

Tennessee Population Projections for 2021-2070

Methodology, Executive Summary, and Notes

Boyd Center for Business and Economic Research

The University of Tennessee, Knoxville

The Population Projections for the State of Tennessee, produced for the Tennessee State Data Center, contain projections for each county in Tennessee, by race, age, and sex for each year from 2021 to 2070. Age is defined by five-year bands, starting with an “age 0-4” group and ending with an “age 85+” group. Race is delineated as one of four categories that combine race and ethnic definitions:

- White Non-Hispanic
- Black Non-Hispanic
- All Hispanic
- Other non-Hispanic, including two or more races.

The 2021 projections are conducted using a cohort-component methodology, as in previous releases. We specify the base year as 2000 and the launch year as 2020. Thus, we inform the forecast with trends from 2000 to 2020. Using vital statistics data from the Tennessee Department of Health, we project the population change resulting from natural components (births minus deaths). Differences between actual population values as reported by the Census and values predicted using births and deaths are used to establish net migration patterns. The forecast used these predicted net migration patterns; life tables from the Social Security Administration; recent average birth rates by county, race, and age of female; and forecast future U.S. populations.

Context Around this and Subsequent Releases

The most recently available data with the requisite level of geographic and demographic precision were taken from the 2020 Vintage Population Estimates from the U.S. Census Bureau. Part of the delay in this projection revision was due to hopeful release of the Demographic Profile product from the 2020 Decennial Census showing county-age-sex-race totals. A publication date for these materials is not yet available.

There are substantive differences between the total population figures reported in the 2020 Vintage Population Estimates and the 2020 Decennial Census. The 2020 Vintage Population Estimate for all of Tennessee was 6,886,834, while Decennial Census reported a population of 6,910,840, a difference of 24,000 people. While there are differences between Population

Estimates and the Decennial Census in most counties, the difference in Davidson County is of particular concern. In the 2020 release used for this forecast, Population Estimates reported Davidson County contained 694,176 persons, and that net domestic migration had dipped into negative territory. However, Decennial Census recorded Davidson County as having a population of 715,884. This difference of 21,708 persons explains almost 90% of the statewide discrepancy between Population Estimates and Census.

Additionally, Because the most recent data available for forecasting purposes are from the first wave of the COVID-19 pandemic, this release does not capture any of the following demographic effects that have manifested over the last two years:

1. Decreased conceptions in the first half of 2020 and a subsequent decline in births in late 2020 and early 2021
2. Increased mortality in 2020 through 2022.
3. Net domestic migration in response to remote employment opportunities, asynchronous class at higher education institutions and local/regional restrictions regarding the pandemic

As much as we know has changed economically and in the workforce over the preceding two years, there is reason to believe there may be changes in overall population trends in some areas. However, at the time of this release, we lack the current data necessary to model or capture any emerging population trends.

In the Fall 2022 release, we will drop the years from 2000-2009 from the set of years used to formulate the projections; establishing 2010 as the new base and 2021 Vintage Population Estimates (informed by the 2020 Decennial Census as a base) as the new launch. Therefore, the next release of projections will likely reflect substantive changes from these projections.

Comparing Previous Release to Launch Year Estimates

Based on data published in 2018, the Boyd Center projected the Tennessee population to reach 6,886,369 by 2020. The Census Bureau's 2020 vintage population estimate for Tennessee as a whole was 6,886,834, a difference of 465 persons. (Decennial Census reported a population of 6,910,840 – however, the data were not available at the level of precision necessary for use in this forecast). Overall, the population change in Tennessee according to Population Estimates from 2018-2020 was 0.4 percent higher than projected (116,824 vs. 116,359). The Decennial Census, however, indicates that population has grown more rapidly. Additionally, some parts of the state grew significantly faster than projected, while others key counties exhibited slower than predicted growth.

Discussion of Critical Factors Underlying Expected Future Changes

There are several continuing patterns in the components of population change that are likely to persist, affecting population growth in Tennessee.

Births

From 2010 to 2020, the state averaged 80,400 live births but both births and births rates are decreasing. These declines are in spite an increase of more than 71,000 females ages 15 to 44 over that period. In 2020, there were 78,685 births, the lowest number on record since 2003. While this one-year decrease was especially pronounced, at least a portion of the decline can be attributed to uncertainty surrounding the early phases of the pandemic. It is unknown at the time of this release how much of a rebound to expect in 2021 and 2022.

Figure 1: In 2020, Births in Tennessee Reached their Lowest Level Since 2003

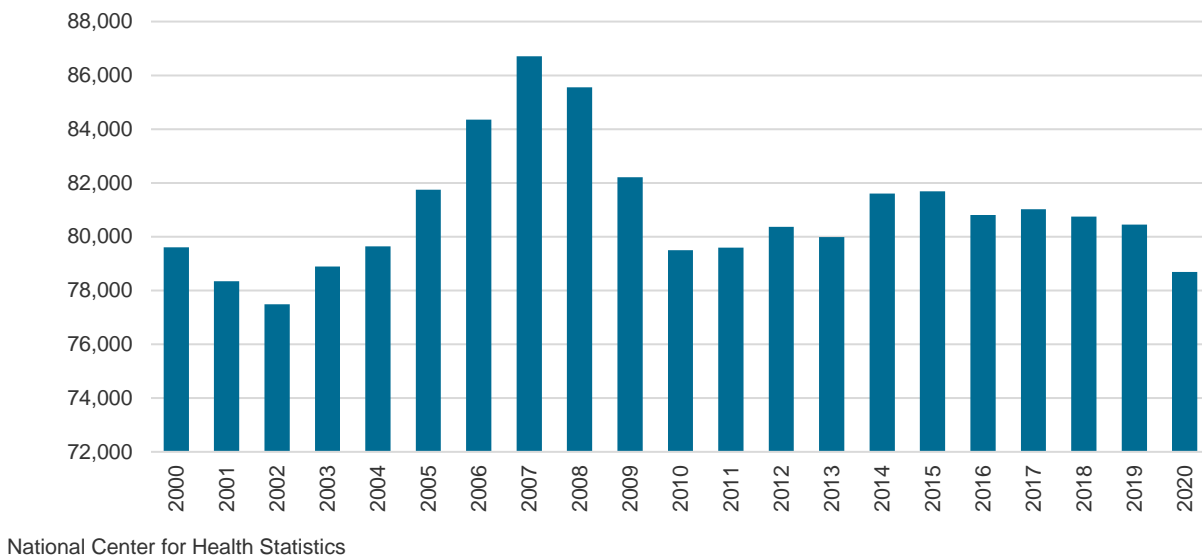
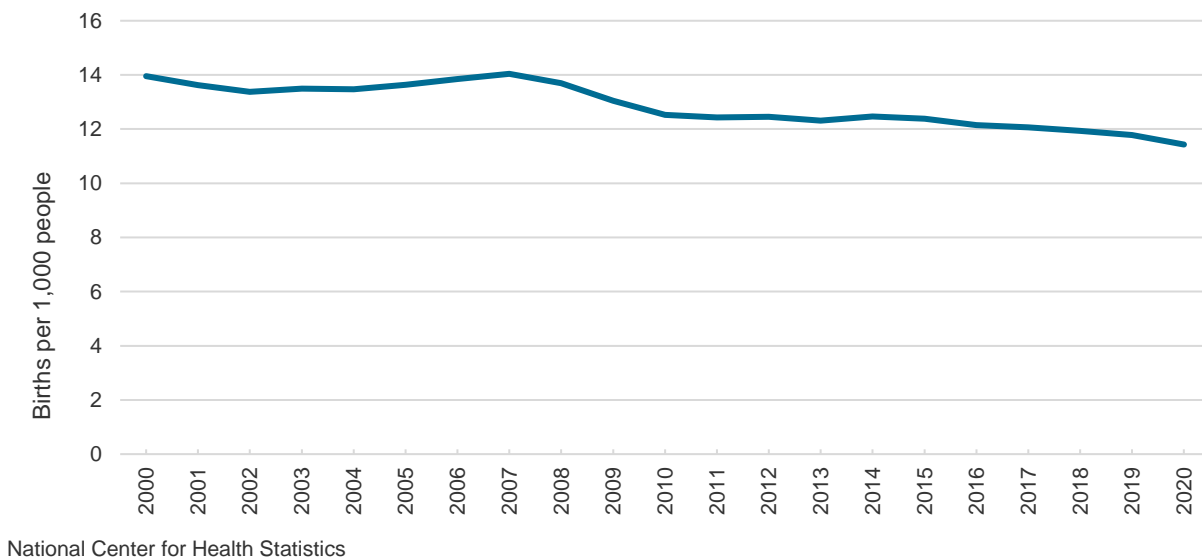


Figure 2: Tennessee Birth Rates Have Fallen Steadily Since the Great Recession in the Mid-2000's



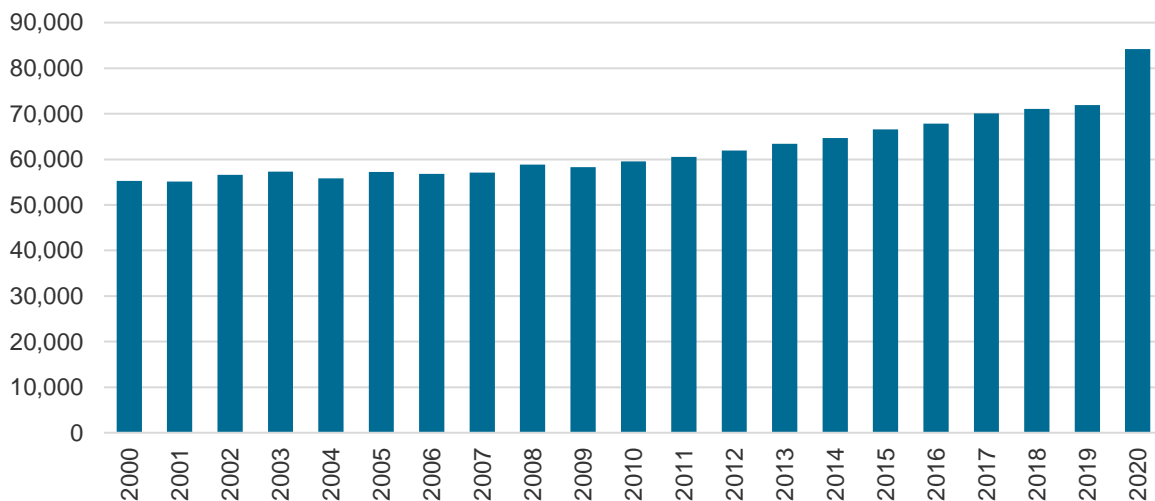
Birth rates have declined steadily since 2007 and reached 11.4 births per 1,000 people in 2020, the lowest birth rate on record in the last several decades. While total births may recover in near-term, birth rates may still fall further in coming years.

Deaths

Increases in deaths have also contributed to the decrease in population growth. From 2007-2019, deaths per year in Tennessee increased from 56,800 to 71,936. Unlike births, however, the increase is likely due to an aging population rather than mortality rates. Last year, the first of the “baby boomer” generation turned 75, meaning that large shares of the population are moving into the part of life where mortality rates are higher. Further, this cohort effect in death rates is not just driven by high birth rates during the ‘boomer years’ but by lower-than-normal birth rates during the Great Depression and WWII.

In 2020, there were 84,194 deaths in Tennessee, an increase of over 12,000 from 2019. We expect similarly high numbers in 2021. However, as we hopefully emerge from the pandemic, it is plausible that deaths will fall back into the 72,000 per year range – or perhaps even lower – but the immediate outlook is unclear at this time.

Figure 3: Deaths were increasing throughout the 2010's but jumped to 84,000 in 2020



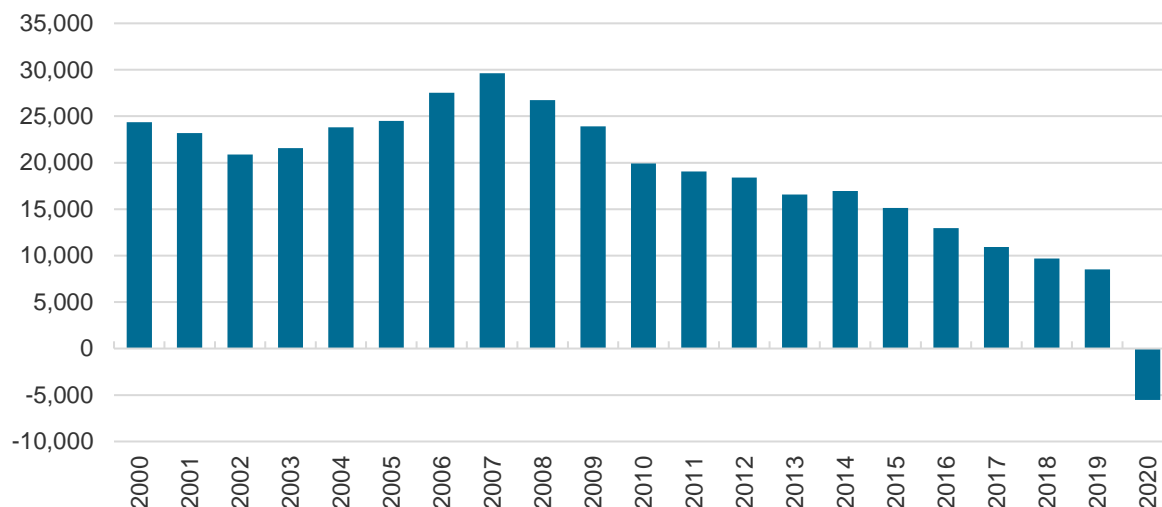
National Center for Health Statistics

Natural Change

In demographics, natural change refers to the combined effects of births and deaths on population. If natural change is positive, there are more births than deaths. If natural change is negative, the converse is true. Natural population growth in Tennessee has fallen sharply, due to increased deaths and decreased births. In 2007, the population of Tennessee grew by almost 30,000 due to births and deaths alone. In 2015, the natural change in population was only

15,000. In 2019, the natural change in population was approximately 8500; and in 2020, the natural change in population was -5500.

Figure 4: Tennessee experienced its first natural decrease in 2020



Boyd Center analysis of data from the National Center for Health Statistics

While 2020 was clearly an aberration, we do expect 2021 numbers to look similar. The data will not be available for us to understand the post-COVID trends in Natural Change for a few additional years.

Net Migration

Net migration continues to drive population growth in Tennessee. About 75% of net migration increases last decade were from state-to-state flows, with the balance coming from international sources. However, given the challenges with the validity of recent Population Estimates which are the primary source of migration data, we are reluctant to treat information from the most recent estimates as reliable. More details on net migration will be forthcoming when we are able to compare 2010 and 2020 decennial census information.

Figure 5: Between 2010 and 2019, Four of the Country's Six Most Populous States Were the Largest Contributors to Tennessee's Net Migration Gains

State	Outflow from Tennessee	Inflow to Tennessee	Net Migration
Florida	144,943	181,894	36,951
Illinois	49,947	84,049	34,102
New York	29,036	53,747	24,711
California	65,827	87,843	22,016
Indiana	37,159	54,554	17,395
North Carolina	79,288	93,839	14,551
Michigan	44,597	56,399	11,802
Virginia	66,239	77,961	11,722
Arkansas	44,909	55,403	10,494
Massachusetts	101,22	20,258	10,136

Boyd Center of analysis of U.S. Census Bureau data

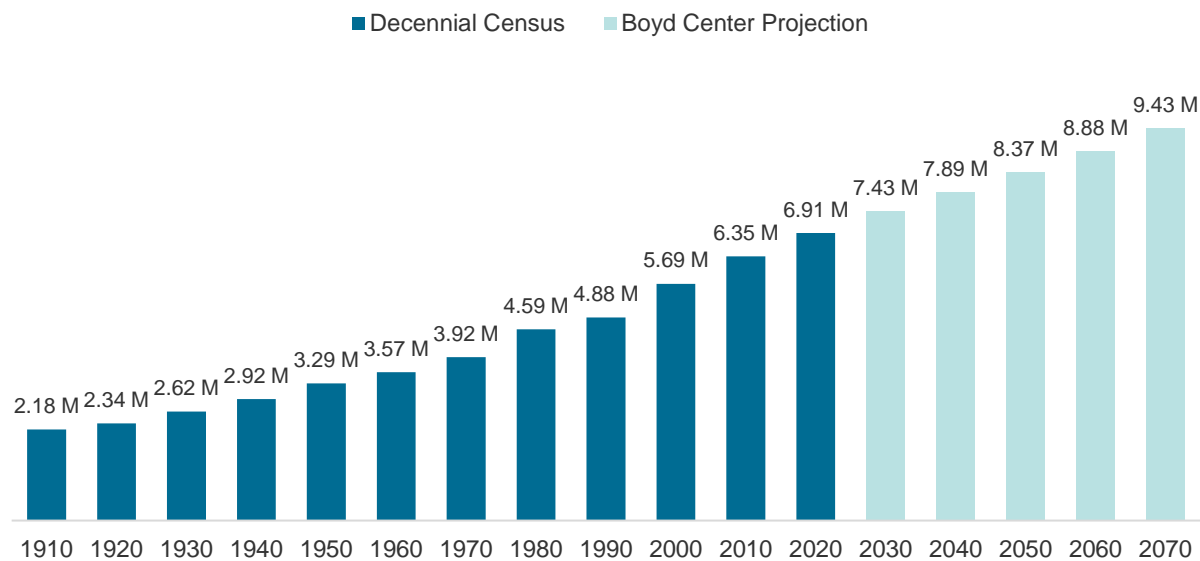
Net migration is increasingly concentrated in the Nashville area. During the 2000s, the five most populous counties in the 13-county Nashville Metropolitan Statistical Area (Davidson, Rutherford, Williamson, Wilson, and Sumner) accounted for 40% of all net migration in Tennessee. In the current decade, those same five counties have absorbed at least 47% of all net migration in Tennessee, with the caveat that net migration into Davidson County is currently understated.

Net migration to the other 90 counties in the state has fallen by 5%. During the 2000s, there was an average of 21,860 net migrants per year to counties in the rest of the state, excluding the big 5 Middle Tennessee counties. During the 2010s, that average fell to 20,600 persons per year.

Summary of Results

These projections reflect that growth outpaced recent projections at the state level. By 2040, the population of Tennessee is expected to increase to 7.89 million (compared to 7.84 million from the previous forecast), reflecting expected growth of approximately 50,000 people per year. This figure is consistent with population growth observed from 2010-2020, but lower than the average annual change of 65,500 observed in the 2000s.

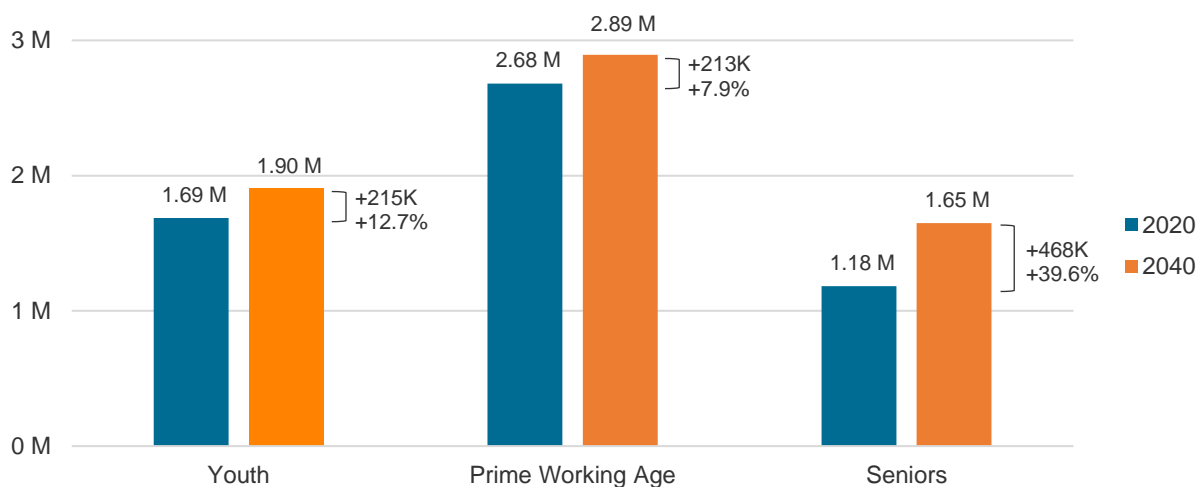
Figure 6: Tennessee Resident and Projected Population, 1910-2070



US Census Bureau, Boyd Center for Business and Economic Research

The share of the population aged 65 and up is expected to increase from 17 percent in 2020 to almost 21 percent by 2040. The ratio of prime working aged individuals (aged 25-54) to retirement aged individuals (aged 65+) is consequently expected to fall from 2.26:1 in 2020 to 1.75:1 by 2040. This will have implications for labor force participation rates, not just because of changing demographics, but the role of families in caregiving for elder relatives.

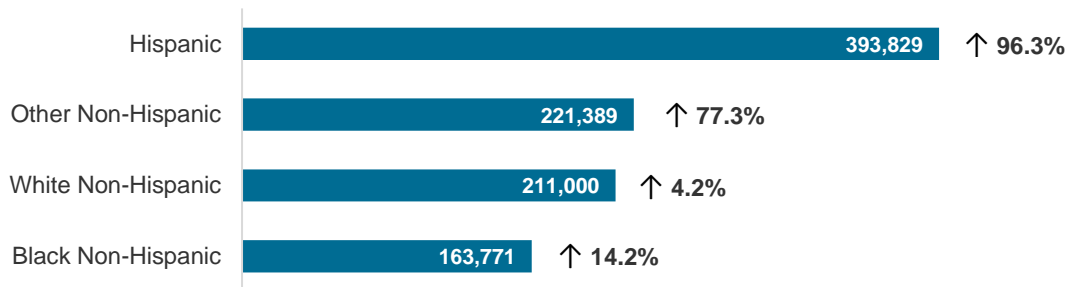
Figure 7: Among the Highlighted Age Groups, Prime Working Age Individuals (25 to 54) Remains the Largest at 2.9 Million People, but the Senior Population Is Growing More Rapidly.



Boyd Center for Business and Economic Research

Tennessee is also expected to continue to increase in racial and ethnic diversity. While the percentage of the population that is black is expected to remain constant at around 16.7%, the Hispanic population is expected to increase from 5.9 percent in 2020 to 10.2 percent by 2040. The residual, 'Other or two or more races' category is also expected to increase in number and percent from 4.1% to 6.4% by 2040.

Figure 8: Between 2020 and 2040, the Fastest Growing Racial and Ethnic Groups will be Hispanics and Other Non-Hispanic Races (Including Two or More Races)



Boyd Center for Business and Economic Research

Conclusions

Ultimately, these projections serve as a very interim update. Due to concerns about immediate data imperfections in the 2020 Population Estimates, comparison issues with 2020 Decennial Census (for which county age-sex-race totals are not yet released), and uncertainty whether the pandemic will manifest as a tragic *event* in demographic patterns, or whether it marks a *structural break* in population trends – we recommend using caution when planning with these – or ANY updated projections at this time. As more recent, corrected, updated data become available; and as we begin to understand what the long-run implications of the pandemic (and individuals’ responses to the pandemic) are, we will have greater confidence in the long run reasonability of these figures.