

# WILL WOMEN CATCH UP TO THEIR FERTILITY EXPECTATIONS?

BY ANQI CHEN AND NILUFER GOK\*

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## Introduction

In 2019, the total fertility rate in the United States dipped to 1.71 children per woman, an all-time low and far below the replacement rate of 2.10 children. However, data on “fertility expectations” suggest no cause for concern. Women in their early 30s today, when first asked about their childbearing expectations in their early 20s, said they intended to have more than two children, similar to previous cohorts. Even considering that “completed” fertility has historically fallen short of expectations by about 0.30 children, women currently in their childbearing years would still end up with around two children. But it turns out that today’s 30-year-olds are much farther from their original expectations than previous cohorts.

This *brief*, based on a recent study, explores whether women are likely to catch up to their fertility expectations.<sup>1</sup> It examines the factors that drove fertility after age 30 for an older cohort of women, and then applies the results to predict where women in their mid-30s today will end up.

The discussion proceeds as follows. The first section summarizes the factors that influence fertility expectations and whether they are achieved. The second section discusses the data and methodology for the analysis, which is based on two cohorts of the *National Longitudinal Survey of Youth*. The third sec-

tion presents the results, which suggest that women in their 30s today will have completed fertility of 1.96; and the gap between their expected fertility at ages 20-24 and their completed fertility appears to have increased from 0.30 to 0.48. The fourth section discusses the implications for future fertility in light of a continued decline in expectations among women 20-24 and the impact of COVID-19. The final section concludes that the declining expectations and effects of the pandemic may make 1.96 an upper bound for younger cohorts.

## Factors Affecting Fertility

Demographers have used numerous techniques to predict fertility expectations and future fertility. The specific question examined here, however, is what factors determine whether expectations are achieved. It turns out that fertility expectations are an important determinant of completed fertility.

When women who are in their 30s today were 20-24, their expected fertility was 2.44 children. Given that the gap between estimated and completed fertility has been 0.30, their completed fertility should be 2.14, all else equal. Thus, one could argue that the

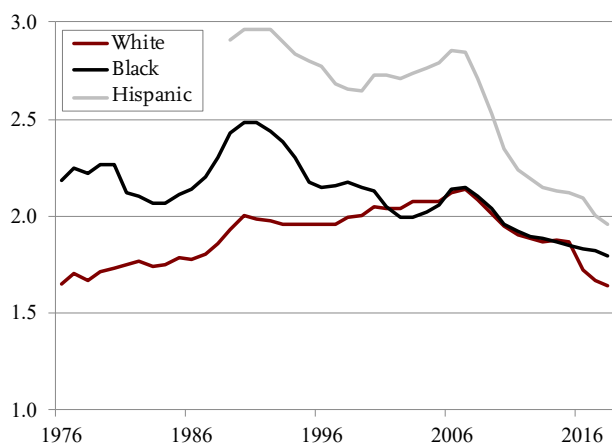
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current low fertility rates merely represent a delay in when women have children. On the other hand, several recent trends could suggest lower fertility.<sup>2</sup>

- *Race/Ethnicity.* Historically, Hispanics have had the highest fertility rates, followed by Blacks, and then whites. In recent years, however, these trends have converged (see Figure 1). By 2001, fertility for Blacks had dropped to the national average. And, since 2001, fertility for Hispanics has declined dramatically and is quickly converging to the average as well.

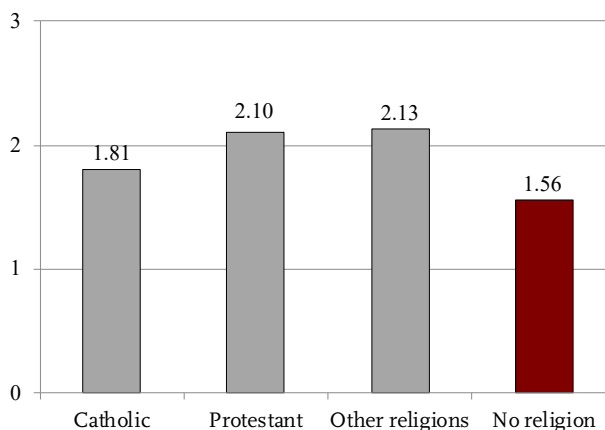
FIGURE 1. TOTAL FERTILITY RATE, BY RACE/ETHNICITY, 1976-2018



Source: Authors' calculations from Centers for Disease Control and Prevention, *U.S. National Vital Statistics Reports* (1976-2019).

- *Decline in Religious Affiliation.* Demographers have concluded that religious service attendance is highly positively correlated with fertility in the United States (see Figure 2) and in Europe.<sup>3</sup> As U.S. religious affiliation continues to decline, fertility rates could follow.
- *Decline in Marriage.* Marriage is often a desired precondition for childbearing.<sup>4</sup> However, the share of 20- and 30-year-old women who are married has continued to fall in recent decades, particularly among Blacks.<sup>5</sup>

FIGURE 2. COMPLETED FERTILITY RATE, BY RELIGIOUS AFFILIATION, 2015-2017



Note: Values are for women ages 45-50 when surveyed. Sources: Authors' calculations from Centers for Disease Control and Prevention, *National Survey of Family Growth* (NSFG) (2015-2017).

- *Decline in Financial Stability.* Recessions and lack of job security are also related to lower fertility.<sup>6</sup> And lower fertility during recessions translates into lower completed fertility. Similarly, homeownership, a milestone that historically was met before childbearing, has declined among young households.<sup>7</sup>
- *Rise in Opportunity and Explicit Costs.* Relative to the past, women are earning more and the cost of childcare has increased. These implicit and explicit costs place downward pressure on fertility.
- *Decline in Unplanned Pregnancies.* The increased ability of women to control their fertility – through improvements in contraception and access to legal abortions – has led to a decline in unplanned births. To the extent that the decrease was driven by a reduction in unwanted – as opposed to mistimed – births, future completed fertility could remain low.<sup>8</sup>
- *Rise in Age of First Births.* The average age at first birth has been increasing steadily since the 1960s and is currently 27. Despite advances in assisted reproductive technologies, having kids later means it takes women longer to get pregnant and increases the risk of miscarriage.<sup>9</sup> The continued rise in the age of motherhood could result in large gaps between actual and expected fertility.

The combination of relatively strong fertility expectations for women in their 30s today, on the one hand, and the host of factors that would be expected to lower fertility, on the other, means that we need some way to assess their likely completed fertility. The following analysis tackles this issue by examining the relationship between fertility expectations and completed fertility for an older cohort. This information is then used to estimate completed fertility for women in their 30s today.

## Data and Methodology

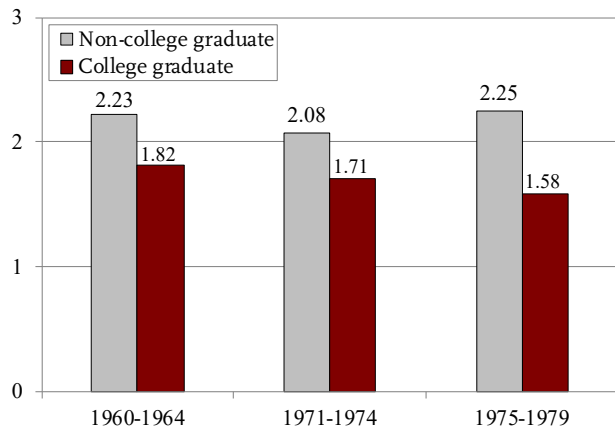
The analysis is based on the *National Longitudinal Survey of Youth* (NLSY), a nationally representative survey that follows young adults throughout their lives.<sup>10</sup> We focus on two cohorts. The older cohort (NLSY79) follows women born in 1957-1964 from 1979 to the present. The younger cohort (NLSY97) follows those born in 1980-1984 from 1997 to the present.<sup>11</sup>

The first step is to determine, for the NLSY79 cohort, how fertility expectations at age 30 and other factors affected how many children a woman had after 30. The factors include demographic characteristics, financial stability, opportunity costs, explicit costs, and birth experience.<sup>12</sup> The regression equation also controls for local economic conditions, such as housing price relative to wage growth in the state. The equation is estimated separately for college and non-college graduates since fertility behavior is very different for each group (see Figure 3).

The next step is to predict the number of children after age 30 for the younger cohort. We take the estimated coefficient for, say, the married variable from the first equation to predict the number of children that married women in the NLSY97 data will have after age 30, and similarly for non-married women. Again, the exercise is done separately for college and non-college graduates. Adding these predicted values to how many children women already have up to age 30 gives us the total number of children this younger cohort is predicted to have at the end of their child-bearing years.

While the model accounts for changes in population shares across cohorts (i.e., a decrease in the share of the population that is married, or an increase in the share that is Hispanic), the effects of each factor on fertility are assumed to stay constant across cohorts. However, on closer analysis, the impact of several variables has changed over time. Specifically,

FIGURE 3. COMPLETED FERTILITY AT AGES 40-44 BY BIRTH COHORT AND COLLEGE ATTAINMENT, VARIOUS YEARS



Sources: Authors' calculations using NSFG (2002, 2006, and 2017-2019).

while married women still have more children than unmarried women, the difference in completed fertility between the two groups has decreased in younger cohorts. Similarly, for those without a college degree, the impact of religion on fertility has virtually disappeared. As discussed, differences by race/ethnicity have also declined dramatically. Finally, the rise in educational attainment could reduce the impact of having a college degree on fertility. Therefore, the coefficients of these variables were adjusted to reflect these changes.<sup>13</sup>

## Results

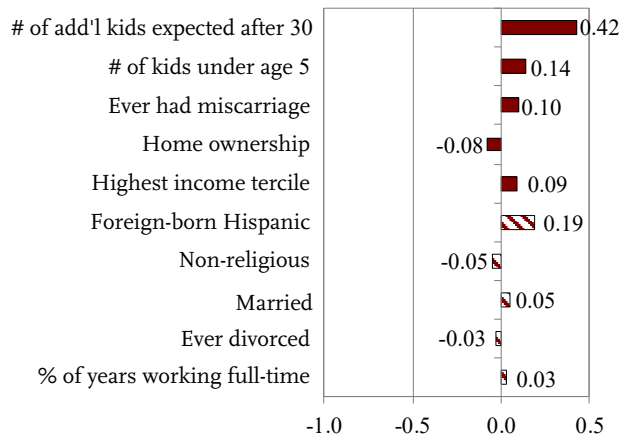
The results are presented in two stages. The first stage shows how the different socioeconomic (SES) factors affected the likelihood of women achieving their fertility intentions for the older cohort. The second stage presents the predictions for completed fertility for the younger cohort.

### SES Factors and Fertility

For non-college graduates, expectations are the biggest determinant of achieved fertility after age 30 (see Figure 4 (on the next page) for the key results; full results are in Appendix Figure A1). Each additional child that a non-college graduate expects to have after age 30 translates into 0.42 children. Other factors have a relatively modest impact. For example, each current child

under age five is associated with 0.14 more children after age 30. And those who have had a miscarriage have 0.10 more children after age 30. Interestingly, being a homeowner translates to 0.08 fewer children after age 30. Homeownership may be a financial strain for the non-college-graduate group, reducing the likelihood of achieving fertility intentions.<sup>14</sup> Being in the top third of the income distribution is positively related to achieving fertility expectations. And, while not statistically significant, foreign-born Hispanic women have more children as well.

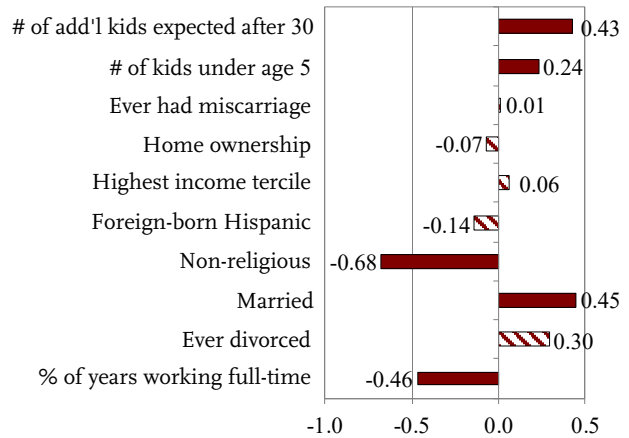
FIGURE 4. EFFECT OF SELECTED FACTORS ON ACTUAL FERTILITY AFTER AGE 30, NON-COLLEGE GRADUATE, NLSY79 COHORT



Note: Striped bars are not statistically significant.  
Source: Authors' calculations.

For college graduates, the story looks very different. While expectations still play an important role, other factors are equally or more important (see Figures 5 and A2). Being religious appears to be one of the most important determinants of fertility among college-educated women, with those who identify as non-religious having 0.68 fewer children after age 30. Being married and ever being divorced both work in the opposite direction – they are associated with more children after 30 for college graduates. Career length is also important. Specifically, each additional year a woman worked full-time is associated with 0.46 fewer children. The one factor that is similar for women across educational groups is that having more children under age five is associated with higher fertility after age 30.

FIGURE 5. EFFECT OF SELECTED FACTORS ON ACTUAL FERTILITY AFTER AGE 30, COLLEGE GRADUATE, NLSY79 COHORT



Note: Striped bars are not statistically significant.  
Source: Authors' calculations.

### Predicted Fertility

These coefficients from the NLSY79 regression (women born in 1957-1964) can now be used to predict completed fertility for the NLSY97 cohort (women born in 1980-1984). The results are presented in Table 1. If the exercise were conducted mechanically – not adjusting for the changing impact of marriage, religion, race/ethnicity, and education – the predicted completed fertility for the NLSY97 cohort would be 2.03. Note

TABLE 1. SENSITIVITY ANALYSIS OF GAP BETWEEN PROJECTED COMPLETED FERTILITY AND EXPECTATIONS AT YOUNGER AGES, NLSY97 COHORT

	Completed fertility	Gap
Expectations during early 20s	2.44	
Assuming all effects remain the same	2.03	0.41
Adjusting for marriage	1.99	0.45
Adjusting for marriage and religion	1.99	0.45
Adjusting for marriage, religion, and race	1.95	0.49
Adjusting for marriage, religion, race and educational terciles	1.96	0.48

Note: Data for expectations in early 20s are from the NSFG.  
Source: Authors' calculations.

that, even in this case, the gap between expected and completed fertility is higher than in the past – 0.41 versus 0.30. If all adjustments are incorporated – our preferred approach – completed fertility for this cohort would be 1.96 with a gap of 0.48. To date, this cohort has had 1.31 children.

## Implications for Subsequent Cohorts

The prediction model estimates that women in the NLSY97 cohort will have a total of 1.96 children, much higher than the current total fertility rate of 1.71. At first glance, this seems like good news. However, the completed fertility of younger cohorts may not be as high as projected for several reasons.

First, birth expectations for 20-24-year-olds are declining over time. While the NLSY97 cohort expected 2.44 children when they were in their early 20s (in 2002), the most recent group of women 20-24 expect only 2.09 children (see Figure 6). If the projected gap between expected and achieved fertility remains at about 0.48, then completed fertility for these younger women will be 1.61. Even if the gap reverts to the

historical 0.30, completed fertility would be 1.79.

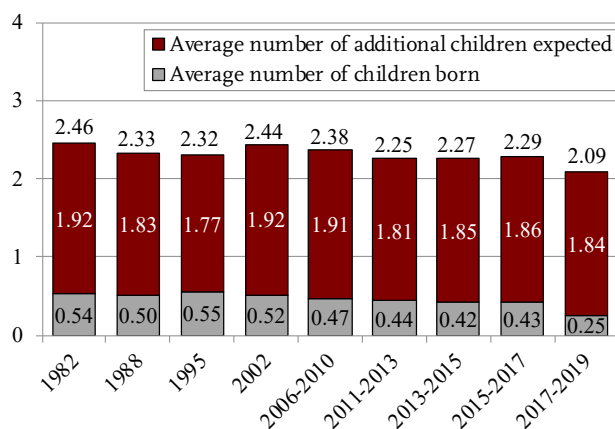
Second, the current pandemic-induced recession is not captured in the projections and will likely have a negative effect on completed fertility, both for the cohort studied in this research and for younger cohorts.<sup>15</sup> For the cohort examined here, since economic uncertainty tends to reduce fertility even among women in their 30s, completed fertility may end up being lower than our estimate of 1.96. The economic uncertainty surrounding the current recession may play a larger role for younger cohorts because they have experienced two recessions in the early years of their careers. Such an impact is especially likely for non-college graduates, who have faced the brunt of the economic instability.<sup>16</sup> So not only do younger cohorts have lower fertility expectations, economic instability due to the pandemic may also reduce completed fertility.

## Conclusion

The total fertility rate is at an all-time low, yet women currently in their childbearing years still expect to have over two children. This *brief* examined the extent to which women will catch up to their fertility expectations at younger ages. The analysis explores, for women in the NLSY79, the factors that influence completed fertility – given expectations – and applies these factors to women in the NLSY97. Adjusting for the changing influence of the various factors over time produces a completed fertility rate of 1.96 children for the younger cohort. This finding means that the gap between expected and completed fertility will increase to 0.48, which is much larger than that of earlier cohorts.

It is important to keep in mind that these results are specific to the NLSY97 cohort, which was born during 1980-1984. Younger cohorts have significantly lower fertility expectations at ages 20-24. Moreover, COVID-19 will likely place downward pressure on fertility, which would increase the gap between expectations and reality. Thus, projected completed fertility, especially for younger cohorts, may not be as high as the estimated 1.96.

FIGURE 6. TOTAL BIRTHS EXPECTED AMONG WOMEN AGES 20-24, VARIOUS YEARS



Source: Authors' calculations using NSFG (various years).

## Endnotes

- 1 Chen and Gok (2021).
- 2 Observing these changes, the 2019 Social Security Technical Panel recommended an ultimate total fertility rate of about 1.95 children. However, the consensus was that the completed fertility rate might still be 2.0. Taking into account these recommendations as well as recent observed trends, the intermediate assumption for the ultimate total fertility rate was 1.95 in the 2020 *Social Security Trustees Report*.
- 3 Frejka and Westoff (2008) and Philipov and Binghammer (2007). An extensive literature explores the relationship between religion and fertility in the United States. McQuillan (2004) provides a framework on how religious identities can affect fertility.
- 4 Bongaarts (2001), Morgan and Rackin (2010), and Hayford (2013).
- 5 Harknett and Hartnett (2014). While today, about 40 percent of children are born outside of wedlock, non-married partnerships – even cohabitation – tend to be less stable than marriage and are more likely to end (Manning 2015 and Wilcox and DeRose 2017). The breakup of a partnership has a mixed but slightly negative effect on fertility (Basten, Sobotka, and Zeman 2014). Partnership breakups or divorce reduce the likelihood of having a child in the next period. However, the formation of new partnerships or marriages provides a new opportunity to have another child.
- 6 Adsera (2006) and Levin, Besedina and Aritomi (2016).
- 7 Mulder and Wagner (2001) and Mulder (2006).
- 8 Much of the decline has occurred among women in their teens and early 20s, which suggests that the decline is driven by mistimed births and, therefore, the effect on total fertility may not be great (Buckles et al. 2019).
- 9 See Morgan and Rackin (2010), Schmidt et al. (2012), and De Carvalho, Wong, and Mirando-Ribeiro (2016). Later births do have several benefits, including less income loss for mothers, psychological maturity and preparation, and higher levels of reported happiness among parents (Miller 2011 and Myrskylä and Margolis 2014).
- 10 The survey provides information on expected and completed fertility, as well as education, employment, household and family characteristics, income and assets, and health. The NLSY data are merged with restricted state-of-residence data from the U.S. Census Bureau to help identify local economic characteristics. The analysis also includes state-level data on housing prices, wage growth and median income, and childcare costs.  
This information comes from the *All Transaction Housing Index* from the Federal Housing and Finance Agency, *Current Employment Statistics*, the *Annual Social and Economic Supplements*, and the *Survey of Income and Program Participation*, respectively.
- 11 We restricted the NLSY79 sample to women who were observed at least once during ages 28-32 and at least once after age 45. This approach produces a sample of 4,184 women. A further 1,659 observations were dropped due to missing data for at least one explanatory variable, resulting in a final sample of 2,997 women. Similarly, for the younger NLSY97 cohort, only those observed during ages 28-32 who did not have missing data were included, resulting in a final sample of 2,307 women.
- 12 Demographic characteristics include race, religion, and marital status. Financial stability includes homeownership, the ratio of mortgage debt to income, student loans, and employment stability. Opportunity costs are measured by time spent working full-time, whether the employer offers maternity leave, and the woman's earnings as a share of total household income. Explicit costs are measured by the average cost of childcare. Birth experiences include miscarriage, abortion, contraceptive use, and the number of children under age five.
- 13 See Chen and Gok (2021) for details.
- 14 Courgeau and Lelièvre (1992), Mulder (2006) and Lo (2012).
- 15 Updated baseline estimates incorporating the effects of the COVID-19 pandemic and recession from the Social Security actuaries, published in November 2020, show that they expect the total fertility rate to decrease slightly over the next five years but return to their long-run estimate by 2029 (U.S. Social Security Administration 2020).
- 16 Chen and Munnell (2020).

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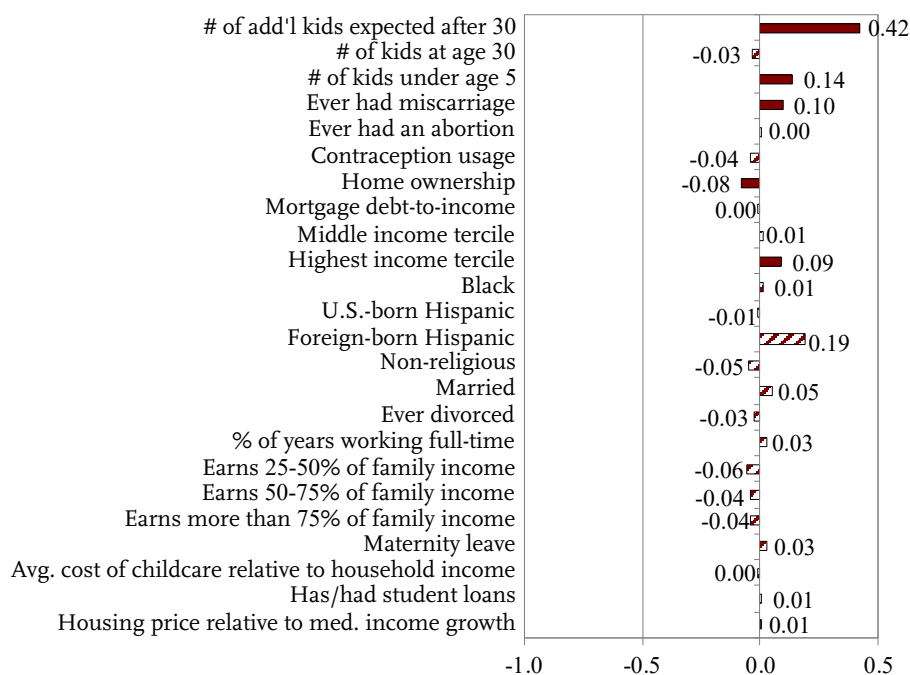


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# APPENDIX

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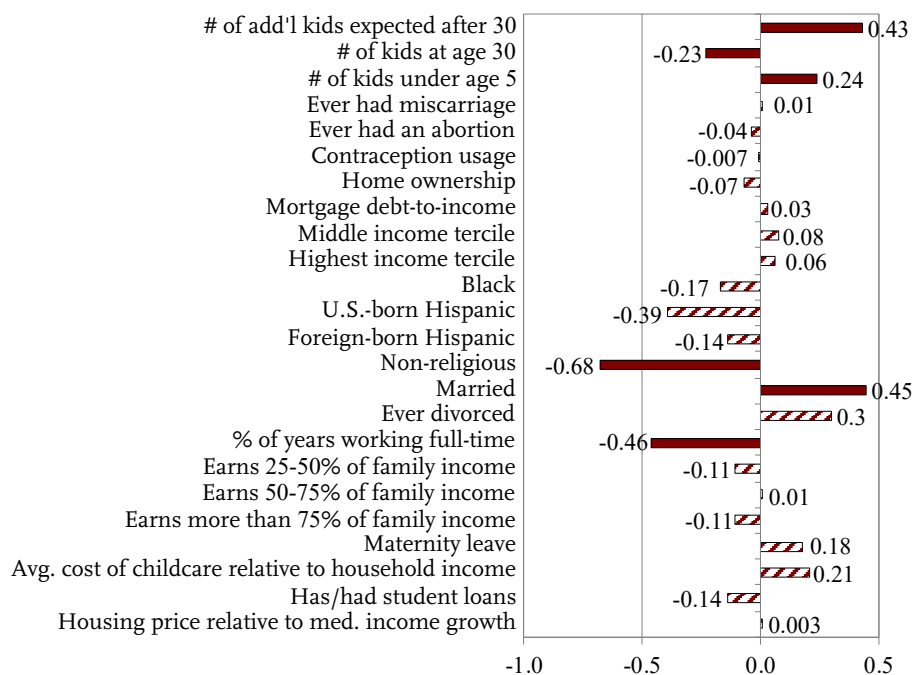
FIGURE A1. EFFECT OF VARIOUS FACTORS ON ACTUAL FERTILITY AFTER AGE 30, NON-COLLEGE, NLSY79 COHORT



Note: Striped bars are not statistically significant.

Source: Authors' calculations.

FIGURE A2. EFFECT OF VARIOUS FACTORS ON ACTUAL FERTILITY AFTER AGE 30, COLLEGE, NLSY79 COHORT



Note: Striped bars are not statistically significant.

Source: Authors' calculations.

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