

# The U.S. Census Bureau's Postcensal and Intercensal Population Estimates

Alexa Jones-Puthoff  
Population Division

National Conference on Health Statistics  
August 7, 2012

# Overview

- Postcensal Population Estimates
- Postcensal vs. Intercensal Estimates
- Intercensal Estimates Methods
- Race in the Population Estimates

# Postcensal Estimates, Produced Annually

- Population
  - Nation by age, sex, race, and Hispanic origin
  - States by age, sex, race, and Hispanic origin
  - Counties by age, sex, race, and Hispanic origin
  - Cities and towns (incorporated places and minor civil divisions / a.k.a. subcounty areas), total population only
  - Puerto Rico Commonwealth and municipios by age and sex
- Housing units
  - States
  - Counties

# Uses of Population Estimates

- Distribution of federal funds
- Population controls for major surveys
  - American Community Survey
  - Current Population Survey
  - Survey of Income and Program Participation
  - American Housing Survey
- Denominators for statistical rates
- Program planning

# Postcensal Population Estimates Methods

- Estimates base is most recent Census
- From the last Census forward, population is estimated using a cohort-component method (also called the administrative record method) at the national, state, and county levels
  - Nation:  
$$\text{Population}_2 = \text{Population}_1 + \text{Births} - \text{Deaths} + \text{NIM}$$

NIM = Net international migration
  - States and counties:  
$$\text{Population}_2 = \text{Population}_1 + \text{Births} - \text{Deaths} + \text{NIM} + \text{DM}$$

DM = Domestic Migration

# National, State, and County Data Sources

- Base population
  - The most recent census
- Births and deaths
  - National Center for Health Statistics (NCHS)
  - Federal-State Cooperative for Population Estimates (FSCPE)
- Net international migration
  - American Community Survey (ACS)
  - Puerto Rico Community Survey (PRCS)
  - Census Bureau estimates of foreign-born emigration and native migration
  - Defense Manpower Data Center
- Domestic migration
  - Federal tax data
  - Medicare

# Historical Comparison, National Total

<b>Population Estimates and Census Counts: 1980 - 2010</b>			
<b>Year</b>	<b>Postcensal Population Estimate</b>	<b>Census Count</b>	<b>Percent Difference</b>
1980	221,672	226,546	-2.15
1990	250,172	248,710	0.59
2000	274,520	281,422	-2.45
2010	308,450	308,746	-0.10

Note: Percent difference = (Estimate – Census)/Census\*100.

Numbers are shown in thousands.

Source: U.S. Census Bureau, Population Division, Population Estimates Program.

# Postcensal versus Intercensal Estimates

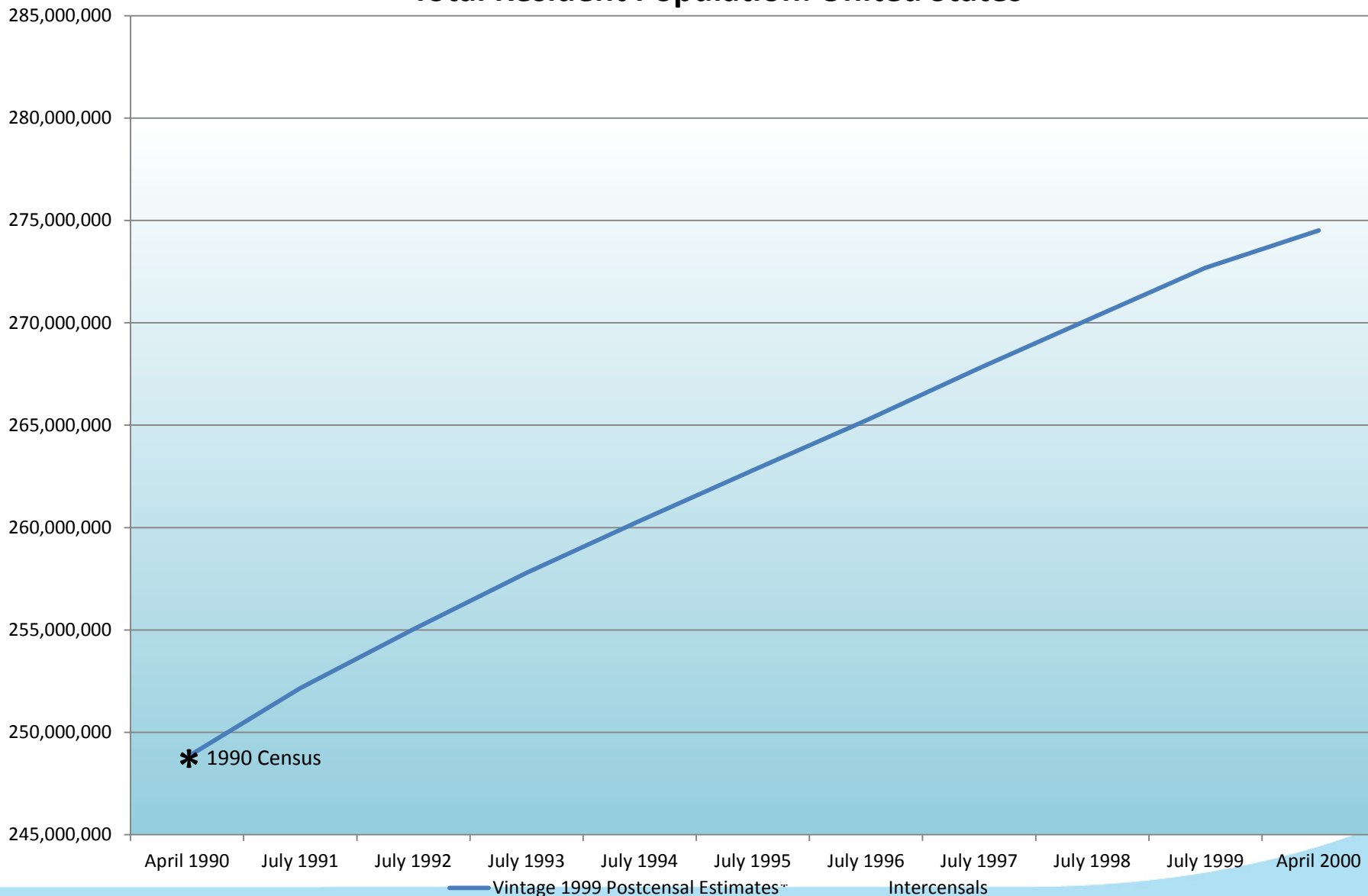
- Postcensal estimates
  - Every year
  - July 1 estimates, full series from last Census date forward (for 2009, series was April 1, 2000-July 1, 2009)
  - “Vintage” identified by terminal year in the series
    - For example, series of estimates released beginning in December 2009 were the “Vintage 2009” estimates
- Intercensal estimates
  - Once a decade
  - July 1 estimates, full series between two most recent Census dates
  - Most recent intercensals begin with Census 2000 and end with Census 2010



# Intercensal Method for April 1, 2000 to April 1, 2010: County and Above

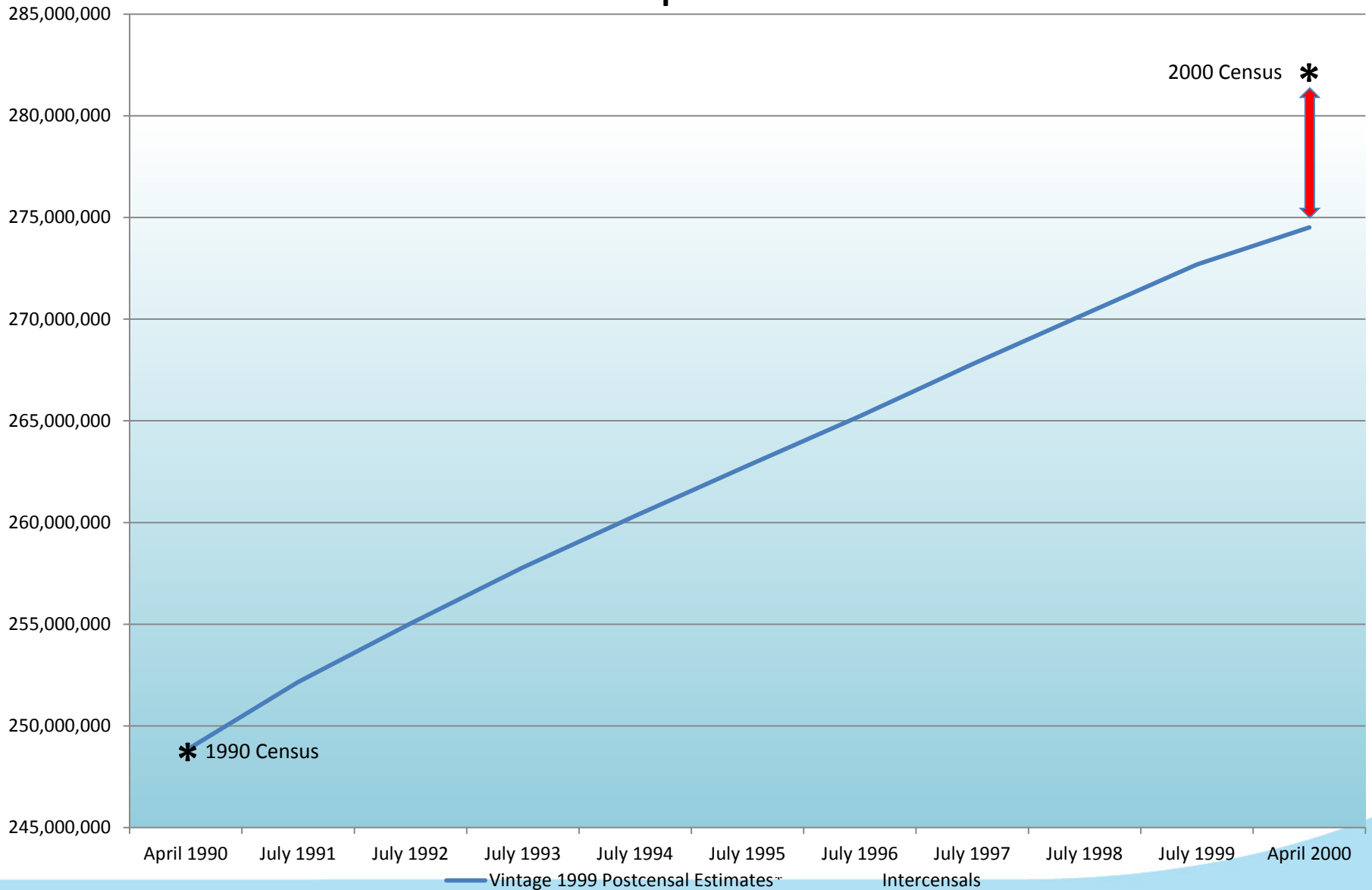
- Interpolation methodology
- Postcensal estimates served as the base
- Difference between the 2010 Census and the postcensal estimates— or “error of closure”— was calculated by age, sex, race, and Hispanic origin
- That difference was then smoothed back over the time period
- Methodological exceptions for small cells, but with controls to higher-level totals
- *Patterns* in postcensal estimates are preserved even when the *level* changes

# Vintage 1999 Postcensal Estimates for the Total Resident Population: United States



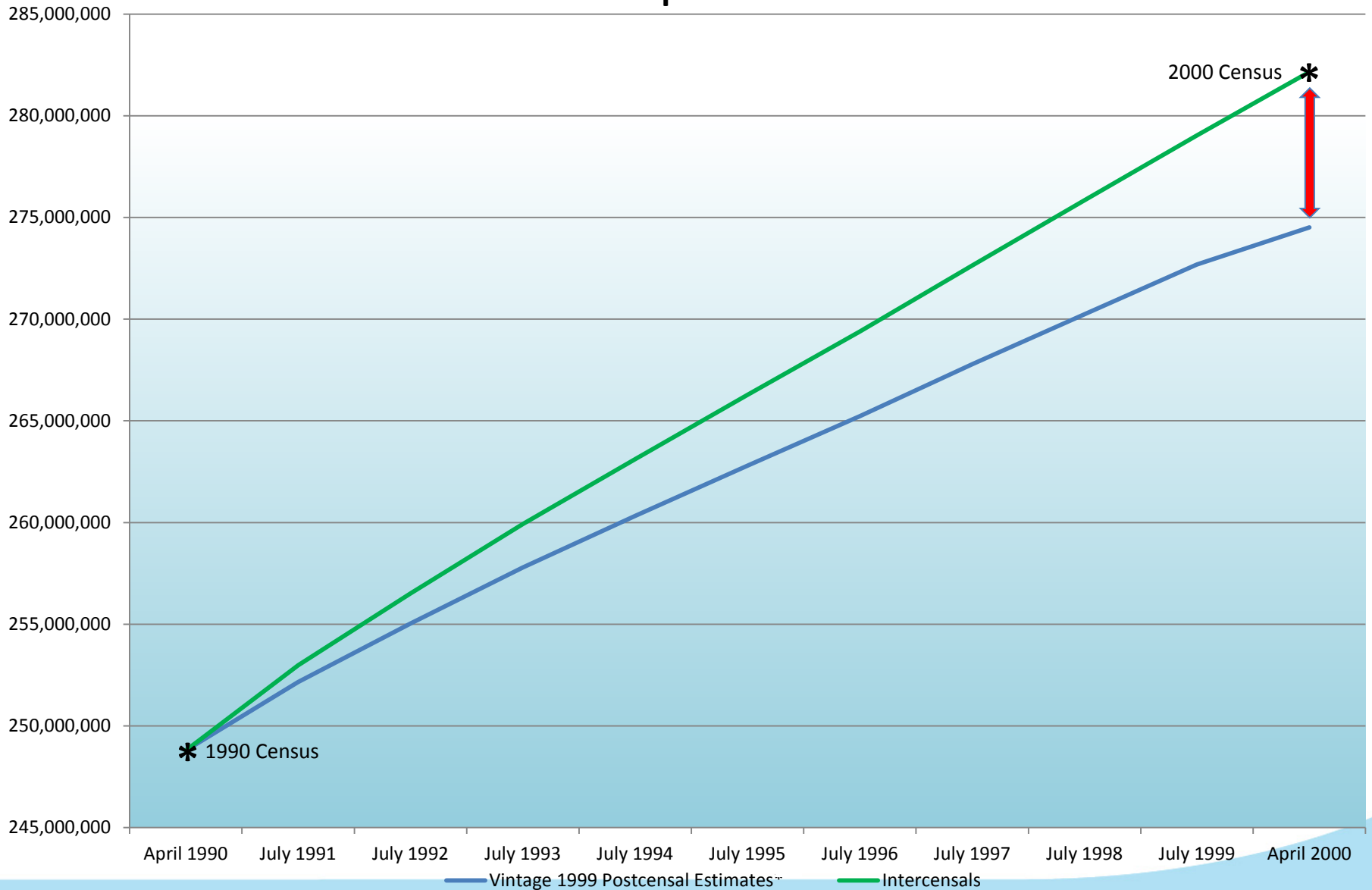
— Vintage 1999 Postcensal Estimates™ Intercensals

# Intercensal Estimates and Vintage 1999 Postcensal Estimates for the Total Resident Population: United States



— Vintage 1999 Postcensal Estimates™ Intercensals

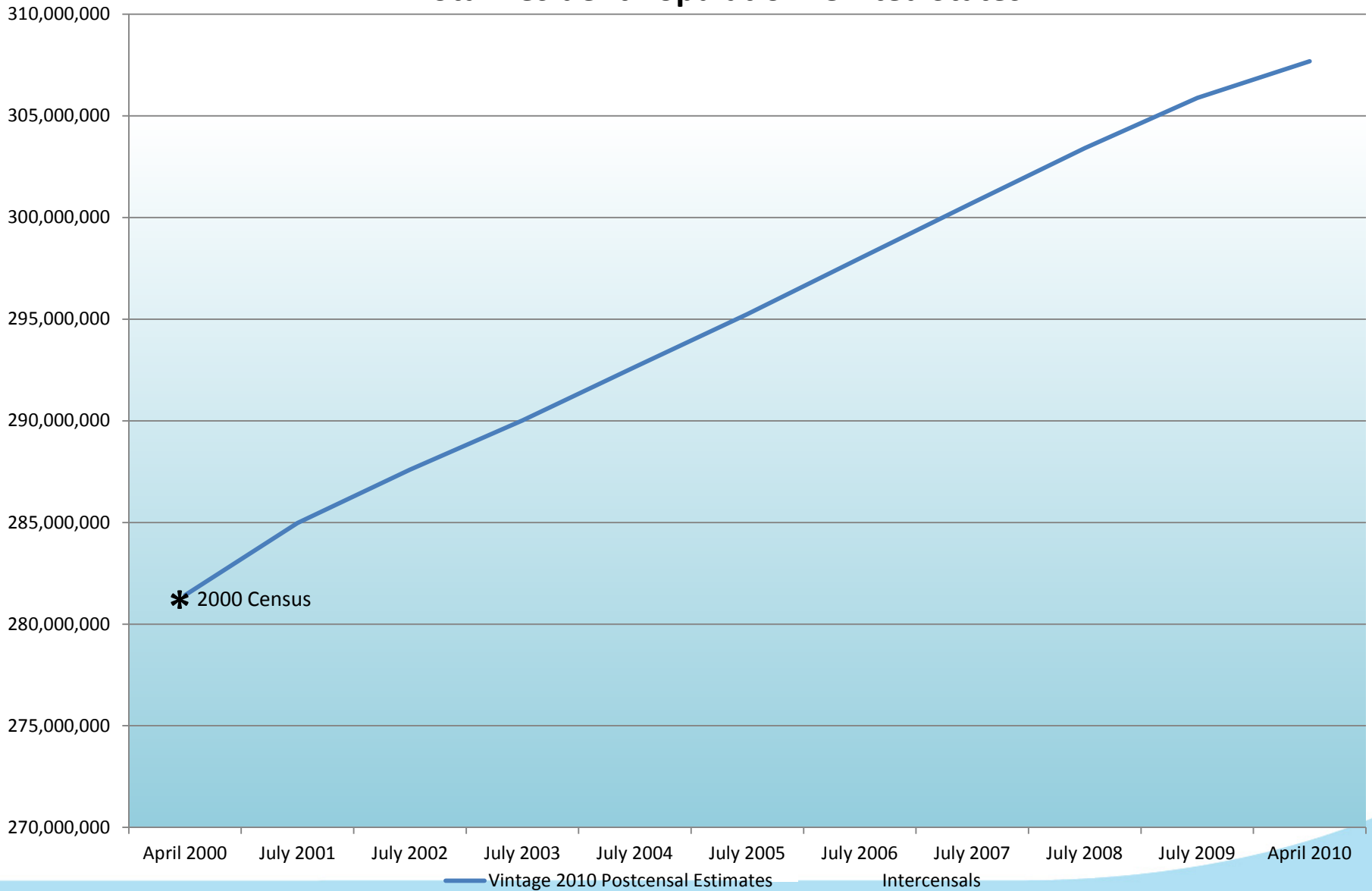
# Intercensal Estimates and Vintage 1999 Postcensal Estimates for the Total Resident Population: United States



— Vintage 1999 Postcensal Estimates™

— Intercensals

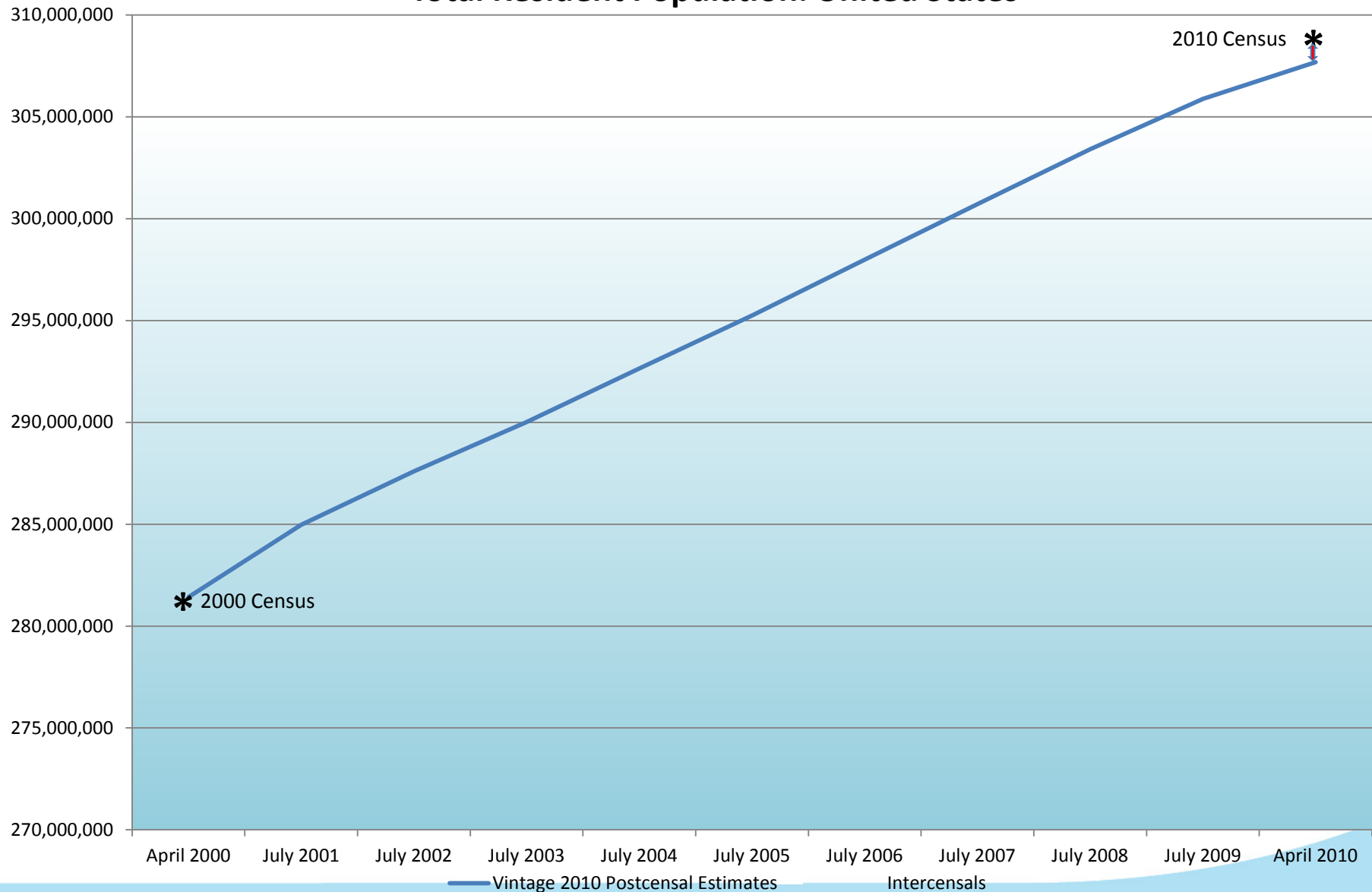
# Vintage 2010 Postcensal Estimates<sup>†</sup> for the Total Resident Population: United States



— Vintage 2010 Postcensal Estimates

Intercensals

# Intercensal Estimates and Vintage 2010 Postcensal Estimates<sup>†</sup> for the Total Resident Population: United States

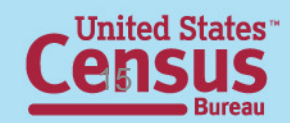
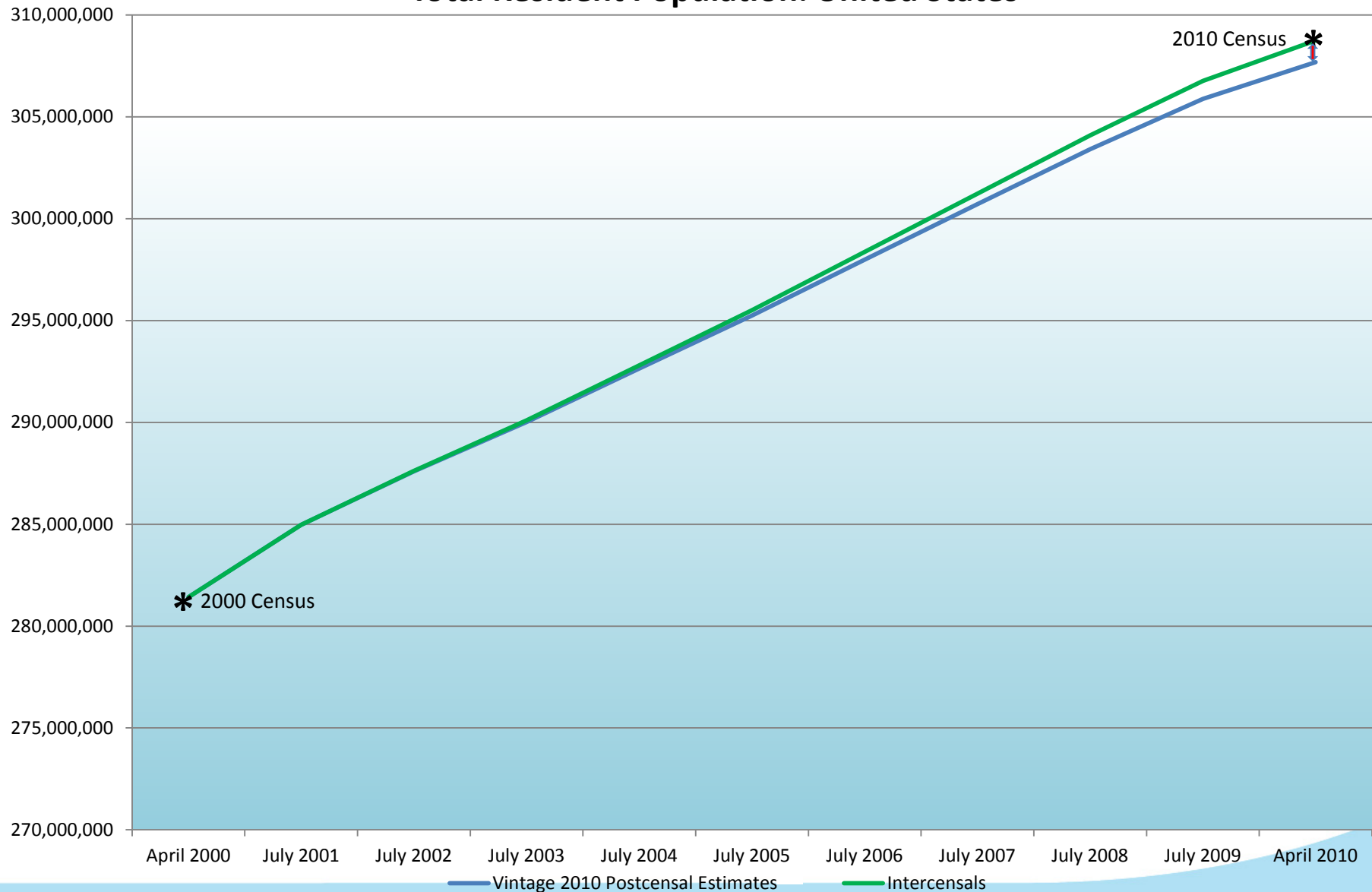


— Vintage 2010 Postcensal Estimates Intercensals



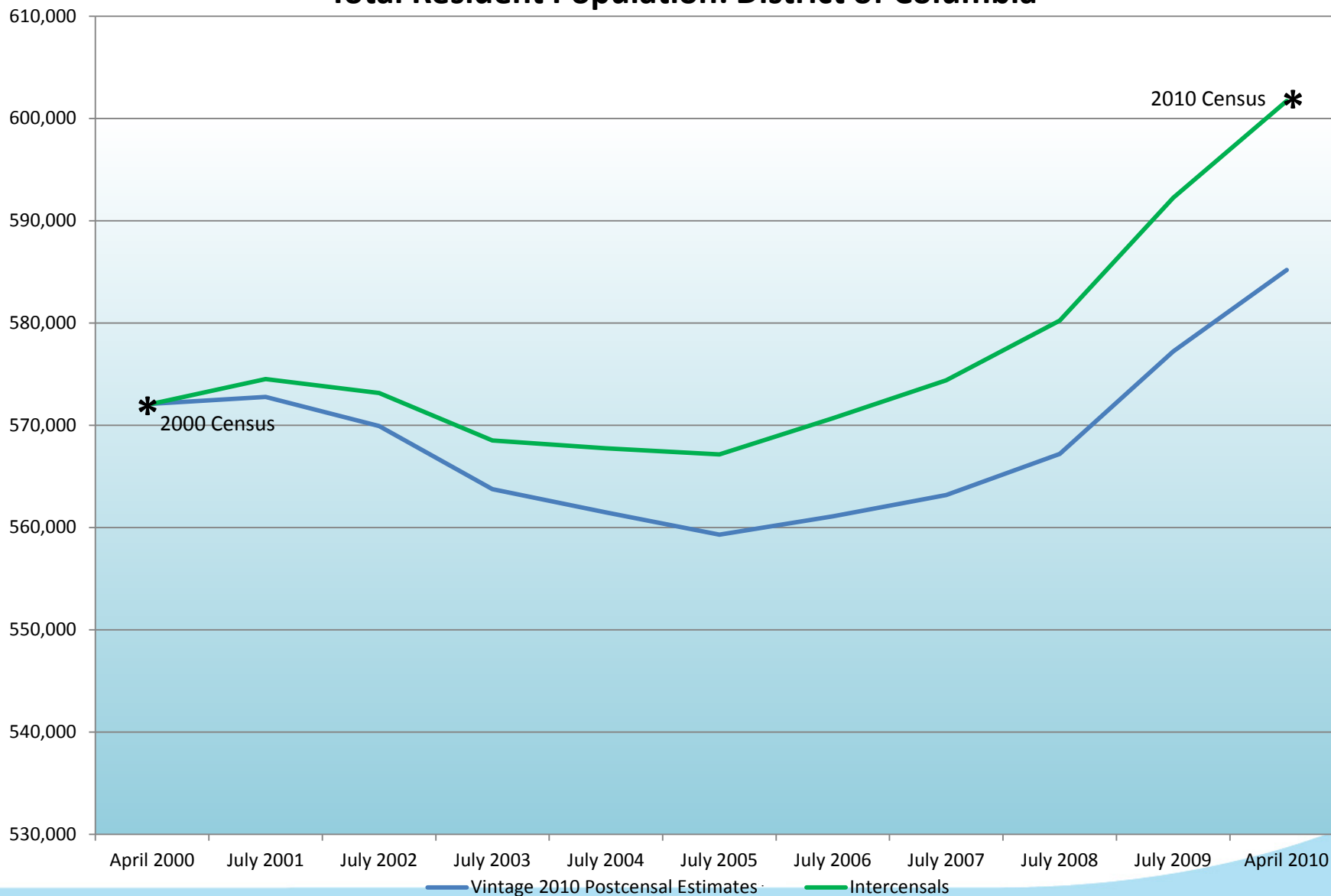
<sup>†</sup> without challenges or Special Censuses

# Intercensal Estimates and Vintage 2010 Postcensal Estimates<sup>†</sup> for the Total Resident Population: United States



<sup>†</sup> without challenges or Special Censuses

# Intercensal Estimates and Vintage 2010 Postcensal Estimates<sup>†</sup> for the Total Resident Population: District of Columbia



— Vintage 2010 Postcensal Estimates — Intercensals



# Intercensal Method for April 1, 2000 to April 1, 2010: Cities and Towns (Subcounty)

- Totals only; no demographic detail
- Intercensal estimates were calculated separately for the household and group quarters populations, then summed to create resident population
- At primitive geographic level (lowest level of mutually exclusive geographies):
  - Straight line interpolation between Census 2000 and Census 2010
  - Controlled to county intercensal totals

# **“Intercensal Series” Estimates Method for April 1, 2010 to July 1, 2010**

- Many users needed an early (pre-Vintage-2011) July 1, 2010 estimate consistent with the 2010 Census
- July 1, 2010 was estimated for the household population and the group quarters population (which, when summed, give the resident population) and housing units
- Numeric and percent change between April 1, 2010 and July 1, 2010 in the Vintage 2010 estimates were used to move the estimates forward from April 1, 2010 (Census)

# Race in the Population Estimates

# Modification of Race Responses

- Race groups differ across products/needs
  - Census (2000, 2010) data include “Some Other Race” as a valid race response
  - Population estimates data include five races “alone” and “in combination” with other races, but no “Some Other Race”
  - Bridged race estimates include only four single-race groups (no “Some Other Race” and no possibility of combinations)
- Stepwise process to accommodate these three different constructs

# Census Race to Population Estimates Race Groups

- Responses of one or more of the five specified OMB races (White, Black, AIAN, Asian, NHPI) are not modified
- Responses that include Some Other Race (SOR) are modified as follows:
  - If SOR and one or more OMB races, SOR is dropped
  - If SOR alone, race is allocated either from within the household or from a hot deck, in both cases matched on specific Hispanic origin response
- In 2010, 97% of SOR alone population was Hispanic; modification does not affect Hispanic origin

Note: AIAN = American Indian and Alaska Native; NHPI = Native Hawaiian and Other Pacific Islander.

# Population Estimates Race Groups to Bridged Race Groups

- Responses of one or more of the four “bridged race” categories (White, Black, AIEA, API) are not modified
- Responses that include two or more races are modified to become single-race responses
- Modification done on the basis of specifications from NCHS

Note: AIEA = American Indian, Eskimo or Aleut; API = Asian and Pacific Islander.

# Race Modification Results

Race	Census 2010		Modified Race		Bridged Race	
	Number	Percent	Number	Percent	Number	Percent
One Race	299,736,465	97.1	301,761,343	97.7	308,745,538	100.0
White	223,553,265	72.4	241,937,061	78.4	245,423,230	79.5
Black	38,929,319	12.6	40,250,635	13.0	42,065,395	13.6
AIAN	2,932,248	0.9	3,739,506	1.2	4,263,539	1.4
Asian	14,674,252	4.8	15,159,516	4.9	16,993,374	5.5
NHPI	540,013	0.2	674,625	0.2		
Some Other Race	19,107,368	6.2	(X)	(X)	(X)	(X)
Two or More Races	9,009,073	2.9	6,984,195	2.3	(X)	(X)

(X) Not applicable

Note: AIAN = American Indian and Alaska Native (American Indian, Eskimo or Aleut in bridged race); NHPI = Native Hawaiian and Other Pacific Islander. Asian and NHPI combine to form Asian and Pacific Islander (API) in bridged race.

Sources: Census 2010 data available via <http://factfinder2.census.gov/>. Modified Race data are from the intercensal estimates produced by the Population Division, U.S. Census Bureau, available via <http://www.census.gov/popest/intercensal/>. Bridged race data are from a special tabulation.

# Products of Interest

- **Intercensal Estimates**

<http://www.census.gov/popest/data/intercensal/index.html>

- **Postcensal Estimates (Vintage 2011)**

<http://www.census.gov/popest/data/index.html>

- **Modified Race File**

<http://www.census.gov/popest/research/modified.html>

- **Estimates Evaluation**

<http://www.census.gov/popest/research/eval-estimates/eval-est.html>



# Contact Information

- Alexa Jones-Puthoff  
Chief, Population Estimates Branch  
301-763-2385 (branch)  
301-763-6030 (direct)  
[alexa.kennedy.jones-puthoff@census.gov](mailto:alexa.kennedy.jones-puthoff@census.gov)

[www.census.gov/popest](http://www.census.gov/popest)