

The 2010 Census Demographic Analysis Program

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U S C E N S U S B U R E A U

What is Demographic Analysis (DA)

DA refers to a macro-level method for evaluating census coverage by comparing census counts with estimates of the population based on administrative data. It also includes assessing the census for internal consistency and consistency with previous census results.

The Strength of DA Estimates

“The foundation of the demographic analysis method is the longitudinal consistency of the underlying demographic data”

“DA follows the process of population change as it occurs, starting with births, and then incrementing or decrementing cohort size with subsequent information on mortality and migration”

J. Gregory Robinson
U.S. Census Bureau

Demographic Analysis Compared to Survey-Based Estimates of Coverage

The Census Bureau has historically relied on two methods to measure coverage in the decennial census

1) Demographic Analysis

- Macro-level
- Comparisons between estimates and census counts

2) Survey-Based Estimates

- Micro-level
- Case-by-case record linkage
- Will use DA sex ratios to correct for Correlation Bias in 2010

Demographic Analysis Compared to Demographic Benchmark Analysis (DBA)

Core DA - National-level estimates by single year of age, sex, Black and Non-Black (researching Hispanic and Non-Hispanic)

Demographic Benchmark Analysis - Comparisons between housing unit and population estimates and census counts for lower levels of geography and additional demographic characteristics

The Method of Demographic Analysis

The basic demographic accounting equation for Demographic Analysis in 2010:

Population < 65 (born since 1945) =
Births – Deaths + Immigration – Emigration

Population 65+ = Medicare count + Estimate of the number not enrolled

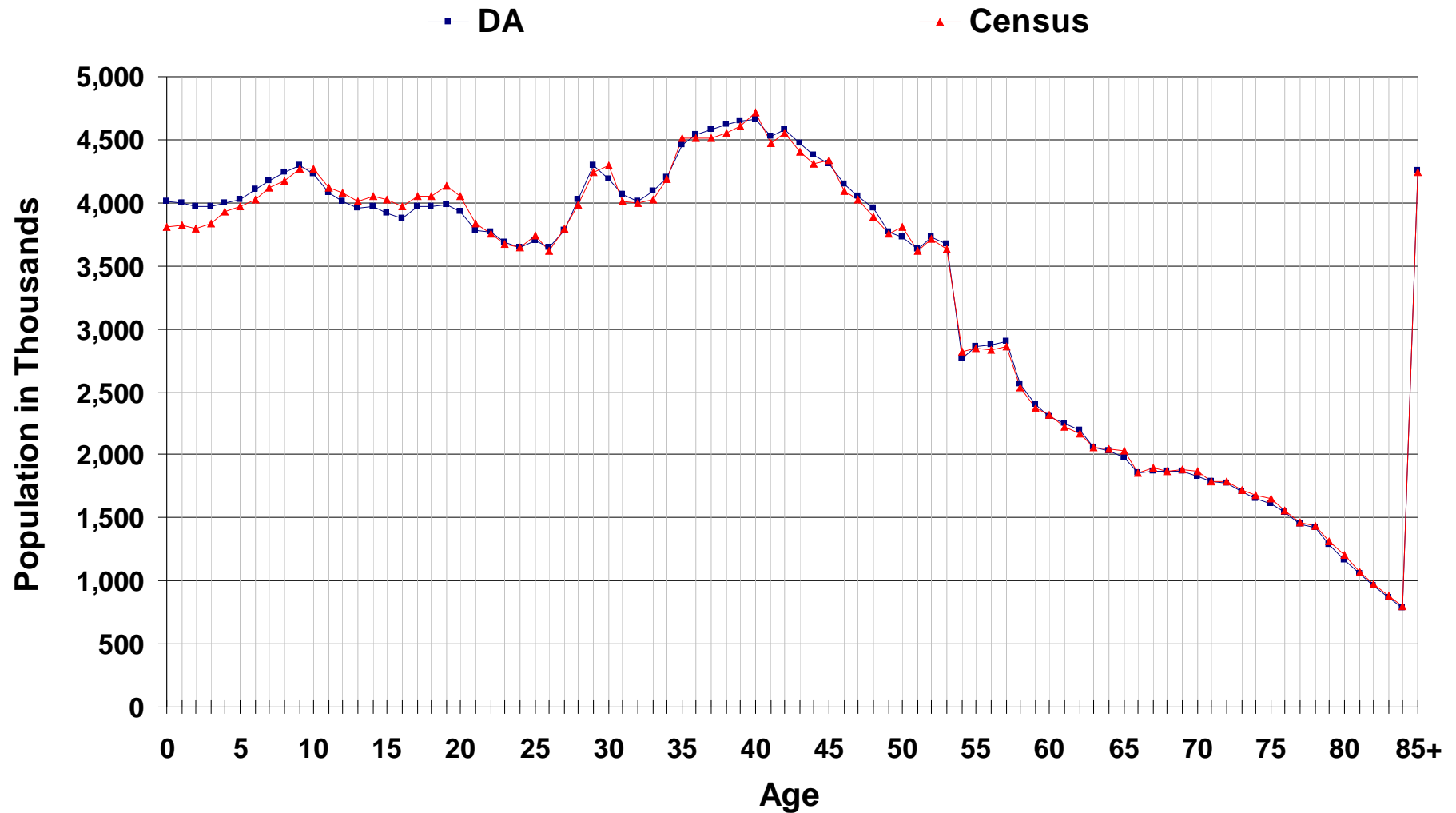
In 2010 DA Estimates Will be Developed Using Administrative Records and Data From the American Community Survey

- Birth and death data from the National Center for Health Statistics
- Medicare data for the population 65 and over
- Data from the American Community Survey and other sources for estimates of international migration

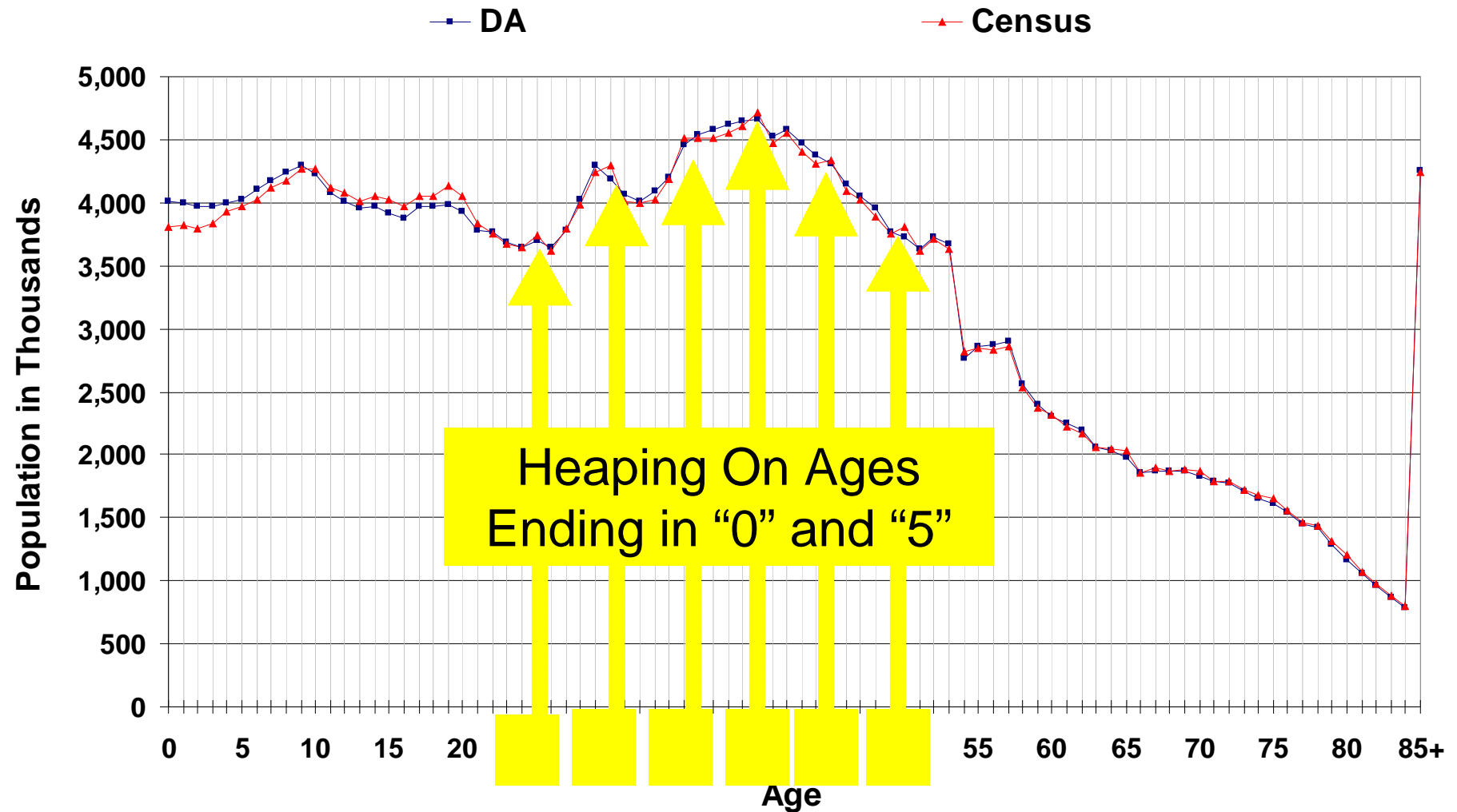
DA Components in 2000

Component	Estimate (in thousands)
Total Population	281,760
Under age 65 in 2000	
+ Births since 1935	234,860
- Deaths to persons born since 1935	14,767
+ Immigration to persons born since 1935	32,564
- Emigration to persons born since 1935	5,485
Ages 65 and over in 2000	
+ Medicare-based population	33,245
+ Estimated not enrolled	1,342

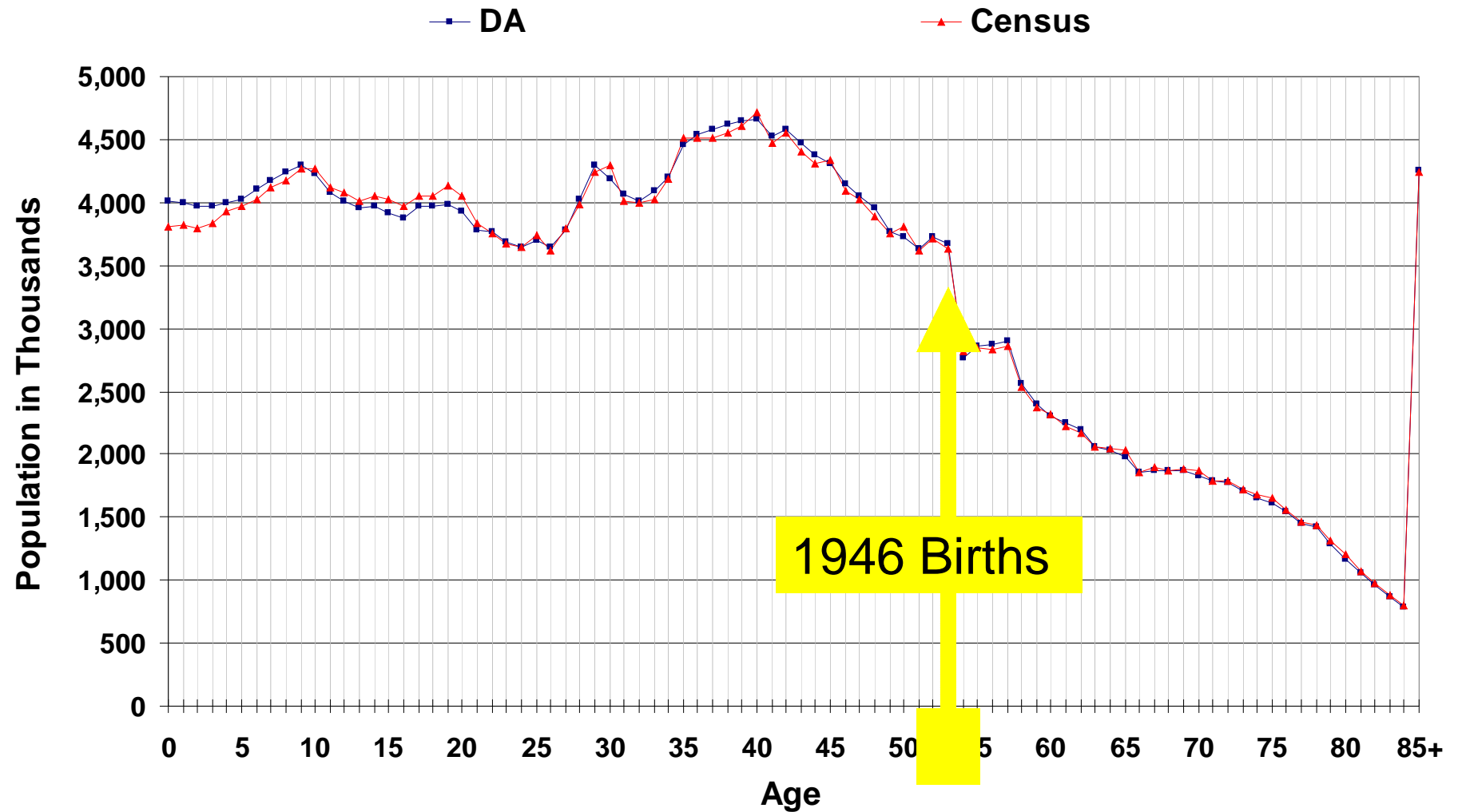
DA and Census 2000 Population by Age



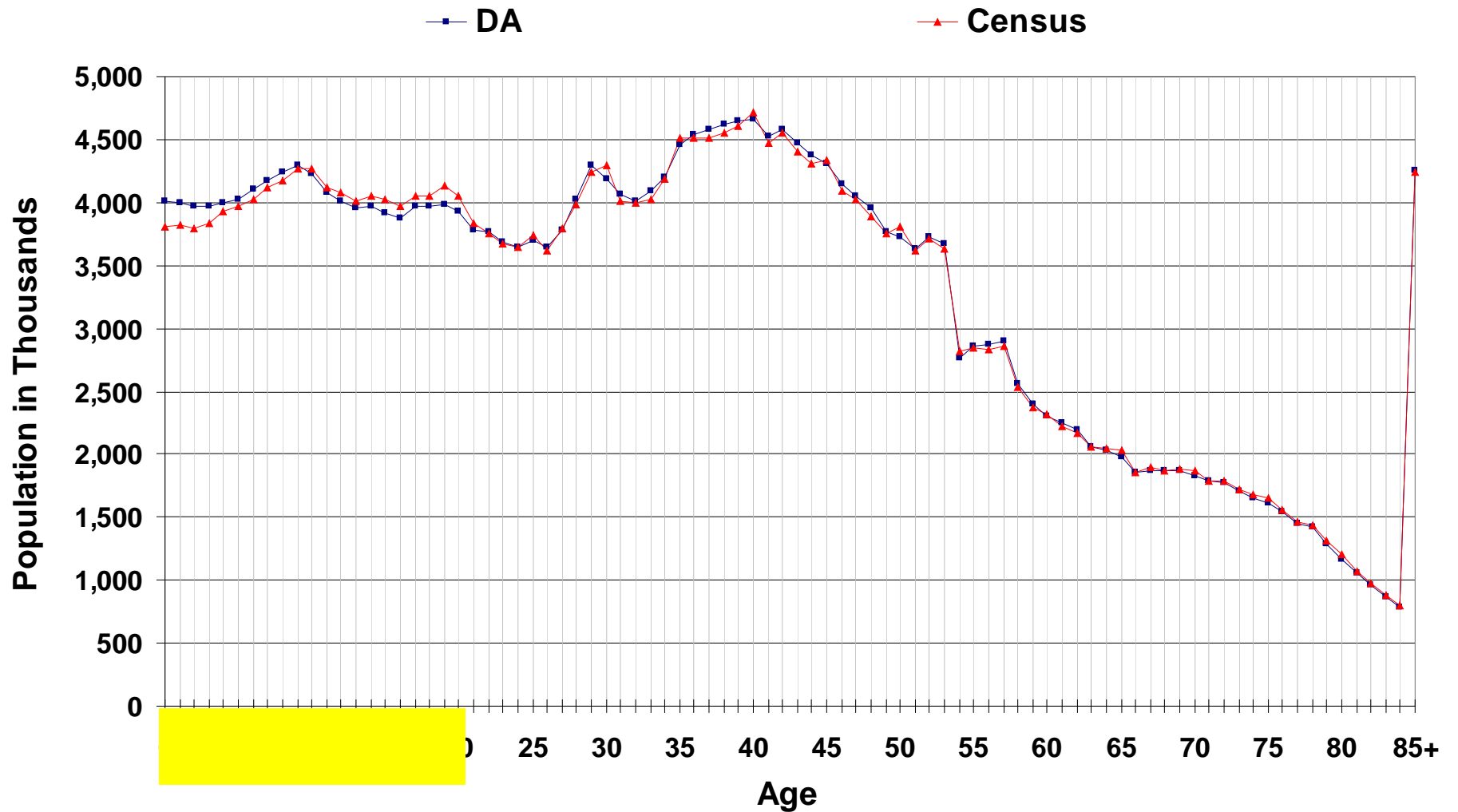
Age Heaping in Census 2000



2000 DA and Census 2000 by Age



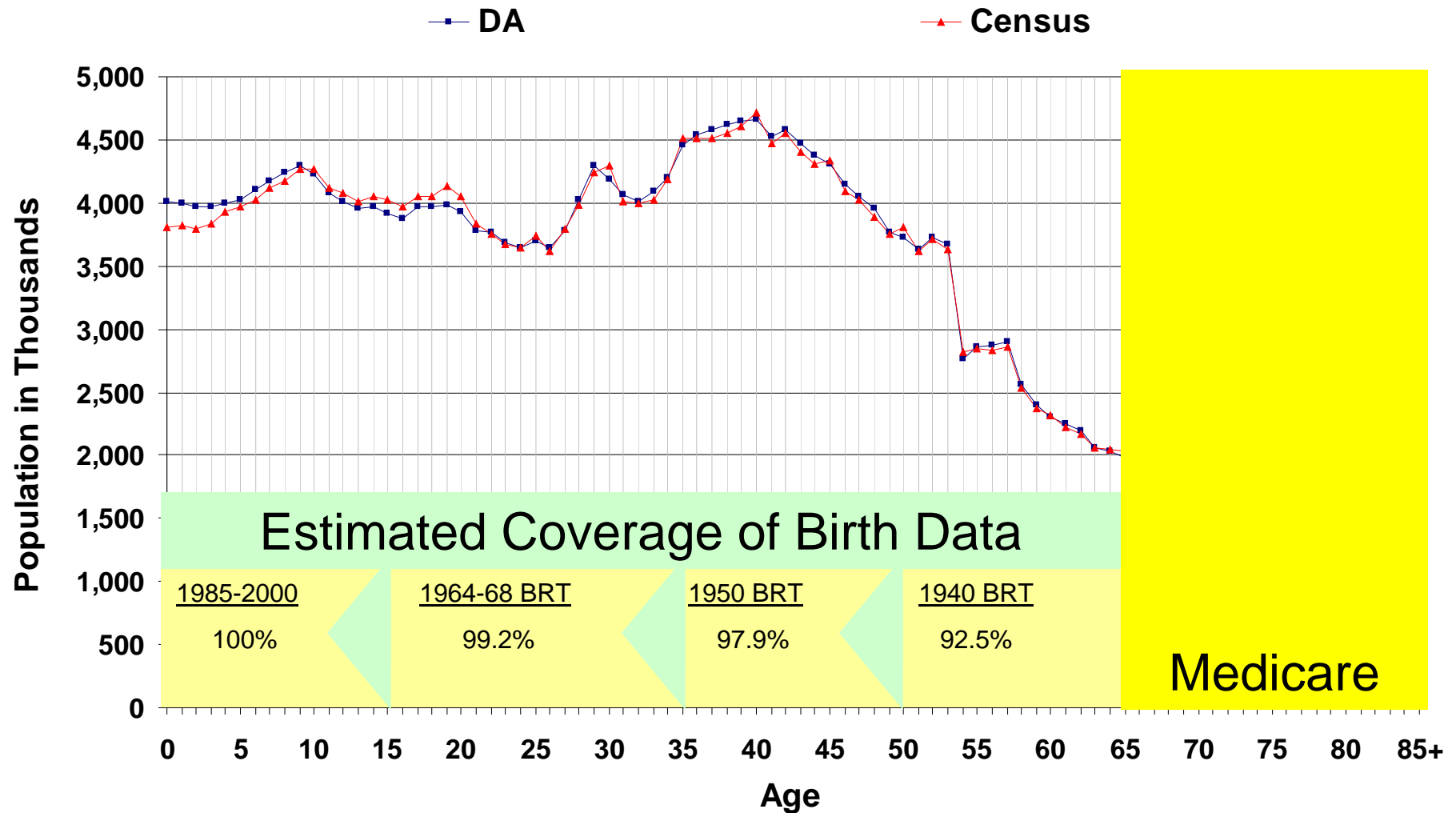
Differences in the Population Under 20



Using Birth and Death Data to Estimate the Population Under 65 in 2010

1. Revise DA 2000 estimates using final 1999 and 2000 births and deaths
2. Add births and subtract deaths for the decade 2000-2010
3. Preliminary data and projections will be used for 2009 and 2010
4. Review assumptions used in 2000 DA about completeness of birth and death data
5. Tabulate births and deaths using different strategies for assigning race and Hispanic origin

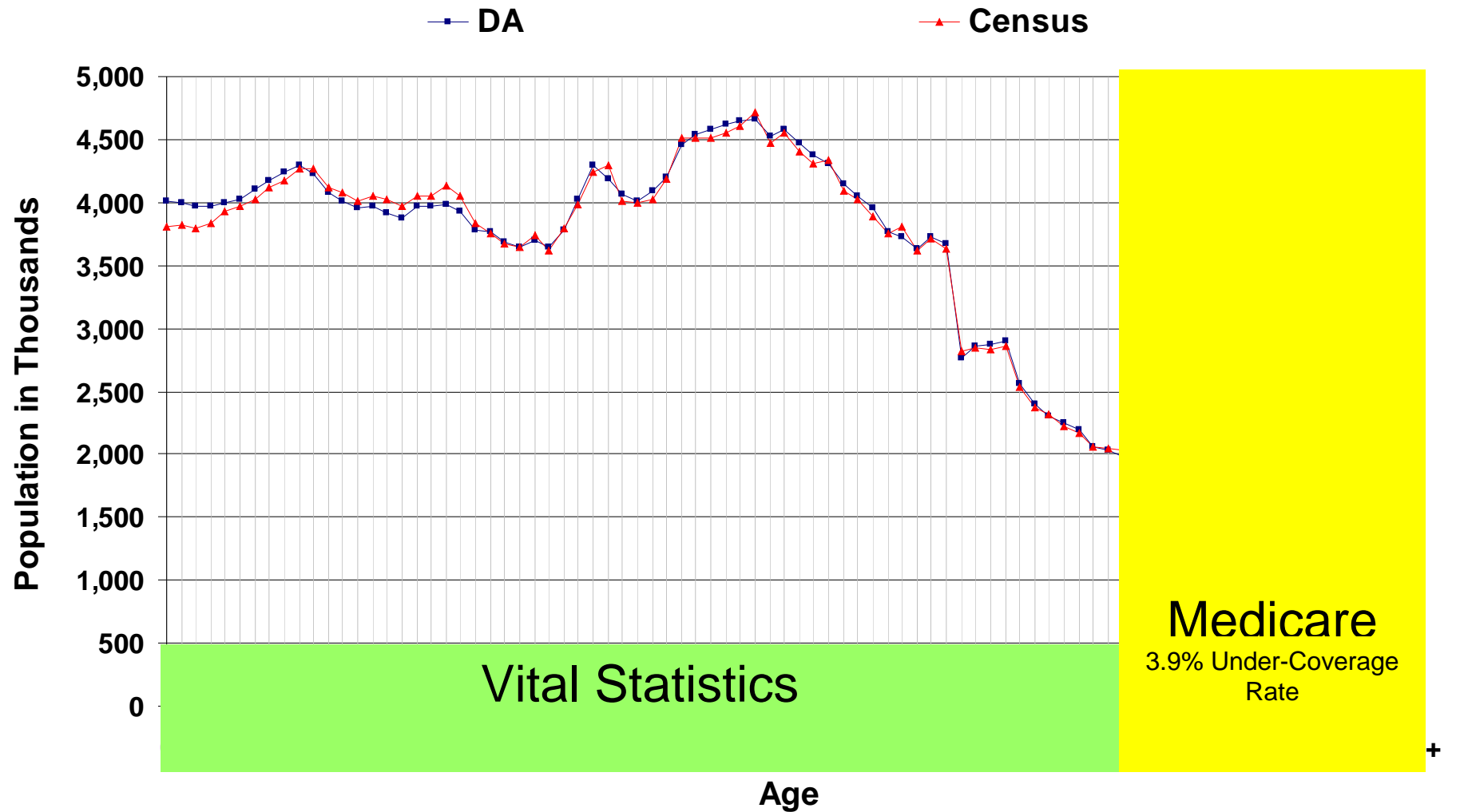
Using the Birth Registration Tests (BRT)



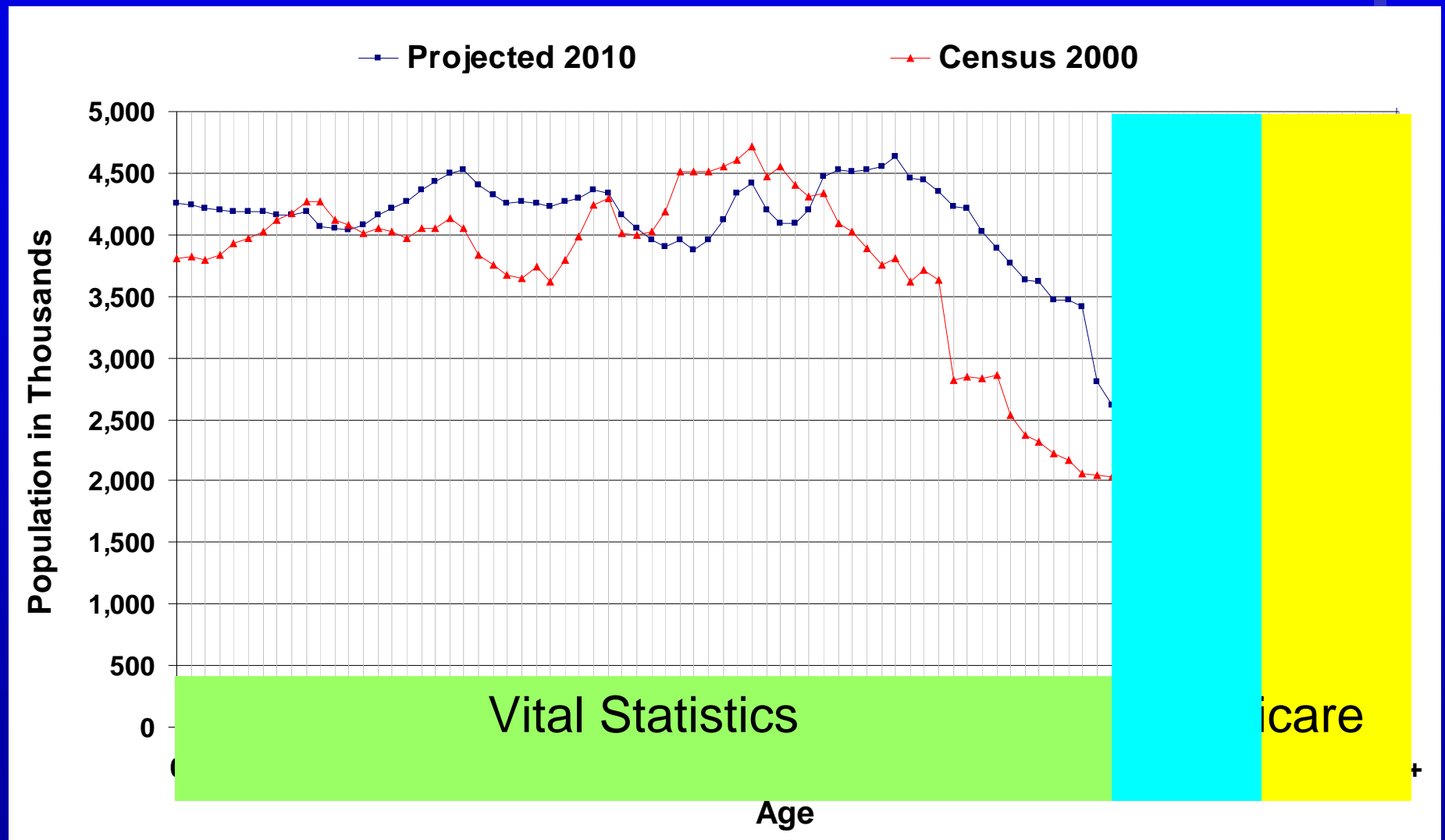
Using Medicare Data to Estimate the Population 65 and Older in 2010

- Developed from the Medicare Enrollment Database
- Includes adjustment factors for under-enrollment
- Delays in enrollment are estimated from information on the Medicare file
- Estimates of those who will never enroll are developed from the CPS
- An under-coverage rate of 3.9% was used in 2000
- Overlap in vital statistics based estimates and Medicare based estimates for first time in 2010

Using Medicare Data



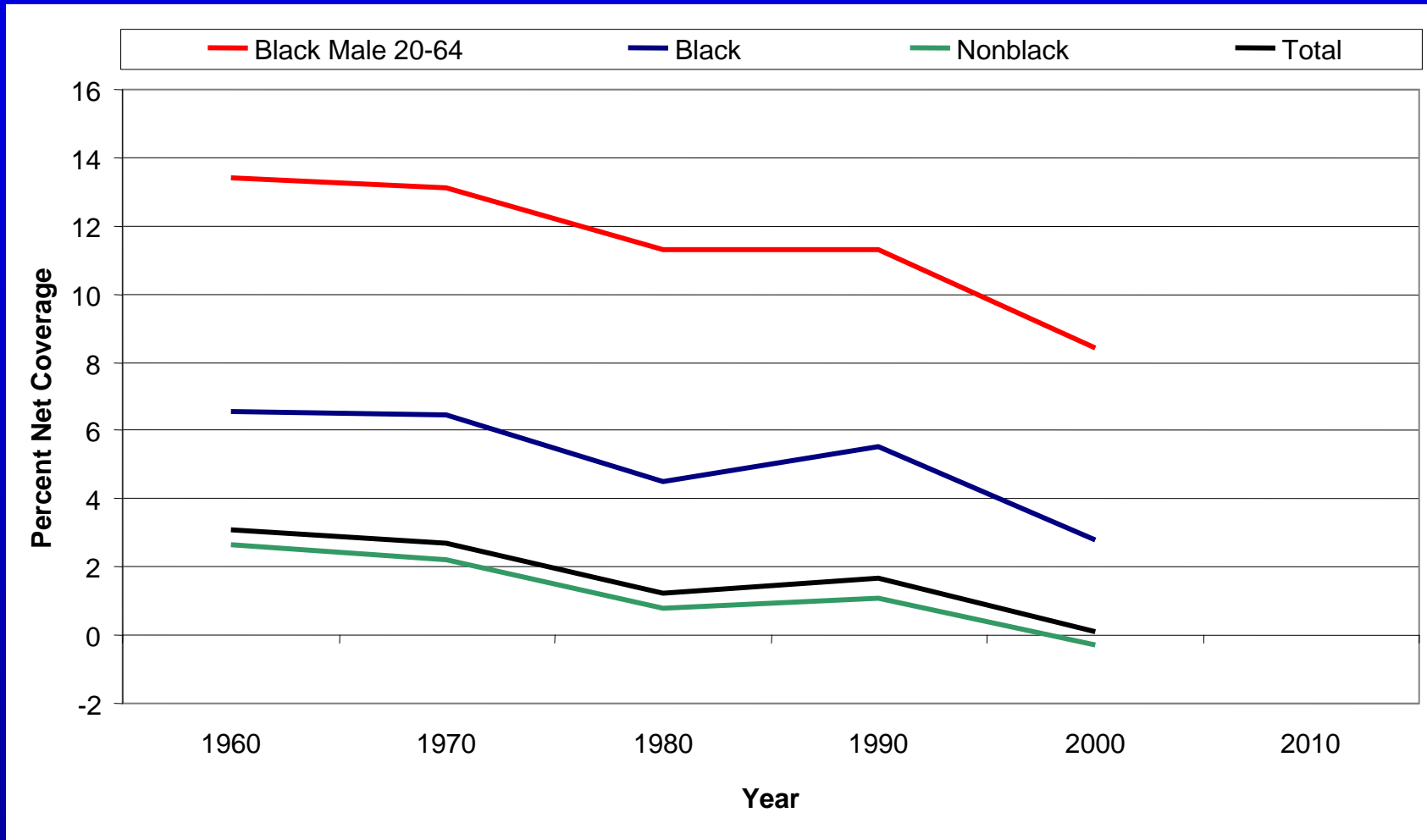
2010 Medicare and Vital Statistics Overlap



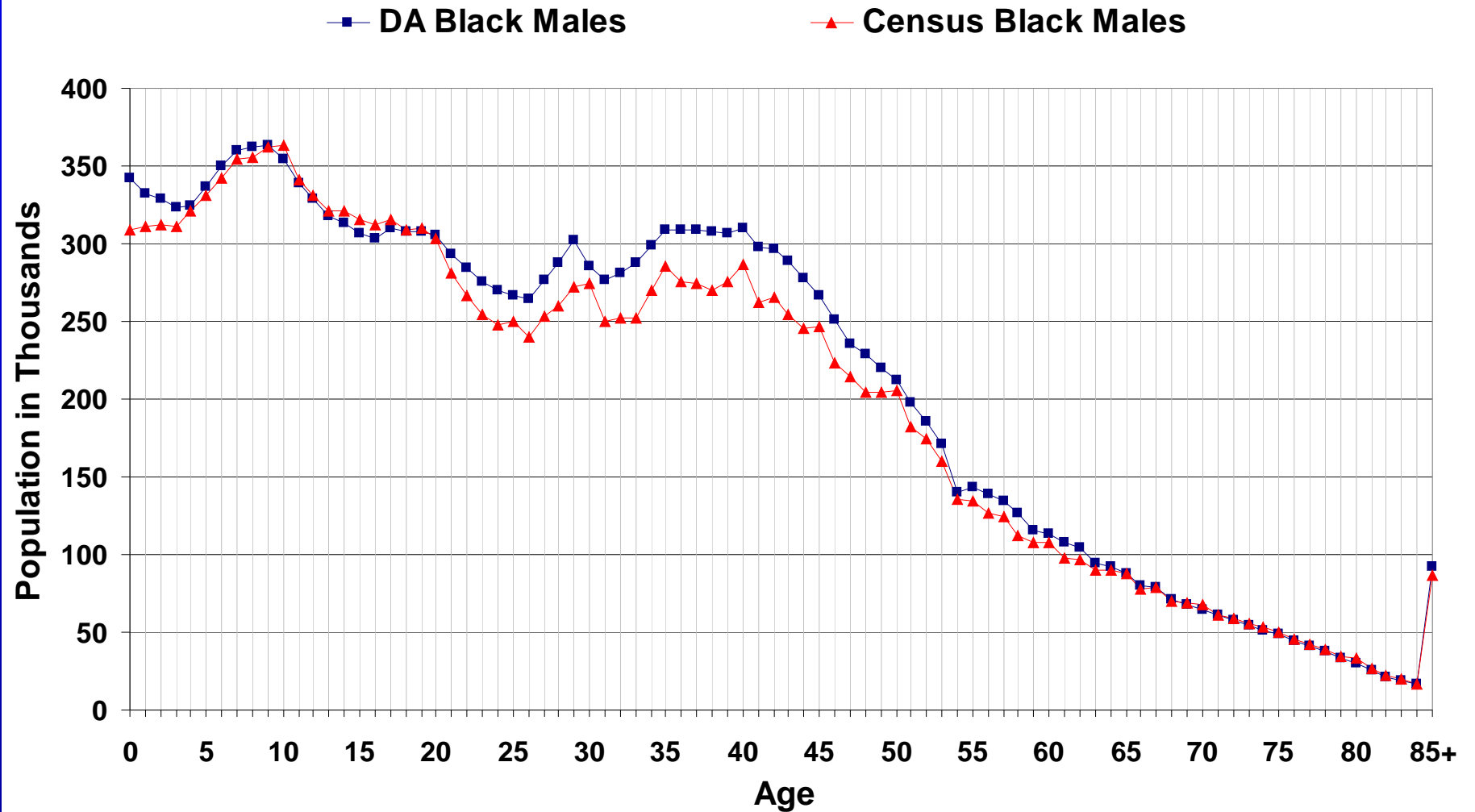
Using DA to Estimate Coverage Differentials

- Strength of DA comes from comparisons between age categories, sex, and Black, non-Black
- Comparisons with previous DA estimates of coverage provide a measure of how coverage differentials have changed over time
- DA sex ratios and estimates of children and older adults are less affected by factors that may lead to national-level differences

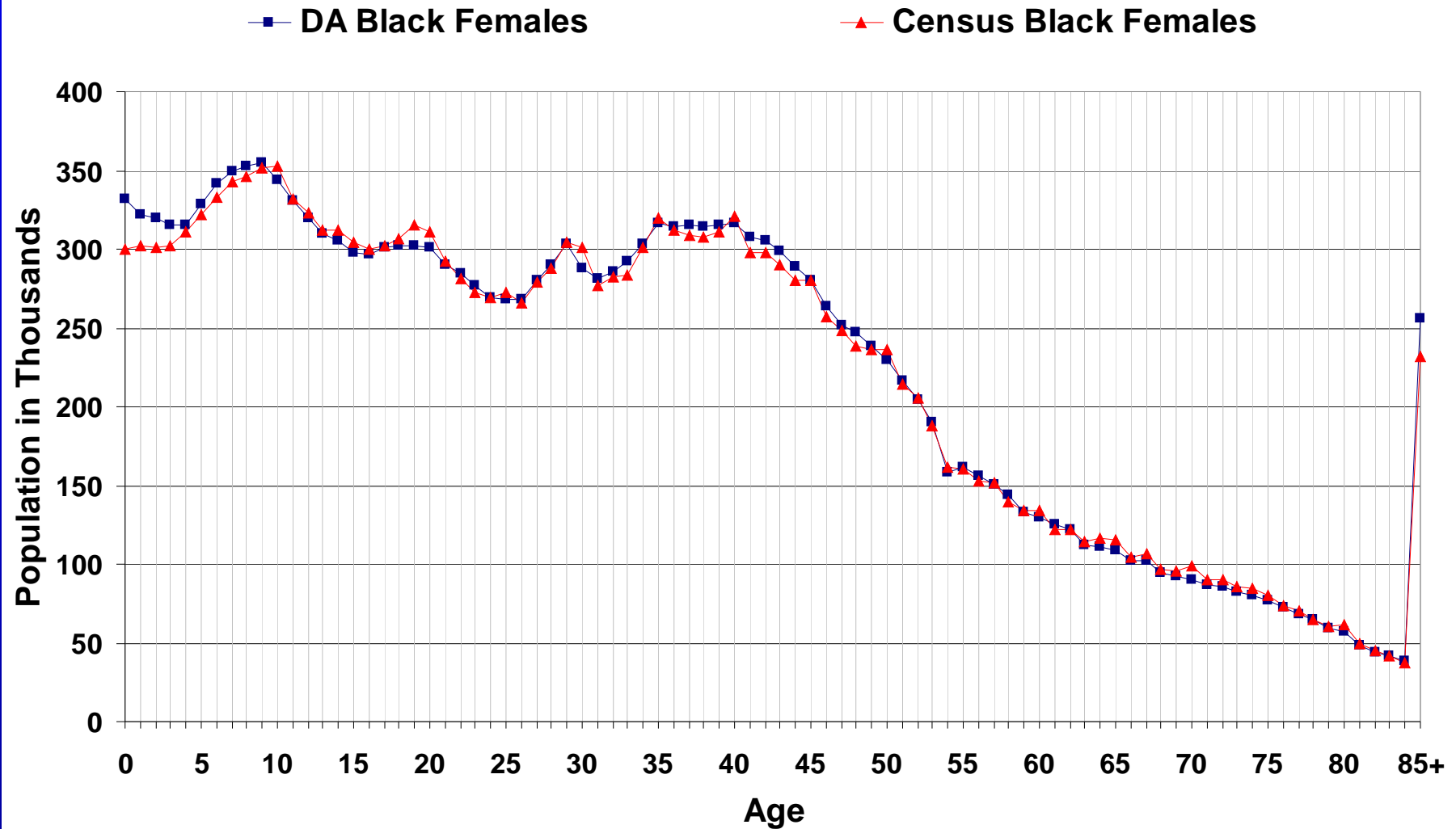
DA Estimates of Census Coverage for 1960 to 2000 and Placeholder for 2010 Census



DA and Census 2000 - Black Males



DA and Census 2000 - Black Females



Estimating Net International Migration

- Residence One Year Ago (ROYA) method will be basis for DA 2010 immigration estimates
- To validate this method and assess uncertainty we will evaluate current assumptions and results of different approaches

ROYA-Method

- Same method used in the population estimates
- Foreign-born immigration: 2000 forward
 - American Community Survey (ACS) data on reported residence in the prior year
- Foreign-born emigration: 2000 forward
 - Residual method based on Census 2000 and ACS data used to develop rates of foreign-born emigration
- U.S. – Puerto Rico Migration: 2005 forward
 - ACS and Puerto Rico Community Survey (PRCS) data on reported residence in prior year

ROYA-Method (continued)

- Net Native Migration
 - Relies on previous research using census data from other countries

We will evaluate these estimates and conduct sensitivity analysis by varying assumptions about ACS coverage and native migration

Coverage in the ACS

- To account for undercoverage issues, ACS is controlled to population estimates
- Implicit assumption in ROYA Method:
 - Assumes no differential coverage between recent immigrants and the rest of the population
- Evaluation: vary this assumption and examine effect on estimates of foreign-born immigration and emigration

Level of Net Native Migration

- Lack of data on emigration of natives
- Current method: census data from other countries used to estimate net migration of natives in the 1990s
 - Issues: quality and timeliness
- Research on other methods
 - Updated evaluation of data from other countries
 - Census 2000 and ACS data
 - Administrative data

Alternative Methods

1. Change in Stock
2. Legal Permanent Resident (LPR) Data
3. Estimates Developed by the Department of Homeland Security Office of Immigration Statistics

Change In Foreign-Born Stock

- Developing method to obtain stock estimate of foreign born in 2010
- Estimates would be developed from estimates of the native-born population and the ratio of native born to the foreign born as measured by the ACS

Census 2010 Timeline

- **December 2010** - Apportionment data will be released
- **December 2010** - DA estimates of coverage will be developed
- **January - March 2011** - Redistricting data are released on a flow basis
- **2012** - Survey-Based estimates of coverage will be released

DA Contacts

Kirsten West - Project Leader

- Renuka Bhaskar - International Migration
- Fred Hollmann - LPR File
- Larry Sink - Black / Non-Black
- Tammany Burden - Hispanic / Non-Hispanic
- Kirsten West - Population Age 65 and Over (Medicare)
- Greg Harper - Housing Unit / MAF Comparisons
- Gregg Robinson – Senior Team Advisor