



BOSTON'S POPULATION PROJECTIONS: 2010 – 2030

BPDA Research Division

November, 2016



**boston planning &
development agency**

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The BPDA Research Division strives to understand the current environment of the city to produce quality research and targeted information that will inform and benefit the residents and businesses of Boston. The Division conducts research on Boston’s economy, population, and commercial markets for all departments of the BPDA, the City of Boston, and related organizations.

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Cover Photos from Boston Mayor’s Office (from left to right):

- 1. Ribbon cutting ceremony for the opening of Uniqlo, October 9, 2015 (Isabel Leon)**
- 2. Brian Honan Annual 5k run in Allston, September 27, 2015 (Jeremiah Robinson)**
- 3. West Roxbury Seniors Group Luncheon at St. Johns Church in West Roxbury, October 5, 2015 (Jeremiah Robinson)**

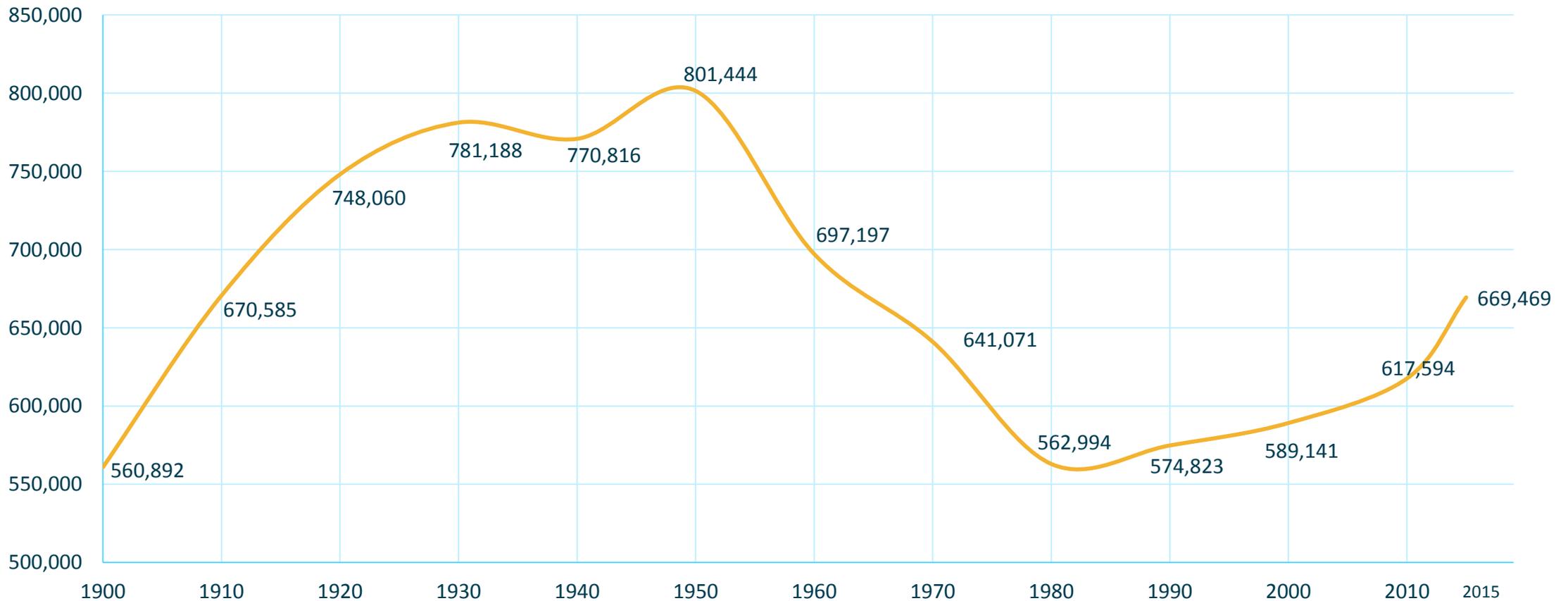
HISTORICAL POPULATION TRENDS



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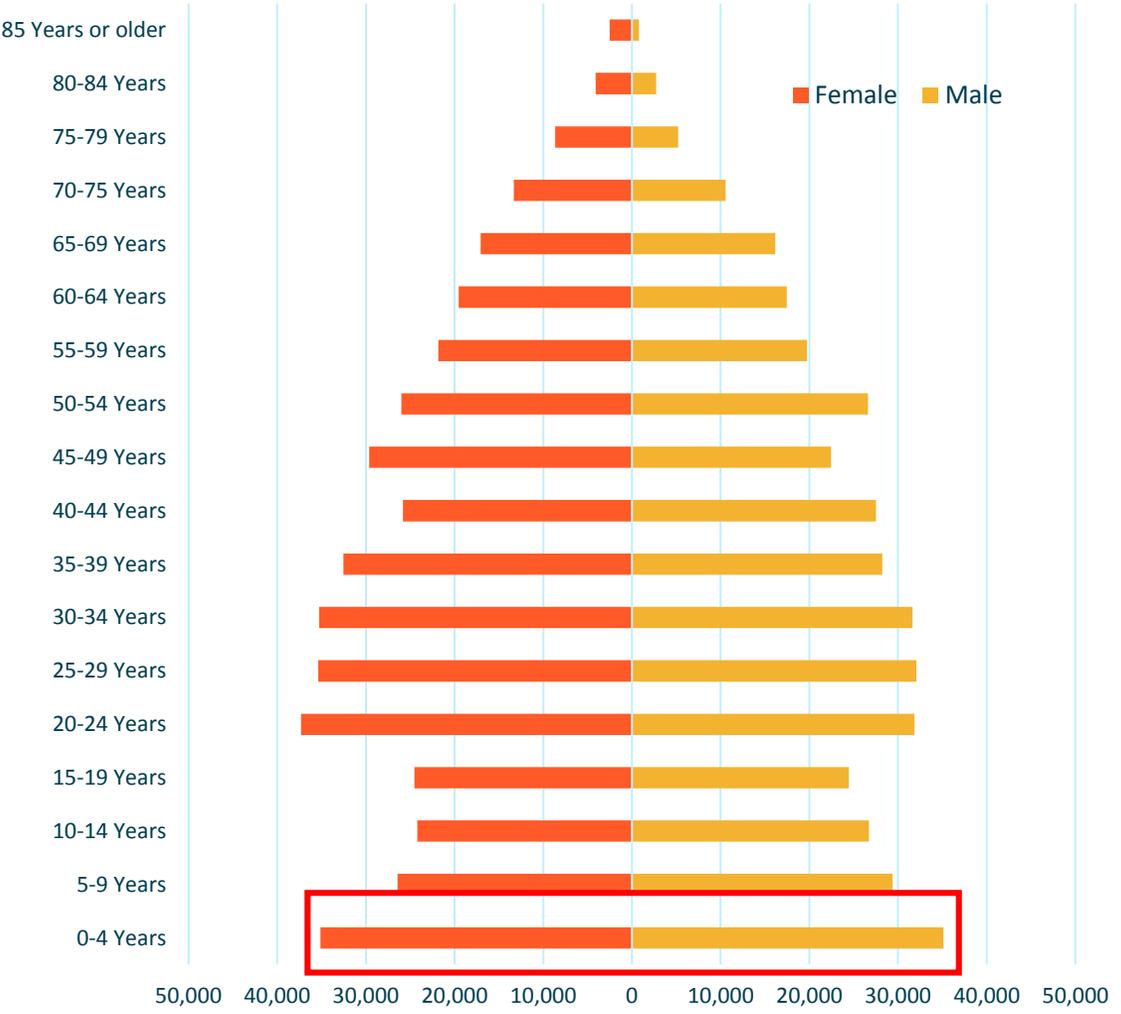
- Boston's population rose through the first half of the 20th century to a peak in 1950 of 801,444 people.
- From 1950 to 1980, Boston's population declined by almost 30 percent to 562,994.
- From 1980 to the present, Boston has experienced steady population growth.

Boston's Population (1900-2015)

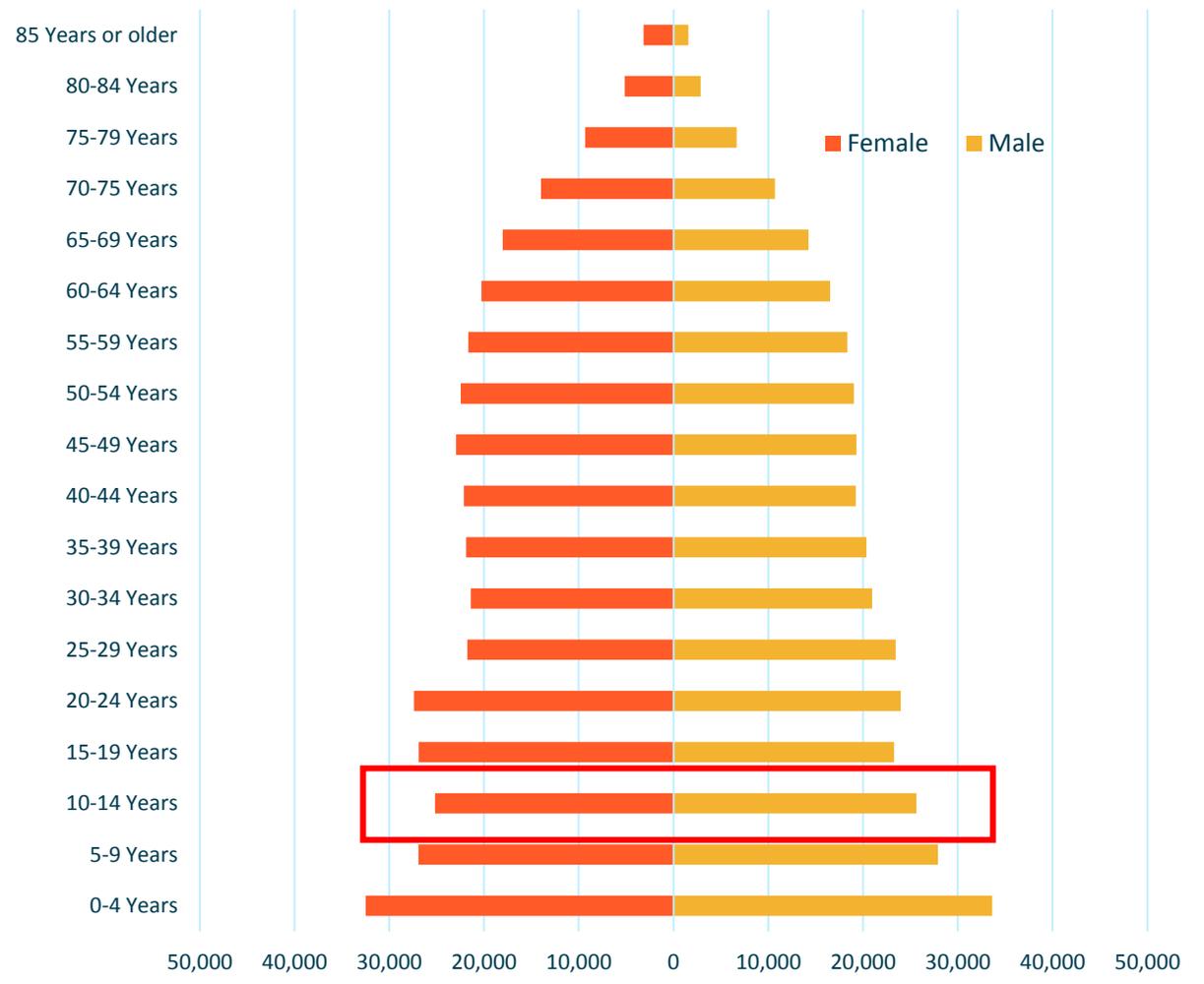


- Boston’s population pyramids for 1950 and 1960 show large numbers of young children (the “Baby Boom”), some of whom migrate out of Boston as they age.
- For example, 70,236 0-4 year olds in 1950 became 50,812 10-14 year olds in 1960 for a net out-migration of over 25 percent.

Boston – 1950 Decennial Census



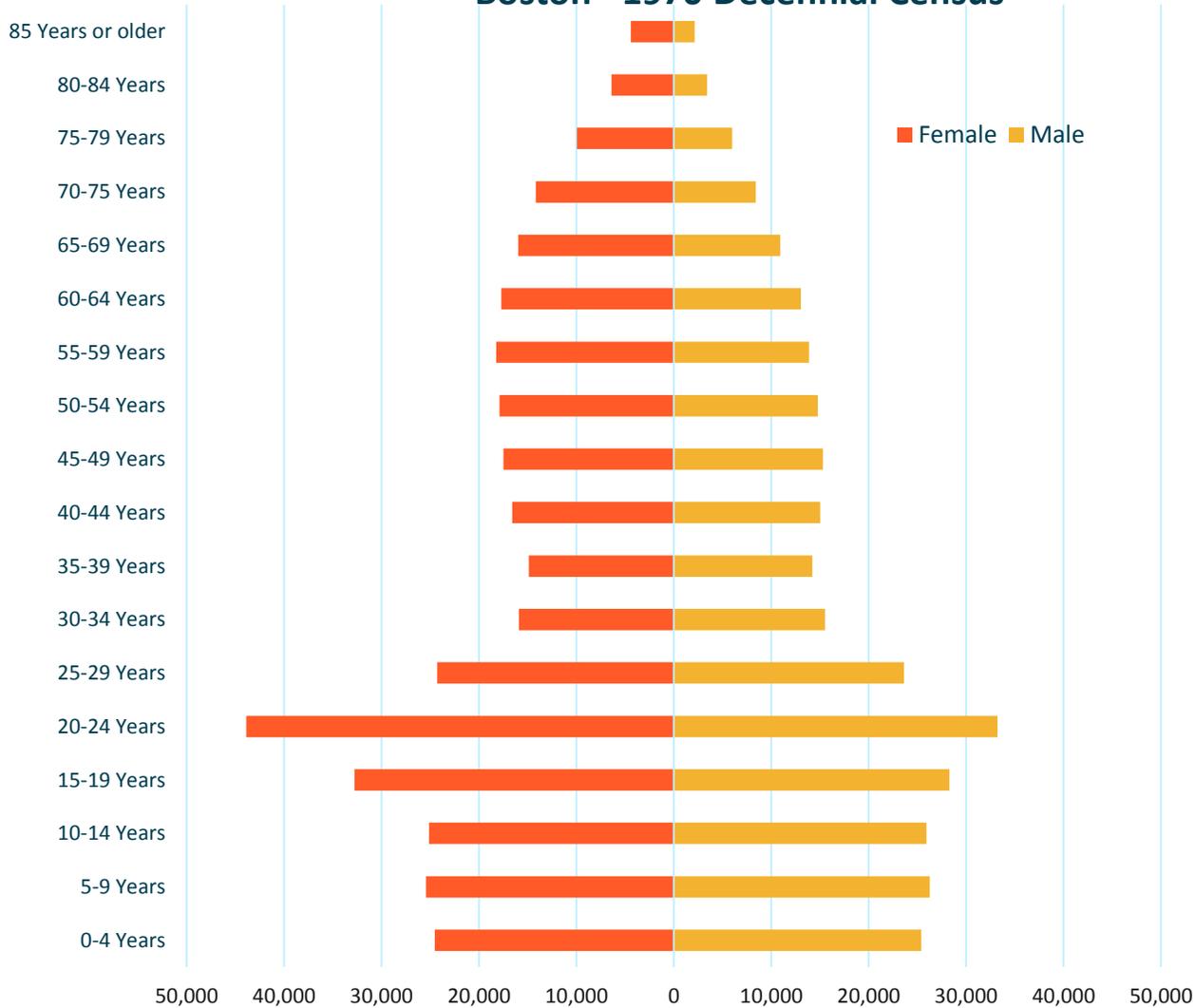
Boston - 1960 Decennial Census



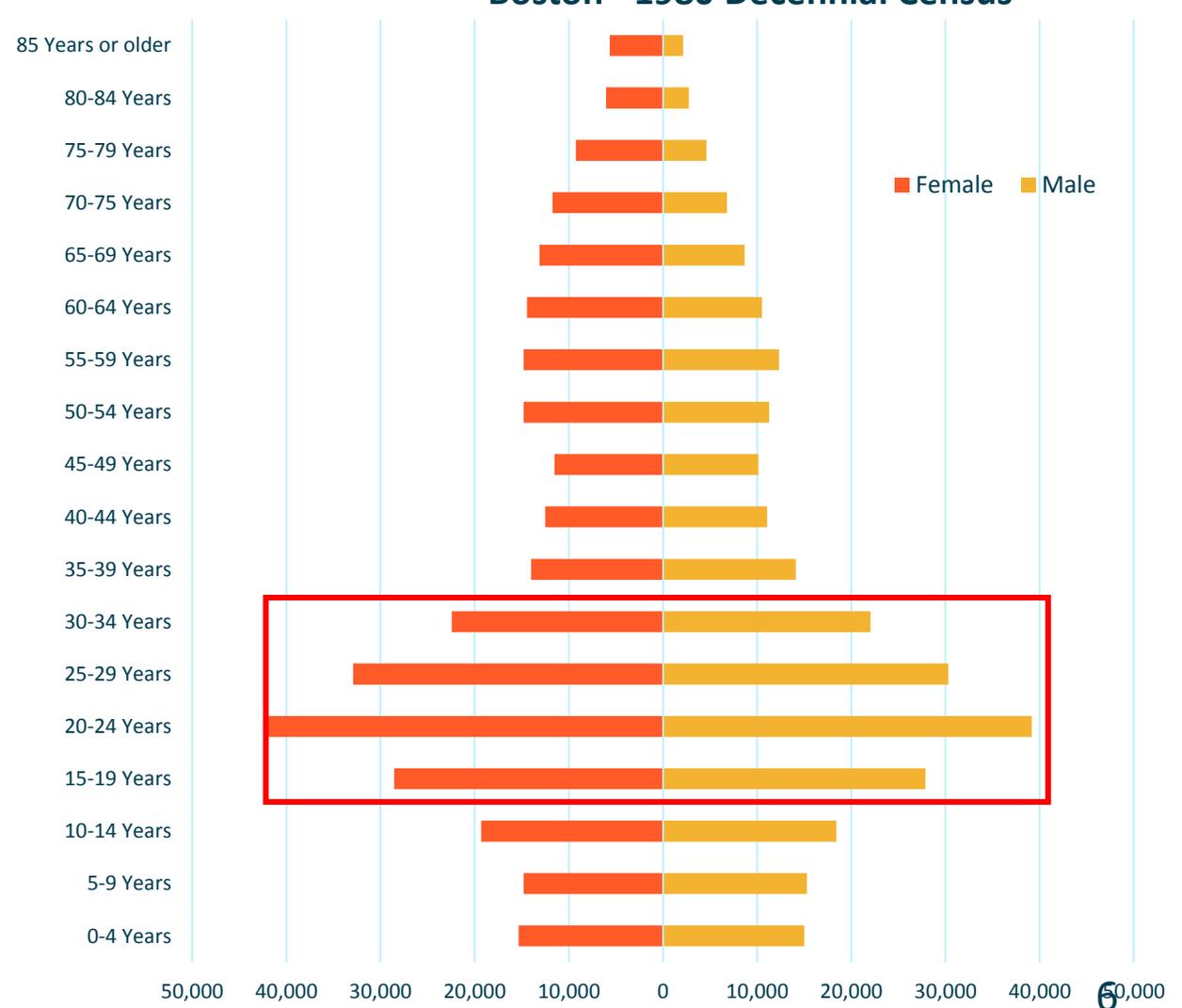
Source: U. S. Census Bureau, 1950 and 1960 Decennial Census, BPDA Research Division Analysis

- By 1980, Boston's population declined to 562,994, a 30 percent decline from the peak in 1950
- The population loss from 1970 was particularly heavy in ages 0-14 and 35-49, leaving a 1980 population heavily skewed toward ages 15-34

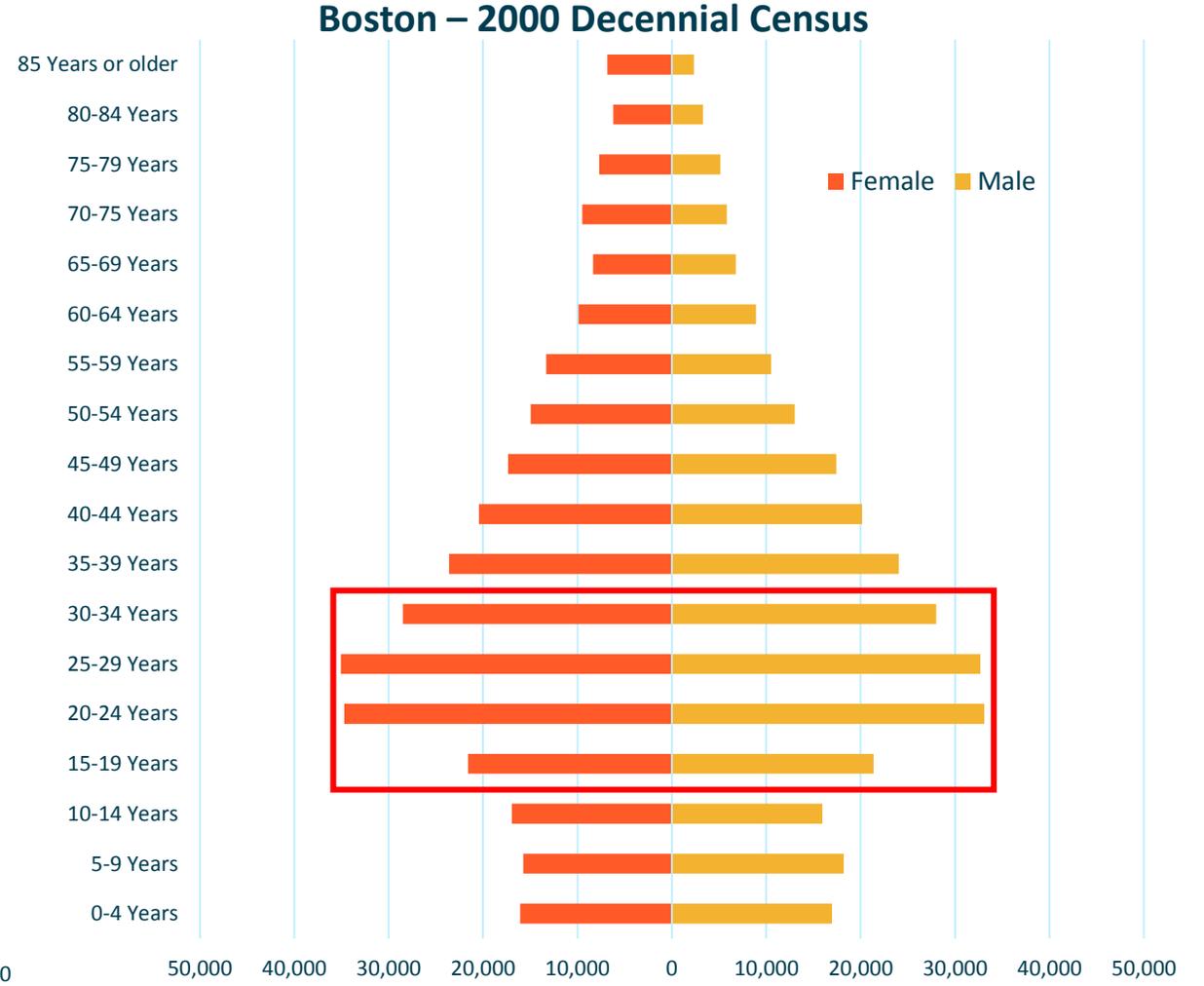
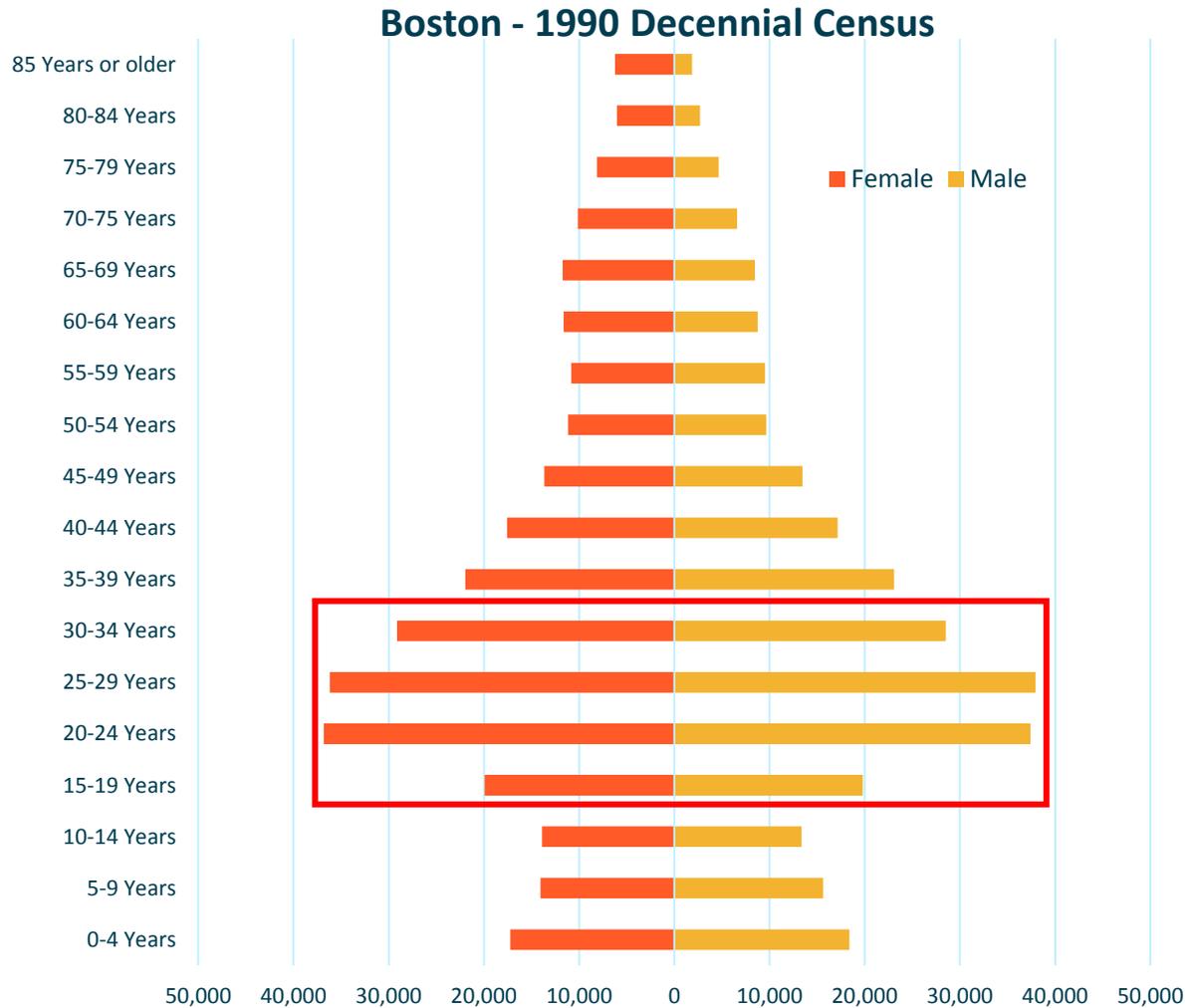
Boston - 1970 Decennial Census



Boston - 1980 Decennial Census



- Boston's population takes on a distinctive shape with college enrollment and international migration among the factors boosting the young adult population.

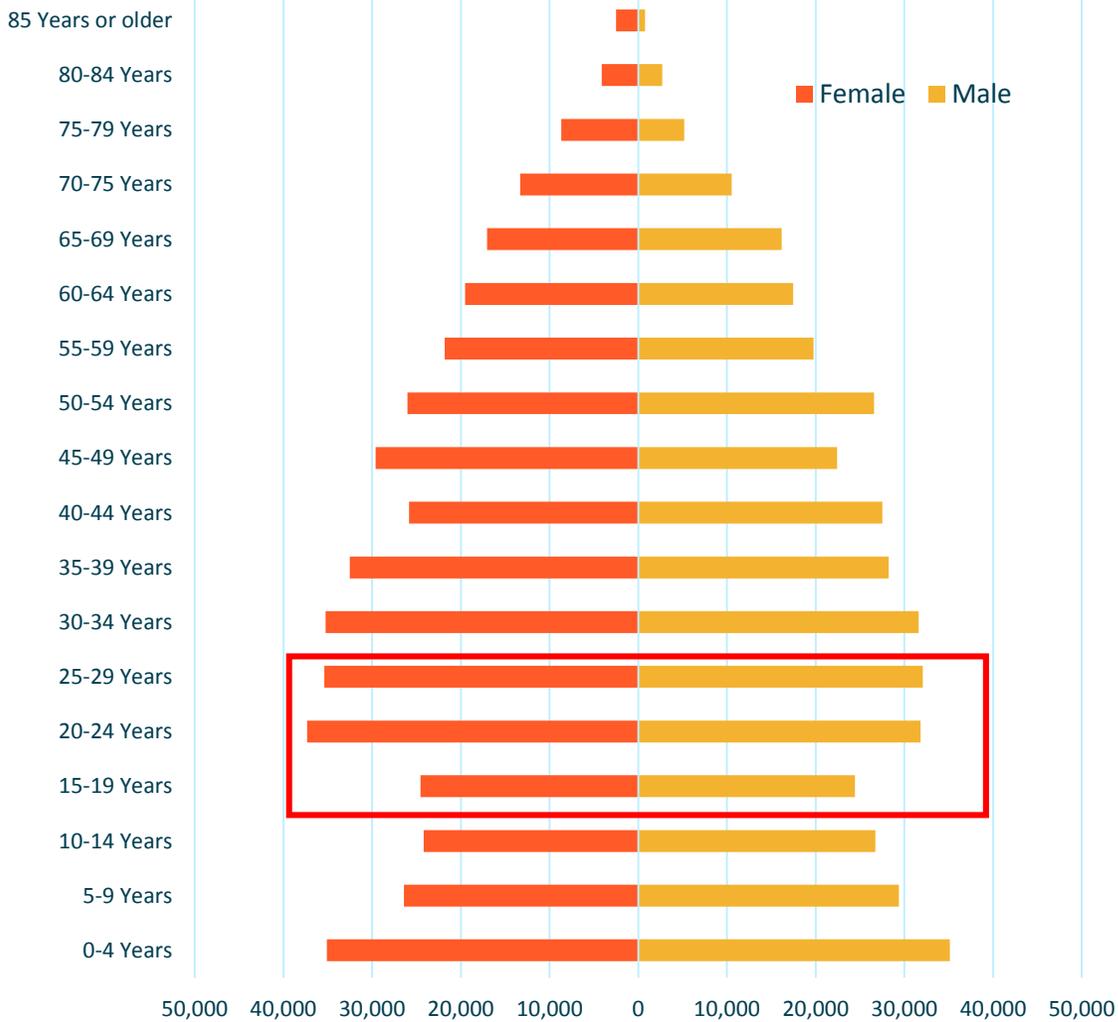


Source: 1990 and 2000 U.S. Decennial Census, BPDA Research Division Analysis

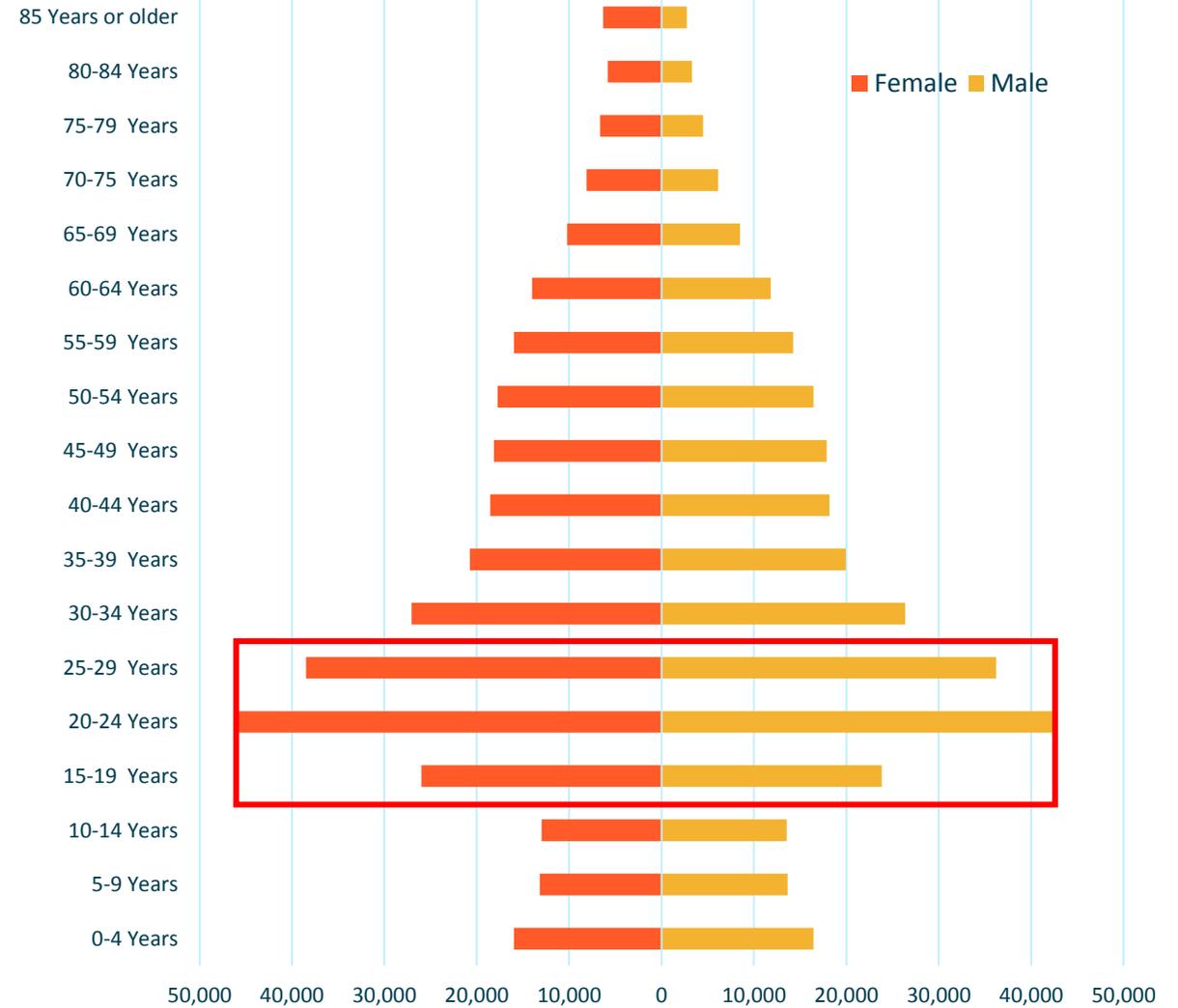
Trends in Boston's age distribution 1950-2010:

(1) decreasing population from birth to 14 years old; (2) increasing population of residents age 15-29; and (3) decreasing population age 30+

Boston – 1950 Decennial Census

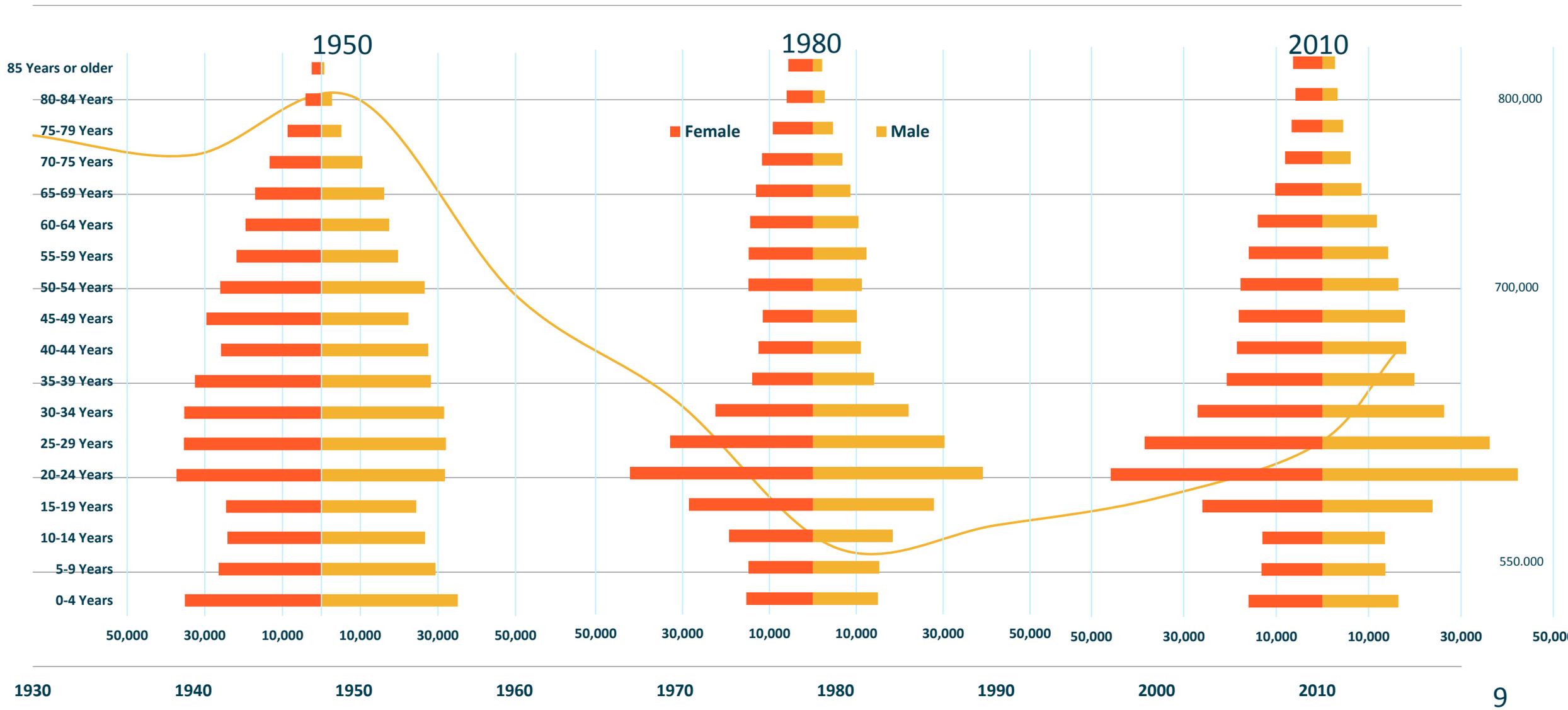


Boston - 2010 Decennial Census



Source: U.S. Census Bureau, 1950 and 2010 U.S. Decennial Census, BPDA Research Division Analysis

Summary of Boston's population change 1950 to 2010



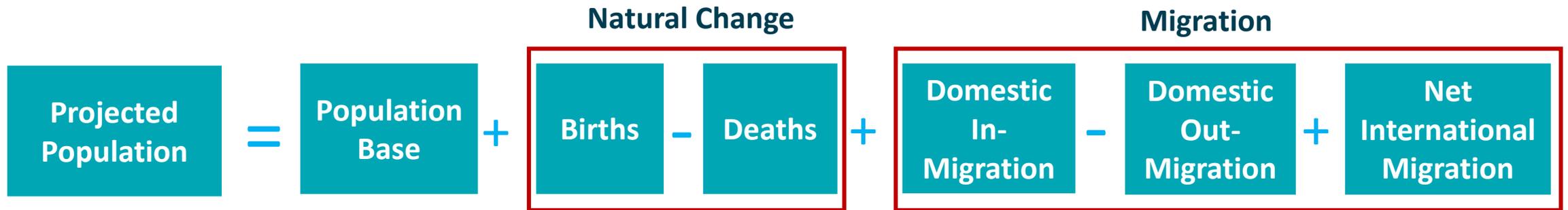
Source: U.S. Census Bureau, 1900-2010 Decennial Census, BPDA Research Division Analysis

POPULATION PROJECTION METHODOLOGY



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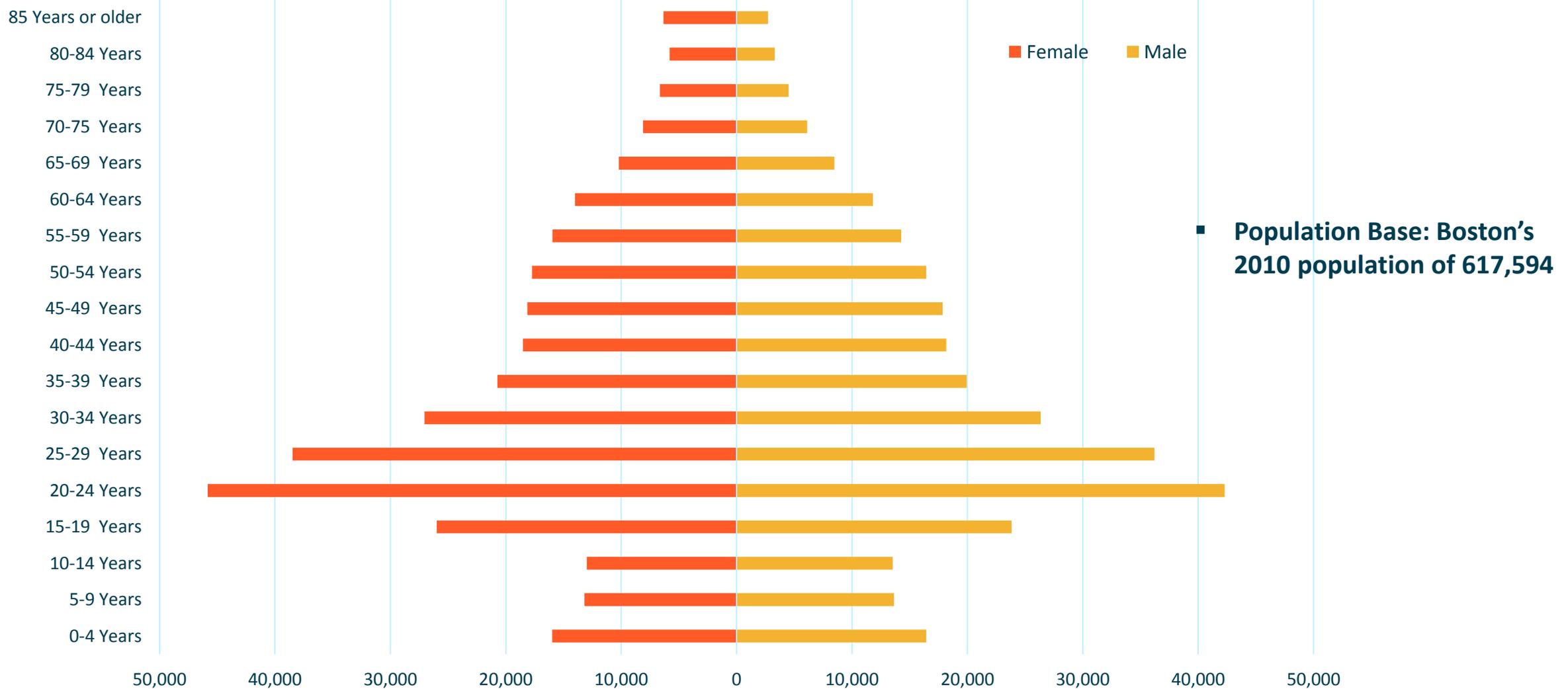
COMPONENTS OF POPULATION CHANGE



POPULATION BASE



Boston -2010 Decennial Census



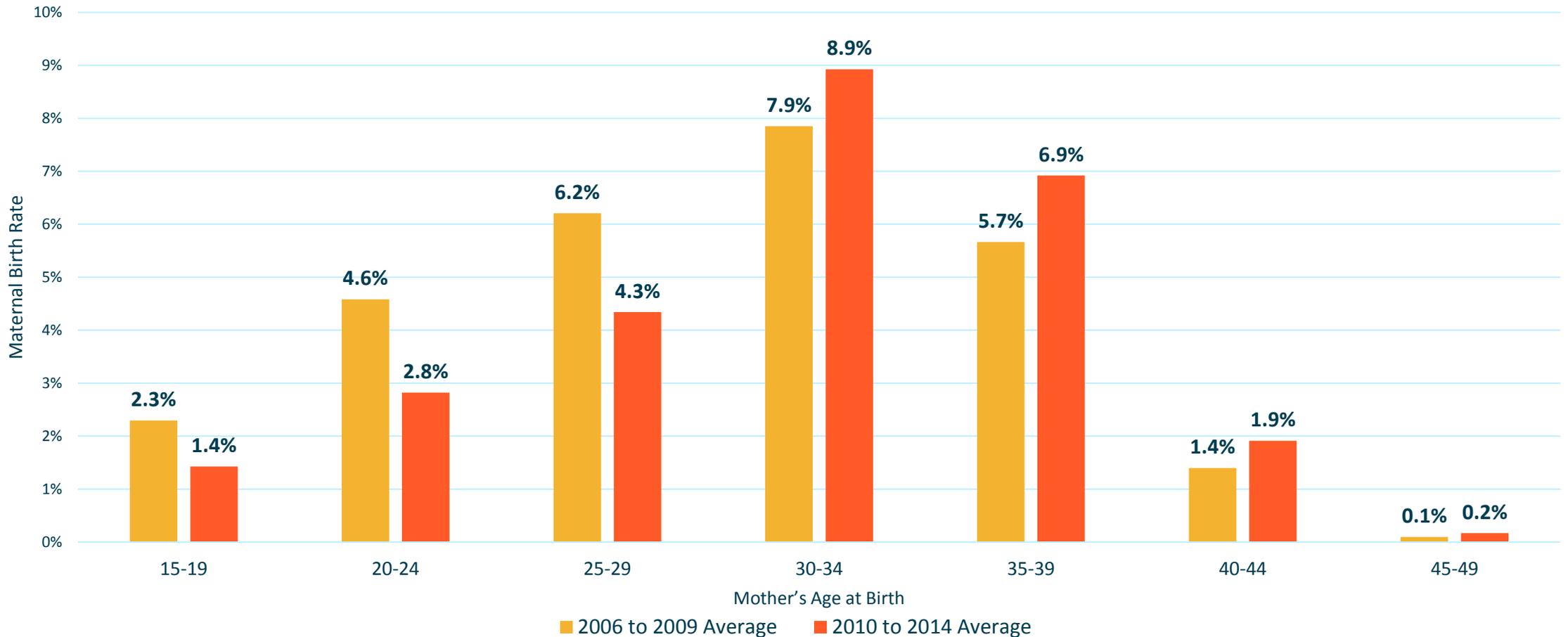
Source: U.S. Census Bureau, 2010 Decennial Census, BPDA Research Division Analysis

BIRTHS



- Boston has averaged 7,900 births a year since 2000
- Overall fertility has declined slightly and shifted to older mothers

Boston's Age-Specific Annual Birth Rates

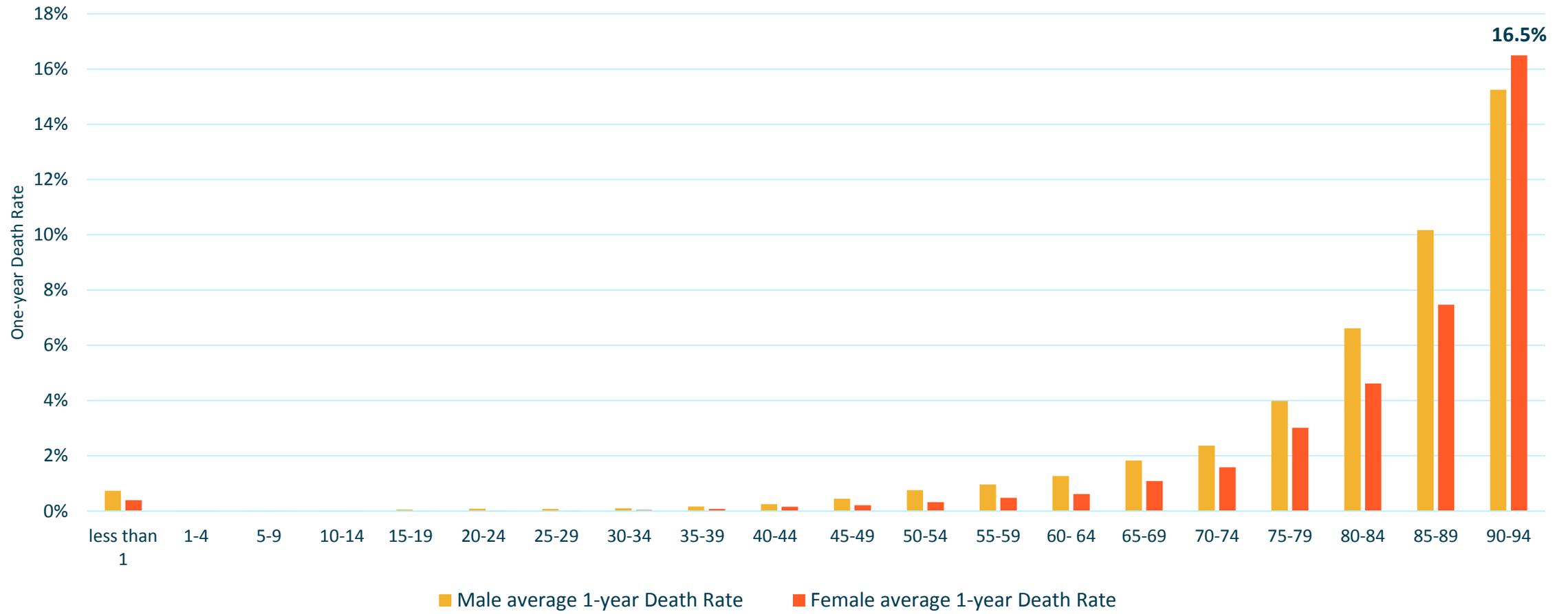


DEATHS



- Boston deaths averaged 3,692 a year from 2010 to 2013

Boston Gender Specific One-Year Death Rates by Age, 2010-2013



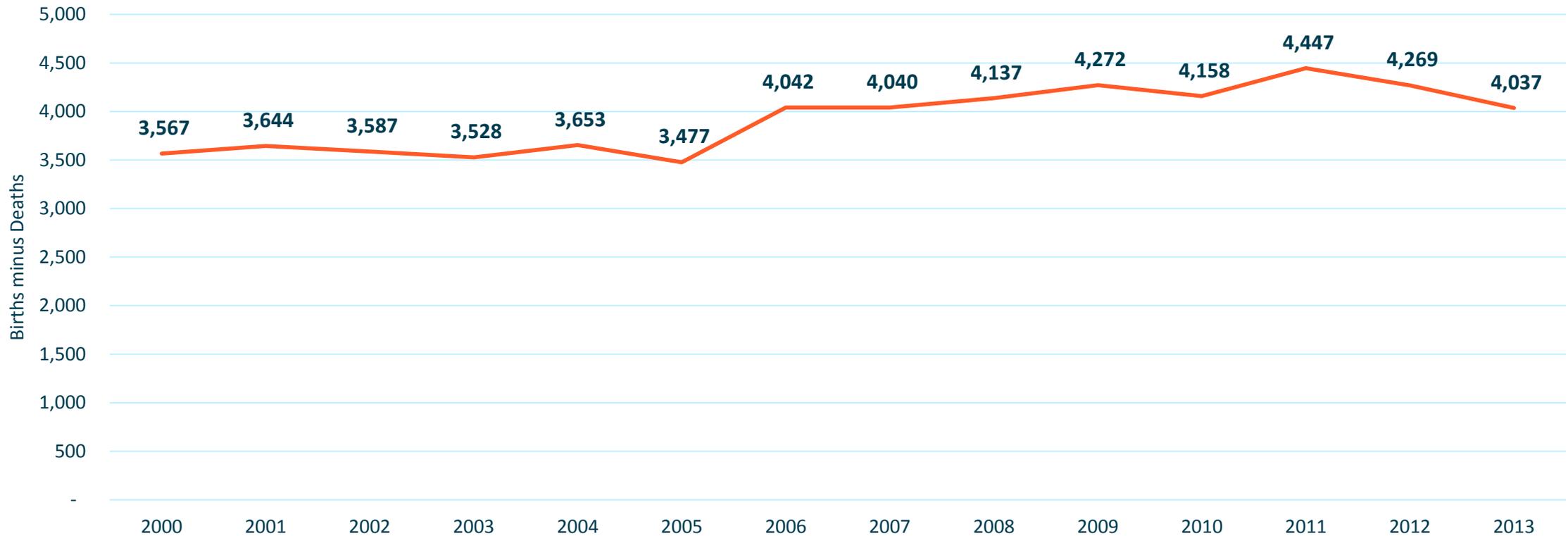
Source: Massachusetts Department of Public Health, Boston Resident Deaths 2010-2013 & U.S. Census Bureau, 2010 Decennial Census, 2011-2013 1-year American Community Survey, BPDA Research Division Analysis

NATURAL CHANGE IN POPULATION

$$\text{Projected Population} = \text{Population Base} + \text{Births} - \text{Deaths} + \text{Domestic In-Migration} - \text{Domestic Out-Migration} + \text{Net International Migration}$$

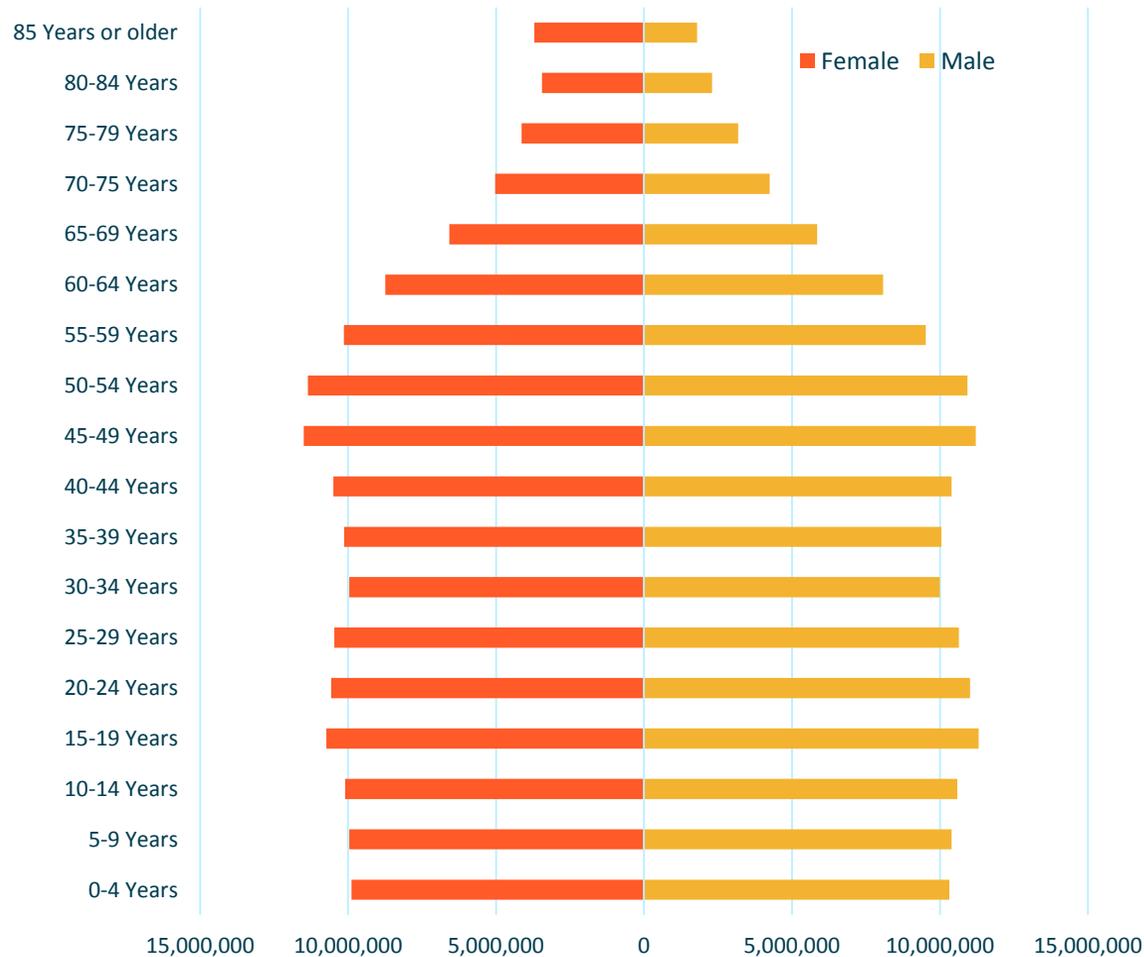
- Births outnumber deaths in Boston by about 3,500 to 4,000 a year
- In the absence of migration, Boston’s population would have grown by this amount through natural change

Natural Change in Boston's Population, 2000-2013

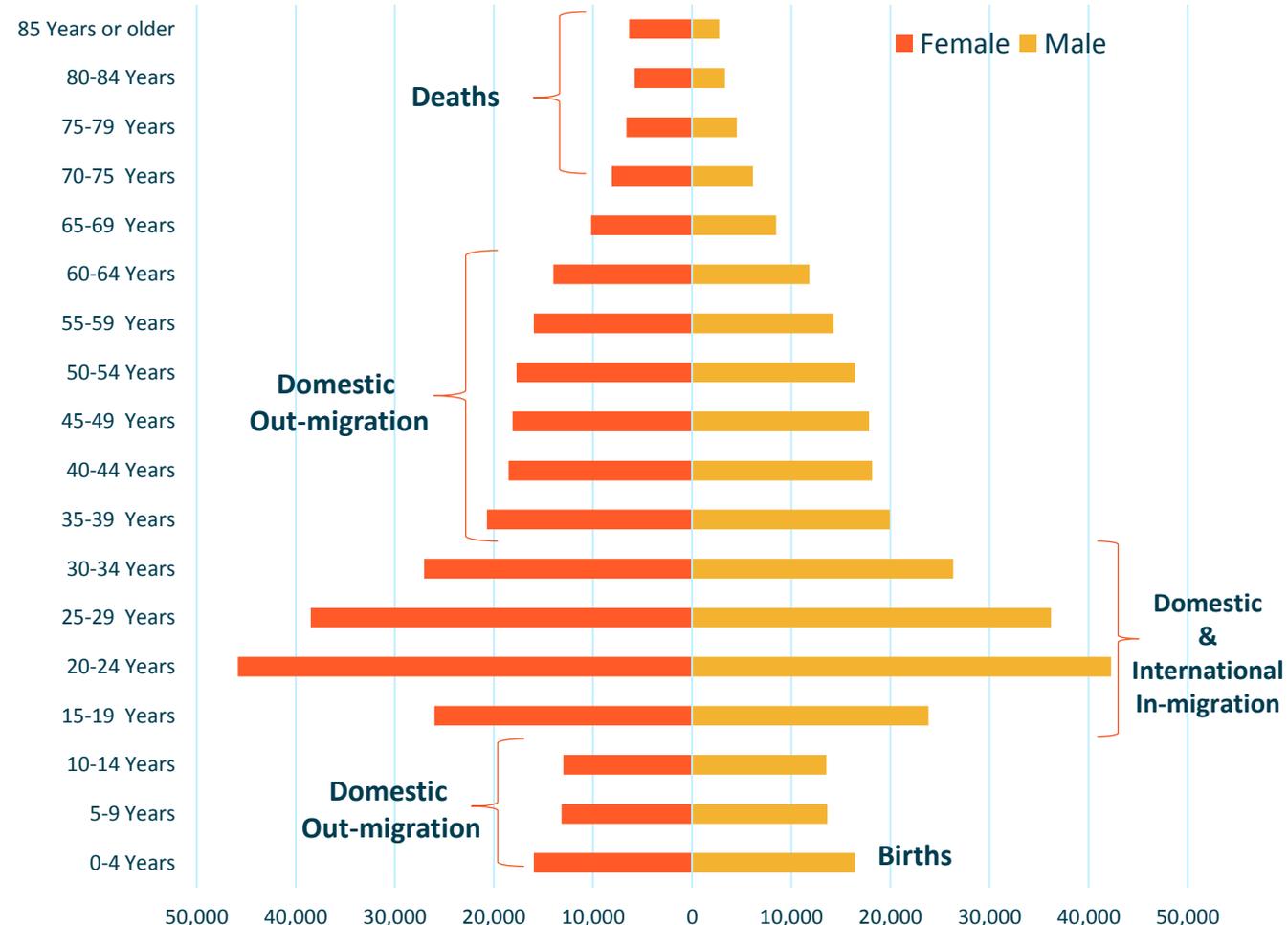


- Natural change explains the U.S. population pyramid well: births replenish the 0-4 cohort and deaths gradually diminish the older cohorts
- However, migration is a more important factor in Boston's population, creating a bulge in the young adult years and making projections much more difficult

United States - 2010 Decennial Census

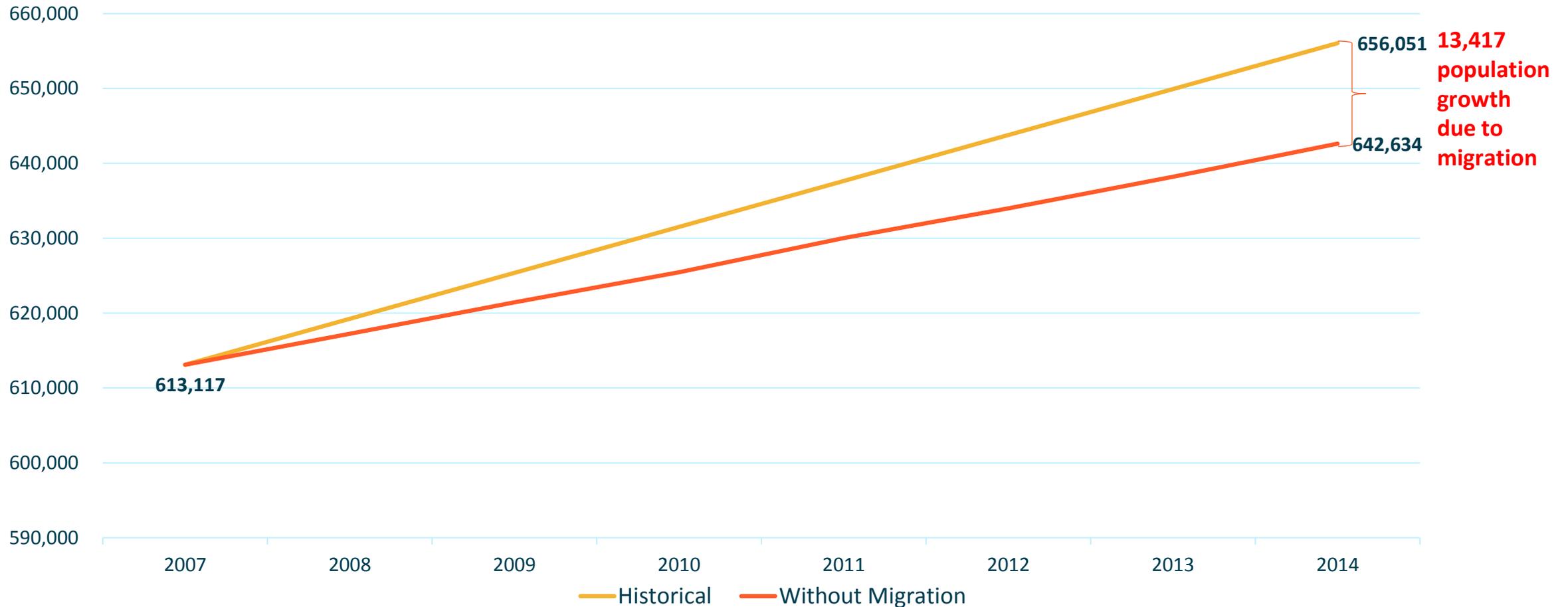


Boston - 2010 Decennial Census



- Natural change (births-deaths) alone would yielded smaller population growth 2007 to 2014.
- Positive net migration increased Boston's population by more than 13,000 over that time period.

Averaged Population Change 2007-2014



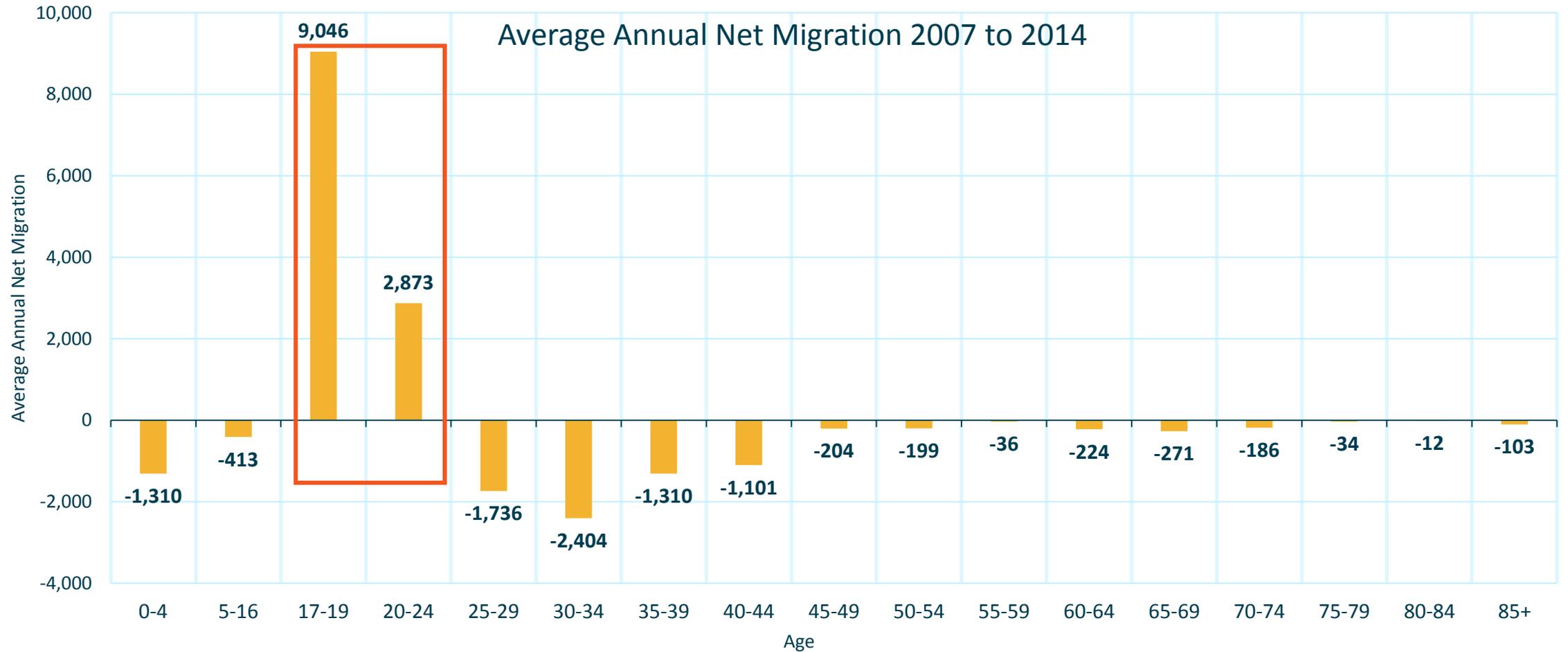
$$\text{Projected Population} = \text{Population Base} + \text{Births} - \text{Deaths} + \text{Domestic In-Migration} - \text{Domestic Out-Migration} + \text{Net International Migration}$$

- The BPDA migration methodology measures three types of migration
- **Domestic in-migration:** people who move to Boston from elsewhere in the United States
 - Domestic in-migration rate is the percentage of the U.S. population outside of Boston that moves to Boston
- **Domestic out-migration:** people who move from Boston to elsewhere in the United States
 - Domestic out-migration rate is the percentage of the Boston population that moves elsewhere in the United States
- **Net international migration:** net movement of people to Boston from other countries and from Boston to other countries
 - Net international migration rate is the net percentage of Boston residents who moved internationally

NET MIGRATION

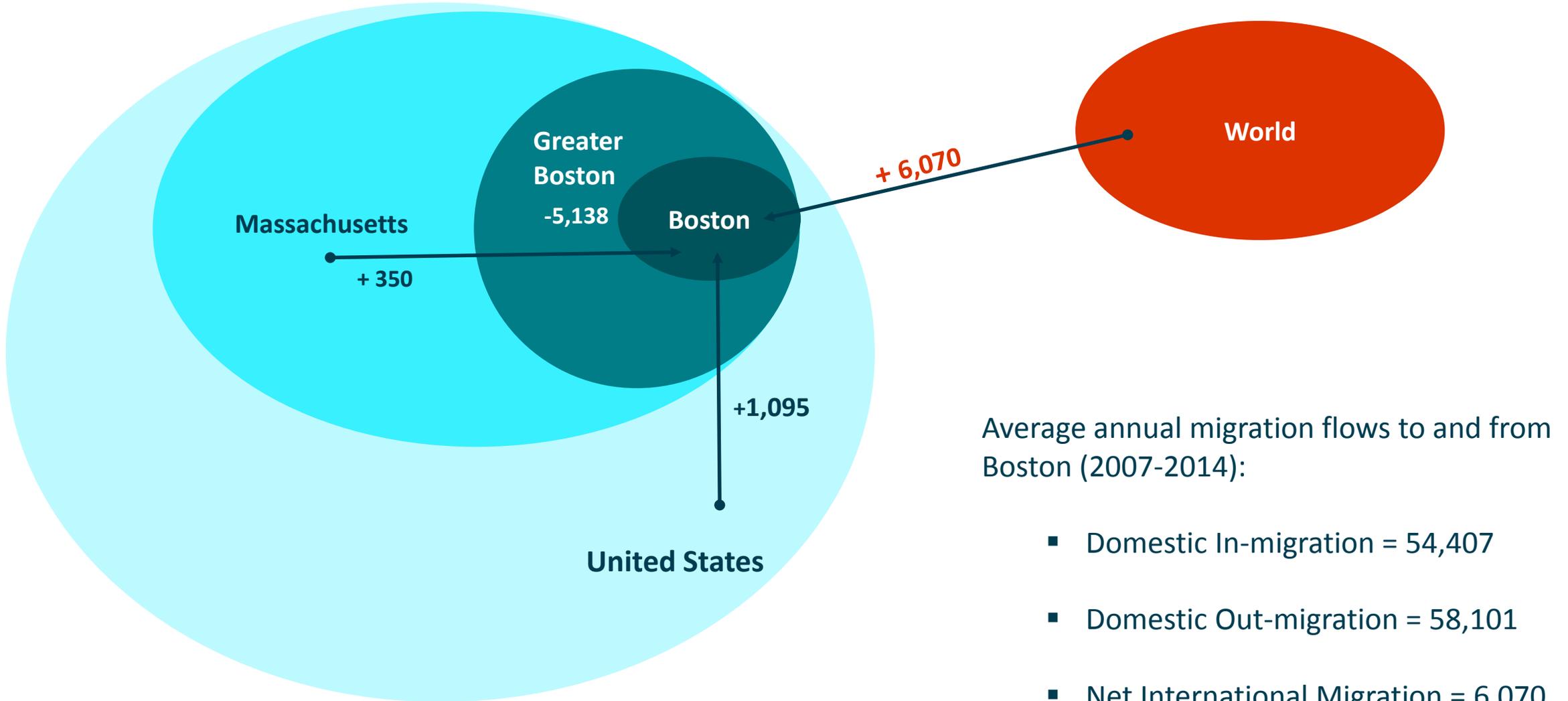
$$\text{Projected Population} = \text{Population Base} + \text{Births} - \text{Deaths} + \text{Domestic In-Migration} - \text{Domestic Out-Migration} + \text{Net International Migration}$$

- From 2007 to 2014, Boston had a net gain on average of 2,376 people per year due to migration.
- This positive net migration is due to the large influx of 17 to 24 year olds

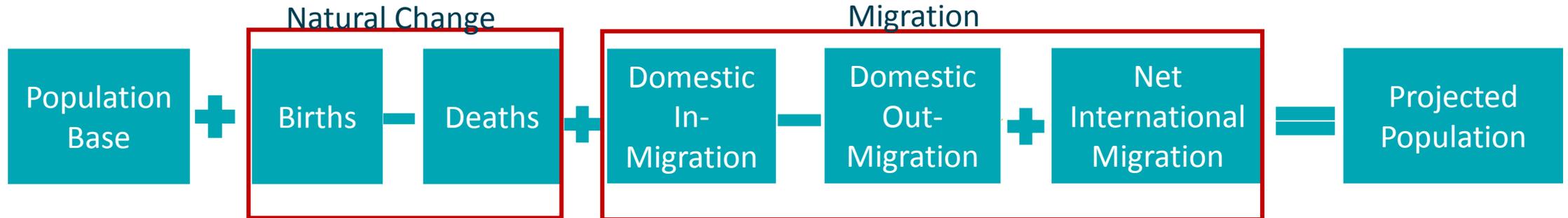


Source: U.S. Census Bureau, 2007-2014 1-year American Community Survey, PUMS, BPDA Research Division Analysis

NET MIGRATION FLOWS



POPULATION PROJECTION METHODOLOGY



- Create **age-specific fertility rates** from historical birth data 2010-2014 from Massachusetts Public Health Commission and U.S. Census and ACS population data.
- Create **age- and gender-specific survival rates** from historical death data 2010-2013 from Massachusetts Public Health Commission and U.S. Census and ACS population data.
- Create **age- and gender-specific migration rates** from ACS migration and population data 2007-2014.
- Apply these rates to the population base (2010 Decennial Census) to project Boston's population through 2030

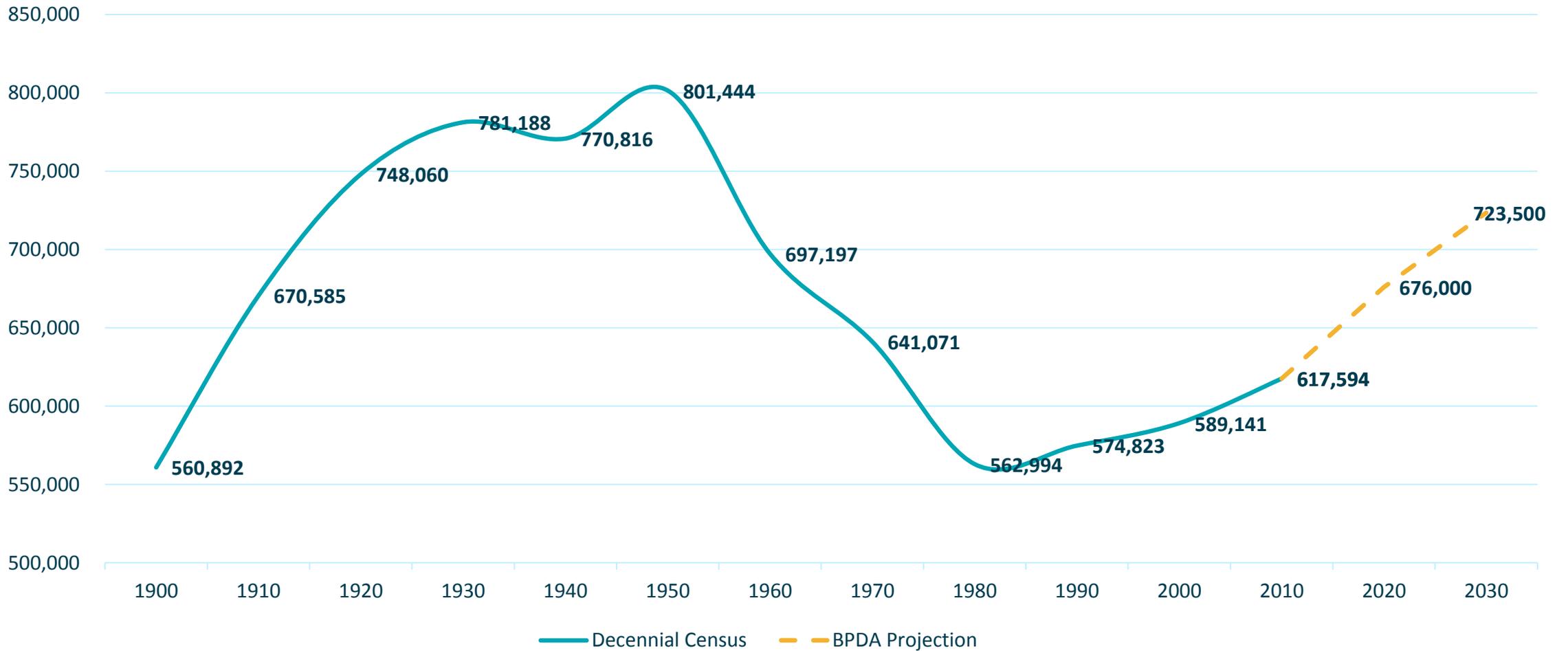
POPULATION PROJECTIONS 2030



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BPDA population projection methodology yields a projected Boston population of 723,500 in 2030

$$\text{Projected Population} = \text{Population Base} + \text{Births} - \text{Deaths} + \text{Domestic In-Migration} - \text{Domestic Out-Migration} + \text{Net International Migration}$$

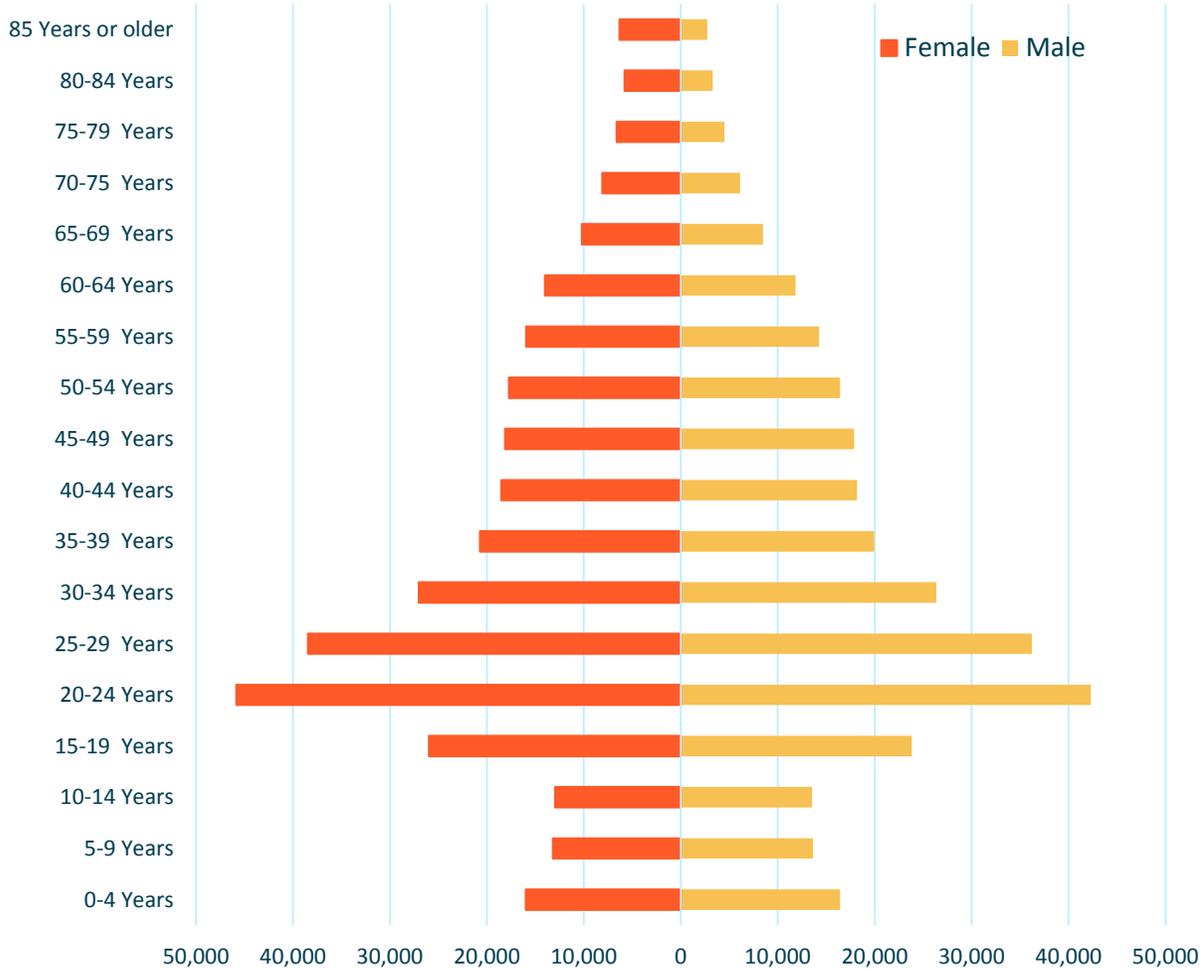


Source: U.S. Census Bureau, 1900-2010 Decennial Census, 2010-2030 Population Projections, BPDA Research Division Analysis

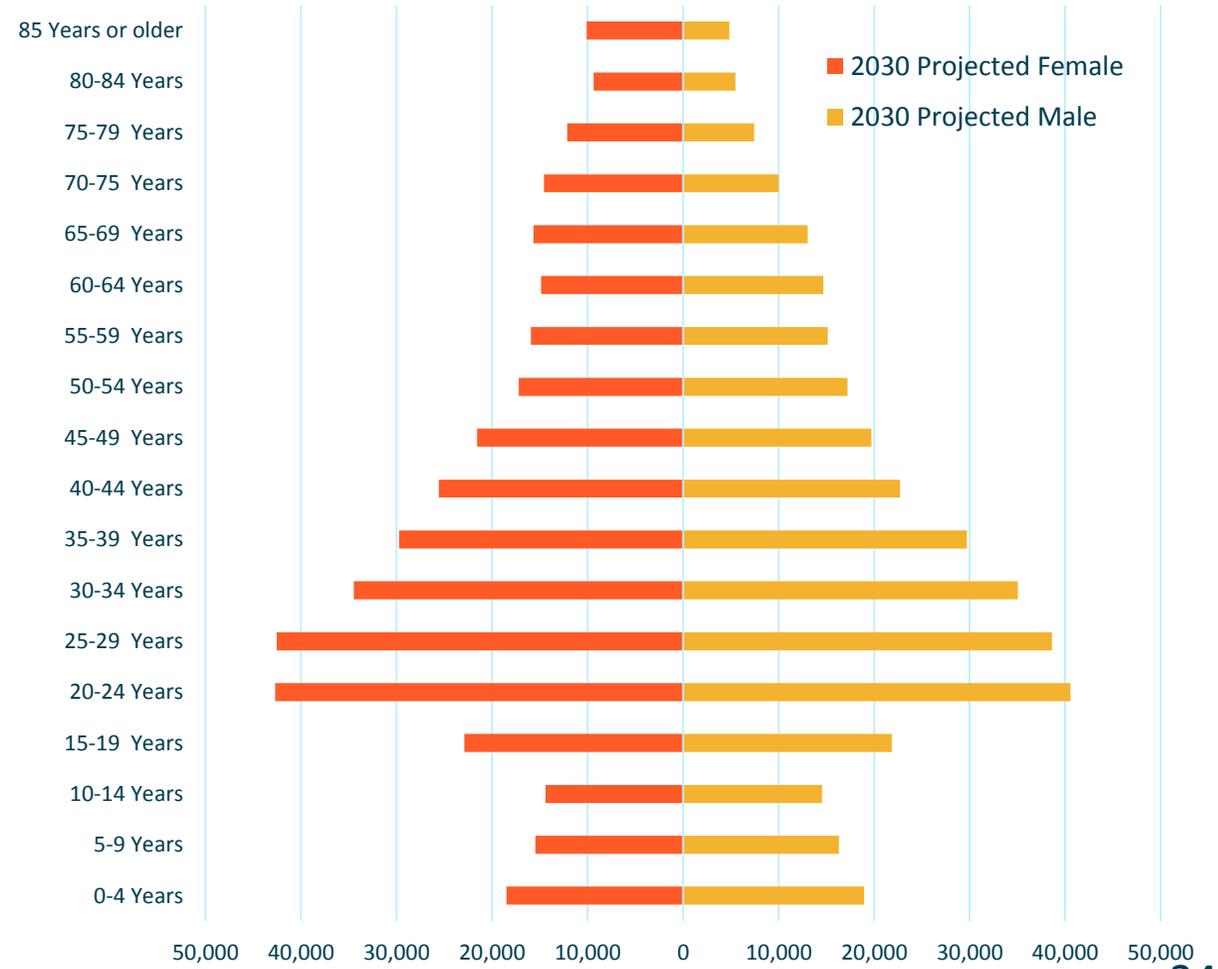
Although the 20-29 cohorts remain the largest, the 2030 projections show increases in the older age cohorts.



Boston - 2010 Decennial Census



Boston - 2030 Projected

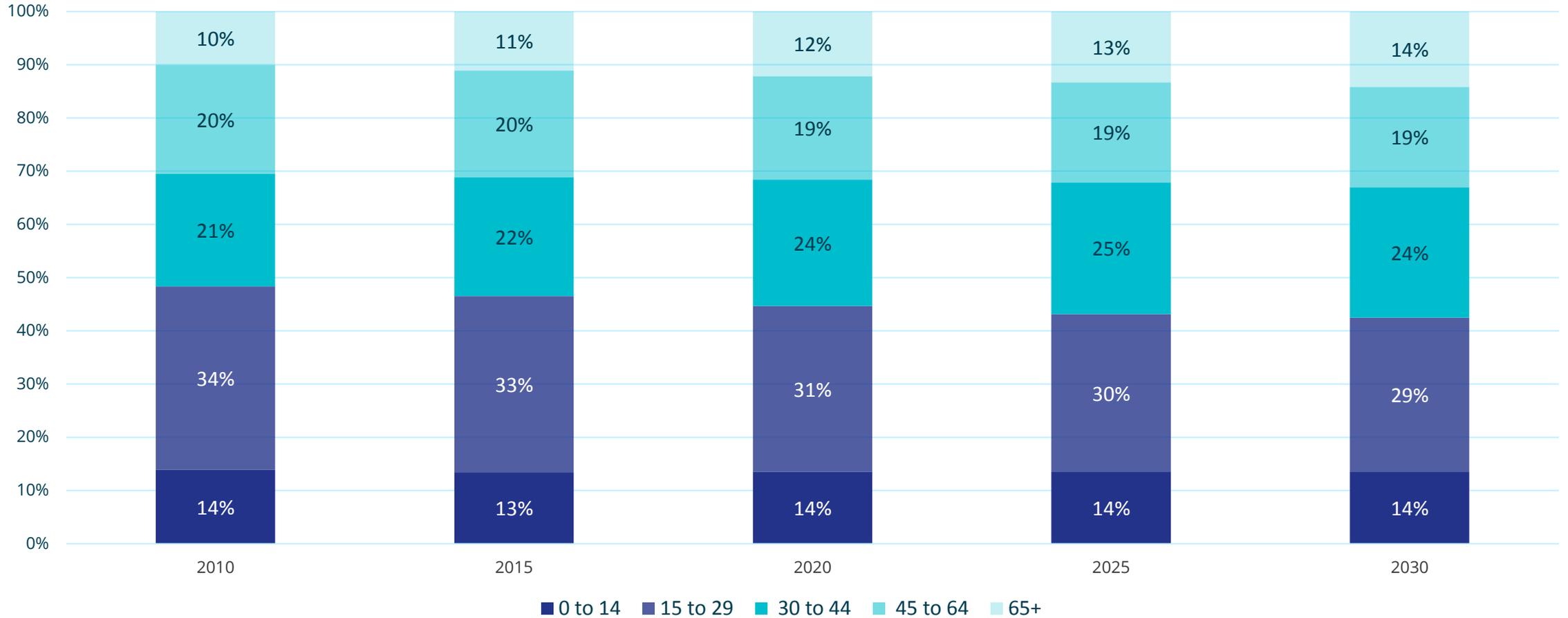


Source: U. S. Census Bureau, 2010, U.S. Decennial Census, BPDA Research Division Analysis

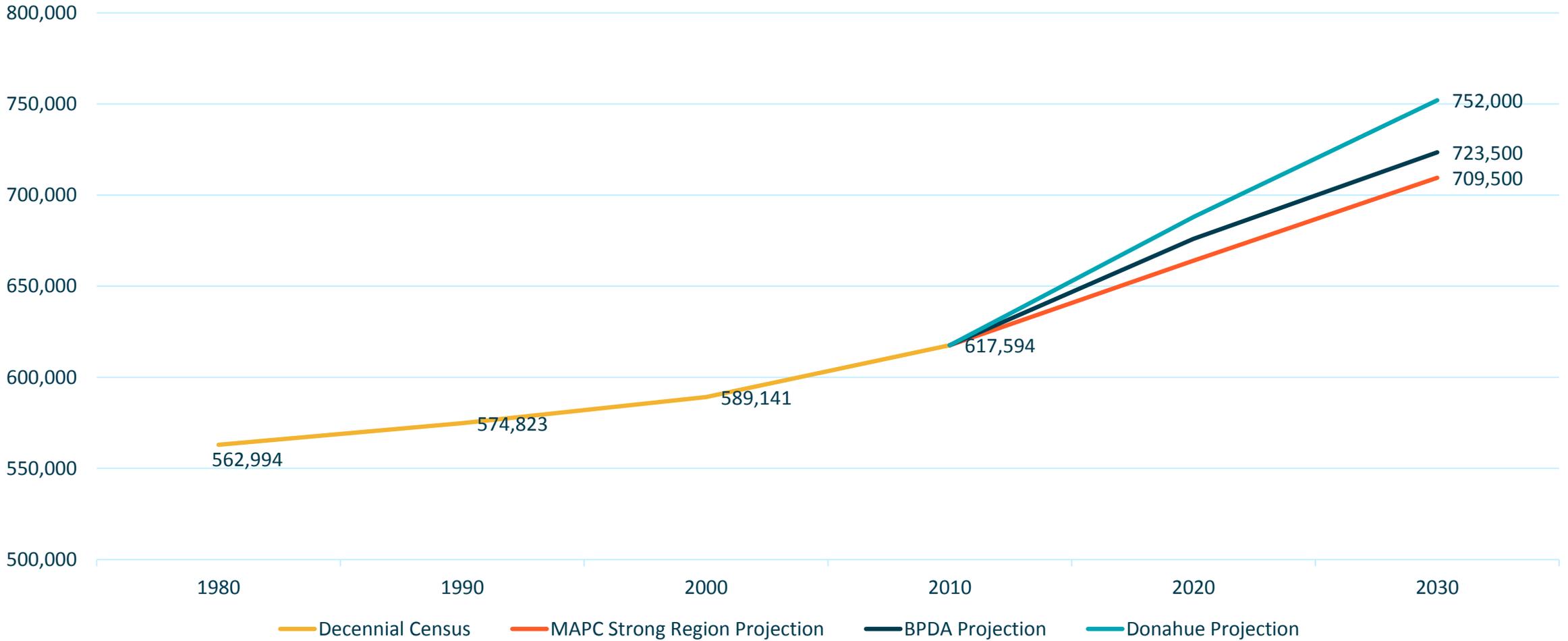
AGE DISTRIBUTION OF PROJECTED POPULATION

$$\boxed{\text{Projected Population}} = \text{Population Base} + \text{Births} - \text{Deaths} + \text{Domestic In-Migration} - \text{Domestic Out-Migration} + \text{Net International Migration}$$

- BPDA projections project decreases in the population share of 15 to 29 year olds, and increases in the share of the 65+ population.



COMPARISON TO OTHER POPULATION PROJECTIONS



Source: Reardon, Tim & Hari, Meghna, "Metro Boston 2030 Population and Housing Demand Projections," MAPC, 2014.
Renski, Henry & Strate, Susan "Long-Term Population Projections for Massachusetts Regions and Municipalities," UMDI, 2014.
BPDA Research Division Analysis

BPDA PROJECTIONS ARE BASED ON MOST UP-TO-DATE DATA:

- 2010 Census from U.S. Census Bureau (Population Base)
- 2010-2014 birth and death data from Massachusetts Department of Public Health (Natural Change)
- 2007-2014 migration data from U.S. Census Bureau, American Community Surveys (Migration)

THE PROJECTIONS DATABASE AND MODEL CAN BE UPDATED AS NEW DATA BECOME AVAILABLE

