

Methodology for Constructing Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and Its Counties, 2025–2050, With Estimates for 2022

Stefan Rayer and Conor Comfort
Bureau of Economic and Business Research
University of Florida
October 2023

The composition of Florida’s population has noticeably changed in recent decades. Between 1950 and 2020, for example, the proportion of Florida’s population younger than age 15 declined from 26.2 to 16.0 percent, and the proportion age 65 and older rose from 8.6 to 21.2 percent. The Hispanic population increased from 6.0 percent of the total population in 1970 to 26.5 percent in 2020. Changes in demographic composition have been even greater for many counties than for the state overall. These changes have important implications for planning and public policy and therefore affect the allocation of many types of public funds. They affect the demand for education, healthcare, housing, recreation, transportation, and many other goods and services, as well as the number and characteristics of persons in the labor force and in public and private retirement systems. Consequently, there is a tremendous need for population estimates and projections by age, sex, race, and Hispanic origin.

This report provides a summary of our most recent projections by age, sex, race, and Hispanic origin for Florida and each of its counties from 2025–2050; estimates of those demographic subgroups for 2022; and a description of the methodology used to construct these estimates and projections. We note that these estimates and projections still only incorporate select results from Census 2020 and should therefore be considered an interim set. While the Census 2020 Demographic and Housing Characteristics (DHC) file that was released earlier this year includes detailed information on age, sex, race, and ethnicity, the racial categories in the DHC file do not follow the bridged-race classification that is used for the BEBR estimates and projections. A complete update of our models will not be possible until the modified race data from Census 2020 have been released. We expect the next set of BEBR county projections by age, sex, race, and Hispanic origin to fully incorporate the Census 2020 counts.

Definitions of Race and Ethnicity

The decennial census in the United States is based on self-enumeration. Residents of each household are asked to provide the responses they believe best describe their demographic characteristics, based on guidelines established by the U.S. Census Bureau and the U.S. Office of Management and Budget (OMB). These guidelines allow respondents to identify themselves as Hispanic or non-Hispanic and as belonging to one or more of several racial groups.

It should be noted that “Hispanic” is an ethnic classification rather than a racial category; that is, people can be identified both by Hispanic origin and by race. The OMB defines Hispanic or Latino as “a person of Cuban, Mexican, Puerto Rican, South or Central American, or other Spanish culture or origin regardless of race.” For data collection and presentation purposes, federal agencies are required to use a minimum of two ethnicities: “Hispanic or Latino,” and “Not Hispanic or Latino.” We follow the same guidelines in this report and use the term “Hispanic” to refer to persons of Hispanic, Latino, or Spanish origin.

DATA

Data from the 2000, 2010, and 2020 censuses formed the basis for these estimates and projections. Although census data are generally accurate, two issues regarding race and ethnicity complicate their use. First, in 1990 and all previous censuses, respondents were required to identify themselves as belonging to a single race. Starting in 2000, they were permitted to identify themselves as belonging to one or more races. In Florida, 97.6 percent of the population identified themselves as belonging to a single race in 2000 and 2.4 percent listed more than one race; these percentages were almost identical in 2010 (97.5 percent and 2.5 percent, respectively). However, in 2020 only 83.5 percent of Florida’s population identified themselves as belonging to a single race while 16.5 percent listed more than one race. An increase in the multiracial population was noted for the nation overall as well. According to a recent analysis by the U.S. Census Bureau, while some of the changes in the multiracial population could be attributed to demographic change since 2010, it is likely that they were largely due to improvements to the design of the two separate questions for race and ethnicity, data processing, and coding, which enabled a more thorough and accurate depiction of how people prefer to self-identify.

Second, although the U.S. Census Bureau defines “Hispanic origin” as an ethnic classification rather than a racial category, many respondents interpreted it as a racial category and listed their race as Hispanic, Latino, Mexican, Spaniard, or a similar response. In Florida, 7.3 percent of the total population in 2020 identified themselves as belonging to a race other than those listed on the census questionnaire; more than 90 percent of those respondents were of Hispanic origin. In 2010 and 2000, the proportions identifying with other racial groups were lower (3.6 percent and 4.4 percent, respectively); again, more than 90 percent of those respondents were of Hispanic origin. Similar to the increase in the proportion of the population that is multiracial, the increase in the “Some Other Race” population since 2010 is likely largely due to changes in the design of the census questionnaire, data processing, and coding, but some of the increase may reflect demographic change as well. While improvements in accuracy are welcome, such changes in data collection and processing unfortunately complicate comparisons over time.

Responding to these issues, the National Center for Health Statistics (NCHS) collaborated with the U.S. Census Bureau to create a set of modified 2000 census counts for every state and county in the United States. Using a variety of data sources and techniques, the NCHS assigned people who classified themselves as belonging to more than one race (or who marked “Some Other Race” on the census questionnaire) to a single primary race. These modifications produced data

that were consistent over time, prevented double-counting of people belonging to more than one race, and provided a racial classification for Hispanics who did not identify their race. The NCHS released a comparable set of modified census counts for 2010. The estimates and projections described in this report were based on NCHS data for 2000 and 2010.

The modified race data are not yet available for 2020. To incorporate the already released population totals by race and ethnicity from Census 2020, we developed a custom allocation of the non-Hispanic “Some Other Race” and the “Two or More Races” respondents. For simplicity, the non-Hispanic “Some Other Race” respondents from Census 2020 were allocated in equal proportions to non-Hispanic White and non-Hispanic Nonwhite. Multiracial non-Hispanic respondents were allocated in equal proportions to the respective bridged-race groups used in the BEBR population estimates and projections. For example, respondents who self-identified as non-Hispanic White, non-Hispanic Black, and non-Hispanic Asian were allocated $\frac{1}{3}$ to non-Hispanic White and $\frac{2}{3}$ to non-Hispanic Nonwhite. While not directly comparable to earlier BEBR estimates and projections that were based on the NCHS bridged-race allocations, the current set approximates those allocations. Statewide, about 51 percent of respondents in the “Some Other Race” and “Two or More Races” categories were allocated to non-Hispanic White in 2020, and 49 percent were allocated to non-Hispanic Nonwhite. These proportions are similar to the NCHS bridged-race allocation in 2010, which allocated about 53 percent of respondents in these two groups to non-Hispanic White and 47 percent to non-Hispanic Nonwhite. However, we note that a larger proportion of respondents had to be allocated in 2020 than in 2010 (about 930,000 vs. 340,000), and the differences between the equal proportion allocation used in 2020 and the bridged-race allocation developed by NCHS for 2010 and 2000 may be greater for individual counties. Therefore, comparisons between the racial and ethnic distributions of this current set to those of previous years should be made with caution.

Large institutions (e.g., universities, prisons) account for a sizeable proportion of the total population in many counties in Florida. In such counties, it is important to account for the impact of these institutions when making population estimates and projections. Consequently, we used institutional records and data from the decennial census to estimate the non-institutional population by age, sex, race, and Hispanic origin for 2000, 2010, 2020, and 2022 in the following counties: Alachua, Baker, Bradford, Calhoun, Columbia, DeSoto, Dixie, Franklin, Gadsden, Gilchrist, Glades, Gulf, Hamilton, Hardee, Hendry, Holmes, Indian River, Jackson, Jefferson, Lafayette, Leon, Liberty, Madison, Okeechobee, Santa Rosa, Sumter, Suwannee, Taylor, Union, Volusia, Wakulla, Walton, and Washington counties. In these counties, we made separate projections for the institutional and non-institutional populations. The final estimates and projections for each county were constructed by adding together the institutional and non-institutional populations. The remainder of this report describes the methodology used for making estimates and projections of the non-institutional population.

METHODOLOGY

2022 Estimates of Total Population by Race and Ethnicity

We made estimates of the total number of non-Hispanic Whites, non-Hispanic Nonwhites, and Hispanics for 2022 using a variety of data sources and techniques. Some relied on extrapolations of previous population trends, whereas others incorporated data on births, deaths, and school enrollment by race and ethnicity. Moreover, some estimates were based on averages of several of the individual techniques. The final estimate for each racial/ethnic group in each county was based on our judgment regarding which technique was most likely to provide an accurate estimate of the non-institutional population. Estimates of total population by race and ethnicity were made by adding estimates of the institutional population to estimates of the non-institutional population. As a last step, estimates for the three racial/ethnic groups were controlled to the 2022 estimates of total population published in “Florida Estimates of Population: April 1, 2022,” Bureau of Economic and Business Research, December 2022. A more detailed description of the methodology can be found in an article by Stanley Smith and June Nogle published in the *Social Science Quarterly* in 2004 (volume 85, pp. 731–745).

Projections of Total Population by Race and Ethnicity

Starting with the 2022 estimates, we made projections of the total non-institutional population of each county for non-Hispanic Whites, non-Hispanic Nonwhites, and Hispanics using the following techniques:

LINE22: linear extrapolation of 2000–2022 non-institutional population change for each racial/ethnic group.

LINE12: linear extrapolation of 2010–2022 non-institutional population change for each racial/ethnic group.

SHARE22: each racial/ethnic group’s share of county non-institutional population change 2000–2022 is applied to projected county non-institutional population change.

SHARE12: each racial/ethnic group’s share of county non-institutional population change 2010–2022 is applied to projected county non-institutional population change.

EXPO AVE: average of exponential extrapolations of 2000–2022 and 2010–2022 non-institutional population change for each racial/ethnic group.

SHIFT AVE: average of the changes in each racial/ethnic group’s share of county non-institutional population 2000–2022 and 2010–2022, which are linearly extrapolated and applied to county projections of total non-institutional population.

CONST%: each racial/ethnic group’s share of the non-institutional population in 2022 is assumed to remain constant over time.

AVE7: an average of projections from the seven techniques described above.

AVE5: an average of these projections, excluding the highest and lowest.

AVE3: an average of these projections, excluding the two highest and the two lowest.

CTRL AVE7: AVE7 controlled to medium county projection of total non-institutional population.

CTRL AVE5: AVE5 controlled to medium county projection of total non-institutional population.

CTRL AVE3: AVE3 controlled to medium county projection of total non-institutional population.

The final projection of the total population for each racial/ethnic group in each county was based on CTRL AVE5 in all 67 counties.

In counties with institutional adjustments, projections of the institutional population were based on institutional records and our judgment regarding future institutional growth. Projections of the racial/ethnic breakdown of the institutional population were made by applying the racial/ethnic distribution from the 2010 census to the projections of the total institutional population, which were adjusted to reflect changes in the racial/ethnic distribution of the non-institutional population over the projection horizon.

Finally, projections of total population by race/ethnicity were made by adding projections of the institutional population to projections of the non-institutional population. In all counties, projections for the three racial/ethnic groups were controlled to the medium projections published in “Projections of Florida Population by County, 2025–2050, with Estimates for 2022,” Florida Population Studies, Bulletin No. 195, Bureau of Economic and Business Research, April 2023.

Projections by Age, Sex, and Race/Ethnicity

Projections by age and sex for each of the three racial/ethnic groups were made using a cohort-survival rate methodology. Age was calculated in five-year groups from 0–4 to 85 and over. Projections were made in five-year intervals, starting with the 2020 estimates published in June 2021; each projection served as the base for the following projection.

This year, we made an adjustment to the April 1, 2020, base population to better align the age estimates to the results from Census 2020. Our previous estimates for April 1, 2020, were too high for ages 0–4 and 85 and over when compared to the Census 2020 counts. The Census Bureau has since identified issues with over- and undercounts of certain age groups in Census 2020 and adjusted the base population for the Census Bureau’s Vintage 2022 population estimates accordingly. Evaluated against this revised base population instead of the original Census 2020 counts, the BEBR estimates for April 1, 2020, were more accurate overall, but still high for ages 0–4. Consequently, we implemented an adjustment to the 2020 base population for this set of estimates and projections that more closely follows the age distribution of the Census Bureau’s

estimates base for April 1, 2020. Compared to last year's set, this resulted in lower estimates for ages 0–4 and 5–9 in 2020, and slightly higher estimates for the other age groups.

Using modified census and institutional population data for 2000 and 2010, and intercensal population estimates and institutional population data for 2005, we subtracted the institutional population from the total population for each age, sex, racial, and ethnic group to derive estimates of the non-institutional population in each demographic subgroup. We calculated cohort-survival rates by sex for the non-institutional population by dividing the 2010 modified census count for each age, racial, and ethnic group by the 2005 intercensal population estimate for the corresponding group 5 years younger. We also calculated cohort-survival rates by sex for the non-institutional population by dividing the 2005 intercensal population estimate for each age, racial, and ethnic group by the 2000 modified census count for the corresponding group 5 years younger. From these we calculated an average of 2000–2005 and 2005–2010 cohort-survival rates. We chose an average of those two periods because population growth in the first half of the decade was quite different from population growth in the second half. Averaging has been found to increase the accuracy of population estimates and projections.

Using cohort-survival rates averaged over 2000–2005 and 2005–2010, we made several additional adjustments. First, we applied weighting factors to account for higher survival rates among the older age groups. For many counties, we further adjusted the resulting cohort-survival rates to account for apparent data errors and to smooth out differences among age groups, or between males and females. These adjustments were most frequent in counties with small populations, especially for the non-Hispanic Nonwhite and Hispanic populations.

We applied the adjusted cohort-survival rates to the 2020 non-institutional population by age, sex, race, and ethnicity to produce projections for 2025 for the population age 5 and older. For the population less than age 5, we used child-woman ratios based on 2010 NCHS data (i.e., population aged 0–4 divided by females aged 15–44). We applied those ratios to the estimated female population in 2025 to provide estimates of children aged 0–4. The population age 0–4 was divided between males and females using proportions of 0.51 and 0.49, respectively. In some instances, we adjusted the child-woman ratios to account for expected changes in fertility rates. For each of the three racial and ethnic groups, we controlled the non-institutional age and sex projections to the independent projections of the total non-institutional population for 2025.

We repeated the process to produce projections for 2030, 2035, 2040, 2045, and 2050. These projections were controlled to the independent projections of the non-institutional population described above. As a last step, we added the independent projections of the institutional population, providing projections by age and sex for non-Hispanic Whites, non-Hispanic Nonwhites, and Hispanics. Projections at the state level were calculated by adding up the county projections.

Projections for other Racial/Ethnic Groups

We developed projections for several additional racial/ethnic groups. Using the 2010 NCHS data, we calculated the White/Nonwhite proportion of the Hispanic population for each county and applied those proportions to the Hispanic estimates and projections to provide a White/Nonwhite breakdown of the Hispanic population (in Florida, approximately 76 percent of the Hispanic population identified themselves as White alone in the 2010 census). Adding the Hispanic White population to the non-Hispanic White population provided estimates and projections of the total White population by age and sex for each county.

Using the 2010 NCHS data, we calculated the Black population as a proportion of the Nonwhite population for both the Hispanic and non-Hispanic populations. We made those calculations separately for each county and – based on historical trends and the 2010 values – projected those proportions into the future. By applying these proportions to estimates and projections of the Nonwhite population (for both Hispanics and non-Hispanics), we developed estimates and projections of the non-Hispanic Black population and the total Black population by age and sex for each county.

This report shows estimates and projections for the non-Hispanic White population, the non-Hispanic Black population, and the Hispanic population – the three largest racial/ethnic groups in Florida. Estimates and projections for these groups do not sum exactly to estimates and projections of the total population because they do not include the non-Hispanic population that is neither White nor Black.

Estimates for 2022

The methodology described above was used to make projections by age, sex, race, and Hispanic origin in five-year intervals from 2025 to 2050 for each county in Florida. Estimates for 2022 were made by interpolating between the 2020 estimates and the 2025 projections for each age/sex/racial/ethnic group and controlling those interpolations to the 2022 estimates of the total population by race and ethnicity described above.

ACKNOWLEDGEMENT

Funding for these estimates and projections was provided by the Florida Legislature.