, the proportion of births that are unwanted is sensitive to the composition of women giving birth, notably the age and relationship status of mothers. Thus, a shift in the timing and relationship context of births would change the proportion of births that are unwanted, even if age- and relationship-specific birth rates do not change. The proportion of births that are unwanted also depends on wanted birth rates. If the number of wanted births declines, the proportion of births that are unwanted will increase even in the absence of changes in unwanted childbearing. In this analysis, we decompose the proportion of births that are unwanted into changes in the age distribution of the population, the distribution of women across relationship statuses, and age- and relationship-specific rates of wanted and unwanted births.

The proportion of births that are unwanted is influenced by many other factors (e.g., the distribution and variation in wantedness of births by maternal employment status, education, income, region of residence...), and any of these factors could potentially be included in a decomposition. Our primary interest here is on the relationship between changing union formation patterns and changing unwanted birth rates, so we limit analysis to the factors listed above. To assess the impact of each of these factors, we standardize the proportion unwanted with respect to each factor in turn, then decompose changes into the fraction of change attributable to each factor.

The proportion of births that are unwanted can be expressed as a function of the age distribution, the distribution of women across relationship statuses in each age group, and age- and relationship-specific wanted and unwanted birth rates as follows:

$$\sum_i \left[A_i \times \left(m_i \times \frac{uw_{mi}}{uw_{mi} + w_{mi}} + c_i \times \frac{uw_{ci}}{uw_{ci} + w_{ci}} + s_i \times \frac{uw_{si}}{uw_{si} + w_{si}} \right) \right]$$

In this equation, A_i represents the proportion of women in each age group i , m_i the proportion of women in age group i who are married, c_i the proportion of women in the age group who are cohabiting, and s_i the proportion of women in the age group who are single (not in a coresidential relationship). Rates of unwanted and wanted fertility are represented by uw and w , respectively; the rates are subscripted to represent age- and relationship-specific birth rates. This formula, then, first calculates the proportion of births that are unwanted in each age and relationship group by dividing the unwanted birth rate by the total (unwanted plus wanted) birth rate. The population proportion is calculated by multiplying each group's proportion unwanted by the proportion of the population in that group.

The goal of standardization is to isolate the effect of changes in a single one of these factors on the proportion unwanted. The total change in the proportion unwanted can then be broken down into components of change associated with each factor. When a quantity involving only two factors and two populations (or one population at two time periods) is decomposed, the process is fairly straightforward, and involves evaluating the effect of one of the factors on a “standard” population derived by averaging the value of the second factor across the two populations. When more factors and more populations are involved, the method is more complex, and results are sensitive to the choice of a standard population.

Das Gupta (1993) proposes a method for choosing standard populations when standardizing across multiple populations with respect to multiple components. This method,

which has been used in previous demographic analyses (e.g. Hayford 2005; Raley 2001; Smith, Morgan, and Koropeckyj-Cox 1996), is appealing because it produces internally consistent results: The changes in the proportion unwanted across a given period due to each component add up to the total change in proportion unwanted. The method involves summation and averages across multiple factors in one period and across multiple time periods. It is described in detail in Das Gupta (1993) and summarized by Smith, Morgan, and Koropeckyj-Cox (1996).

Our decomposition analysis includes nine factors: the age distribution of women of reproductive age, the proportion of person-months spent single, the proportion of person-months spent cohabiting, unwanted birth rates for single women, unwanted birth rates for cohabiting women, unwanted birth rates for married women, wanted birth rates for single women, wanted birth rates for cohabiting women, and wanted birth rates for married women. Each of these factors is a vector-factor containing four components, one for each age group. So, for example, the single unwanted birth rate factor includes unwanted birth rates for single women age 15-19, 20-24, 25-29, and 30-39. Thus, all age-specific rates are incorporated into the analysis, but the impact of changes in wanted or unwanted birth rates in specific age groups is not assessed separately. We also performed a second decomposition using age-specific rates as a vector with components for each relationship status group. Conclusions from these two versions of the analysis are complementary. Where relevant we refer to conclusions from the second analysis, but for simplicity we only present full results from the first version. Full results are available from the authors upon request.

Results

Description of trends

Table 2 shows changes in the proportion of births unwanted between 1990-1994 and 1997-2001 for three race-ethnic groups. During this period, the long-term trend of decline in unwanted fertility reversed, and the proportion of births that was unwanted increased. The relative increase in unwanted births was substantial for all three groups: 34% for African American women, 64% for white women, and 75% for Hispanic women.

Figure 1 through 3 present changes during the 1990s in various factors that contribute to the unwanted birth ratio. For simplicity of presentation, some of these figures combine women of all age groups; the full set of age-specific factors used as the input for our decomposition analysis is shown in Appendix Table 1. Where trends vary significantly across age groups, we note this variation in the description of these figures.

Figure 1 documents the increase in time spent cohabiting between 1990-94 and 1997-2001. The proportion of person-months spent in cohabiting relationships increased for all age groups and all three racial-ethnic groups. The proportion of time spent single remained essentially stable during the 1990s (not shown); thus, increases in cohabitation are associated with less time spent married. In Figure 2, we can see that unwanted birth rates to cohabiting women are higher than unwanted birth rates to married women. Thus, a shift of the population away from marriage and toward cohabitation would be associated with an increase in unwanted fertility if other factors were held constant.

Figure 2 also shows that unwanted birth rates increased for women in almost all racial-ethnic groups and relationship statuses. The only exception to this pattern is cohabiting Hispanic women, for whom unwanted fertility declined slightly during the period under study. The size of the increase varies across groups. Among white women, unwanted birth rates increased most for cohabiting women, almost doubling during the 1990s. For Hispanic women, the largest increases

were among single women. Combining all age groups in this figure obscures some variation by age. For example, unwanted birth rates actually declined or remained stable for black women age 15-19 in all relationship status groups (Appendix Table 1). For the most part, however, increased in unwanted births rates took place across wide segments of the population and were not concentrated among particular subgroups.

Trends in wanted birth rates between 1990-1994 and 1997-2001 were more varied (Figure 3). Wanted fertility increased for single women and declined for cohabiting women in all racial-ethnic groups. For white and African American married women, rates of wanted fertility increased. Among married Hispanic women, wanted birth rates decreased during the 1990s. Holding other factors constant, a decline in wanted births would lead to an increase in the proportion of births that are unwanted. So, for example, the declining wanted birth rates among cohabiting women could be a factor in the rising unwanted ratio, especially given the increase in time spent cohabiting.

Increases in unwanted birth rates were consistent across racial-ethnic groups and relationship statuses. Holding other factors constant, these increases would lead to an increase in the unwanted birth ratio, as observed. However, other factors were not constant. It is not clear how changes such as increasing wanted birth rates among some women and shifts in time spent married and cohabiting exacerbated or counterbalanced the effect of increasing unwanted birth rates on the unwanted birth ratio. To understand the impact of these changes, we proceed with a full decomposition of the unwanted ratio into relationship-specific wanted and unwanted birth rates.

Decomposition of trends

Figure 4 shows the change in the unwanted birth ratio attributable to each of nine factors. The nine factors included in the decomposition are the age distribution of reproductive-age women; the proportion of women single (not in a coresidential relationship); the proportion of women cohabiting; unwanted birth rates for single, cohabiting, and married women; and wanted birth rates for single, cohabiting, and married women. (Note that the proportion of women married is not explicitly included as a factor, since it can be calculated from the proportions single and cohabiting.) The bars shown in the figure can be interpreted as the amount by which the unwanted birth ratio would have changed if only the specified factor had changed and all other factors had remained constant. Each figure contains nine bars, representing the contribution of changes in each factor to the observed change; negative bars indicate that changes in the specified factor would have produced a *decline* in the unwanted birth ratio if other factors had remained constant. Adding the nine bars together would produce the total observed change in the unwanted ratio.

Population composition contributed only weakly to increases in the unwanted birth ratio in the 1990s. Holding all other factors constant, the increase in cohabitation between 1990-1994 and 1997-2001 would have been associated with an increase of less than 10 unwanted births per thousand births. The contribution of changes in time spent single and changes in the age distribution were even smaller. Thus, changes in the unwanted birth ratio appear to be primarily attributable to changes in reproductive behavior and not to changes in the composition of women of reproductive age.

For all racial and ethnic groups, the largest portion of the observed change in the unwanted birth ratio is attributable to increases in the unwanted birth rate to single women. The contribution of unwanted births to single women is particularly notable among Hispanic women:

if other factors had remained constant, increased unwanted birth rates to single women would have produced an additional 58 unwanted births per thousand births. Among black women, unwanted birth rates to single women would have produced an additional 33 unwanted births, and among white women they would have led to 16 additional unwanted births per thousand births.

Unwanted birth rates among married women were also a major component of the overall change in unwanted birth ratio for all race-ethnic groups. In fact, for white women, the contribution of marital unwanted birth rates was roughly equal to that of single unwanted birth rates. For white women, unwanted birth rates to cohabiting women account for about 11 additional unwanted births per thousand births between 1990-1994 and 1997-2001. For black and Hispanic women, the contribution of unwanted cohabiting birth rates was small.

The contribution of wanted birth rates to the observed change in the unwanted birth ratio varies across race-ethnic groups and across relationship status. Wanted birth rates made the largest absolute contribution to change in the unwanted ratio for black women -- changes of about 40 unwanted births per thousand births are attributable to wanted birth rates for black women. However, these changes were in opposite directions for married and unmarried women. Among married black women, wanted birth rates increased in the 1990s, which would have reduced the unwanted birth ratio if other factors had been stable. Among single and cohabiting black women, in contrast, wanted birth rates fell. For white and Hispanic women, absolute changes were smaller and changes were in opposite directions for single, cohabiting and married women. Taken together, changes in wanted birth rates explain little of the observed change in the unwanted birth ratio for each of the three racial-ethnic groups.

Discussion and conclusions

For most of the twentieth century, the proportion of births in the United States that were unwanted declined. In the 1990s, however, this trend reversed, and the unwanted fertility ratio increased. The primary goals of this paper were, first, to document recent changes in the unwanted birth ratio for black, white, and U.S.-born Hispanic women and, second, to assess the contribution of compositional changes to these trends. We initially speculated that recent increases in unwanted birth ratios might be due in part to changes in relationship formation, particularly to continued postponement of marriage and expansion of cohabitation. However, decomposition analysis shows that most of the change in the unwanted ratio in the 1990s was due to changes in unwanted birth rates, especially unwanted birth rates among married and single women. Changes in wanted birth rates contributed only a small proportion of change in the unwanted ratio. Neither the distribution of women across relationship statuses nor changes in the fertility behavior of cohabiting women were major contributors to changes in the proportion of unwanted births.

For the most part, patterns of change are similar across racial and ethnic groups. However, the increase in the unwanted ratio between the 1995 and 2002 NSFG was larger for U.S.-born Hispanic women than for white or African American non-Hispanic women. Additionally, unwanted births among single women were relatively more important among Hispanic women than in other racial and ethnic groups. While the contribution of changes in the relationship distribution of the population to changes in the unwanted ratio were generally minor, increases in cohabitation were associated with increases in unwantedness among African American women.

Although our results emphasize the importance of unwanted birth rates in explaining trends in the unwanted birth ratio, our analyses are unable to explain *why* unwanted birth rates

have increased. However, we can use these results to adjudicate between several possible explanations. These explanations fall along three lines. The first two possibilities are closely related: Women may be having more unintended conceptions, or they may be carrying more unintended pregnancies to term. An increase in unwanted conceptions is most likely a contributing factor to change, although it is somewhat surprising given increased access to contraception in the 1990s (Dailard 1999). The second scenario would suggest that women are becoming less likely to abort unwanted pregnancies, either because of decreased stigma towards nontraditional family structures or because of greater barriers to receiving abortion services (Finer and Henshaw 2003, Henshaw and Finer 2003). Due to concerns over the accuracy of pregnancy and abortion reporting, we are unable to distinguish between these first two explanations, or to explore the role of barriers to abortion in the increased unwanted birth ratio. This inability is a limitation of this research.

A third possible explanation is that the number of pregnancies is remaining constant, but women are becoming more likely to label a birth as unwanted. This explanation implies shifts not in sexual or contraceptive behavior but in how women understand and interpret pregnancies and births. At the population level, this explanation is attractive, since fertility levels have remained approximately stable during the period under study. However, closer examination of birth rates by age, race, and relationship status shows that this explanation fits some subgroups well, but does not hold for all groups. Among married Hispanic women, for example, unwanted birth rates have risen as wanted birth rates have fallen. This shift may reflect decreased desire for children in the later period, so that high parity births are less likely to be labeled as wanted. Similarly, increased unwanted fertility rates are accompanied by declines in wanted fertility rates among single and cohabiting black women, especially young women, between 1995 and 2002.

This group is the population most targeted by recent policy initiatives against nonmarital fertility. It may be the case that those who do have a birth outside of marriage feel more stigmatized in the current environment and are more likely to label this birth unwanted. Among married white women, in contrast, both unwanted and wanted birth rates increased between 1995 and 2002. For these women, increased unwanted fertility appears to represent true behavioral change rather than a change in attitudes toward childbearing.

These observations point to the importance of considering the social meaning of unwantedness along with the public health consequences. The stigma of identifying a pregnancy or birth as unwanted may have changed over time as social and cultural attitudes toward childbearing have changed, and the identification of a birth as “unintended” or “unwanted” may depend on a woman’s perception of the suitability of having a birth in different social contexts (Musick 2002). The research literature on unintended fertility is suffused with persistent concerns over the measurement of intentions. Recent work has emphasized that intentionality or planning status may only reflect one dimension of pregnancy wantedness and that other dimensions – such as efficacy or affect (happiness) – may be just as important to measure and document (Bachrach and Newcomer, 1999; Trussell, Vaughan, and Stanford 1999; Klerman 2000). The NSFG includes questions about a woman’s happiness about each pregnancy, though only for pregnancies in the three years preceding each survey. Future work may incorporate these measures into analyses of recent patterns of change.

References

- The Alan Guttmacher Institute. 2006. *In Brief: Facts on Induced Abortion in the United States*. New York, NY: The Alan Guttmacher Institute.
- Bachrach, Christine and Susan Newcomer. 1999. "Intended Pregnancies and Unintended Pregnancies: Distinct Categories or Opposite Ends of a Continuum?" *Family Planning Perspectives* 31 (5) : 251-52.
- Barber, Jennifer S., William G. Axinn, and Arland Thornton. 1999. "Unwanted Childbearing, Health, and Mother-Child Relationships." *Journal of Health and Social Behavior* 40(3): 231-257.
- Barber, Jennifer S. and Amie Emens. 2006. "The Intersection Among Unintended, Premarital, and Teenage Childbearing in the U.S." Population Studies Research Report: 06-608. Ann Arbor, MI: University of Michigan.
- Baydar, Nazli. 1995. "Consequences for Children of Their Birth Planning Status." *Family Planning Perspectives* 27 (6): 228-34+245.
- Brown, Sarah S. and Leon Eisenberg. 1995. *The Best Intentions: Unintended Pregnancy and the Well-Being of Children and Families*. Washington, DC: National Academy Press.
- Bumpass, Larry, and Hsien-Hen Lu. 2000. "Trends in Cohabitation and Implications for Children's Family Contexts in the United States." *Population Studies*. 54: 29-41.
- Bustan, Muhammad N. and Ann L. Coker. 1994. "Maternal Attitude Toward Pregnancy and the Risk of Neonatal Death." *American Journal of Public Health* 84: 411-414.
- Carlson, Marcia, Sara McLanahan, and Paula England. 2004. "Union Formation in Fragile Families." *Demography*. 41: 237-261.
- Chandra, A., G.M. Martinez, W.D. Mosher, J.C. Abma, and J. Jones. 2005. "Fertility Family Planning and Reproductive Health of U.S. Women: Data from the 2002 National Survey of Family Growth." Vital and Health Statistics, Series 23, Number 25. Hyattsville, MD: National Center for Health Statistics.
- Crissey, Sarah R. 2005. "Effect of Pregnancy Intentions on Child Well-Being and Development: Combining Retrospective Reports of Attitude and Contraceptive Use." *Population Research and Policy Review* 24 (6): 593-615.
- Dailard, C. 1999. "U.S. Policy Can Reduce Cost Barriers to Contraception." *Issues in Brief*. New York, NY: The Alan Guttmacher Institute.
- Das Gupta, Prithwis. 1993. *Standardization and Decomposition of Rates: A User's Manual*. Special Reports Series P23, No. 186. Washington, DC: U.S. Bureau of the Census.
- Edin, Kathryn and Maria Kefalas. 2005. *Promises I Can Keep: Why Poor Women Put Motherhood Before Marriage*. Berkeley, CA: University of California Press.
- Finer, F. B. and S. K. Henshaw. 2003. "Abortion Incidence and Services in the United States in 2000." *Perspectives on Sexual and Reproductive Health* 35: 6-16.

- Finer, L.B. and S. K. Henshaw. 2006. "Disparities in the Rates of Unintended Pregnancy in the United States, 1994 and 2001." *Perspectives in Sexual and Reproductive Health*. 38: 90-96.
- Geronimus Arlene T. 1986. "The Effects of Race, Residence, and Prenatal Care on the Relationship of Maternal Age to Neonatal Mortality." *American Journal of Public Health*, 76: 1416-1421.
- Hayford, Sarah R. 2005. "Stable Fertility in a Time of Family Change: A Decomposition of Trends in American Fertility, 1970-1999." *Social Biology* 52 (1-2): 1-18.
- Hellerstedt, W. L., P. L. Pirie, H. A. Lando, S. J. Curry, C. M. McBride, L. C. Grothaus, and J. C. Nelson. 1998. "Differences in Preconceptional and Prenatal Behaviors in Women with Intended and Unintended Pregnancies." *American Journal of Public Health* 88:663-6.
- Henshaw, S.K. 1998. "Unintended Pregnancy in the United States." *Family Planning Perspectives*. 30: 24-29.
- Henshaw, S.K. and L. B. Finer. 2003. "The Accessibility of Abortion Services in the United States, 2001." *Perspectives on Sexual and Reproductive Health* 35: 16-24.
- Hromi-Fiedler, A.J. and R. Perez-Escamilla. 2006. "Unintended Pregnancies Are Associated with Less Likelihood of Prolonged Breast Feeding: An Analysis of 18 Demographic and Health Surveys." *Public Health Nutrition* 9:306-12.
- Hummer, Robert, Carl P. Schmertmann, Isaac W. Eberstein, and Susan Kelly. 1995. "Retrospective Reports of Pregnancy Wantedness and Birth Outcomes in the United States." *Social Science Quarterly* 76: 402-418.
- Hummer, Robert, Kimberley Hack, and R. Kelly Raley. 2004. "Retrospective Reports of Pregnancy Wantedness and Child Well-Being in the United States". *Journal of Family Issues*, 25(3): 404-428.
- Johnson, Rucker C. and Robert F. Schoeni. 2007. "The Influence of Early-Life Events on Human Capital, Health Status, and Labor Market Outcomes Over the Life Course." Working Paper.
- Joyce, Theodore J., Robert Kaestner, and Sanders Korenman . 2000. "The Effect of Pregnancy Intention on Child Development." *Demography* 37(1): 83-94.
- Joyce, Theodore J., Robert Kaestner, and Sanders Korenman. 2002. "On the Validity of Retrospective Assessments of Pregnancy Intention." *Demography* 39 (1) : 199-213.
- Kost, K., D.J. Landry, and J.E. Darroch. 1998. "The Effects of Pregnancy Planning Status on Birth Outcomes and Infant Care." *Family Planning Perspectives* 30: 223-30.
- Loomis, Laura Spencer and Nancy S. Landale. 1994. "Nonmarital Cohabitation and Childbearing Among Black and White American Women." *Journal of Marriage and Family* 56: 949-962.
- Manning, Wendy D. and Nancy S. Landale. 1996. "Racial and Ethnic Differences in the Role of Cohabitation in Premarital Childbearing." *Journal of Marriage and the Family* 58:63-77.

- Marsiglio, William, and Frank L. Mott. 1988. "Does Wanting to Become Pregnant with a First Child Affect Subsequent Maternal Behaviors and Infant Birth Weight?" *Journal of Marriage and the Family* 50: 1023-1036.
- Martin, J.A., B.E. Hamilton, P.D. Sutton, S.J. Ventura, F. Menacker, and S. Kirmeyer. 2006. "Births: Final Data for 2004." National Vital Statistics Reports: 55(1). Hyattsville, MD: National Center for Health Statistics.
- Morgan, S. Philip. 2003. "Is Low Fertility a Twenty-First-Century Demographic Crisis?" *Demography* 40 (4) : 589-603.
- Mosher, W.D., G.M. Martinez, A. Chandra, J.C. Abma, and S.J. Willson. 2004. "Use of Contraception and Use of Family Planning Services in the United States: 1982-2002." Advance Data from Vital and Health Statistics, No. 350. Hyattsville, MD: National Center for Health Statistics.
- Musick, Kelly. 2002. "Planned and Unplanned Childbearing among Unmarried Women." *Journal of Marriage and the Family* 64 (4): 915-29.
- Pulley, L., L.V. Klerman, H. Tang, and B.A. Baker. 2002. "The Extent of Pregnancy Mistiming and its Association with Maternal Characteristics and Behaviors and Pregnancy Outcomes." *Perspectives on Sexual and Reproductive Health* 34:206-11.
- Raley, R. Kelly. 2001. "Increasing Fertility in Cohabiting Unions: Evidence for the Second Demographic Transition?" *Demography* 38: 59-66.
- Santelli, John, Roger Rochat, Kendra Hatfield-Timajchy, et al. 2003. "The Measurement and Meaning of Unintended Pregnancy." *Perspectives on Sexual and Reproductive Health*, 35(2): 94-101.
- Smith, Herbert L., Morgan, S. Philip, and Tanya Koropecykj-Cox. 1996. "A Decomposition of Trends in the Nonmarital Fertility Ratios of Blacks and Whites in the United States, 1960-1992." *Demography* 33(2): 141-151.
- Stack, Carol B. 1974. *All Our Kin: Strategies for Survival in a Black Community*. New York: Harper and Row, Publishers, Inc.
- Trussell, James, Barbara Vaughan, and Joseph Stanford. 1999. "Are All Contraceptive Failures Unintended Pregnancies? Evidence From the 1995 National Survey of Family Growth." *Family Planning Perspectives* 31 (5) : 246-7+260.
- U.S. Department of Health and Human Services. 2000. *Healthy People 2010. 2nd ed. With Understanding and Improving Health and Objectives for Improving Health*. 2 vols. Washington, DC: U.S. Government Printing Office.
- Weller, Robert H., Isasac.W. Eberstein, and Mohamed Bailey. 1987. "Pregnancy Wantedness and Maternal Behavior during Pregnancy." *Demography* 24: 407-412.
- Westoff, Charles F. and Norman B. Ryder. 1977. "The Predictive Validity of Reproductive Intentions." *Demography* 14 (4) : 431-53.
- Wildsmith, Elizabeth. and Frank F. Furstenberg, Jr. 2007. "The Impact of Recent Changes in Maternal Age on the Wellbeing of Infants." Paper presented at the annual meeting of the Population Association of America meeting, New York, NY.

Williams, Lindy and Joyce C. Abma. 2000. "Birth Wantedness Reports: A Look Forward and a Look Back." *Social Biology* 47 (3-4) : 147-63.

Zabin, Laurie Schwab. 1999. "Ambivalent Feelings About Parenthood May Lead to Inconsistent Contraceptive Use-and Pregnancy." *Family Planning Perspectives* 31 (5) : 250-51.

Zuravin, S.J. 1991. "Unplanned Childbearing and Family Size: Their Relationship to Child Neglect and Abuse." *Family Planning Perspectives*. 23: 155-161.

Table 1: Sample sizes for analytic sample, 1995 and 2002 NSFG

	1995	2002
Births in 5 years prior to survey to women age 15-39:		
U.S. born Hispanic mothers	372	403
African American mothers	970	565
Non-Hispanic white mothers	2025	1327
Person-years lived by women age 15-39 in 5 years prior to survey:		
U.S. born Hispanic women	2723	3342
African American women	10571	6337
Non-Hispanic white women	27475	17500

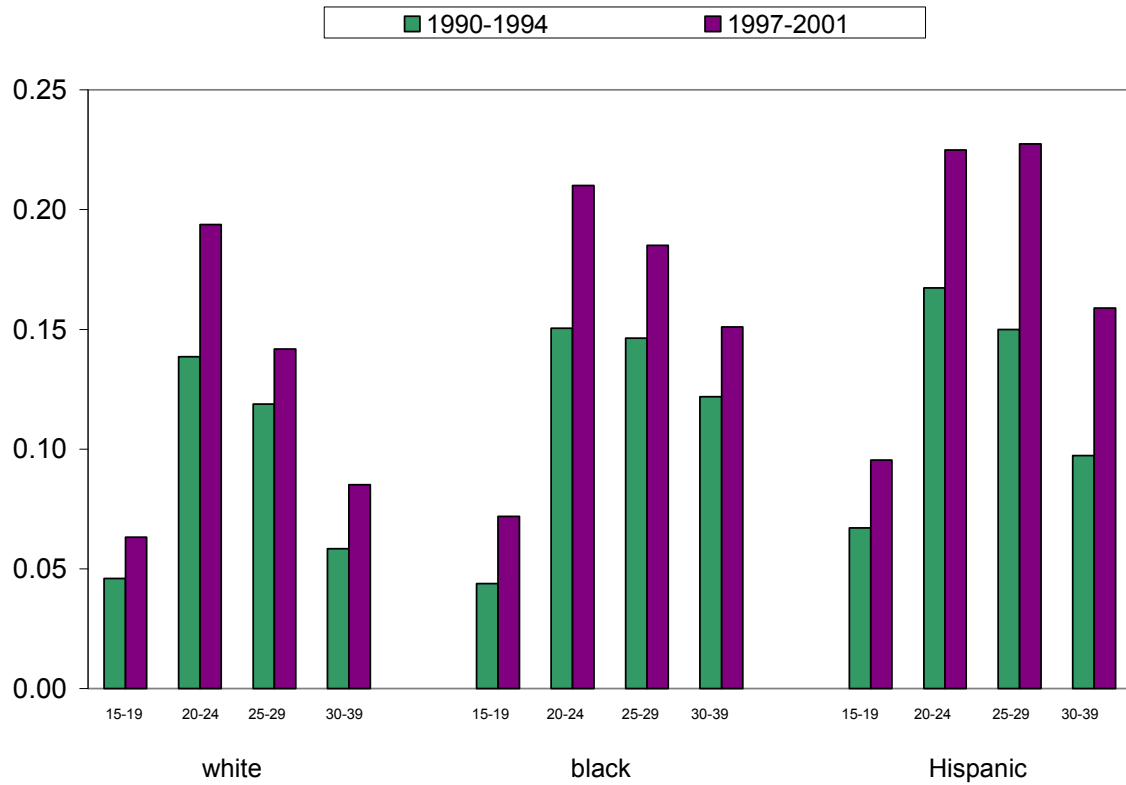
All numbers are unweighted.

Table 2: Proportion of births reported as unwanted, 1990-1994 and 1997-2001

	Unwanted births per 1000 births		Percent change in unwanted ratio
	1990-1994	1997-2001	
U.S. born Hispanic women	110	200	75%
African American women	180	250	34%
Non-Hispanic white women	60	110	64%

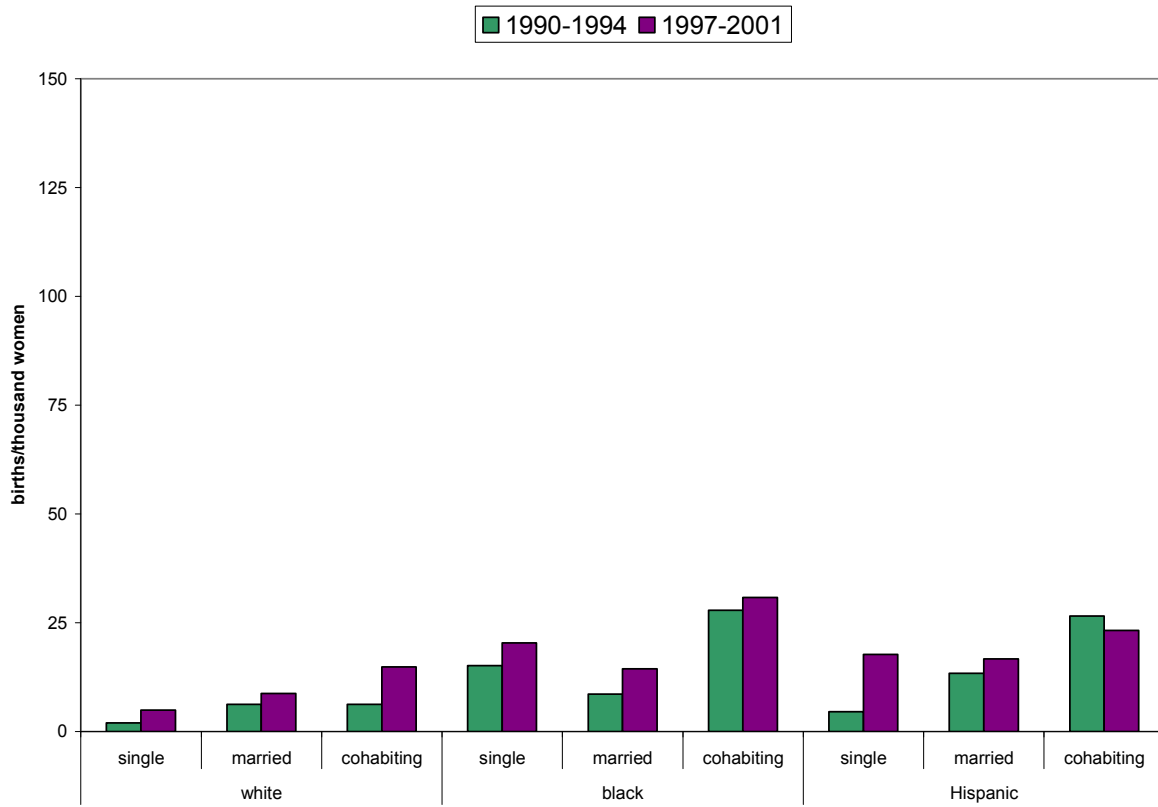
Data: National Survey of Family Growth, 1995 and 2002. Births to women age 15-39. Proportions weighted using sample weights.

Figure 1: Proportion of person-months lived in cohabiting relationships for women age 15-39, 1990-1994 and 1997-2001



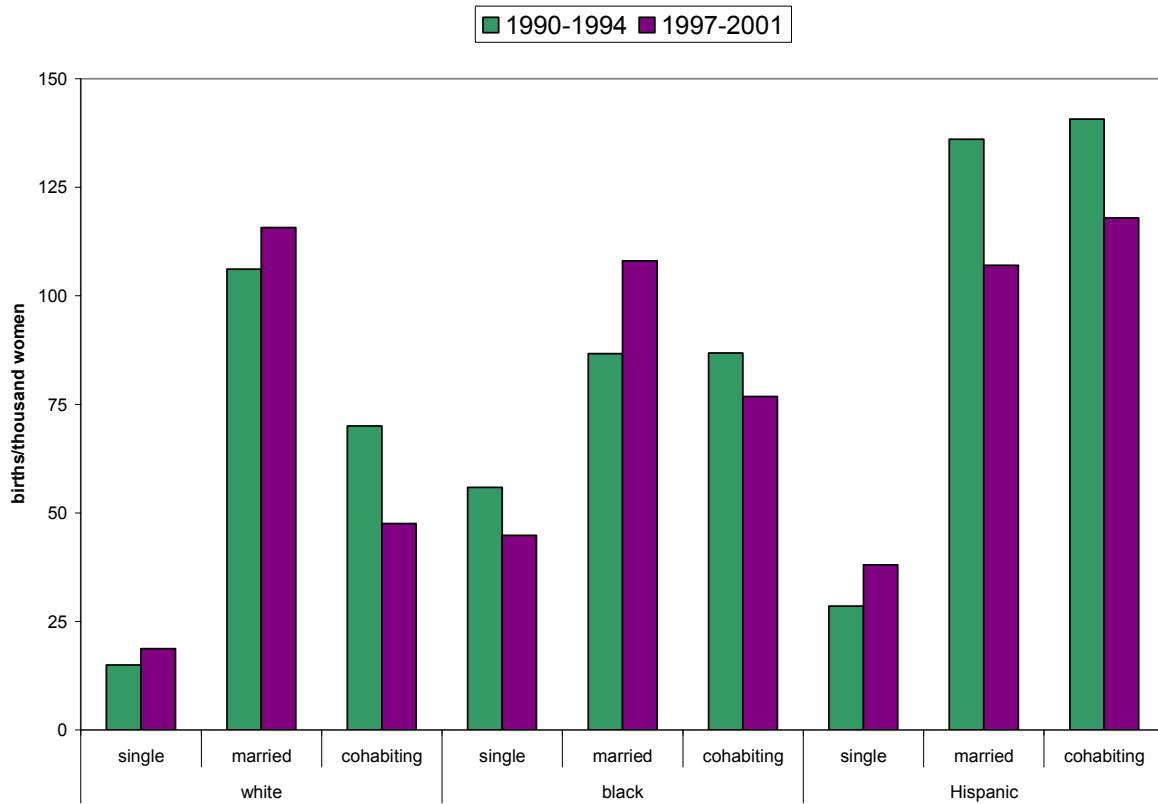
Data: National Survey of Family Growth, 1995 and 2002. Sample consists of women age 15-39 during the period specified. Proportions weighted using sample weights.

Figure 2: Unwanted birth rates to single, married, and cohabiting women age 15-39, 1990-1994 and 1997-2001



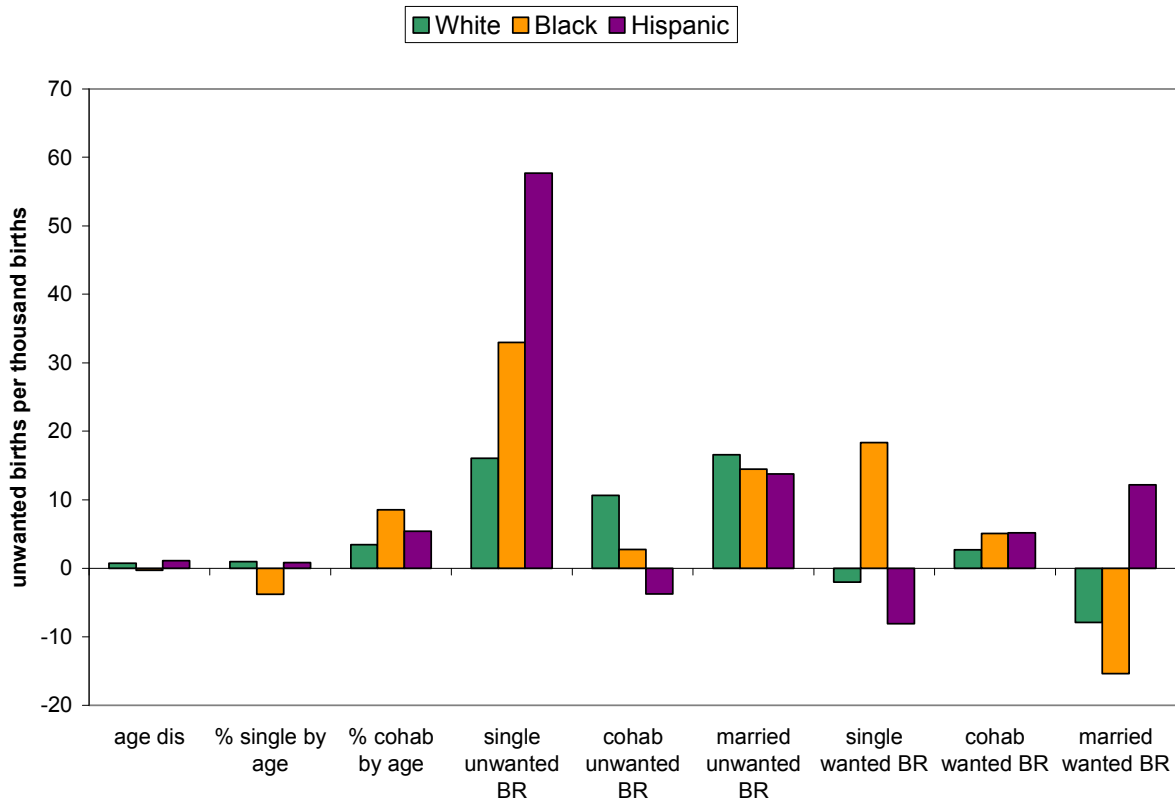
Data: National Survey of Family Growth, 1995 and 2002. Sample consists of women age 15-39 during the period specified and births to those women. Proportions weighted using sample weights.

Figure 3: Wanted birth rates to single, married, and cohabiting women age 15-39, 1990-1994 and 1997-2001



Data: National Survey of Family Growth, 1995 and 2002. Sample consists of women age 15-39 during the period specified and births to those women. Proportions weighted using sample weights.

Figure 4: Contribution of specified factors to change in the unwanted birth ratio, 1990-1994 to 1997-2001



Data: National Survey of Family Growth, 1995 and 2002. Sample consists of women age 15-39 during the period specified and births to those women. Results of decomposition analysis; see text for details.

Appendix Table 1: Proportions and rates used in decomposition analysis

	Non-Hispanic White, 1990-1994				Non-Hispanic White, 1997-2001			
	15-19	20-24	25-29	30-39	15-19	20-24	25-29	30-39
proportion in age group	0.168	0.178	0.204	0.450	0.191	0.171	0.186	0.451
proportion single in age group	0.916	0.525	0.305	0.210	0.915	0.553	0.310	0.229
proportion cohab. in age group	0.046	0.139	0.119	0.059	0.063	0.194	0.142	0.085
unwanted single birth rate	2.2	0.7	4.4	1.4	2.9	9.9	4.7	4.1
unwanted cohab. birth rate	2.0	6.2	9.1	4.7	41.5	21.4	13.2	1.9
unwanted married birth rate	6.2	10.1	7.6	5.1	37.8	11.4	10.1	7.6
wanted single birth rate	13.8	24.5	14.3	7.7	10.1	33.5	31.0	13.1
wanted cohab. birth rate	189.3	100.7	49.5	25.1	90.1	67.0	35.9	25.3
wanted married birth rate	352.2	201.4	163.5	63.5	377.8	201.7	153.1	87.9
	Black 1990-1994				Black 1997-2001			
	15-19	20-24	25-29	30-39	15-19	20-24	25-29	30-39
proportion in age group	0.196	0.189	0.210	0.404	0.206	0.194	0.197	0.403
proportion single in age group	0.936	0.700	0.588	0.506	0.917	0.683	0.558	0.500
proportion cohab. in age group	0.044	0.150	0.146	0.122	0.072	0.210	0.185	0.151
unwanted single birth rate	14.5	19.6	26.5	5.8	12.1	43.3	30.9	7.2
unwanted cohab. birth rate	12.0	63.4	21.5	14.1	38.2	44.1	36.1	17.0
unwanted married birth rate	89.5	15.5	8.1	5.4	42.5	53.5	20.2	6.1
wanted single birth rate	72.7	93.1	55.7	16.7	38.0	84.0	57.8	18.2
wanted cohab. birth rate	185.5	149.7	77.5	39.2	124.5	126.6	92.5	22.5
wanted married birth rate	202.2	205.7	125.9	46.7	345.4	264.6	148.2	66.7
	U.S. Born Hispanic, 1990-1994				U.S. Born Hispanic, 1997-2001			
	15-19	20-24	25-29	30-39	15-19	20-24	25-29	30-39
proportion in age group	0.247	0.216	0.202	0.335	0.263	0.224	0.188	0.325
proportion single in age group	0.872	0.509	0.351	0.353	0.869	0.533	0.320	0.272
proportion cohab. in age group	0.067	0.167	0.150	0.097	0.095	0.225	0.227	0.159
unwanted single birth rate	5.3	6.1	2.0	3.1	15.3	36.6	11.6	2.7
unwanted cohab. birth rate	38.3	26.9	39.3	8.3	50.9	23.3	29.3	4.7
unwanted married birth rate	18.1	13.9	11.5	13.8	66.4	34.0	23.6	5.9
wanted single birth rate	20.4	50.8	25.6	24.2	29.5	45.7	46.8	43.7
wanted cohab. birth rate	234.6	188.9	108.6	69.6	263.8	153.7	100.7	26.2
wanted married birth rate	436.2	231.1	151.1	67.5	248.6	172.0	142.5	64.4

Data: National Survey of Family Growth, 1995 and 2002. Sample consists of women age 15-39 during the period specified and births to those women. Proportions weighted using sample weights. Proportions refer to person months. Rates are births per thousand women per year.