

2020 Demographic Analysis Estimates Briefing

Eric Jensen
Senior Technical Expert for Demographic Analysis
Population Division
U.S. Census Bureau

The U.S. Census Bureau reviewed this data product for unauthorized disclosure of confidential information and approved the disclosure avoidance practices applied to this release. CBDRB-FY21-053.



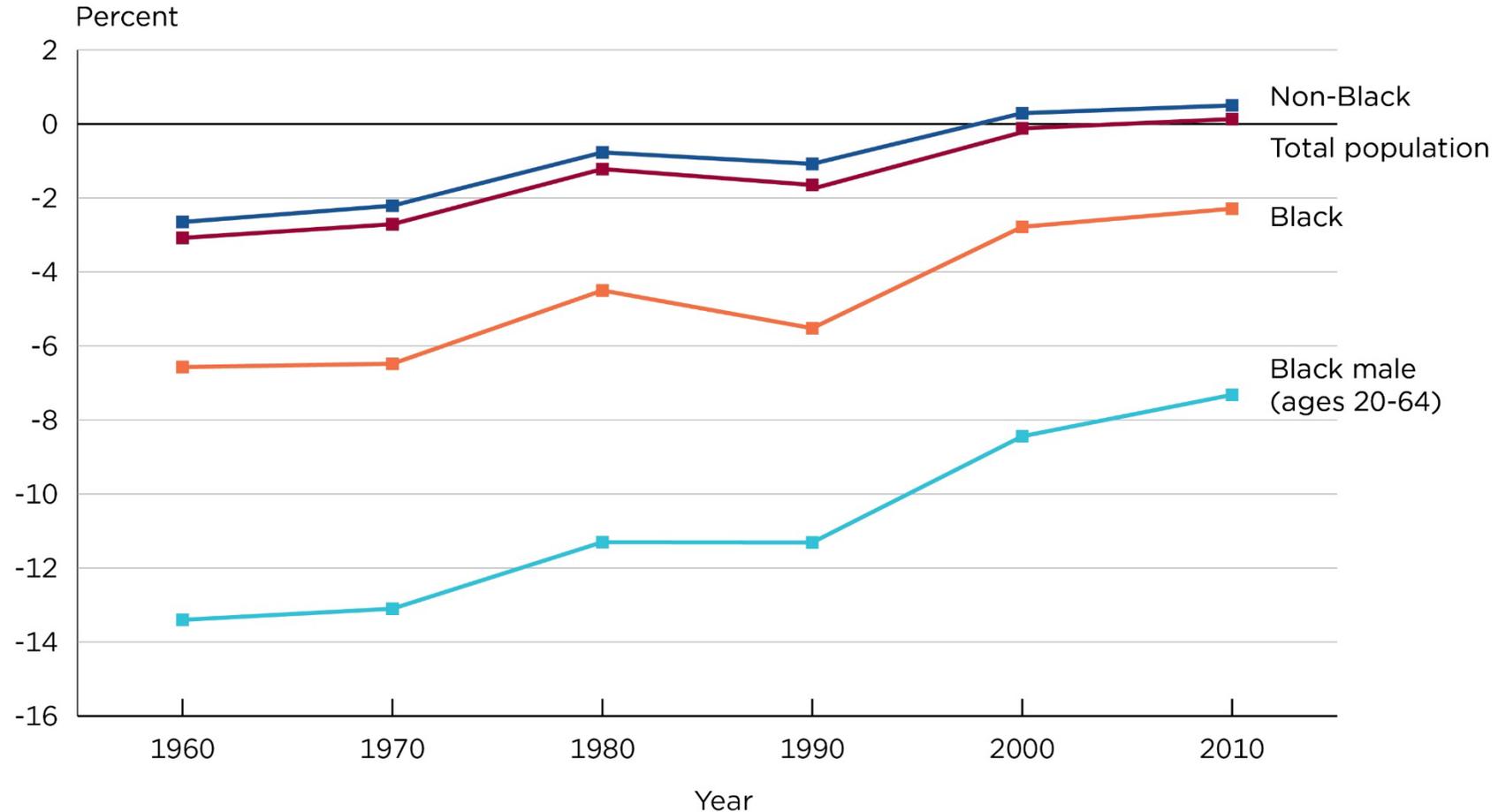
What is Demographic Analysis?

- Demographic Analysis (DA) is a method that the Census Bureau uses to evaluate the quality of the decennial census
- We produced national estimates of the population on April 1, 2020 by age, sex, DA race categories, and Hispanic origin
- Estimates are developed using current and historical vital records, data on international migration, and Medicare records
- The estimates are used to develop estimates of net coverage error at the national level by demographic detail

What Demographic Analysis Tells Us About the Quality of the 2020 Census Results

- DA can tell us about the net coverage error for specific age, sex, DA race, and Hispanic origin groups at the national level
- Net coverage error combines undercounts and overcounts for the same group
- The strength of DA is what it tells us about differential coverage for demographic groups either within the same census or over time
 - Coverage differentials by race
 - Undercount of young children

Demographic Analysis Estimates of Net Coverage Error From 1960 to 2010



Note: Net coverage error is calculated as the percent difference between the census counts and the Demographic Analysis estimates.

Source: U.S. Census Bureau, Population Division, Demographic Analysis Program, Special Tabulation.

Demographic Analysis Method

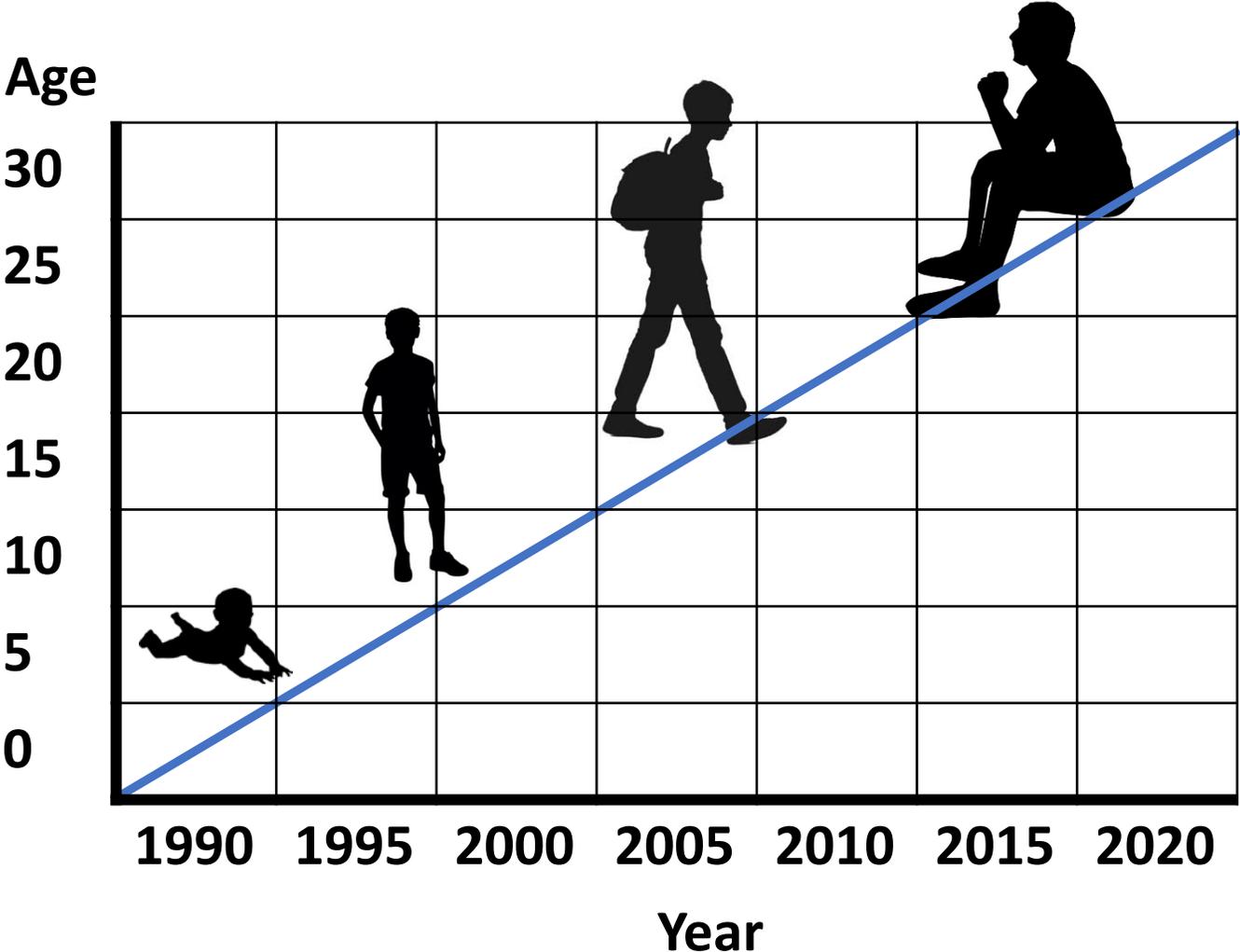
$$\text{Population} = \text{Births} - \text{Deaths} + \text{Immigration} - \text{Emigration}$$

- Birth records are the foundation of the DA estimates
- The total estimate for each cohort is calculated by answering two questions:
 - Who was in the birth records from 1945 to 2020 but was not living in the United States on April 1, 2020?
 - Who was living in the United States on April 1, 2020 but was not in the birth records?

Demographic Analysis Method (cont.)

Example

- In 1990-1991, there were 2.1 million male births in the United States
- From 1990-2020, there were 68,000 male native deaths to that cohort
- By April 1, 2020, there were an additional 355,000 males added to that cohort due to net international migration
- We estimate that there should be approximately 2.4 million males in the 2020 Census age 29



Demographic Analysis Method (cont.)

- We use Medicare enrollment records to estimate the population born before 1945, or ages 75 and older on April 1, 2020
 - Adjustments are made to account for underenrollment
- To calculate the total population, we sum the estimates for each birth cohort from 1945 to 2020 and add them to the estimates of the population aged 75 and older

A Range of Demographic Analysis Estimates

- We produce three series of estimates to account for uncertainty in the data and methods used to create the DA numbers
- Each series is a plausible estimate of the U.S. population on April 1, 2020
- We developed the range of estimates by varying the assumptions used to produce the components of population change

Difference Between the Low and High Series by Population Component	
Components	Percentage
Births and Deaths	19.7
International Migration	49.7
Oldest Ages (Medicare)	30.6
Total	100.0

Estimates Available at the National Level

- Currently, estimates can only be produced at the national level
- Birth records tell us where a person was born, but good data are not available to determine where that person was living on Census Day
- We plan to produce experimental state and county estimates for the population aged 0-4 once the birth records for counties become available in 2022

The Demographic Analysis Race and Ethnic Categories

- DA estimates have been limited to the Black and non-Black categories primarily for two reasons:
 - Information for races other than Black and White is not available for all years and all states in the historical vital statistics data
 - The 2020 Census includes the option of selecting more than one race, but the historical vital statistics did not include this option
 - The uncertainty that this introduces into the classification of births by race limits the usefulness of DA estimates for race categories other than Black and White
- Hispanic origin information was not available on the birth certificates for all states until 1990

Demographic Analysis in 2020

- Nearly a decade of research to improve the methods used to produce the 2020 DA estimates
- Increased collaboration with external experts
 - Demographers from universities, research centers, state agencies, and other federal agencies
- Released the DA estimates before the 2020 Census results
 - The estimates are completely independent of the 2020 Census

What is being released today?

- Three sets of Demographic Analysis (DA) population estimates
 - Black Alone/non-Black Alone
 - Black Alone or in Combination/non-Black Alone or in Combination
 - Hispanic (ages 0-29 only)
- National estimates by age, sex, DA race groups, and Hispanic origin
- Low, middle, and high series for each set to measure uncertainty
- Components of population change for all three sets and series
 - Births, deaths, international migration, Medicare-based estimates

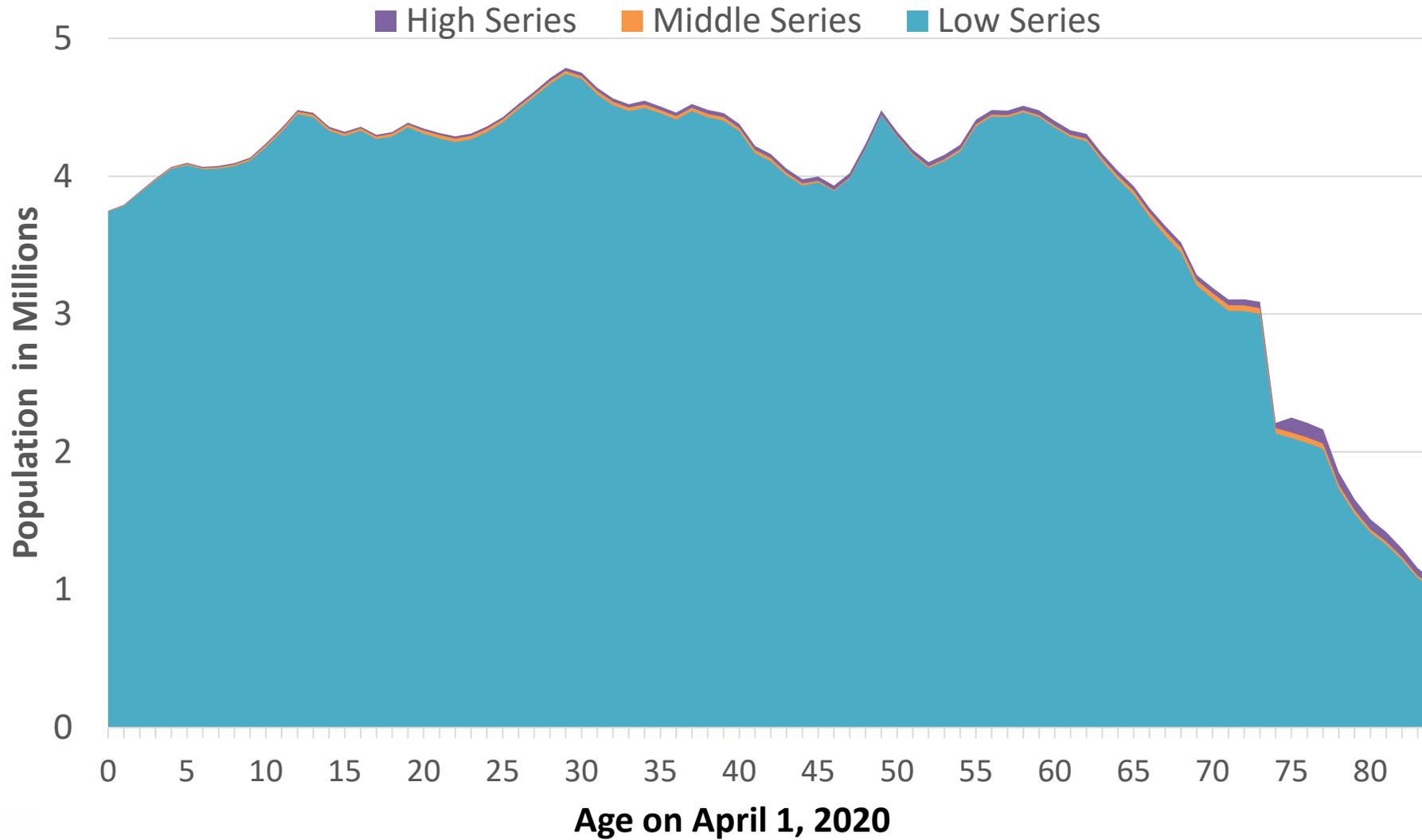
2020 Demographic Analysis Estimates of the U.S. Population as of April 1, 2020

2020 Demographic Analysis Estimates of the U.S. Population as of April 1, 2020

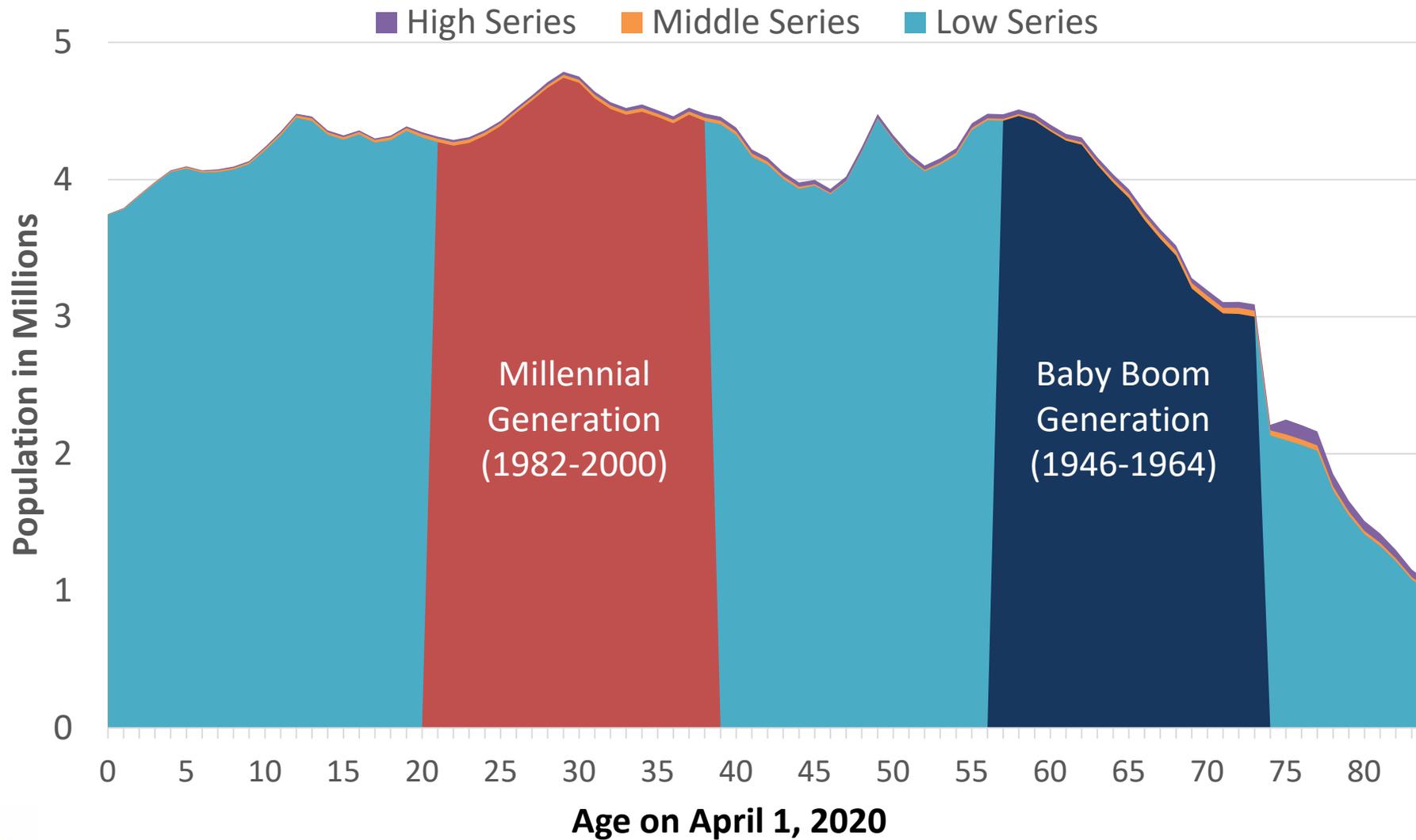
Low	Middle	High
330,730,000	332,601,000	335,514,000

Total Population by Age and Sex

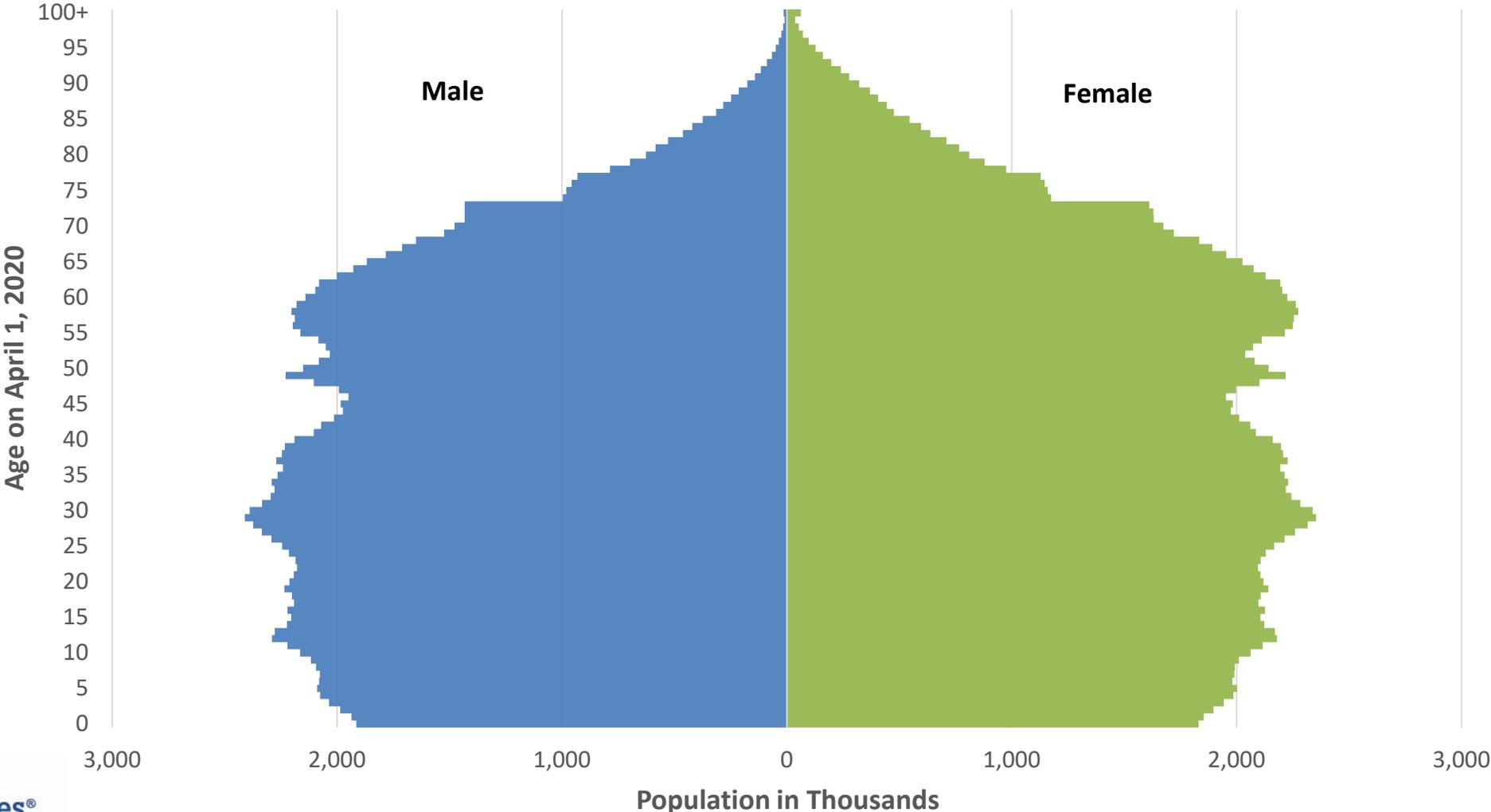
Total Population by Age for the 2020 Demographic Analysis Estimates: April 1, 2020



Total Population by Age for the 2020 Demographic Analysis Estimates: April 1, 2020

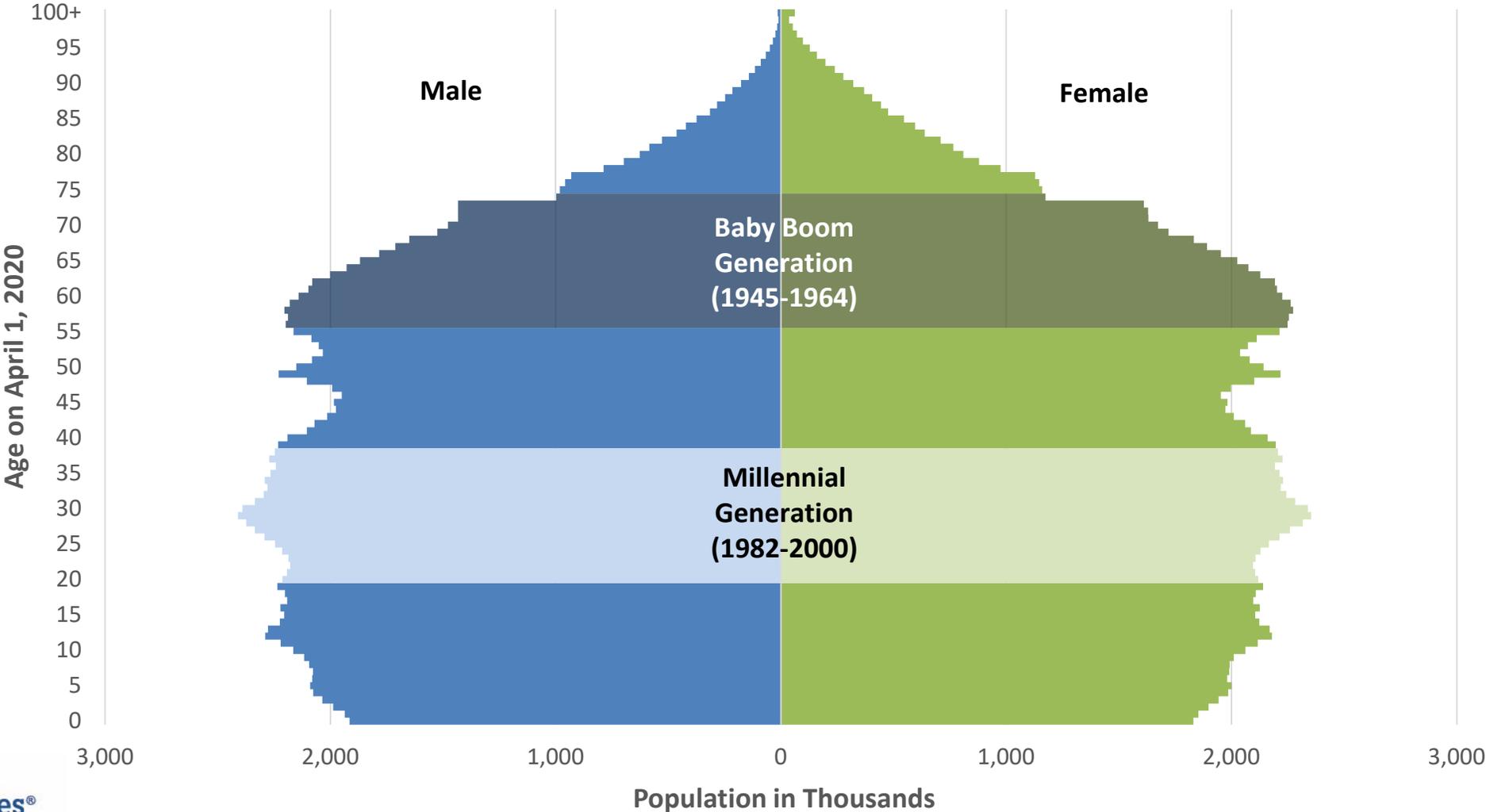


Population Pyramid for the 2020 Demographic Analysis Estimates (Middle Series): April 1, 2020

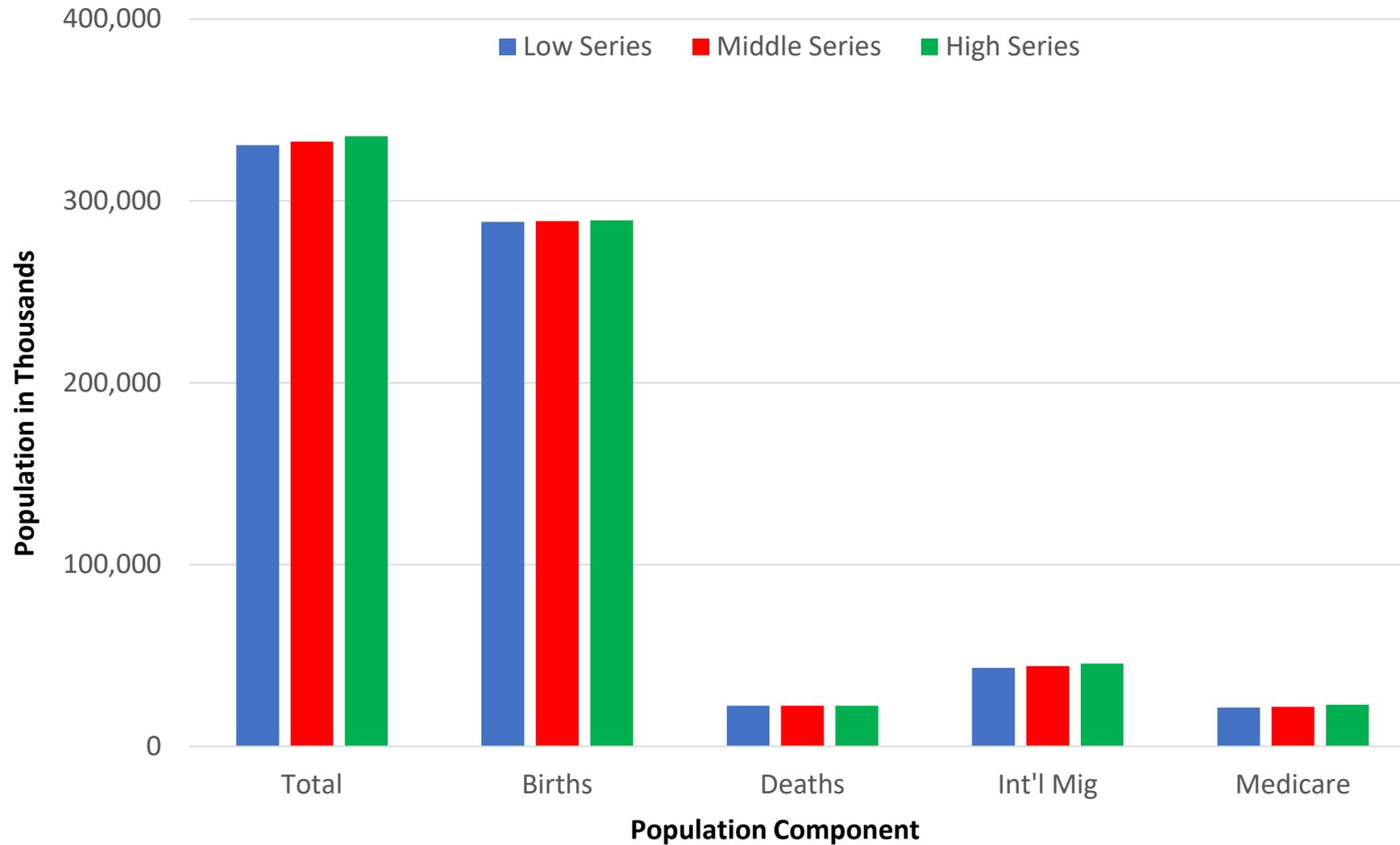


Source: U.S. Census Bureau, Population Division, 2020 Demographic Analysis (December 2020 release).

Population Pyramid for the 2020 Demographic Analysis Estimates (Middle Series): April 1, 2020

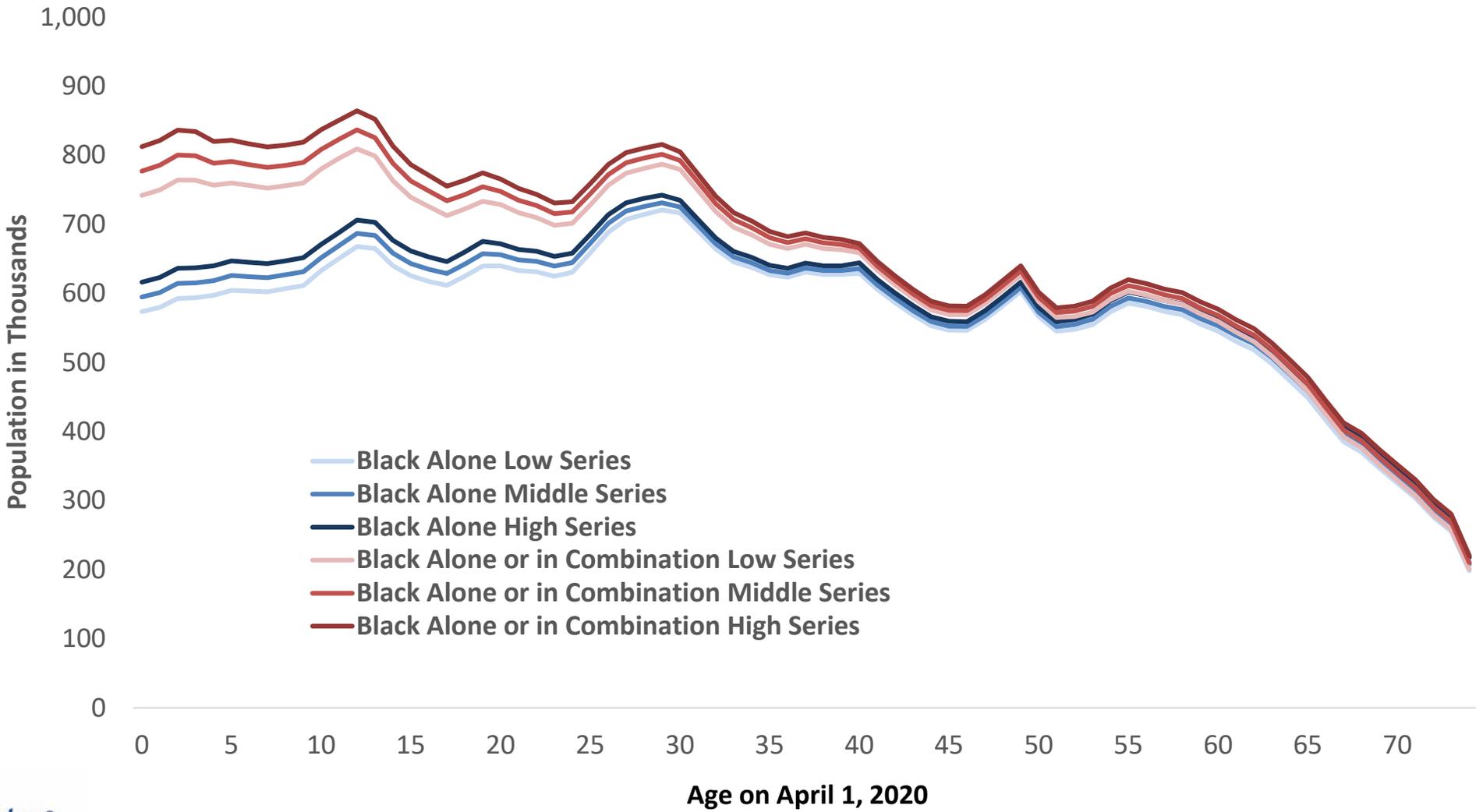


2020 Demographic Analysis by Series and Population Component: April 1, 2020



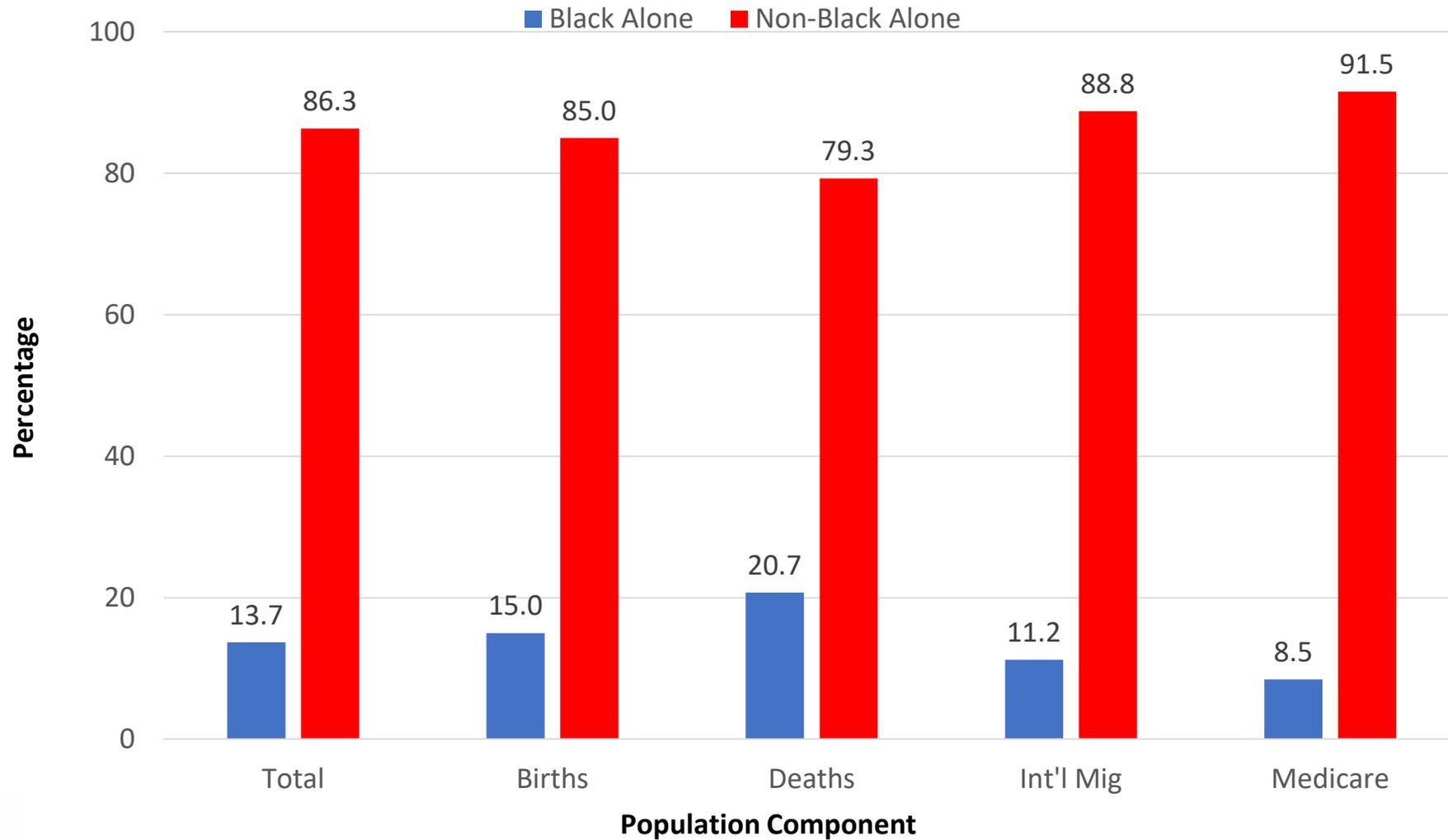
Black Alone and Black Alone or in Combination

Demographic Analysis Estimates of the Black Alone and Black Alone or in Combination Populations by Age and Series: April 1, 2020

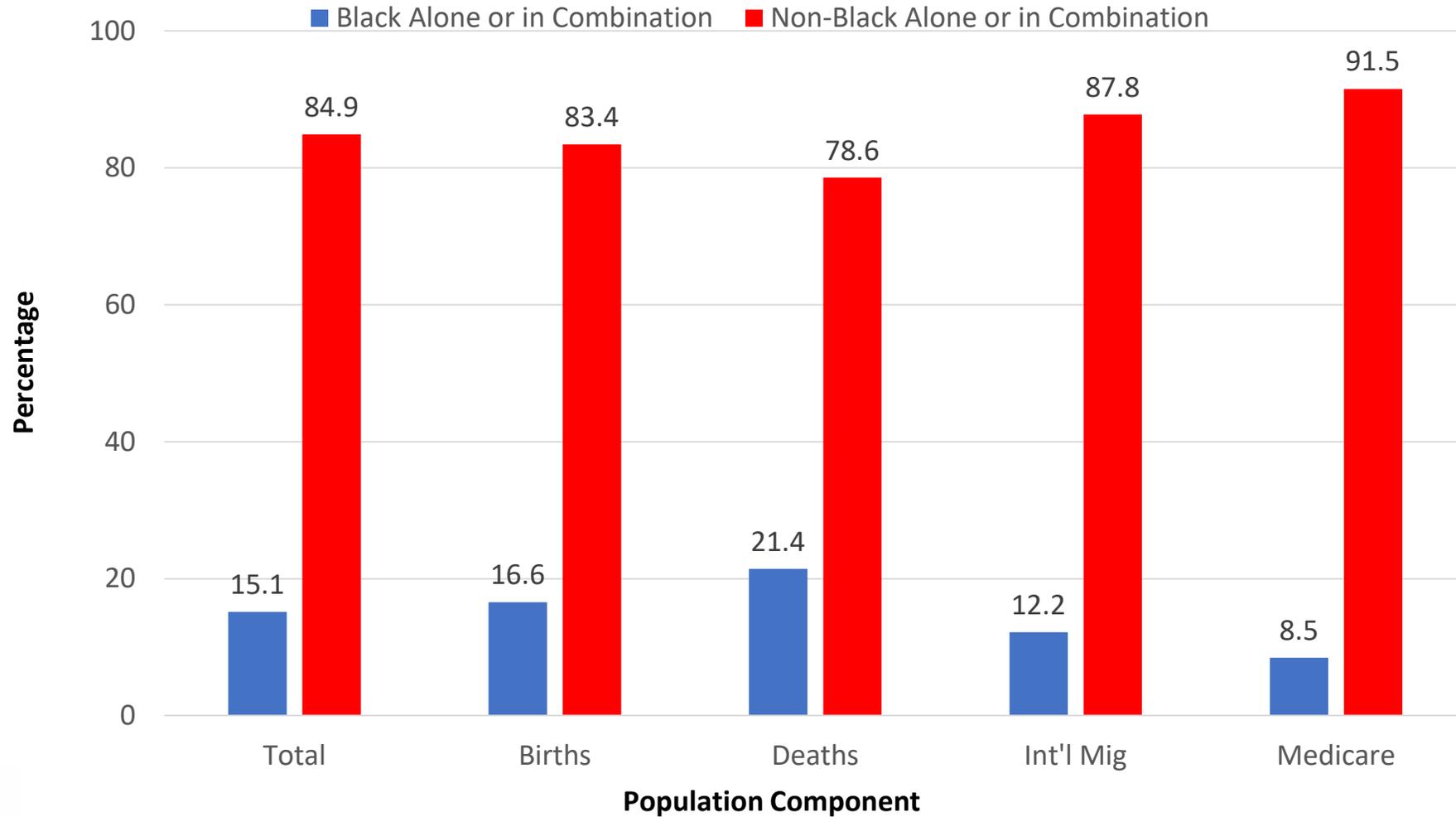


Source: U.S. Census Bureau, Population Division, 2020 Demographic Analysis (December 2020 release).

Distribution of the 2020 Demographic Analysis Black Alone/Non-Black Alone Estimates by Population Component (Middle Series): April 1, 2020

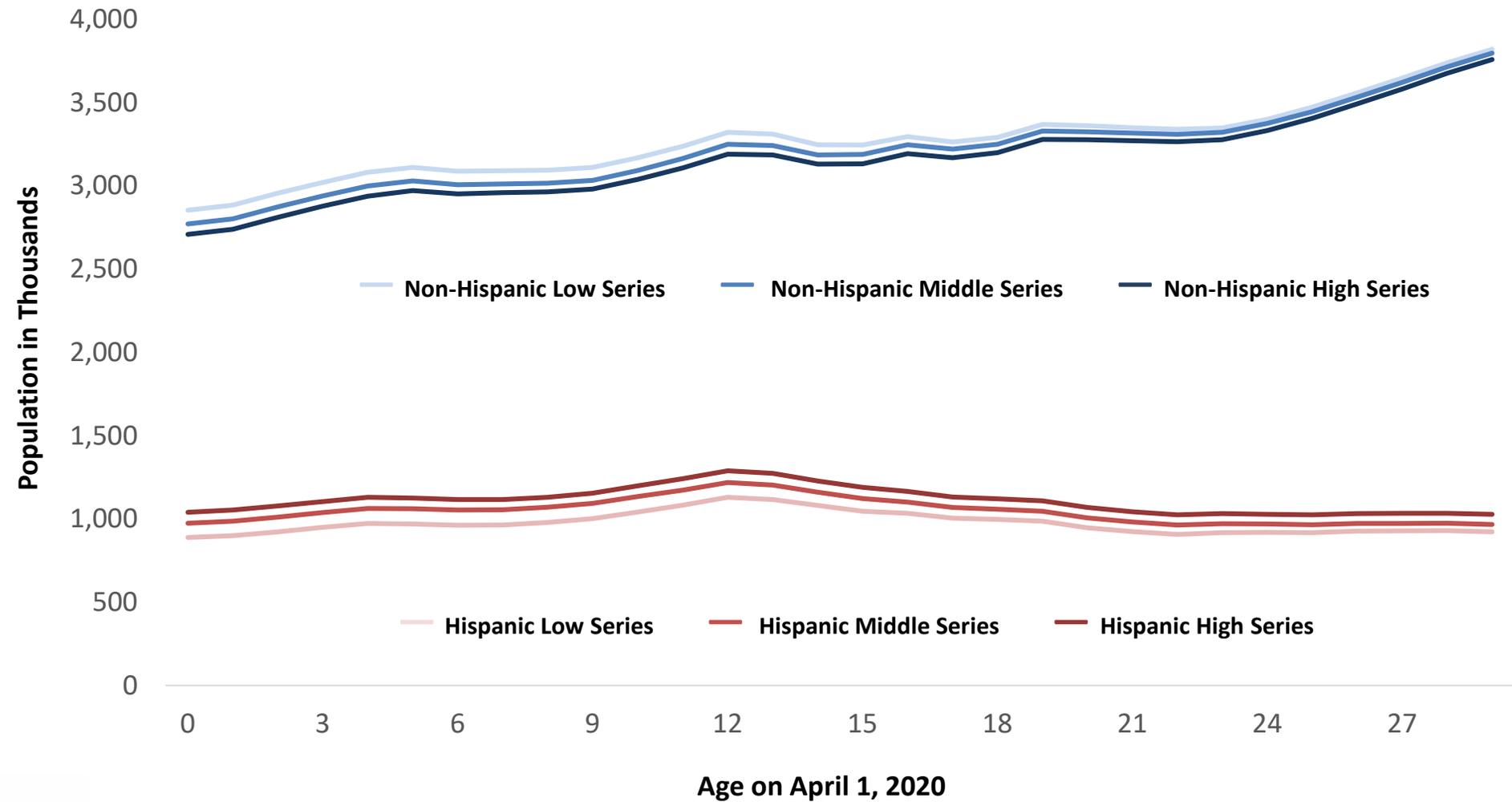


Distribution of the 2020 Demographic Analysis Black Alone or in Combination/Non-Black Alone or in Combination Estimates by Population Component (Middle Series): April 1, 2020



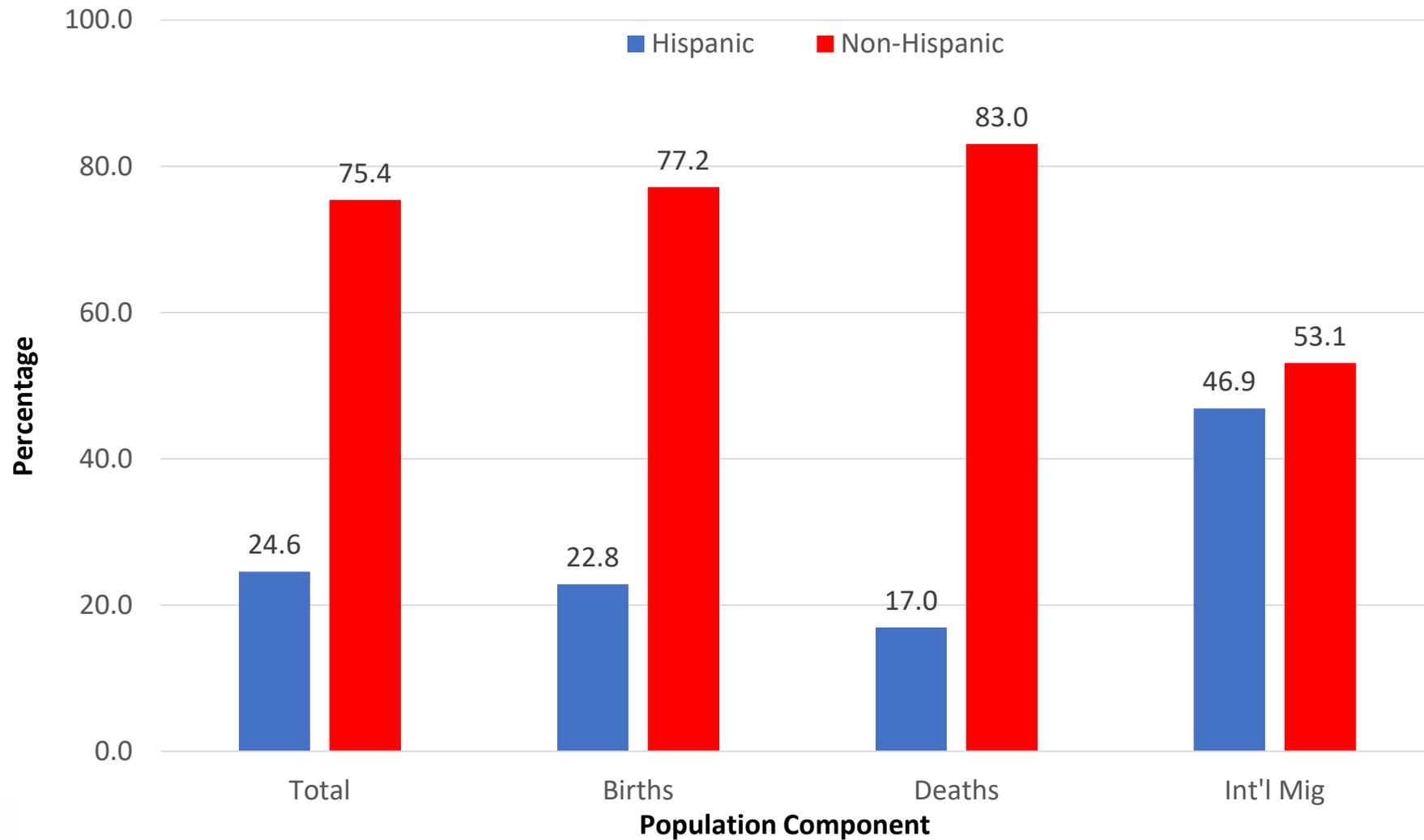
Hispanic/Non-Hispanic

Demographic Analysis Estimates of the Hispanic and Non-Hispanic Populations by Age and Series: April 1, 2020



Source: U.S. Census Bureau, Population Division, 2020 Demographic Analysis (December 2020 release).

Distribution of the 2020 Demographic Analysis Hispanic/Non-Hispanic Estimates by Population Component (Middle Series): Ages 0-29 on April 1, 2020



Next Steps

- Report on DA estimates of net coverage error to be produced in 2021
- Experimental sets of estimates to be produced in 2021 and 2022
 - Extended Hispanic origin (ages 0-39)
 - Churning race (ages 0-85+)
 - Full race and Hispanic origin detail (ages 0-17)
 - State and county estimates (ages 0-4)

Questions?

Eric Jensen

eric.b.Jensen@census.gov