# Projecting Rates of Fertility by Nativity

Jennifer M. Ortman
Sandra L. Colby
David M. Armstrong

Population Division
U.S. Census Bureau

Presented at the Annual Meeting of the Population Association of America,
Boston, MA, May 1-3, 2014.

**ABSTRACT**

Research has shown significant differences in the fertility of foreign and native-born women in the United States. Incorporating assumptions into our population projections that take into account the differences in fertility rates by nativity will likely improve our projections of the population. Here, we consider methods for estimating and projecting fertility rates separately by nativity status. We use birth registration data collected by the National Center for Health Statistics in conjunction with U.S. Census Bureau population estimates to calculate fertility rates by nativity. We then evaluate methods to project fertility rates by nativity from 2014 to 2060 and the feasibility of incorporating these fertility projections into the Census Bureau's next series of national population projections.

## INTRODUCTION

The U.S. Census Bureau currently produces long-term national projections for the population by age, sex, race, and Hispanic origin. The projections are not currently produced by nativity. Projecting the population by nativity requires us to develop assumptions about the mortality and fertility experience of the native and foreign-born populations, which could lead to improvements in the accuracy of the national population projections. For example, developing assumptions about fertility rates of native and foreign-born populations separately makes it possible to project different rates of change in fertility for each group. This will allow for a better accounting of the influence of international migration on the changing racial and ethnic makeup of the nation in the population projections. Projections of the foreign born are also of interest to researchers and policy makers because they provide a context from which to assess future education, language, and other resource needs for this population.

As a step toward producing projections of the U.S. population by nativity later this decade, we explore methods of estimating and projecting fertility rates for foreign-born women. The purpose of this paper is to determine the feasibility of estimating fertility rates separately for foreign-born women and determining what method of projection may be most appropriate for proceeding with this work.

## BACKGROUND

It is readily accepted and well documented that fertility levels in the United States vary by race and Hispanic origin. Vital statistics data compiled by the National Center for Health Statistics (NCHS) have consistently demonstrated this since the 1980s and differences along these dimensions were incorporated into the fertility assumptions of the 2012 National Population Projections (National Center for Health Statistics, 2013; U.S. Census Bureau, 2012a).

However, these are not the only characteristics by which fertility behaviors vary. Findings based on a variety of data sources using multiple indicators of fertility reveal significant differences between the fertility of foreign and native-born women in the United States. Measures of completed fertility based on the 2010 Current Population Survey (CPS) show that foreign-born women aged 40 to 44, on average, had higher numbers of children ever born, 2,185 children per 1,000 foreign-born women compared to 1,843 for the native-born population, and lower percentages of childlessness than the native-born population. Thirteen percent of foreign-born women remain childless by the time they are in their 40s compared to 20 percent of the native-born population (U.S. Census Bureau, 2010).

Research using American Community Survey (ACS) data also hints at higher fertility for non-native women. Among women aged 15 to 50 who reported having a birth in the 12 months prior to survey participation, the fertility rate per 1,000 women was 76.4 for the foreign born compared to 55.1 for the native born (Dye 2010). Similar distinctions have been made between the fertility of native and non-native Hispanic women. Foreign-born Hispanic women in the National Survey of Family Growth had a greater percentage of women aged 15 to 44 reporting that they had ever had a child and had more children on average than native-born Hispanic women (Martinez et al. 2012). To account for these differences in our projections, we propose to estimate and project the fertility rates of foreign-born women separately from those of native-born women. Developing separate assumptions about the fertility of native and foreign-born women allows us to better project the nation's fertility from the projected future composition of the childbearing population. It will also allow us to make different assumptions about how the fertility of the native and foreign-born population will change over time.

## DATA AND METHODS

*Birth Data*

Fertility rates are calculated for foreign and native-born women aged 15 to 49 years from birth registration data for 1990 to 2011, which were compiled by NCHS. These data include information on the mother's place of birth, indicating whether the mother was born in the United States or abroad. Those born in the United States are considered native born and all other categories are considered foreign born.[1] Births to non-resident women are excluded from the time series.[2] Since our denominators and projections are for the resident population of the 50 states and District of Columbia, we consider mothers born in a U.S. territory to be foreign born. For example, this includes births to women born in Puerto Rico, the U.S. Virgin Islands, and Guam.

Figure 1 presents the distribution of births by mother's nativity. As expected, the overall number of births to foreign-born women is smaller than that for native-born women; it is a smaller population. Between 1990 and 2011, there has been an overall decline in births to native-born women and an increase to foreign-born women. These patterns of change lend support to our position that there are distinct differences between the fertility behaviors of the foreign born and native-born populations. However, it is also possible that differences in the number of births over time are reflective of changes in the composition of the female population during this period. Increases in the number of births registered to non-native women could be the product of increases in the number of non-native women in the population.

*Population Estimates*

To create fertility rates by nativity, we need population estimates by nativity to serve as the denominators. This is one of the complications to this work, as we do not have annual estimates of the foreign and native-born resident populations prior to 2000.[3] For the total population, annual

[1] Less than one percent of birth records (ranging from a low of 0.19% in 1990 to a high of 0.41% in 2005) were missing information on mother's place of birth in any given year. We currently assume that if the value is missing that the mother is native born.
[2] Non-resident women are defined as women whose state of residence is *not* one of the 50 states or the District of Columbia.
[3] While estimates of the foreign-born population can be obtained from the Current Population Survey (CPS), we are not currently using these data to estimate the foreign born in the 1990s because the survey only

estimates are available for each year from 1990 to 2011. We use intercensal estimates for the period from 1990 to 1999 and 2000 to 2009 (U.S. Census Bureau 2004, 2011). The Census Bureau's 2012 population estimates are used for 2010 to 2011 (U.S. Census Bureau, 2012b). For the foreign-born population, we have census counts of the population for April 1990 and April 2000. We also have annual estimates from the ACS for 2001 to 2011 (U.S. Census Bureau, 2001-2012). [4]

For our first attempt to create annual estimates of foreign-born women for use in calculating fertility rates, we fill in the time series for the 1990s using linear interpolation. One limitation to this approach is that it assumes that the change in the foreign-born population was spread evenly across the decade. Given what we know about migration levels during that decade, we know this is not actually the case. Rather than skip over this step due to its simplistic nature and potential for obscuring change over the decade, we decided to test it to see how the resulting population estimates and fertility rates would look. It is a starting, but not necessarily ending, point.

To generate our estimates of the native born for each year, we subtract the foreign born from the total population. The estimates are aggregated by single year of age (10 to 54), Hispanic origin, and three race groups: White, Black or American Indian and Alaska Native (AIAN), and Asian or Pacific Islander (API).[5]

Figure 2 presents the estimates of the total population (black line) and foreign-born population (red line), with the native born (blue line) representing the difference between the black and red lines. As to be expected from a linear interpolation, there is a nice smooth gradual increase from the 1990 to 2000 for the foreign born. The population of foreign-born women between the ages of 10 to 54 increased from 7 million in 1990 to 11.5 million in 2000 and 14.4 million in 2010.

---

provides information about the civilian noninstitutional population and sample sizes are relatively small. Further research will be carried out to evaluate whether CPS data can be used to improve our estimation of the foreign born for the period from 1990 to 2000.

[4] Data from the ACS are used to estimate the foreign-born population. The ACS data are based on a sample and are subject to sampling variability. For information on confidentiality protection, sampling error, nonsampling error, and definitions see http://www.census.gov/acs.

[5] We continue to use the superseded category of Asian and Pacific Islander due to the lack of historical data for the current categories of Asian and Native Hawaiian and Other Pacific Islander in both our population and birth estimates.

The number of women aged 10 to 54 in the native-born population increased from 72.8 million in 1990 to 79.3 million in 2000 and 81 million in 2010.

*Fertility Rates*

The annual estimates of the foreign-born population developed for this work are used in conjunction with the birth registration data to produce a series of age-specific fertility rates for foreign and native-born women. Rates were calculated by dividing the number of births by the female population in each single year of age category. For the purpose of this paper, rates were calculated for women aged 15 to 49. Thus far, we have created three sets of rates. First, we calculate age-specific fertility rates by nativity – foreign versus native born. Second, we added Hispanic origin to the mix, to look at how fertility rates might differ by Hispanic origin within nativity group. This will help us answer questions such as, do patterns of fertility for non-Hispanics differ significantly between the foreign and native-born segments of the population. Finally, third, we are evaluating a more detailed cross of the characteristics by looking at nativity separated into four race and Hispanic origin groups: Non-Hispanic White, Non-Hispanic Black and Non-Hispanic AIAN, Non-Hispanic API, and Hispanic. In this paper, we present our preliminary estimates for the first two sets, nativity and nativity crossed by Hispanic origin.

Figure 3 shows our initial estimates of the total fertility rates for foreign and native-born women over the past two decades. While the overall number of births was higher for native-born women, the total fertility rate of foreign-born women is higher than that of the native-born women. Fertility rates for the native-born population have been consistently below replacement for several years according to our estimates, with a slight decrease from 1.92 in 1990 to 1.78 in 2010.[6] In contrast, the total fertility rates for the foreign born were estimated to be at around 3.5 in 1990, falling to 3.01 in 2000 and despite a brief increase during the 2000s, fell to 2.7 in 2010. The bump up in foreign-born fertility during the 2000s is something we are looking into, to determine if this is

[6] Replacement fertility is considered to be about 2.1 births per woman.

something 'real' versus something that may have been generated at least in part by a misalignment between our numerators and denominators.

Having shown there are differences in the fertility rates of foreign and native-born women, we next look at how those rates might vary by Hispanic origin to determine if there are still clear differences in the levels and trends by Hispanic origin once nativity is accounted for. Figure 4 presents estimates of fertility for foreign and native-born women further disaggregated by Hispanic origin. Hispanic origin shows clear differentiation within the foreign-born group. Total fertility rates for foreign-born Hispanic women (the solid red line at the top of the graph) are the highest in all years. The rates for foreign-born non-Hispanic women (the dashed red line) are markedly lower, though still above replacement level. In contrast, there is not as much differentiation among the native-born Hispanics shown by the solid blue line and native-born non-Hispanics shown by the dashed blue line. Both groups are consistently just below replacement level. Since we do find differences by Hispanic origin even after considering nativity, we have decided to proceed at this stage of the research with evaluating different approaches to projecting the fertility rates using these four groups (foreign-born Hispanic, foreign-born non-Hispanic, native-born Hispanic, and native-born non-Hispanic).

*Projecting Fertility Rates*

We test three different methods of projecting the fertility rates by nativity and Hispanic origin for the period from 2012 to 2060. In addition to assuming convergence of the fertility rates for all four groups on an ultimate level, as was used for the projections of fertility by race and Hispanic origin in the 2012 National Projections (U.S. Census Bureau, 2012a), we consider linear extrapolation and time series methods.

The first approach is one of convergence. In our 2012 National Projections, we assumed that the fertility rates of all race and Hispanic origin groups would converge on the average rates for the non-Hispanic White alone population. In this adaptation of the convergence approach, we assume

all four groups will converge on the average of the total fertility rate of all native-born women for the period from 1990 to 2011. Because this group has been very stable over the last two decades, we might reasonably assume that this group is not going to change substantively in the future but the rates for foreign-born women, which have shown an overall decrease over the last two decades, might approach the level of native-born women at some point. Here, we assume that convergence to the average fertility rate of 1.90 will happen in 2100.

The linear extrapolation approach projects fertility rates for each of the four groups separately, assuming that future fertility rates will change by the same amount as in the past. This approach is represented by equation 1:

$$TFR_t = a + b(t) \qquad [1]$$

where $TFR_t$ represents the total fertility rate at time *t*, *a* is the estimated intercept, *b* is the estimated slope, and *t* is the year of data being projected.

For our time series approach, we adapted the Lee-Carter model (Lee and Carter, 1992), commonly used to forecast mortality, to project fertility rates. Using this model, fertility rates are forecasted using a combination of extrapolation and time series methods. The equation representing the model states that:

$$log(F_{x,t}) = a_x + b_x k_t + e_{x,t} \qquad [2]$$

where $\log(F_{x,t})$ is the log of the fertility rate for age *x* at time *t*, $a_x$ represents the general fertility at age *x*, $b_x$ is the change in the fertility rates at age *x*, $k_t$ represents the overall level of fertility at time t, and $e_{x,t}$ represents the error in the log fertility rate that is unexplained by the model at age x and time t.

**RESULTS**

In this section, we present projections of total fertility rates by nativity and Hispanic origin. First, we show the results within each projection method by nativity and Hispanic origin to

illustrate how the projections differ by nativity and Hispanic origin group. Next, we show the results for all three models for each nativity and Hispanic origin group separately to evaluate differences in each model for the four groups we projected. The figures in this section include both the estimates for 1990 to 2011 and projected rates for 2012 to 2060 so that the projection results can be assessed in comparison to the historical time series. Table 1 displays the projection results from all three projection approaches and four nativity and Hispanic origin groups for 2010 to 2060.

*Comparing Groups within Projection Models*

Projections of the total fertility rates from the convergence approach are shown in Figure 5. As is to be expected from a convergence approach, the differences between the total fertility rates for all four groups grow smaller over time. In our approach, we assume that all four groups will converge on the average rates of native-born women in the year 2100. Because the rates for native-born women, both Hispanic and non-Hispanic have been very stable over the time series, there is little change forecasted for these two groups. As of 2011, the native-born non-Hispanic group had a total fertility rate of 1.73 while the native-born Hispanic group had a total fertility rate of 1.80. By 2060, the fertility rate for both native-born groups is projected to be just above 1.80. Fertility rates for foreign-born women are projected to decline, with foreign-born Hispanic women projected to experience a decline from 3.0 in 2011 to 2.39 in 2060. The projected decline for foreign-born non-Hispanic women is somewhat smaller, since this group had lower levels of fertility in the observed period. Their fertility rates are projected to fall from 2.21 in 2011 to 2.04 in 2060.

The linear extrapolation approach projects declines for all four groups (see Figure 6). In this approach, native-born non-Hispanic and Hispanic women are projected to have total fertility rates of 1.61 in 2060. Rates for foreign-born Hispanic women are projected to fall to 2.63 in 2060 while rates for foreign-born non-Hispanic women are projected to drop to 1.86.

The time series approach projects that fertility rates for the Hispanic population, both native and foreign born, will remain relatively stable between now and 2060 (see Figure 7). In

2011, the total fertility rate for foreign-born Hispanics was 3.0 and is projected to decline to just under 2.7 by 2060. For native-born Hispanics, the total fertility rate is projected to increase slightly, from 1.80 in 2011 to 1.90 in 2060. In contrast, both the foreign and native-born fertility rates for non-Hispanics are projected to increase significantly throughout the projection period. The native-born non-Hispanic total fertility rate is projected to increase from 1.73 in 2011 to 2.01 in 2060, while the foreign-born non-Hispanic total fertility rate is projected to increase from 2.21 in 2011 to 2.71 in 2060. Based on the time series model, the fertility rates of the non-Hispanic population within each nativity group are projected to exceed those of the Hispanic population. For the foreign-born population, this crossover occurs in 2057 and for the native-born population it is in 2028.

The current specification of the time series model is producing results which we do not deem reasonable. However, this does not mean that the time series approach is not a viable method for projecting fertility rates. We suspect that the time component of fertility may be misspecified due to the irregular pattern observed in the historical fertility rates. This is particularly the case for the non-Hispanic foreign-born group. Before we settle on a final method for projecting fertility rates, we plan on testing variations of the Lee-Carter model. An approach that models differences from a reference group, borrows information from a longer time series, or some combination of these could result in more plausible projections of the total fertility rates by race and Hispanic origin groups.

*Comparing Projection Models within Groups*

Figures 8 through 11 provide a comparison of the three projection models within each of the four groups (nativity * Hispanic origin) that were projected. For foreign-born non-Hispanics (see Figure 8), both the convergence and linear extrapolation approaches, shown by cross hatch and triangle markers respectively, project declines in the total fertility rates for this group to around or below replacement level by 2060. In contrast, the time series model, represented by

square markers, projects an increase back to the levels observed in 1990. In Figure 9, we see the comparison of all three approaches for foreign-born Hispanics. Both the time series and linear extrapolation approaches project a slight decrease for foreign-born Hispanics, to a fertility rate around 2.6. The convergence approach projects a decline to 2.39.

For native-born non-Hispanics (see Figure 10), the linear extrapolation approach projects a decline in the total fertility rate from 1.73 in 2011 to 1.61 in 2060. In contrast, the convergence model projects a slight increase to 1.82 in 2060 while the time series model projects this group to increase to 2.01 – higher than any total fertility rate experienced during the observed period. Finally, for native-born Hispanics (see Figure 11), the total fertility rate in the linear extrapolation model is projected to fall to 1.61 by 2060. In the convergence and time series approaches, the total fertility rate is projected to increase slightly to around 1.85.

Table 1 summarizes the results for all three models for each of the four nativity and Hispanic origin group we projected. The time series model has the highest projected total fertility rates for all groups in 2060, projecting increases in the rates for both native-born Hispanics and non-Hispanics as well as foreign-born non-Hispanics. The foreign-born Hispanic group is projected to experience declines in all models. The linear extrapolation approach had the smallest projected fertility rates for the native born as well as foreign-born non-Hispanics. The lowest projected value in 2060 of 2.39 was projected by the convergence model for foreign-born Hispanics.

**DISCUSSION**

Over the past two decades, all nativity and Hispanic origin groups have shown declines in their overall fertility rates. Given the evidence of the recent past, we might reasonably expect that fertility patterns will continue this trend and future rates will be lower than what we currently observe. We also expect, given the historical patterns and trends in fertility projections incorporated into the last several series of Census Bureau population projections, that future

fertility should be approaching replacement level if the rates for that group have not already reached or fallen below that level.

Two of the three models we have tested here, the convergence and linear extrapolation approaches, yield results consistent with this expectation for non-Hispanic females and native-born Hispanic females. Projections for foreign-born Hispanic females remain above replacement level, though both the convergence and linear extrapolation approaches show a clear pattern of decline, whereas the time series for this group levels off and remains steady at just above 2.5 . Fertility rates for the native-born groups and foreign-born non-Hispanic group are projected to be at or below replacement in both of these models. Rates for foreign-born Hispanics in these models are projected to be nearing replacement level by 2060. Our current implementation of the Lee-Carter model has not yielded satisfactory results for the time series approach.

As we continue this work, we will evaluate whether the data can support further dissection to include some level of race detail along with nativity and Hispanic origin. This will help us to determine whether there are additional patterns of difference beyond those illustrated by the cross of nativity and Hispanic origin that we should consider in our projections. We also need to finalize our method for projecting the fertility rates into the future and determine whether we will continue with the Census Bureau's current method of convergence, or adopt a linear extrapolation or time series approach. Before a decision is reached, we plan to work to further develop the time series approach, considering variations of the Lee-Carter model that can better accommodate the highly irregular pattern observed in the historical fertility rates.

Finally, once a decision is reached about what projection model to proceed with, we will run simulations to see how the fertility projections perform in the population projections. The first simulation will entail updating the production code from the 2012 National Projections to include nativity and then test the fertility projection in that program. We would also like to produce a projection series using Census 2000 as the base population, basically a re-run of the Census

Bureau's previous projections from 2008 with a modified fertility input, to see whether the fertility projections, and subsequent projections of the population, show any improvements when evaluated through comparison to the 2010 Census. Using the 2010 Census as a benchmark, the projected population for 2010 from the 2008 series underestimated the Hispanic population (Ortman, 2012). We are interested to see whether the addition of the nativity component and development of distinct assumptions about the fertility of the foreign and native-born populations will bring our projections closer to the census total for this group.

**REFERENCES**


Dye, Jane Lawler. 2010. *Fertility of American Women 2008*. Washington, DC: U.S. Census Bureau. http://www.census.gov/prod/2010pubs/p20-563.pdf Accessed August 20, 2013.

Lee, Ronald D. and Lawrence R. Carter. 1992. "Modeling and Forecasting U.S. Mortality." *Journal of the American Statistical Association* 87(419): 659-671.

Martinez Gladys, Kimberly Daniels, and Anjani Chandra. 2012. "Fertility of Men and Women Aged 15–44 Years in the United States: National Survey of Family Growth, 2006–2010." National Health Statistics Reports No. 51. Hyattsville, MD: National Center for Health Statistics. http://www.cdc.gov/nchs/data/nhsr/nhsr051.pdf Accessed August 20, 2013.

National Center for Health Statistics. 2013. *Health, United States, 2012: With Special Feature on Emergency Care*. Hyattsville, MD: National Center for Health Statistics. http://www.cdc.gov/nchs/data/hus/hus12.pdf Accessed August 20, 2013.

Ortman, Jennifer M. 2012. "Evaluation of the U.S. Census Bureau's 2008 and 2009 National Population Projections." Presented at the Annual Meeting of the Population Association of America, May 3-5, 2012.

U.S. Census Bureau. 2001-2012. *American Community Survey*. http://www.census.gov/acs/www/ Accessed August 20, 2013.

———. 2004. *National Intercensal Estimates (1990-2000)*. http://www.census.gov/popest/data/intercensal/national/index.html Accessed August 20, 2013.

———. 2010. *Fertility of American Women: 2010 – Detailed Tables*. http://www.census.gov/hhes/fertility/data/cps/2010.html Accessed August 20, 2013.

———. 2011. *National Intercensal Estimates (2000-2010).* http://www.census.gov/popest/data/intercensal/national/nat2010.html Accessed August 20, 2013.

———. 2012a. *2012 National Projections.* http://www.census.gov/population/projections Accessed August 20, 2013.

———. 2012b. *2012 Population Estimates*. http://www.census.gov/popest/data/national/totals/2012/index.html Accessed August 20, 2013.

**Figure 1. Births by Mother's Nativity: 1990 to 2011**

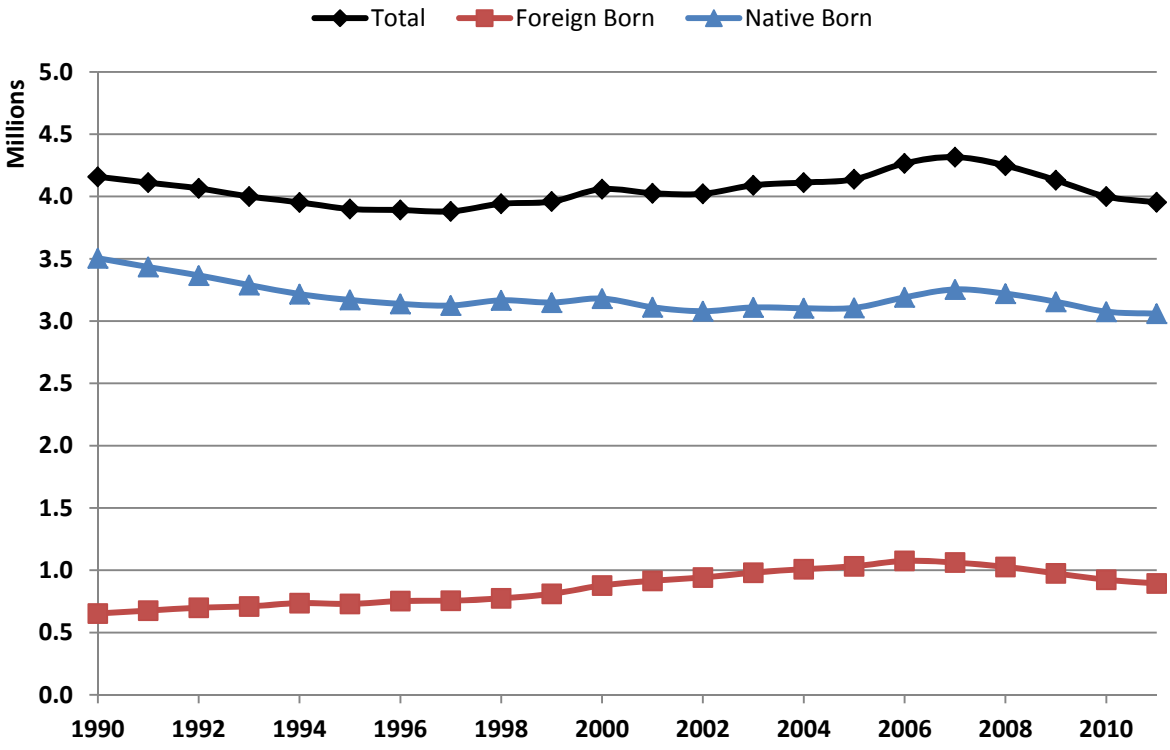


**Figure 2. Female Population Aged 10 to 54 Years by Nativity: 1990 to 2011**

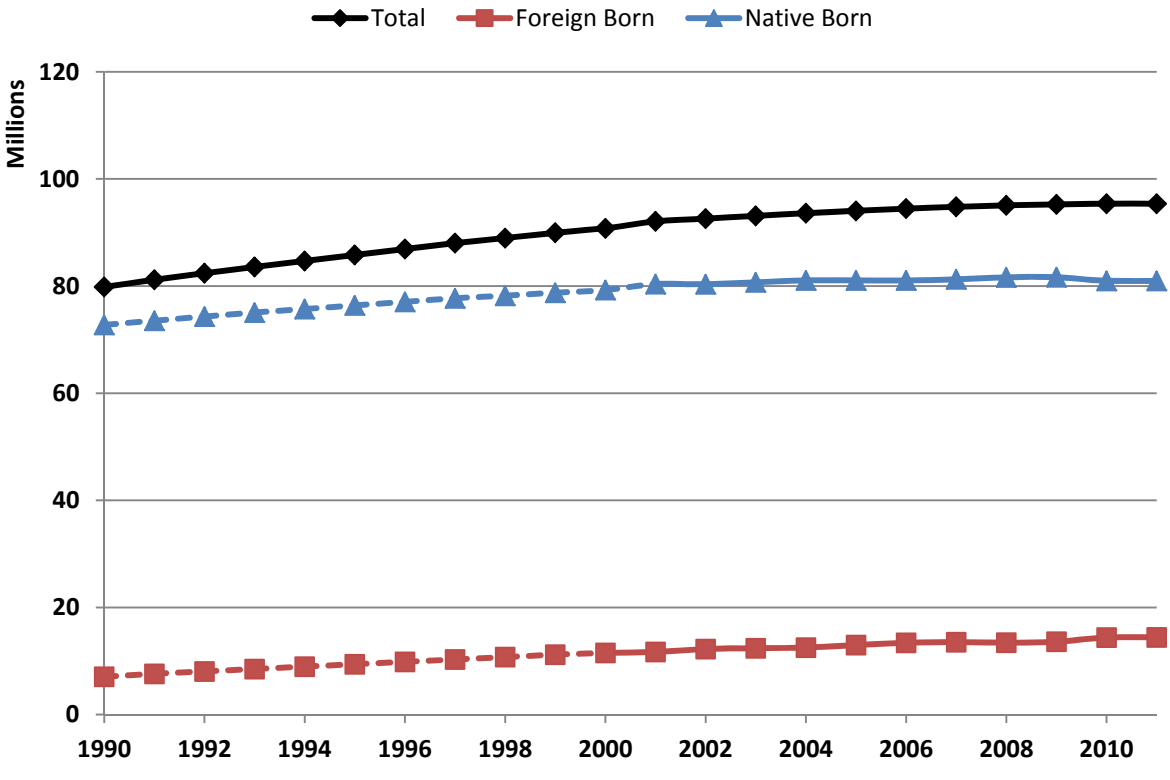

**Figure 3. Total Fertility Rates by Nativity: 1990 to 2011**

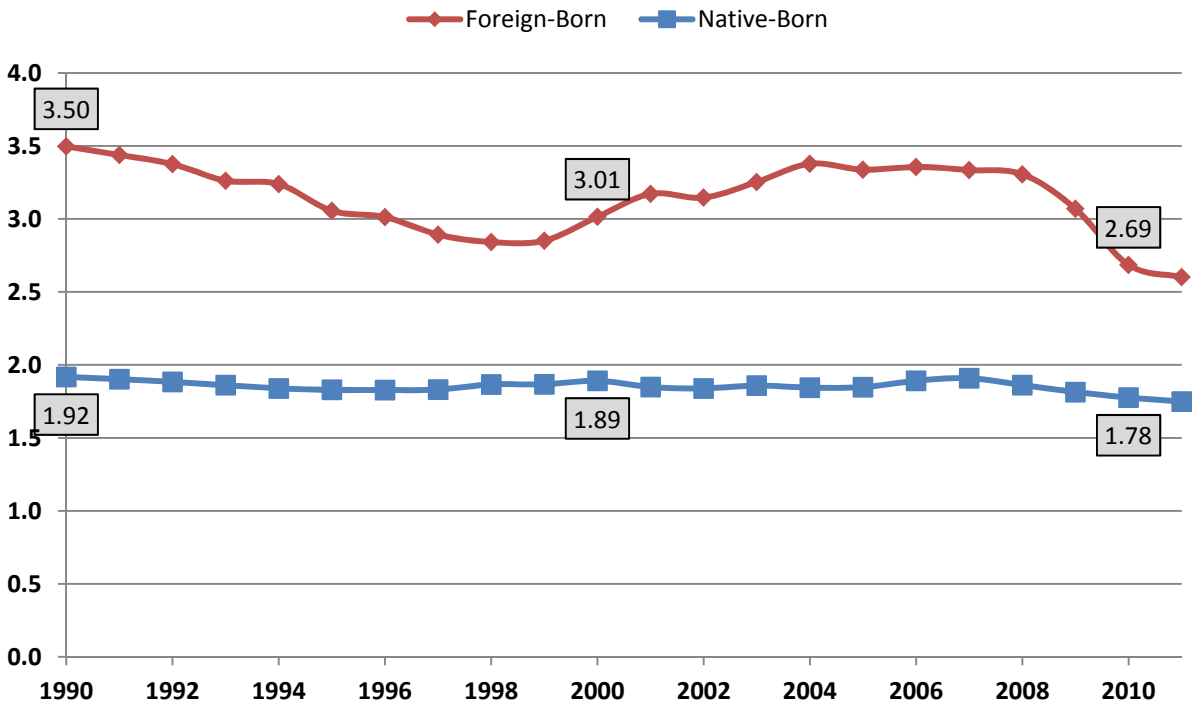


**Figure 4. Total Fertility Rates by Hispanic Origin and Nativity: 1990 to 2011**

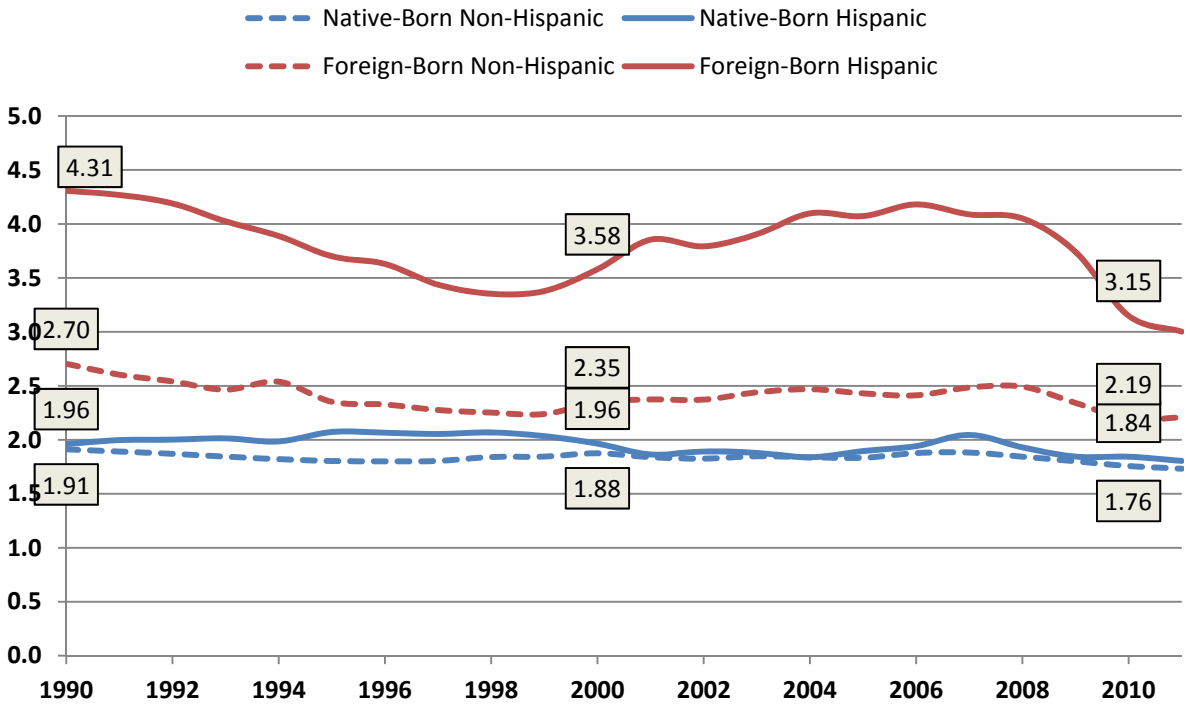

**Figure 5. Total Fertility Rates from the Convergence Approach: 1990 to 2060**

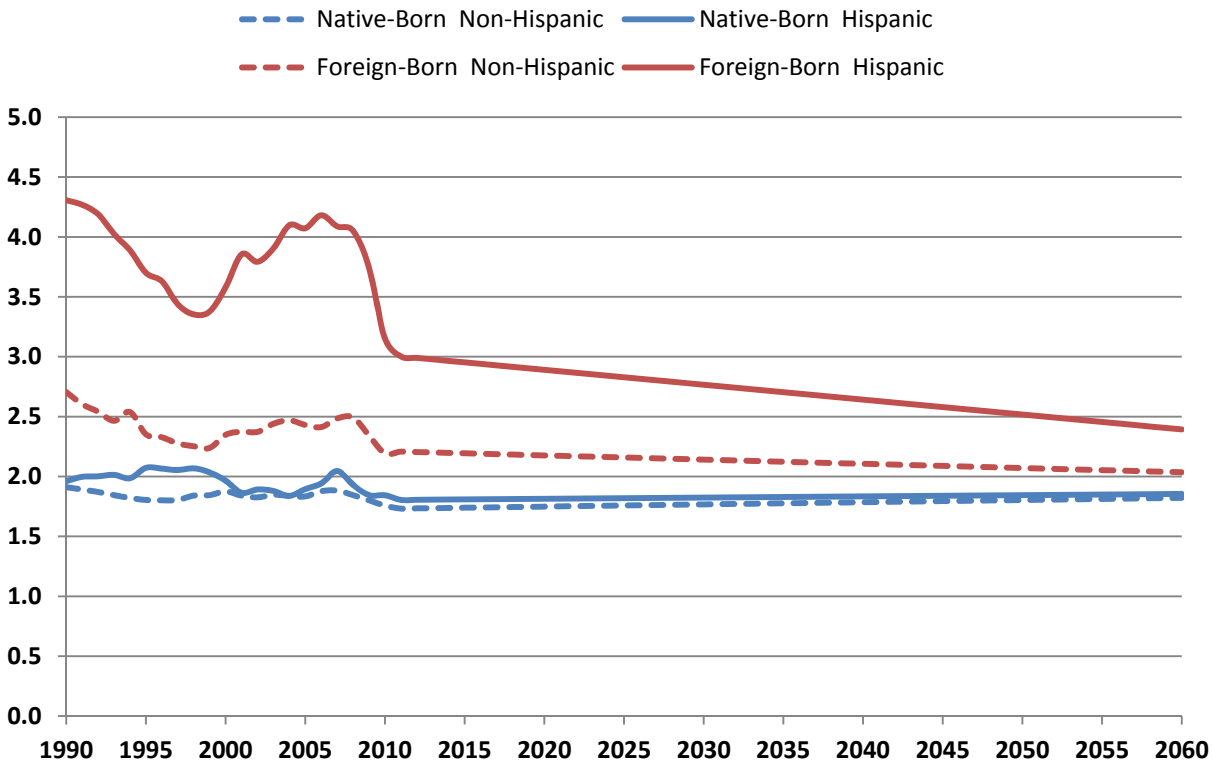


**Figure 6. Total Fertility Rates from the Linear Extrapolation Approach: 1990 to 2060**

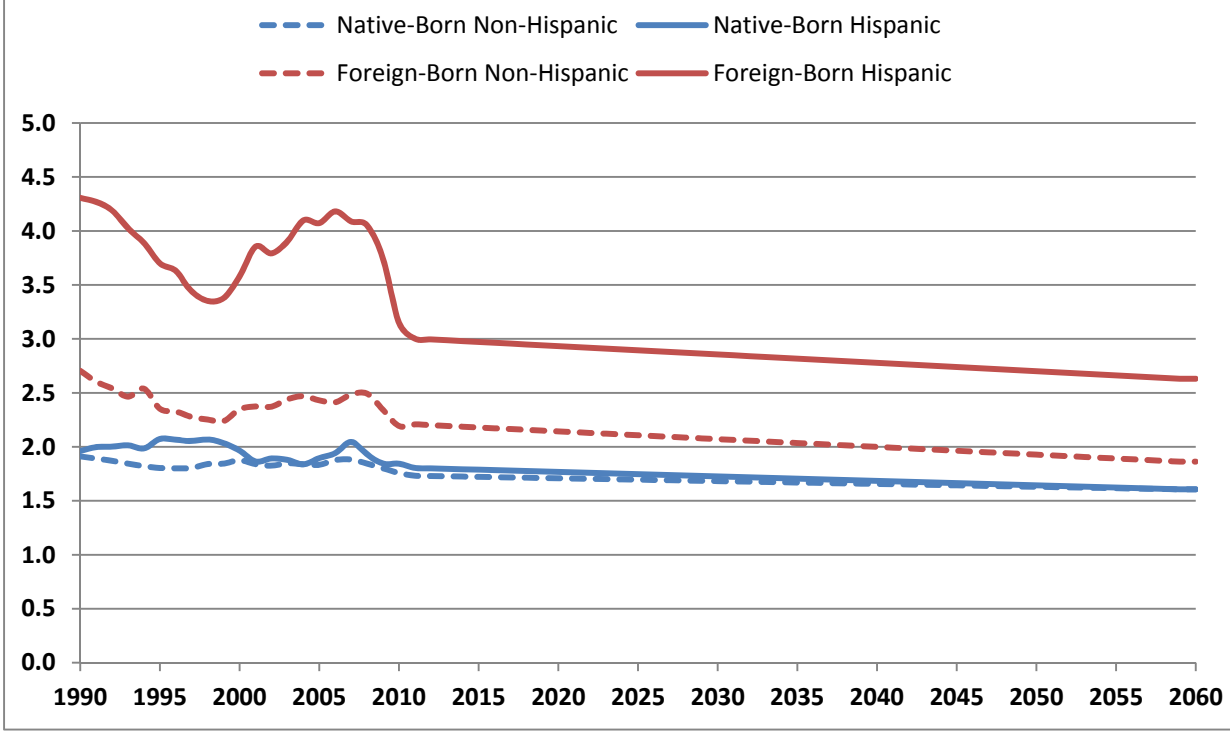

**Figure 7. Total Fertility Rates from the Time Series Approach: 1990 to 2060**

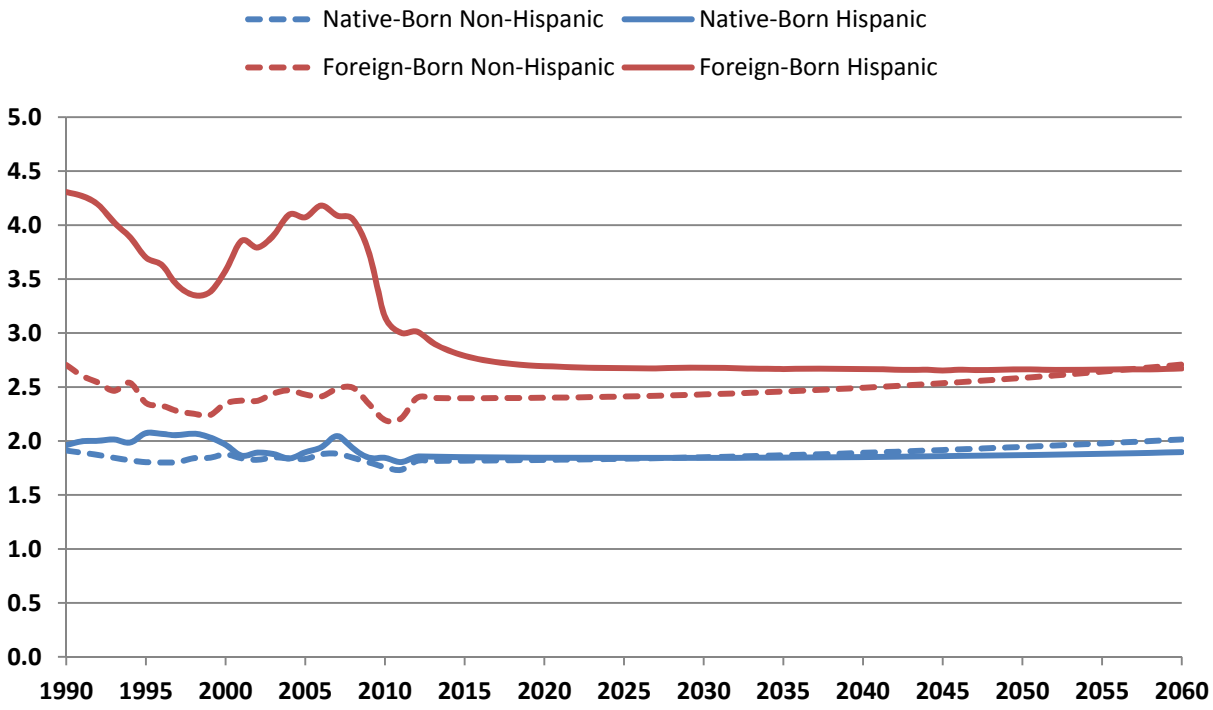


**Figure 8. Comparison of the Total Fertility Rates for Foreign-Born Non-Hispanic Females: 1990 to 2060**

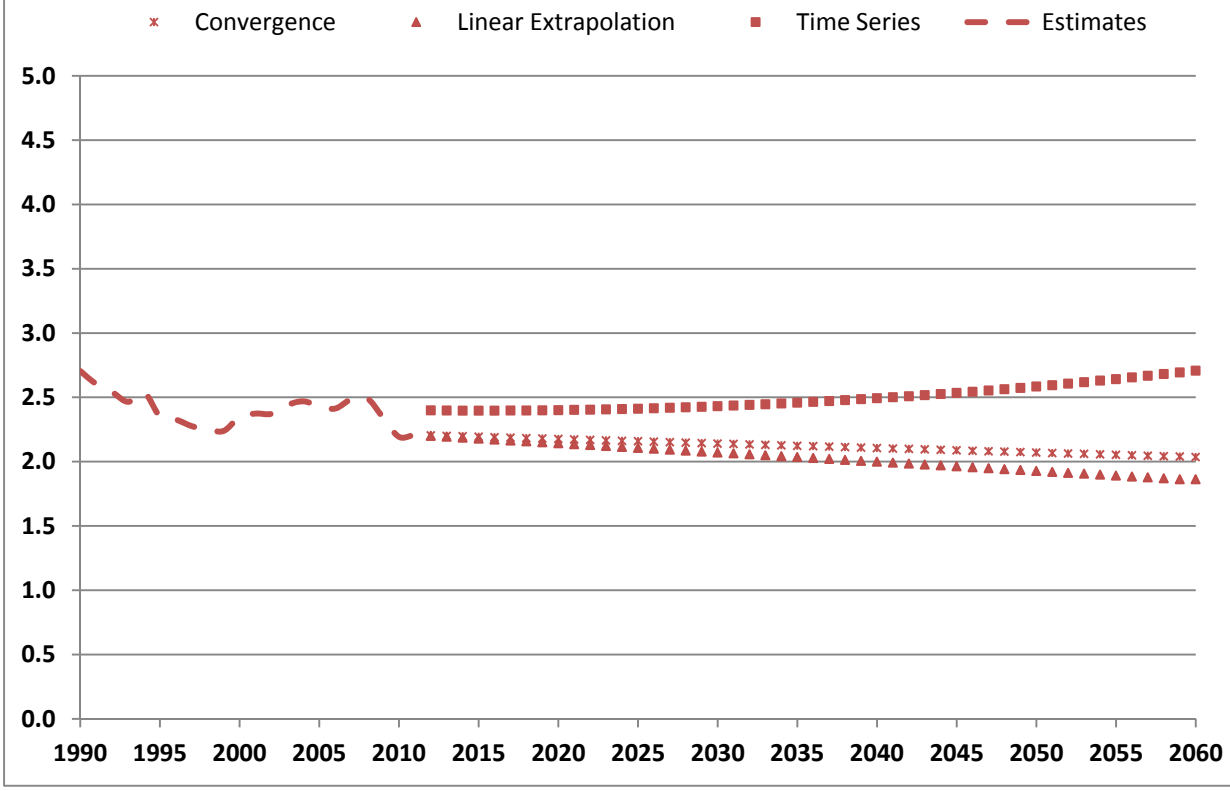

**Figure 9. Comparison of the Total Fertility Rates for Foreign-Born Hispanic Females: 1990 to 2060**

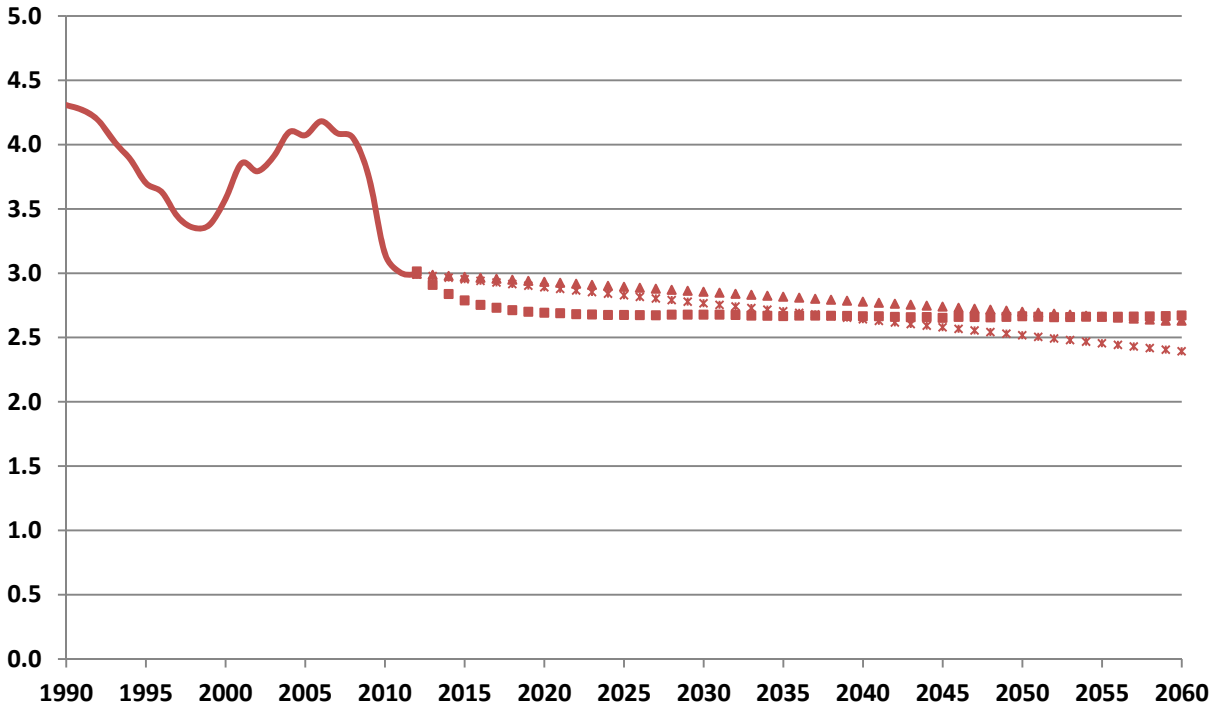


**Figure 10. Comparison of the Total Fertility Rates for Native-Born Non-Hispanic Females: 1990 to 2060**

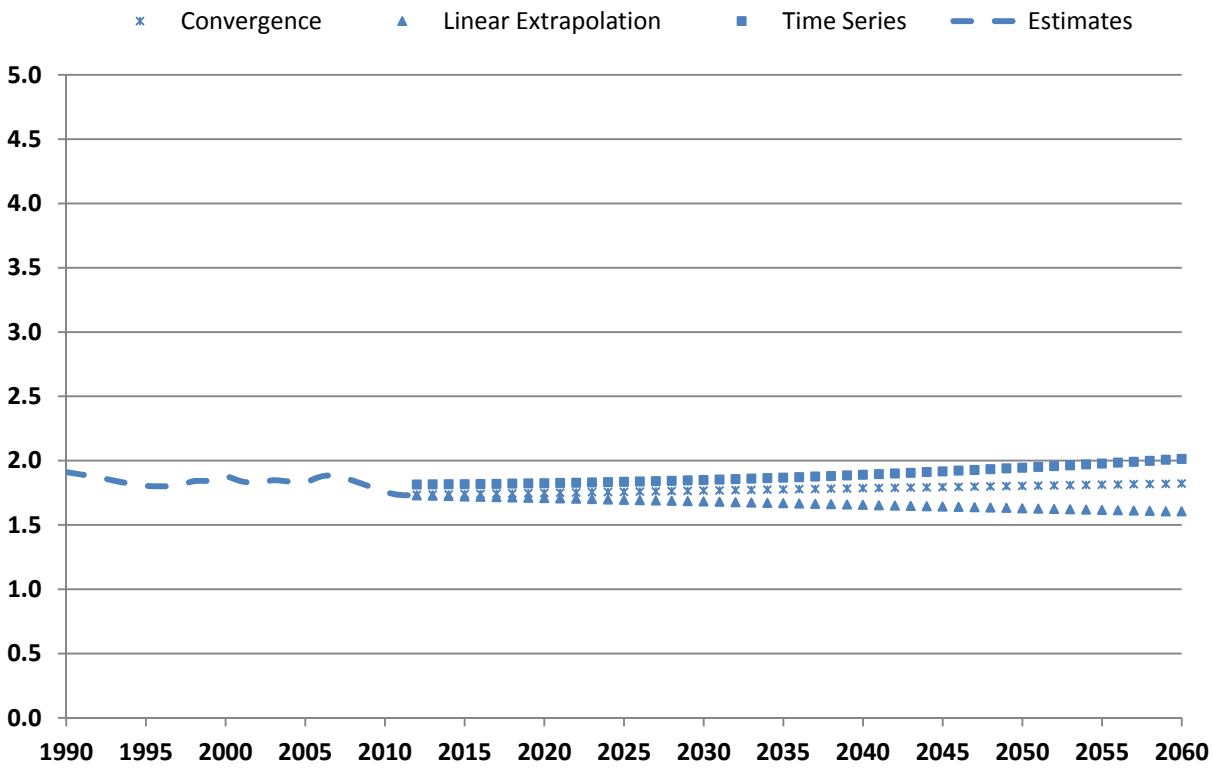

**Figure 11. Comparison of the Total Fertility Rates for Native-Born Hispanic Females: 1990 to 2060**

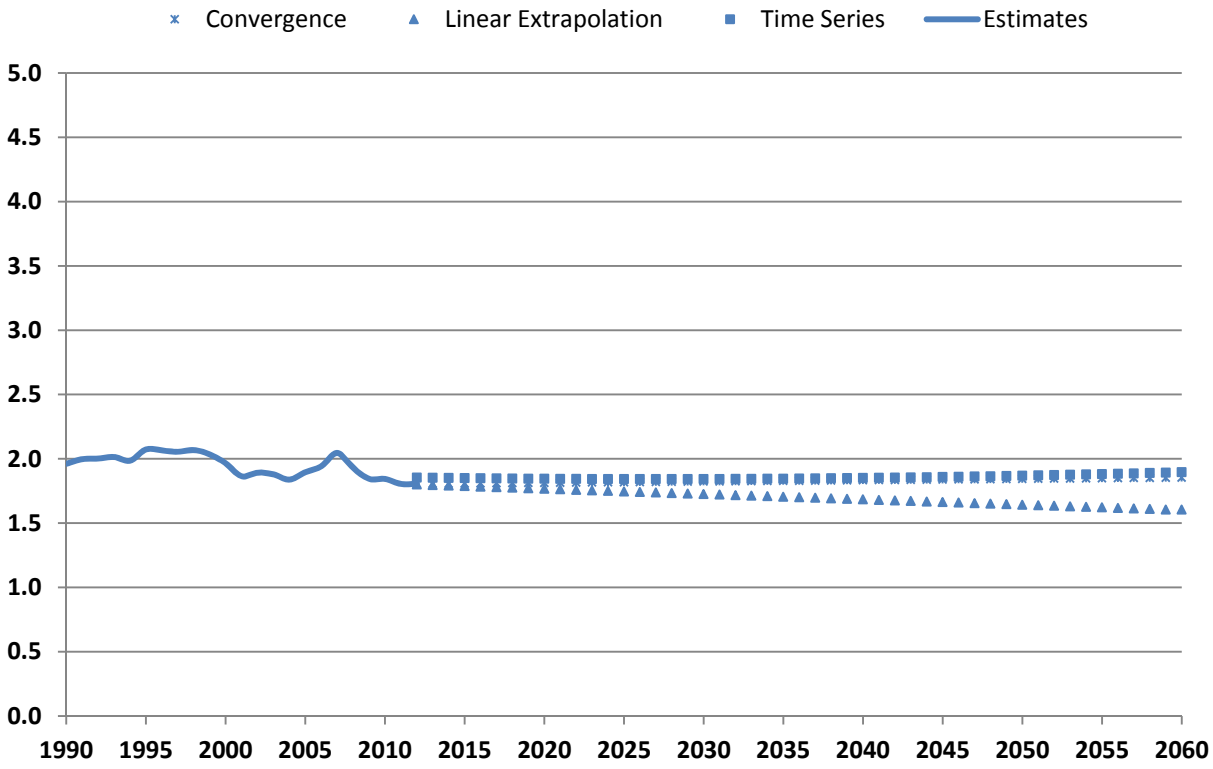

**Table 1. Total Fertility Rates: 2014 to 2060**

| Year | Convergence | | | | Linear Extrapolation | | | | Time Series | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Native Born | | Foreign Born | | Native Born | | Foreign Born | | Native Born | | Foreign Born | |
| | Non-Hispanic | Hispanic | Non-Hispanic | Hispanic | Non-Hispanic | Hispanic | Non-Hispanic | Hispanic | Non-Hispanic | Hispanic | Non-Hispanic | Hispanic |
| **2010** | 1.76 | 1.84 | 2.19 | 3.15 | 1.76 | 1.84 | 2.19 | 3.15 | 1.76 | 1.84 | 2.19 | 3.15 |
| **2011** | 1.73 | 1.80 | 2.21 | 3.00 | 1.73 | 1.80 | 2.21 | 3.00 | 1.73 | 1.80 | 2.21 | 3.00 |
| **2012** | 1.73 | 1.81 | 2.20 | 2.99 | 1.73 | 1.80 | 2.20 | 2.99 | 1.81 | 1.85 | 2.40 | 3.01 |
| **2013** | 1.74 | 1.81 | 2.20 | 2.98 | 1.73 | 1.80 | 2.19 | 2.99 | 1.82 | 1.85 | 2.40 | 2.91 |
| **2014** | 1.74 | 1.81 | 2.20 | 2.97 | 1.72 | 1.79 | 2.19 | 2.98 | 1.82 | 1.85 | 2.40 | 2.84 |
| **2015** | 1.74 | 1.81 | 2.19 | 2.95 | 1.72 | 1.79 | 2.18 | 2.97 | 1.82 | 1.85 | 2.40 | 2.79 |
| **2016** | 1.74 | 1.81 | 2.19 | 2.94 | 1.72 | 1.78 | 2.17 | 2.96 | 1.82 | 1.85 | 2.40 | 2.75 |
| **2017** | 1.74 | 1.81 | 2.19 | 2.93 | 1.72 | 1.78 | 2.16 | 2.96 | 1.82 | 1.85 | 2.40 | 2.73 |
| **2018** | 1.75 | 1.81 | 2.18 | 2.92 | 1.71 | 1.78 | 2.16 | 2.95 | 1.82 | 1.85 | 2.40 | 2.71 |
| **2019** | 1.75 | 1.81 | 2.18 | 2.90 | 1.71 | 1.77 | 2.15 | 2.94 | 1.82 | 1.85 | 2.40 | 2.70 |
| **2020** | 1.75 | 1.81 | 2.18 | 2.89 | 1.71 | 1.77 | 2.14 | 2.93 | 1.82 | 1.85 | 2.40 | 2.69 |
| **2021** | 1.75 | 1.81 | 2.17 | 2.88 | 1.71 | 1.76 | 2.14 | 2.93 | 1.83 | 1.84 | 2.40 | 2.69 |
| **2022** | 1.75 | 1.82 | 2.17 | 2.87 | 1.70 | 1.76 | 2.13 | 2.92 | 1.83 | 1.84 | 2.40 | 2.68 |
| **2023** | 1.75 | 1.82 | 2.17 | 2.85 | 1.70 | 1.75 | 2.12 | 2.91 | 1.83 | 1.84 | 2.41 | 2.68 |
| **2024** | 1.76 | 1.82 | 2.16 | 2.84 | 1.70 | 1.75 | 2.11 | 2.90 | 1.83 | 1.84 | 2.41 | 2.68 |
| **2025** | 1.76 | 1.82 | 2.16 | 2.83 | 1.70 | 1.75 | 2.11 | 2.89 | 1.84 | 1.84 | 2.41 | 2.68 |
| **2026** | 1.76 | 1.82 | 2.16 | 2.82 | 1.69 | 1.74 | 2.10 | 2.89 | 1.84 | 1.84 | 2.42 | 2.67 |
| **2027** | 1.76 | 1.82 | 2.15 | 2.80 | 1.69 | 1.74 | 2.09 | 2.88 | 1.84 | 1.84 | 2.42 | 2.67 |
| **2028** | 1.76 | 1.82 | 2.15 | 2.79 | 1.69 | 1.73 | 2.09 | 2.87 | 1.84 | 1.84 | 2.42 | 2.68 |
| **2029** | 1.77 | 1.82 | 2.14 | 2.78 | 1.68 | 1.73 | 2.08 | 2.86 | 1.85 | 1.84 | 2.43 | 2.68 |
| **2030** | 1.77 | 1.82 | 2.14 | 2.77 | 1.68 | 1.73 | 2.07 | 2.86 | 1.85 | 1.84 | 2.43 | 2.68 |
| **2031** | 1.77 | 1.82 | 2.14 | 2.75 | 1.68 | 1.72 | 2.06 | 2.85 | 1.85 | 1.84 | 2.44 | 2.68 |
| **2032** | 1.77 | 1.83 | 2.13 | 2.74 | 1.68 | 1.72 | 2.06 | 2.84 | 1.86 | 1.84 | 2.44 | 2.68 |
| **2033** | 1.77 | 1.83 | 2.13 | 2.73 | 1.67 | 1.71 | 2.05 | 2.83 | 1.86 | 1.84 | 2.45 | 2.67 |
| **2034** | 1.77 | 1.83 | 2.13 | 2.72 | 1.67 | 1.71 | 2.04 | 2.82 | 1.86 | 1.85 | 2.45 | 2.67 |
| **2035** | 1.78 | 1.83 | 2.12 | 2.70 | 1.67 | 1.71 | 2.04 | 2.82 | 1.87 | 1.85 | 2.46 | 2.67 |
| **2036** | 1.78 | 1.83 | 2.12 | 2.69 | 1.67 | 1.70 | 2.03 | 2.81 | 1.87 | 1.85 | 2.46 | 2.67 |
| **2037** | 1.78 | 1.83 | 2.12 | 2.68 | 1.66 | 1.70 | 2.02 | 2.80 | 1.88 | 1.85 | 2.47 | 2.67 |
| **2038** | 1.78 | 1.83 | 2.11 | 2.67 | 1.66 | 1.69 | 2.01 | 2.79 | 1.88 | 1.85 | 2.48 | 2.67 |
| **2039** | 1.78 | 1.83 | 2.11 | 2.65 | 1.66 | 1.69 | 2.01 | 2.79 | 1.88 | 1.85 | 2.49 | 2.67 |
| **2040** | 1.79 | 1.83 | 2.11 | 2.64 | 1.66 | 1.68 | 2.00 | 2.78 | 1.89 | 1.85 | 2.49 | 2.67 |
| **2041** | 1.79 | 1.84 | 2.10 | 2.63 | 1.65 | 1.68 | 1.99 | 2.77 | 1.90 | 1.85 | 2.50 | 2.67 |
| **2042** | 1.79 | 1.84 | 2.10 | 2.62 | 1.65 | 1.68 | 1.99 | 2.76 | 1.90 | 1.85 | 2.51 | 2.66 |
| **2043** | 1.79 | 1.84 | 2.10 | 2.60 | 1.65 | 1.67 | 1.98 | 2.75 | 1.91 | 1.86 | 2.52 | 2.66 |
| **2044** | 1.79 | 1.84 | 2.09 | 2.59 | 1.65 | 1.67 | 1.97 | 2.75 | 1.91 | 1.86 | 2.53 | 2.66 |
| **2045** | 1.79 | 1.84 | 2.09 | 2.58 | 1.64 | 1.66 | 1.96 | 2.74 | 1.92 | 1.86 | 2.54 | 2.65 |
| **2046** | 1.80 | 1.84 | 2.08 | 2.57 | 1.64 | 1.66 | 1.96 | 2.73 | 1.92 | 1.86 | 2.54 | 2.66 |
| **2047** | 1.80 | 1.84 | 2.08 | 2.55 | 1.64 | 1.66 | 1.95 | 2.72 | 1.93 | 1.86 | 2.55 | 2.66 |
| **2048** | 1.80 | 1.84 | 2.08 | 2.54 | 1.63 | 1.65 | 1.94 | 2.72 | 1.93 | 1.86 | 2.56 | 2.66 |
| **2049** | 1.80 | 1.84 | 2.07 | 2.53 | 1.63 | 1.65 | 1.93 | 2.71 | 1.94 | 1.87 | 2.57 | 2.66 |
| **2050** | 1.80 | 1.84 | 2.07 | 2.52 | 1.63 | 1.64 | 1.93 | 2.70 | 1.95 | 1.87 | 2.58 | 2.66 |
| **2051** | 1.81 | 1.85 | 2.07 | 2.50 | 1.63 | 1.64 | 1.92 | 2.69 | 1.95 | 1.87 | 2.59 | 2.66 |
| **2052** | 1.81 | 1.85 | 2.06 | 2.49 | 1.62 | 1.63 | 1.91 | 2.69 | 1.96 | 1.87 | 2.61 | 2.66 |
| **2053** | 1.81 | 1.85 | 2.06 | 2.48 | 1.62 | 1.63 | 1.91 | 2.68 | 1.96 | 1.88 | 2.62 | 2.66 |
| **2054** | 1.81 | 1.85 | 2.06 | 2.47 | 1.62 | 1.63 | 1.90 | 2.67 | 1.97 | 1.88 | 2.63 | 2.66 |
| **2055** | 1.81 | 1.85 | 2.05 | 2.46 | 1.62 | 1.62 | 1.89 | 2.66 | 1.98 | 1.88 | 2.64 | 2.66 |
| **2056** | 1.81 | 1.85 | 2.05 | 2.44 | 1.61 | 1.62 | 1.88 | 2.65 | 1.99 | 1.88 | 2.66 | 2.66 |
| **2057** | 1.82 | 1.85 | 2.05 | 2.43 | 1.61 | 1.61 | 1.88 | 2.65 | 1.99 | 1.89 | 2.67 | 2.66 |
| **2058** | 1.82 | 1.85 | 2.04 | 2.42 | 1.61 | 1.61 | 1.87 | 2.64 | 2.00 | 1.89 | 2.68 | 2.66 |
| **2059** | 1.82 | 1.85 | 2.04 | 2.41 | 1.61 | 1.61 | 1.86 | 2.63 | 2.01 | 1.89 | 2.69 | 2.67 |
| **2060** | 1.82 | 1.85 | 2.04 | 2.39 | 1.61 | 1.61 | 1.86 | 2.63 | 2.01 | 1.90 | 2.71 | 2.67 |

Source: U.S. Census Bureau, Population Division.