U.S. Census Bureau's Population Estimates and Projections

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The Population Estimates Program

- The Population Estimates Program (PEP) disseminates official measures of population and housing units between decennial censuses

- Developed as per Title 13, U.S. Code, Section 181

- Use cases include:
    - Population controls and denominators
    - Academic and business research
    - Program planning in the public and private sectors

- Estimates extend back to 1900

- Time series are released annually featuring data for the date of the last census through the vintage year, which represents the latest year of estimates available

- Vintage 2023 is the current series
    - Contains estimates for April 1, 2020 to July 1, 2023
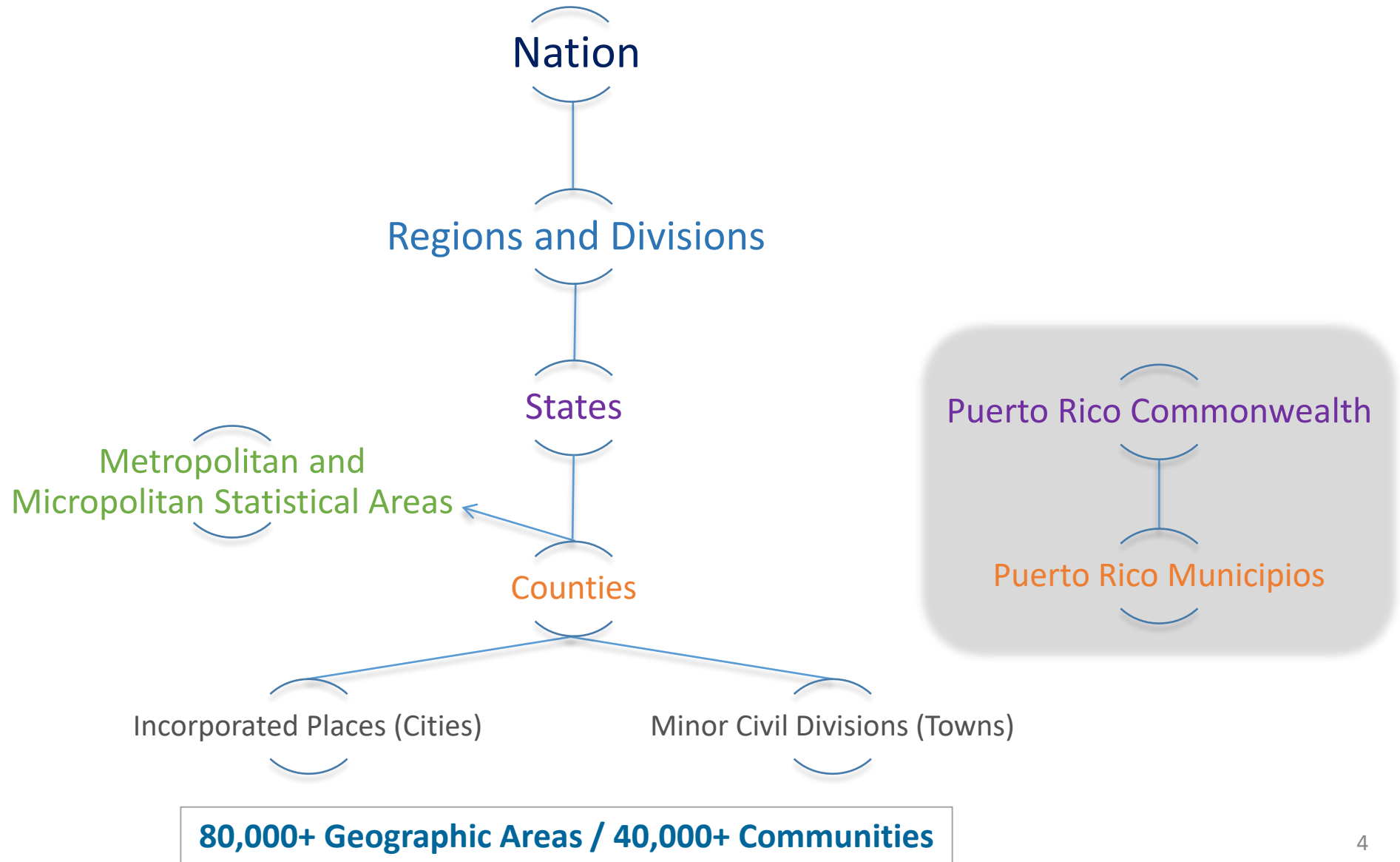
Why We Disseminate Estimates

Federal Mandate (U.S.C. Title 13)

Allocation of federal funds

Program planning for public and private services
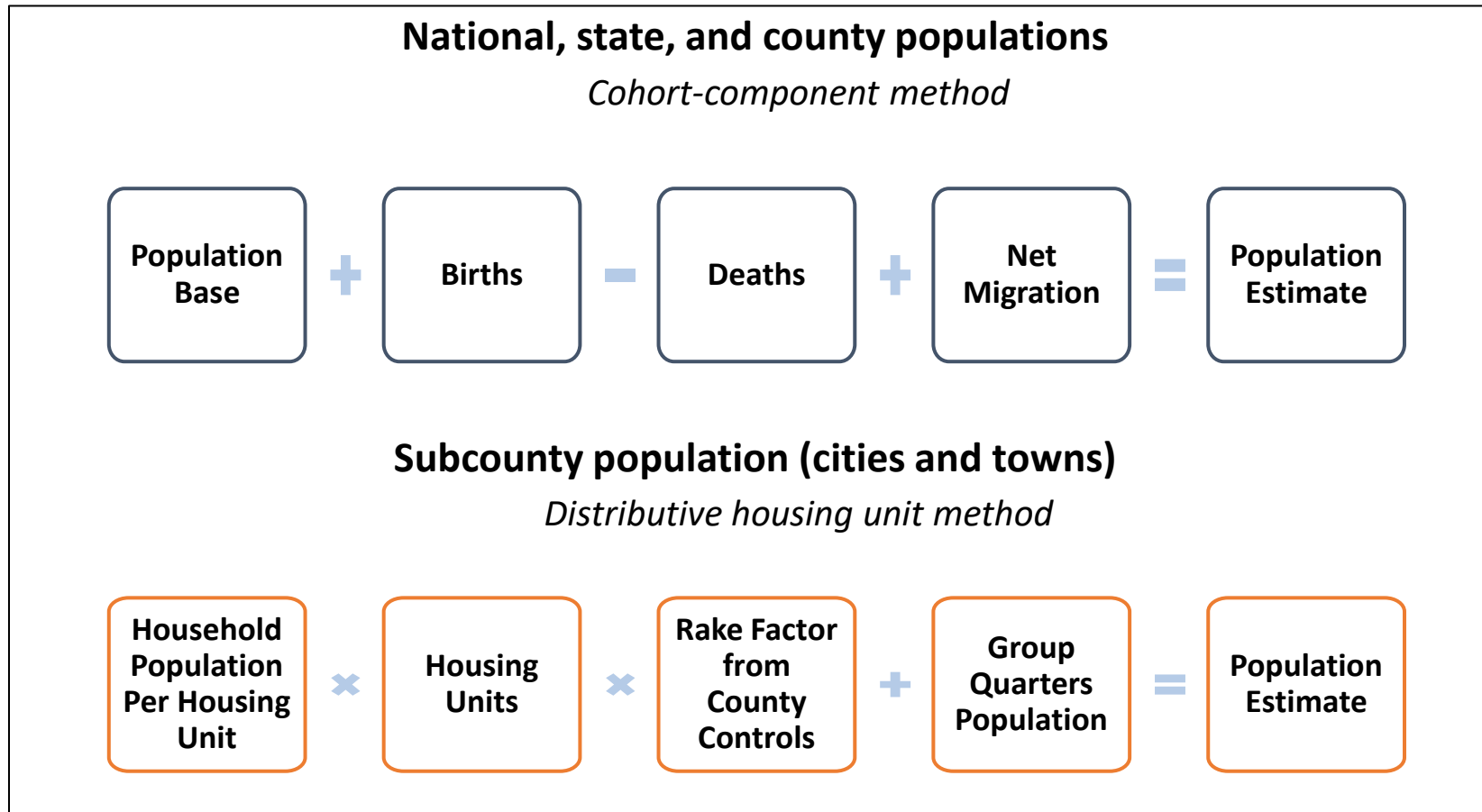
Controls for federal surveys

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PEP Estimates Geographies

Nation

Regions and Divisions

States

Metropolitan and
Micropolitan Statistical Areas

Counties

Incorporated Places (Cities)

Minor Civil Divisions (Towns)

Puerto Rico Commonwealth

Puerto Rico Municipios

80,000+ Geographic Areas / 40,000+ Communities

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Population and Housing Unit Estimates by Type and Geography

Estimate Type	U.S.	States	Metro/ Micro Statistical Areas	Counties	Cities and Towns	Puerto Rico	Puerto Rico Municipios
Total Resident Population	X	X	X	X	X	X	X
Components of Change (Births, Deaths, Net Migration)	X	X	X	X		X	
Population Characteristics (Age, Sex, Race, Hispanic Origin)	X	X	X	X		X (age & sex)	X (age & sex)
Monthly Population (Five Universes*)	X						
Group Quarters Population	X (by char.)	X (totals)		X (totals)			
Housing Units	X	X		X			

*These five estimates universes are: resident, resident plus Armed Forces overseas, civilian, civilian noninstitutionalized, household.

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Population and Housing Unit Estimates Methodology

National, state, and county populations

Cohort-component method

Population Base	**+**	Births	**−**	Deaths	**+**	Net Migration	**=**	Population Estimate

Subcounty population (cities and towns)

Distributive housing unit method

Household Population Per Housing Unit	**×**	Housing Units	**×**	Rake Factor from County Controls	**+**	Group Quarters Population	**=**	Population Estimate

Population Estimates Input Data

Component	Source of Data
Base population	Blended Base: 2020 Census, Vintage 2020, 2020 Demographic Analysis
Births	National Center for Health Statistics
Deaths	National Center for Health Statistics
Domestic migration	IRS Tax Records and Medicare Enrollment Records
International migration	American Community Survey, Puerto Rico Community Survey, Foreign Censuses and Population Registers

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Blended Base Approach
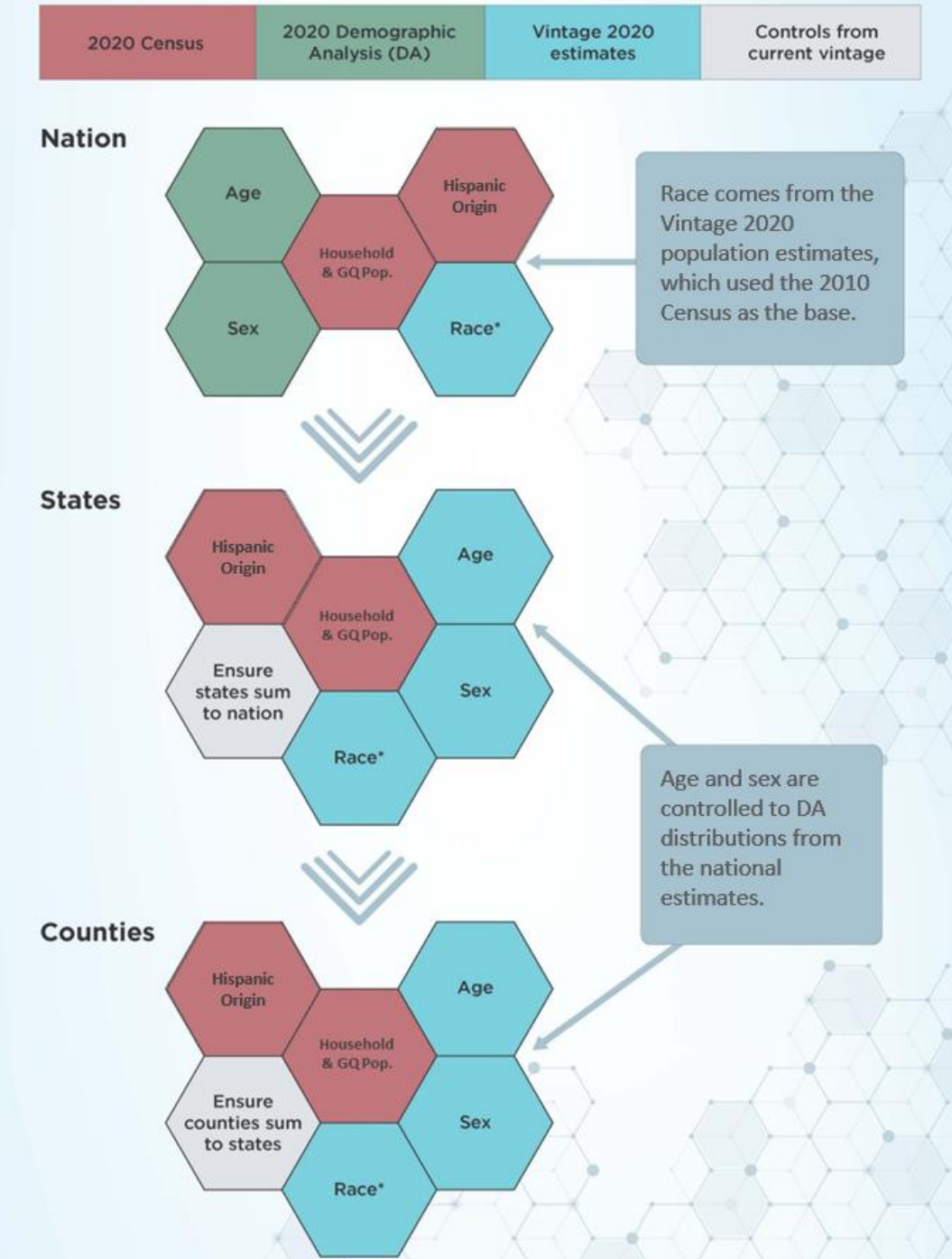
Availability of Vintage 2024 Population and Housing Unit Data Products

Release Date*	Product	Geography
December 2024	Population totals, components of change, and voting-age population	Nation, states, and Puerto Rico Commonwealth
March 2025	Population totals and components of change	Metropolitan and micropolitan statistical areas, counties, and Puerto Rico municipios
April 2025	Population by age and sex	Nation
May 2025	Population totals--	Cities and towns (incorporated places, minor civil divisions)
	Housing unit totals--	Nation, states, and counties
June 2025	Population by age, sex, race, and Hispanic origin--	Nation, states, metropolitan and micropolitan statistical areas, and counties
	Population by age and sex--	Puerto Rico Commonwealth and municipios

Dates subject to change.

Ways to Access Estimates

- PEP Webpage:

  census.gov/programs-surveys/popest.html

- data.census.gov

- QuickFacts

- Application Programming Interface (API)

Projections

FIGURE 55 — PROJ2023 Middle Series Review: TOT Annual Components of Change
sex=(0)Total hisp=(0)Total race6=(00)Total

Estimated and Projected Median Age of the US Population: 2022 to 2060
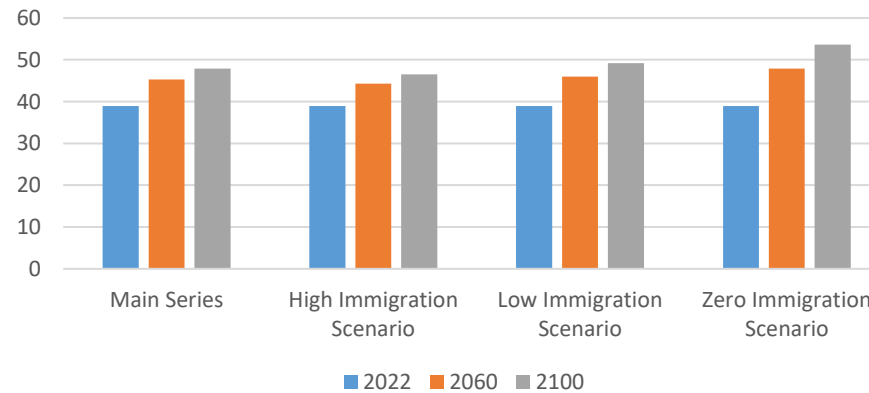
What We Mean by Population "Projections"

- Population for future dates

- Based on assumptions about future demographic trends

- Use population estimates as a base

- Are made at the national level

Why We Disseminate Projections

Program planning for public and private services

Academic and business research

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Population Projections Methodology

Cohort-component method

Population Base + **Births** – **Deaths** + **Net Migration** = **Population Projection**

Accuracy of the Projections

The accuracy of projections is affected primarily by two things:

- The accuracy of the base population (recent estimates)

- The assumptions we make about future fertility, mortality, and international migration

Availability of Population Projections

- In recent times, only national-level projections

- Annual data based on the most recent estimates and extending several decades

- Content includes:
    - Total Population
    - Components (Births, Deaths, and Net International Migration)
    - Characteristics by
        - Single-year-of-age
        - Sex
        - Race
        - Hispanic Origin
        - Nativity

Availability of Population Projections (continued)

- Current Projections Released November 2023
  - First Census projections to include 2020 Census data
- Includes a main series and three alternative immigration scenarios
  - Low, High and Zero
- Covers 2023-2100
  - Age, sex, race, Hispanic origin and nativity through 2060
  - Limited to age, sex and nativity for 2061-2100
- Produced using primarily the same methodology as the 2017 projections with updated input data

How to Access Projections

census.gov/programs-surveys/popproj.html

Undercount of Young Children

What is the Issue?

- In the 2020 Census, young children (0-4 years old) had a larger undercount than any other age group: **Net undercount 5.4%**

- This is a persistent issue in the census despite major efforts to improve the count leading up to 2020

- We also see this issue in demographic surveys:
  o American Community Survey (ACS)
  o Current Population Survey (CPS)
  o Survey of Income and Program Participation (SIPP)

- The Census Bureau is committed to improving data on young children

Vintage 2021 Blended Base, Base Inputs, and 2020 Census Data by Age and Sex: April 1, 2020
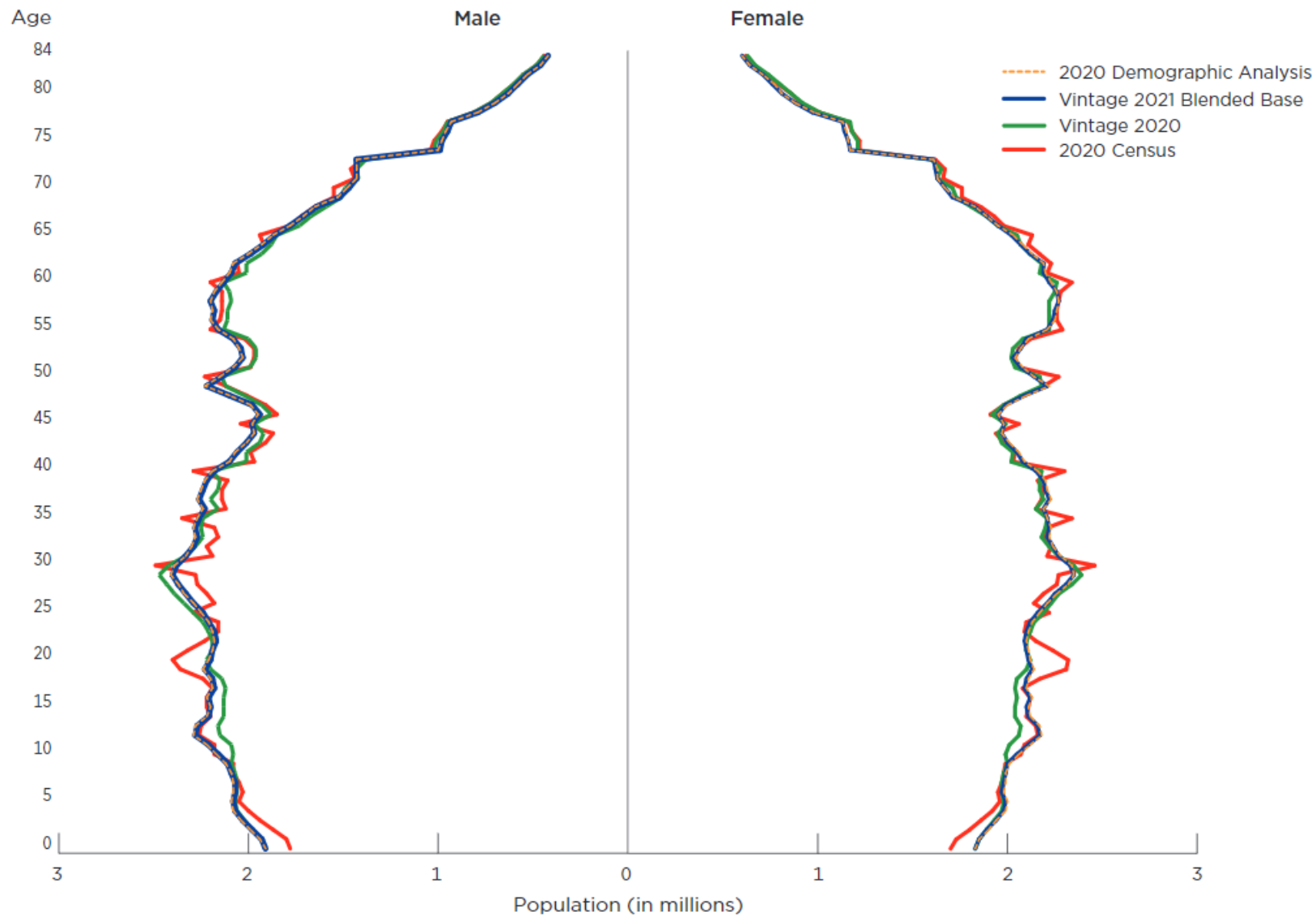
Note: These 2020 Census data by age and sex represent a special tabulation of the 2020 Census with confidentiality protections applied using the 2020 Census Disclosure Avoidance System. The U.S. Census Bureau reviewed this data product for unauthorized disclosure of confidential information and has approved the disclosure avoidance practices applied to this release. (DRB clearance number CB-FY22-DSEP-001.)
Source: U.S. Census Bureau, 2020 Decennial Census; 2020 Demographic Analysis; Vintage 2020 and 2021 Population Estimates.

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Vintage 2021 Blended Base, Base Inputs, and 2020 Census Data by Age and Sex: April 1, 2020
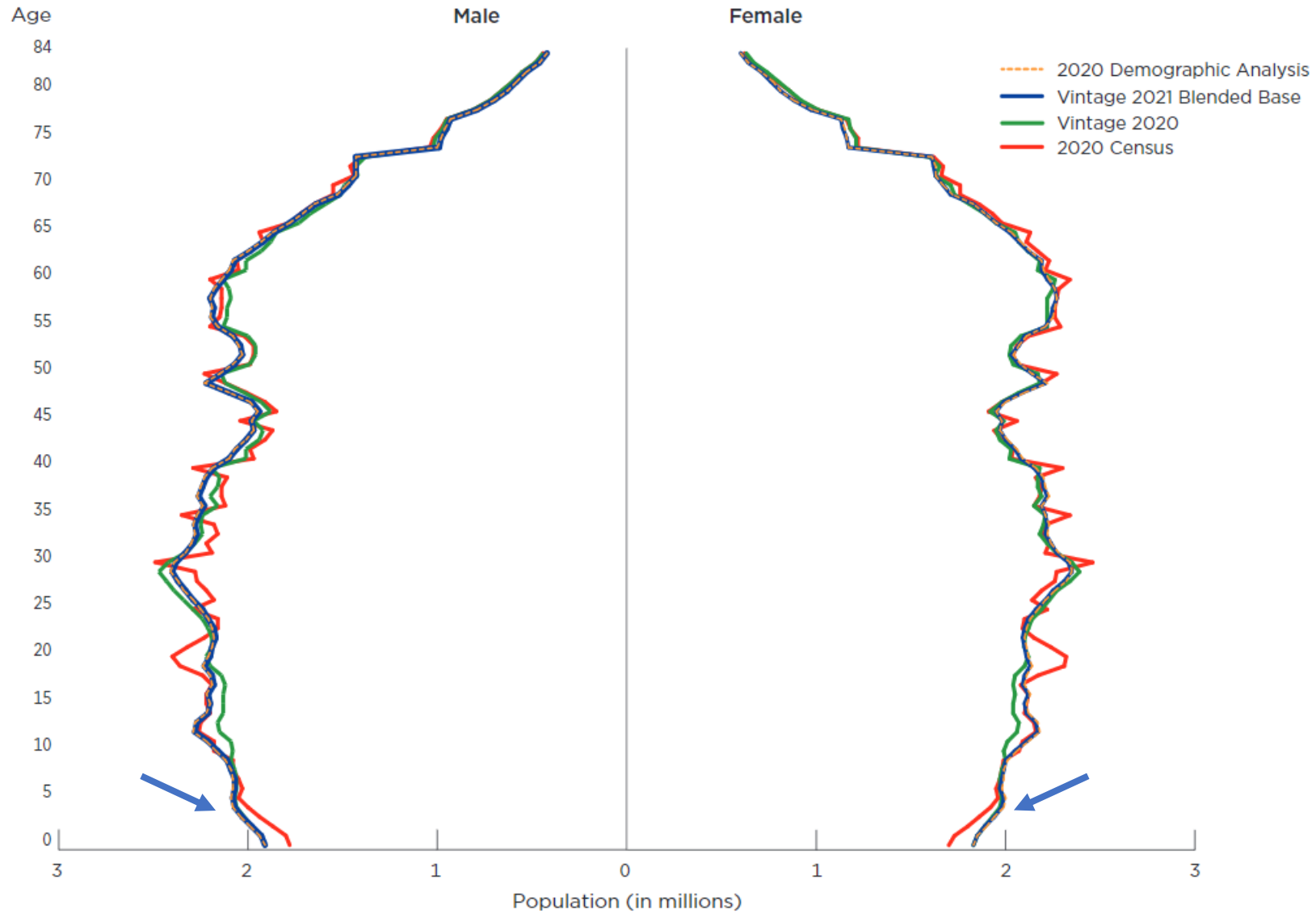
Estimating International Migration

Estimating foreign-born immigration

- We use data from the ACS to estimate migration flows
  - Total population is developed by identifying the foreign-born population whose Residence One Year Ago (ROYA) was abroad
  - We use data from the ACS to assign the geographic distribution and demographic characteristics
- The ACS data we use is lagged by one year
- During COVID, we supplemented the ACS-based estimates with administrative data

Figure 2.
Foreign-Born Immigration Estimates and Select Administrative Data: 2010-2022
(In millions)
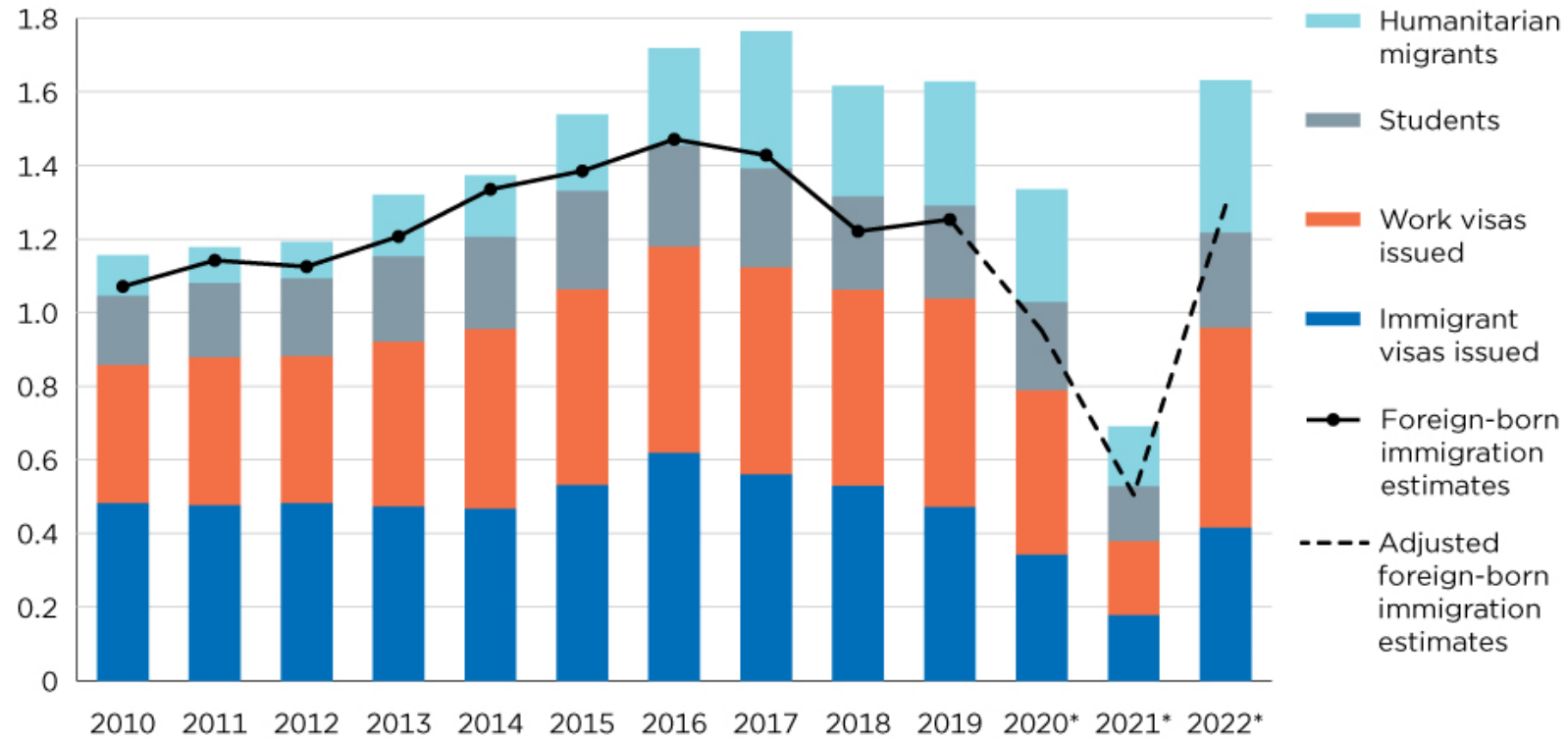
* Foreign-born immigration estimates adjusted for COVID-19 pandemic.

Sources: U.S. Census Bureau Internal Research Population Estimates; U.S. Department of Justice; Institute of International Education; U.S. Citizenship and Immigration Services; U.S. Department of Homeland Security; and U.S. State Department Bureau of Consular Affairs and Refugee Processing Center.
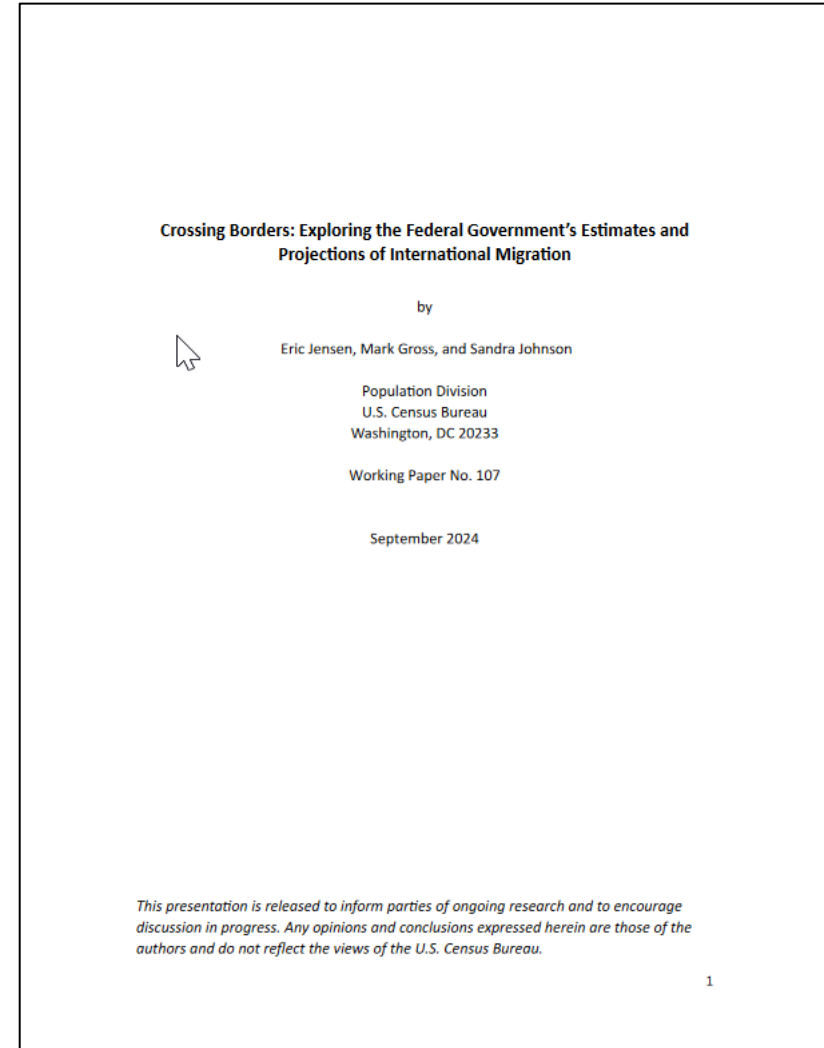
NIM updates for Vintage 2024

- Increased immigration at the southern border has been a challenge for federal agencies to measure
  - Census Bureau population estimates
  - Congressional Budget Office population projections
  - Office of Homeland Security Statistics
- Recent working paper highlights these challenges:

https://www2.census.gov/library/working-papers/2024/demo/pop-wp107.pdf

Crossing Borders: Exploring the Federal Government's Estimates and Projections of International Migration

by

Eric Jensen, Mark Gross, and Sandra Johnson

Population Division
U.S. Census Bureau
Washington, DC 20233

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This presentation is released to inform parties of ongoing research and to encourage discussion in progress. Any opinions and conclusions expressed herein are those of the authors and do not reflect the views of the U.S. Census Bureau.

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NIM updates for Vintage 2024 (cont.)

- A major research priority is identifying ways to make our ACS-based approach more current

- Consulted with academics to improve the methodology for estimating migration flows

- Explored administrative data from:
  - DHS US Border Protection Releases
  - DHS Office of Field Operations Paroles
  - State Dept Refugee Processing Center

Population Estimates and the American Community Survey (ACS)

How are the ACS and PEP Similar?

- Both disseminate total population and housing unit estimates
- Both disseminate population characteristics estimates by age, sex, race, and Hispanic origin
- PEP estimates are used as controls for ACS population and housing unit data, so 1-year estimates for larger areas are consistent

B01003 | Total Population

American Community Survey | Universe: Total population | 2022: ACS 1-Year Estimates Detailed Tables

Notes

Label	United States	
	Estimate	Margin of Error
Total	333,287,562	*****

How are the ACS and PEP Different?

	ACS	PEP
Purpose	• Sample estimates	• Provide annual estimates of the current population and total housing units by calculating change since the last census
Collects	• Detailed social, economic, housing, and demographic characteristics	• Not a survey • Uses administrative records and other data sources to calculate annual change in population and housing
Content	• Population and housing characteristics	• No social and economic detail • Population characteristics by age, Hispanic origin, race, and sex only • Housing unit totals only
New Data Every	• Year	• Year
Time Represented	• 1-year estimates: January 1-December 31 of data collection year • 5-year estimates: January 1 lower limit year to December 31 of upper limit year	• Estimate dates – First of selected months • Estimate intervals – Monthly, Annual, and Decade

How are the ACS and PEP Different (cont.)

	ACS	PEP
Geography	• 1-year ACS estimates contain geographies with populations of 65,000 or more • 5-year ACS estimates can be found down to the block group level for select tables	• Nation, states, counties, cities, and towns • Puerto Rico Commonwealth and its municipios • Metropolitan and micropolitan statistical areas
Statistics	• Margins of error calculated at the 90% confidence level	• Not a product of sampling, so statistical confidence intervals are not needed. • Entire time series back to last census updated annually, so averages for time periods are not used

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Resources & Contact Information

Census Bureau Website: www.census.gov

Population and Housing Unit Estimates Website:
www.census.gov/popest

Population Projections Website:
www.census.gov/programs-surveys/popproj

Coordination, Dissemination, and Outreach Branch (for any questions pertaining to the Estimates & Projections Area):
pop.cdob@census.gov

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Questions

Thank You!