Vintage 2021 Release Notes

The Vintage 2021 population estimates reflect the following methodological changes since the release of the Vintage 2020 estimates. For more detail, please refer to the full Vintage 2021 methodology statement: http://www.census.gov/programs-surveys/popest/technical-documentation/methodology.html.

Base Population

Whereas the latest decennial census typically serves as the population estimates base, the 2020 Census could not be adopted for this purpose due to several challenges resulting from the COVID-19 pandemic. As a result, the Population Estimates Program developed a process for integrating the following three data sources at varying levels of detail to produce what we refer to as the Blended Base:

- *2020 Census PL 94-171 Redistricting File*: Nation, state, county, and Puerto Rico total population counts
- *2020 Demographic Analysis (DA) Estimates*: National population estimates by age and sex
- *Vintage 2020 Postcensal Population Estimates*: Nation, state, and county population estimates by age, sex, race, Hispanic origin, and population universe; and Puerto Rico Commonwealth and municipio population estimates by age, sex, and population universe

In the Blended Base at the national level, population totals come from the decennial census, age and sex detail comes from DA, and race and Hispanic origin detail comes from the Vintage 2020 estimates.

The development of the Blended Base for Puerto Rico follows the same approach. The main differences are that there is no DA control available for Puerto Rico and that the annual Puerto Rico estimates are only produced by age, sex, and population universe.

Vital Statistics Estimates

For Vintage 2021, the data and methods were updated to manage the lag in available data for the start of the new decade and account for increased mortality and changes to natality from the COVID-19 pandemic. Specifically, we incorporated national provisional monthly estimates on births and deaths for all months of 2020 from the National Center for Health Statistics Web site. We assigned characteristics to these using distributions from the last year of final birth and death data available, 2019. For births, we also incorporated monthly total births for the nation in the first quarter of 2021 and used recent trends to project births for the second quarter of the year. For deaths, we had monthly total data through June 30, 2021 that include recent trends and patterns of excess mortality from the pandemic. The adjusted national births and deaths serve as controls for subnational vital events, resulting in an increase in deaths and decrease in births for numerous states and counties. Other than the national control, no methodological changes were made to the subnational birth or death estimates.

Net International Migration Estimates

For Vintage 2020, we adjusted the net international migration component for the 2020 estimates period (July 1, 2019 - June 30, 2020) to account for the impact of the COVID-19 global pandemic. We typically update prior years in the time series for each vintage as newer data become available. However, 2020 American Community Survey (ACS) data are not available to use for this time period due to data quality concerns resulting from the COVID-19 pandemic, so we did not update the estimates for April 1, 2020 - June 30, 2020 in Vintage 2021.

At the time of production, 2019 was the latest ACS file available for estimating international migration. To account for trends from July 1, 2020 to June 30, 2021, we used current data from the United States Department of Justice, Department of Homeland Security (Citizenship and Immigration Services), State Department (Bureau of Consular Affairs and Refugee Processing Center), and the Institute of International Education to adjust 2019 ACS estimates. For the net Puerto Rico migration component, we combined Bureau of Transportation Statistics domestic airline passenger traffic data from 2020 with 1-year ACS and Puerto Rico Community Survey (PRCS) data.

Group Quarters Estimates

Due to complications in Group Quarters (GQ) data as a result of the COVID-19 pandemic, Vintage 2021 uses GQ data from the April 1, 2020 base and holds it constant forward to July 1, 2021.

Puerto Rico Estimates

For Vintage 2021, a flight data-based methodology was used to calculate net migration for the Commonwealth of Puerto Rico. Net migration estimates were updated to include net movement from other U.S. territories and foreign countries. In addition, net migration estimates are no longer one year behind as flight data are current for this vintage. We anticipate this change will require fewer updates to the net migration totals each vintage. A COVID-19 adjustment was not necessary as we no longer used the ACS and PRCS to calculate net migration. Domestic and international flight data are obtained from the Bureau of Transportation Statistics Air Carrier Statistics, T-100 Segment database.

Similar to last vintage, net migration characteristics by age and sex come from the ACS/PRCS residence one year ago (ROYA) estimates. We continued to use the 2019 ACS to distribute age and sex because the 2020 ACS data have been deemed experimental due to quality concerns resulting from the impact of the COVID-19 pandemic. In addition, we changed the usage of the 5-year ACS data so that the last year, instead of the middle year, is aligned to the net migration year. For example, the 2014-2018 ACS 5-year data previously used for estimating age of migrants in 2016 would instead be used for 2018. This change will result in fewer updates to the estimates each vintage and conforms to guidance from ACS staff.

Despite moving to a flight-based methodology to calculate net migration, we still use 5-year ACS/PRCS files to calculate demographic characteristics for in- and out-migration flows. The 5-year ACS/PRCS file (proxy universe) is used to determine demographic characteristics, which are then applied to the current year. The 5-year ACS/PRCS files represent an average over the 5-year period and not a specific point in time.[1] In 2015, when the three-year ACS/PRCS files were discontinued, the Population Estimates Program began to use file "centering" or the midpoint year of the 5-year file for their estimates. This method has been discontinued and file "anchoring" of the 5-year ACS/PRCS files is now used, which "anchors" estimates at the last year of the file. This change improves data recency and accuracy and aligns with the ACS Data User Handbook updated guidance.

---

[1] U.S. Census Bureau, 2020. *Understanding and Using American Community Survey Data: What All Data Users Need to Know*, U.S. Government Publishing Office, Washington, DC. Accessible at <https://www.census.gov/programs-surveys/acs/library/handbooks/general.html>.