



# *Demographic Trends in Boston 2010-2017*

*BPDA Research Division*

*January 2019*



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Cover photo: August 18, 2016 - (BPDA Photo)

# Motivation for this Research

- Boston has experienced rapid population and economic growth from 2010 to 2017. To what extent has this change influenced the composition of Boston's population?
- The American Community Survey (ACS) provides detailed population and housing information on an ongoing basis and is the best lens to examine the effects of this demographic and economic change. The BPDA Research Division analyzes these data for demographic and economic reports, often providing one-year snapshots of the population.
- The ACS identifies an estimate of a population's size and its share of the total population. Because of Boston's growth, the absolute numbers in these ACS estimates usually increase during this time period. However, the share of the population may or may not show an increase.
- In this research, we examine how the composition of Boston's population changed between 2010 and 2017.

# Evaluating Change over Time

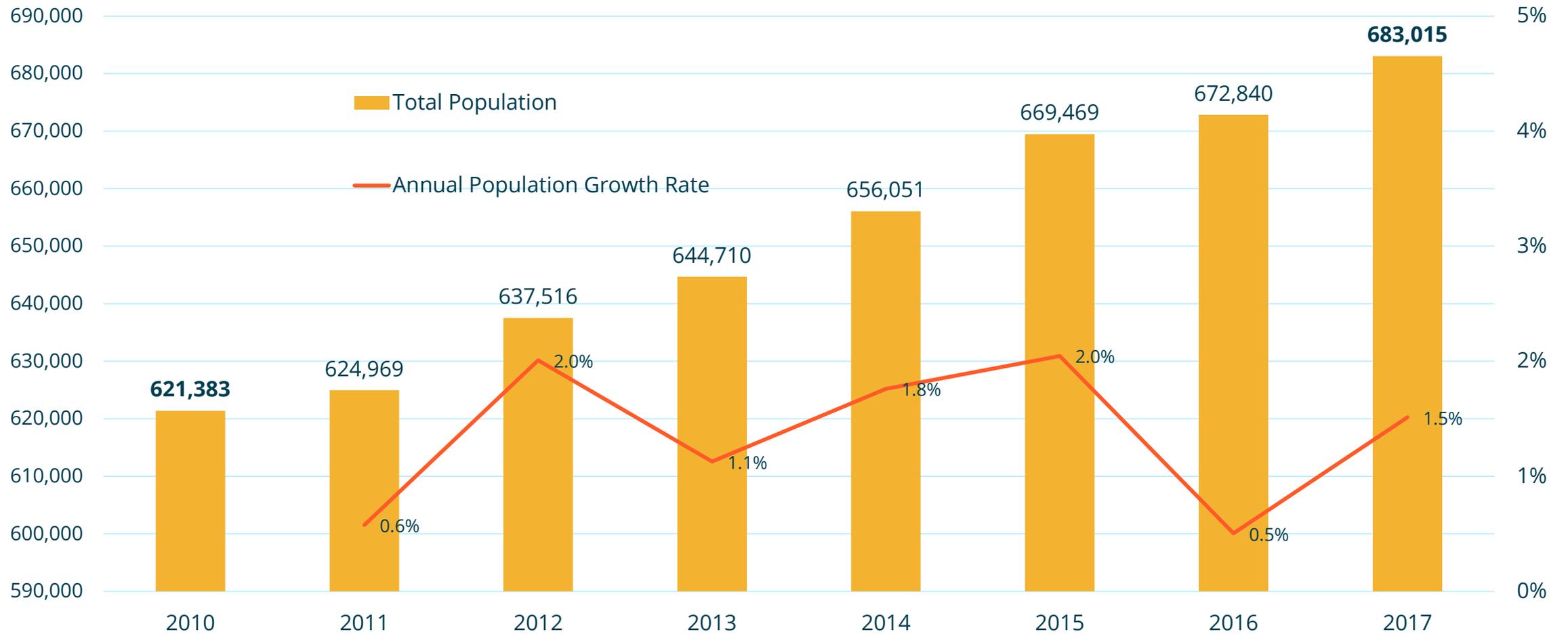
- As a statistical survey, the ACS provides a characteristic's estimate and a range or "margin of error" (moe) inside of which the true value should fall 90% of the time. In comparing yearly estimates, as two estimates differ, a point exists where their difference becomes "statistically significant" – the change is unlikely to be due to random chance of who happened to be surveyed in a given year. (See appendix for details).
- In this presentation, estimates for categories within characteristics are presented with columns for 2010 to 2017. Estimates with only one category are presented with lines. Results, where a statistically different change in the population has occurred, are highlighted with the percentage change identified for both 2010 and 2017. If no statistically different change occurred, that section of a column or line is presented in a pastel color, and the 2010 percentage is not presented.

# Population, Age, & Mobility



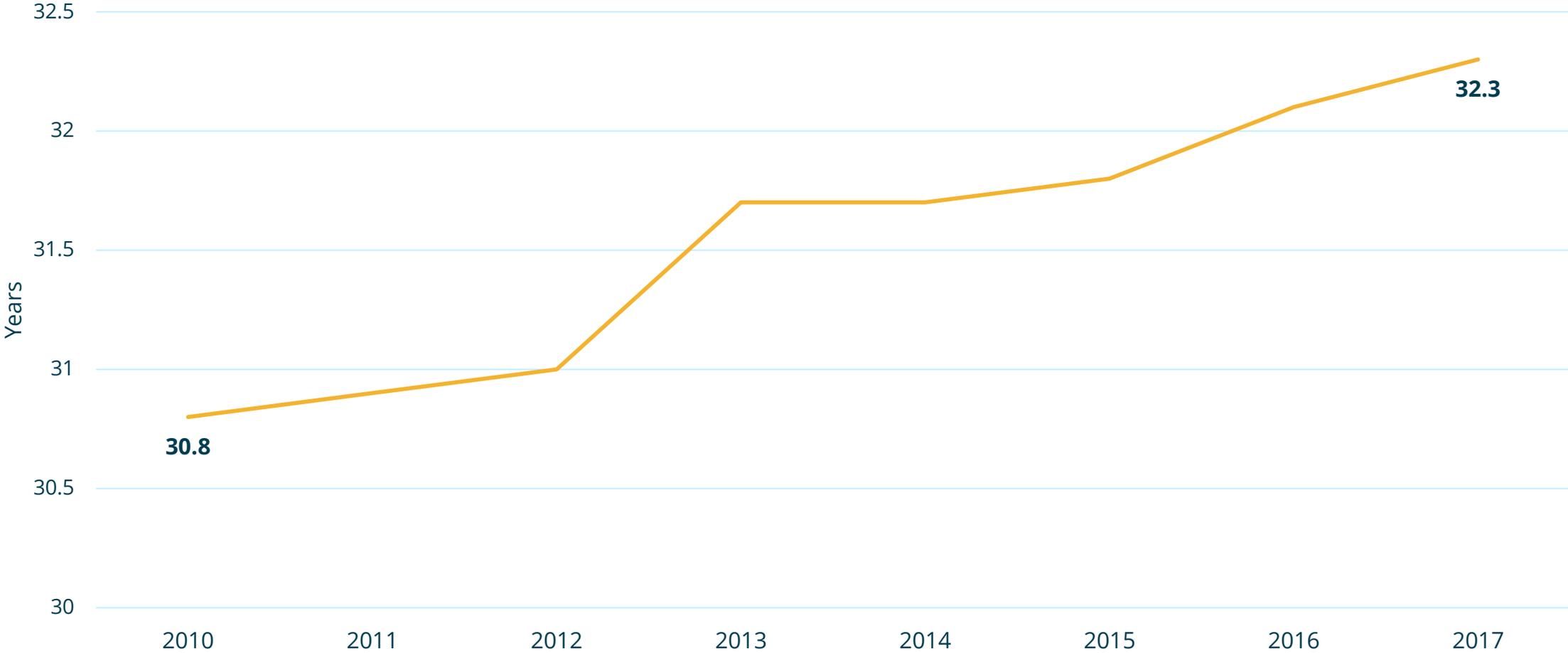
# Total Population

- Boston's population has grown by nearly 10 percent since 2010 to 683,000 in 2017.



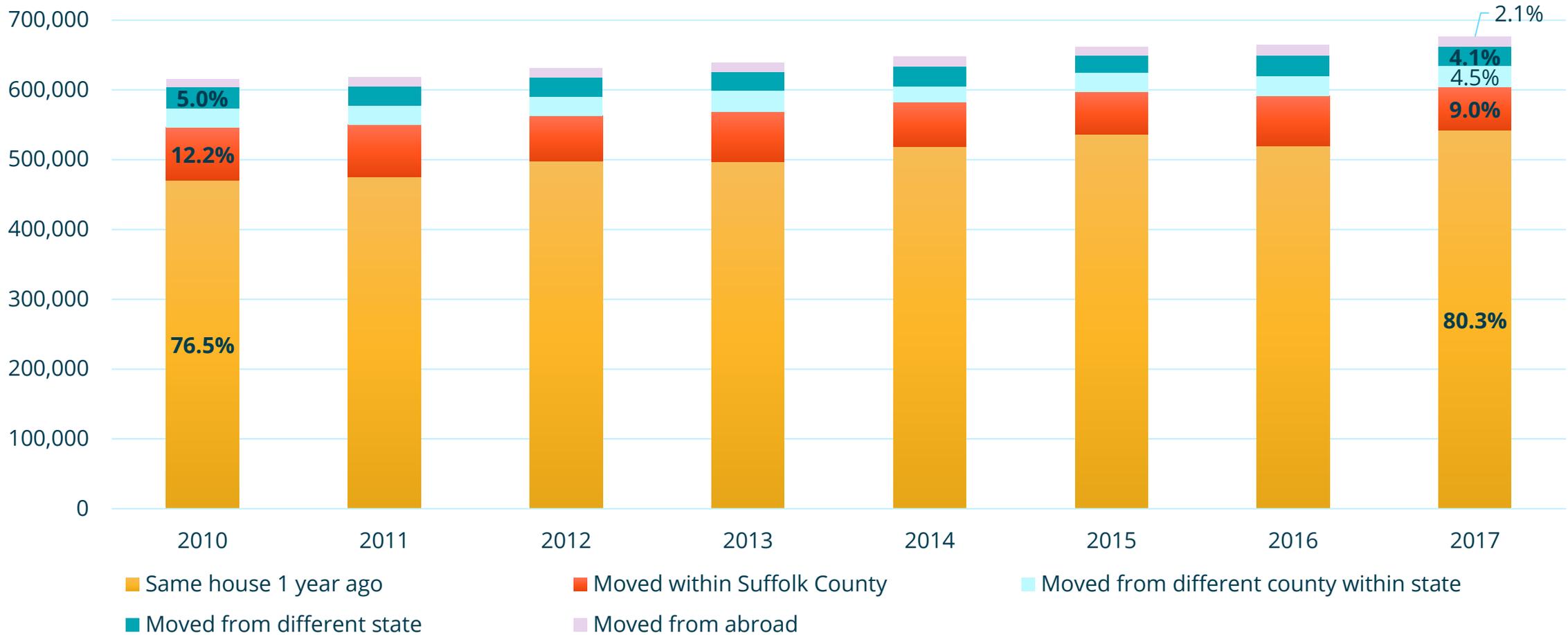
# Median Age

- As the population has grown, the median age increased by 1.5 years to 32.3 years.



# Geographic Mobility (Age 1 & Older)

- Geographic mobility declined: the share of the population remaining in the same house as the prior year increased to 80%.
- The share of the population changing houses within Suffolk County fell to 9.0%, and the share moving to Boston from outside Massachusetts fell to 4.1%.



U.S. Census Bureau, 2010-2017 American Community Survey, BPDA Research Division Analysis.

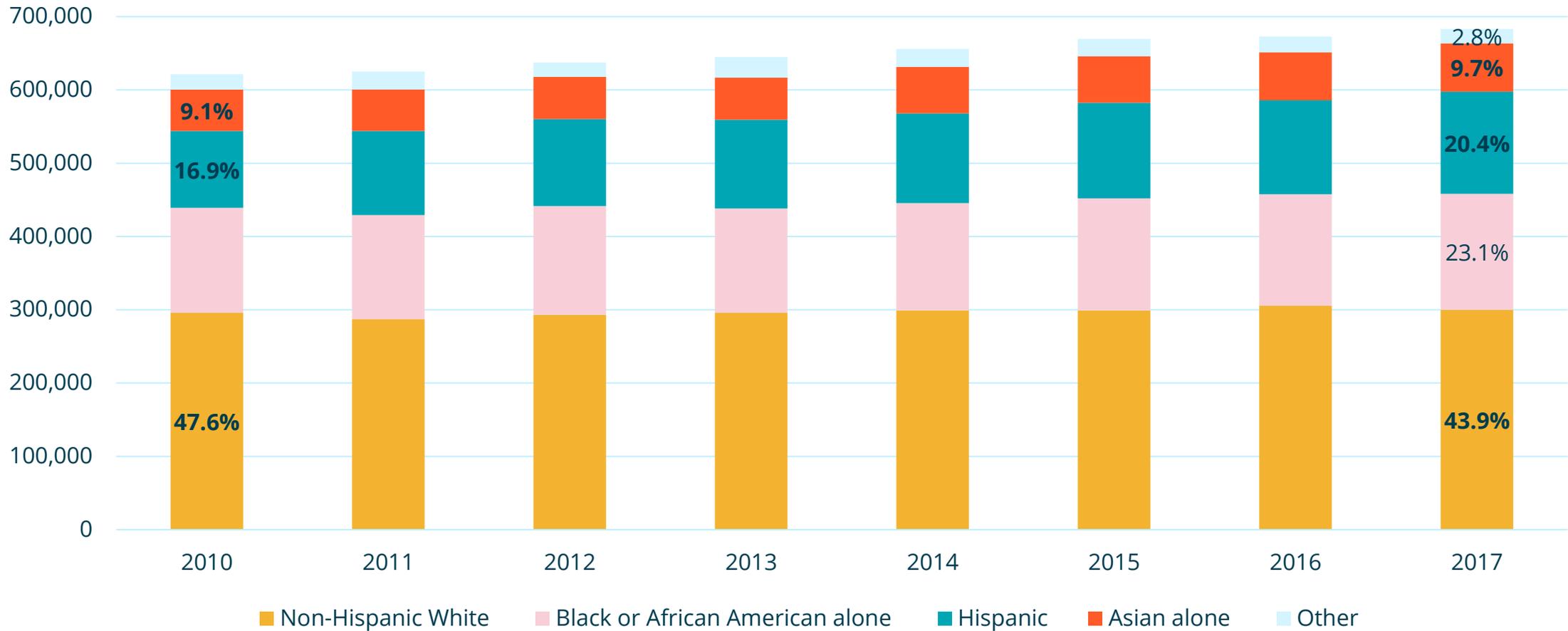
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# Race, Nativity, & Language



# Race & Ethnicity

- The share of the Latino and Asian populations increased to 20.4% and 9.7%, respectively.

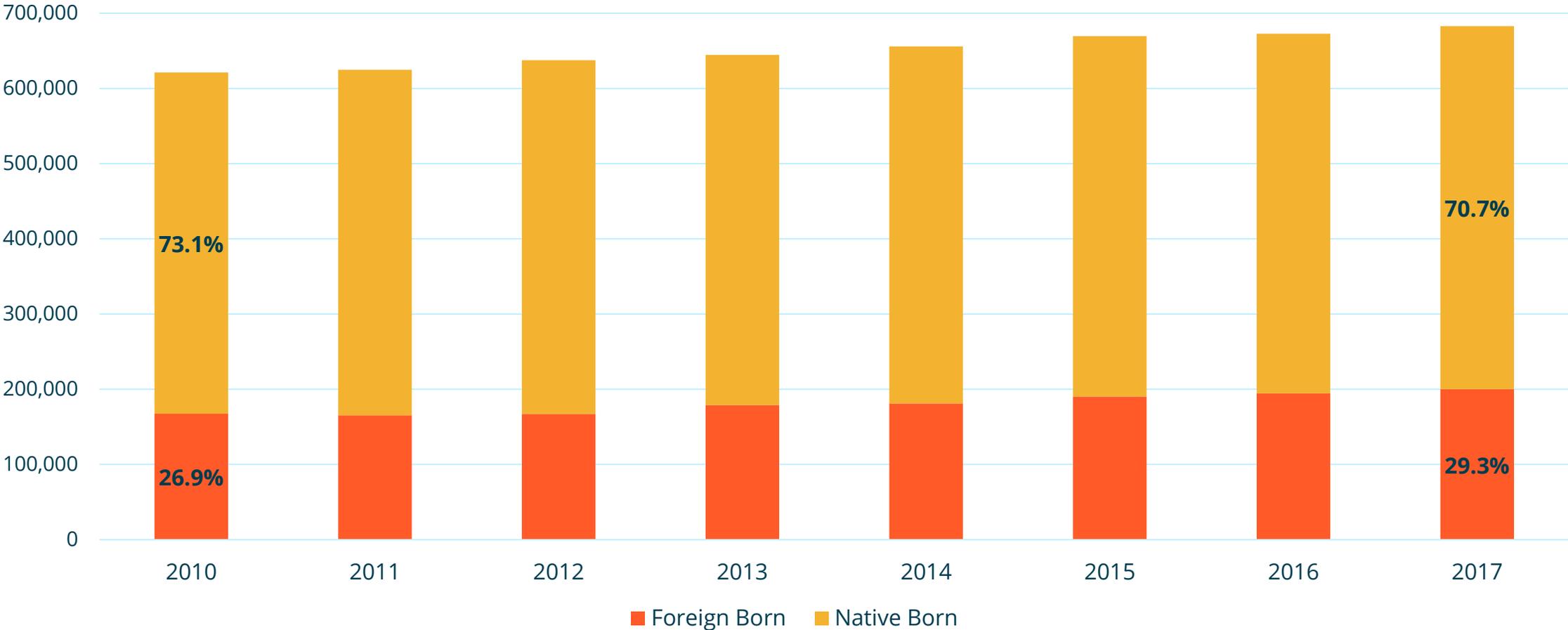


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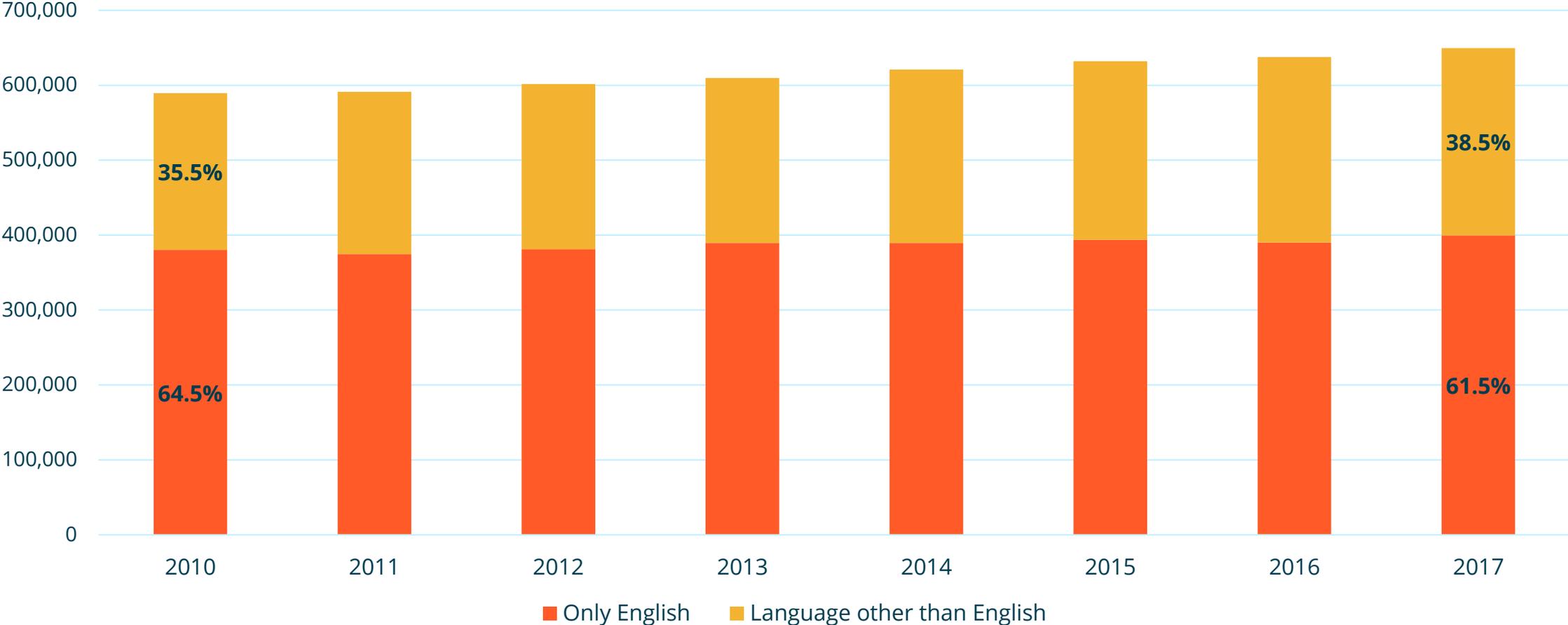
# Nativity

- Boston became increasingly populated by foreign-born residents.
- The share of foreign-born residents increased to 29.3%.
- There was no significant change in the regions of the world from which immigrants came to Boston.



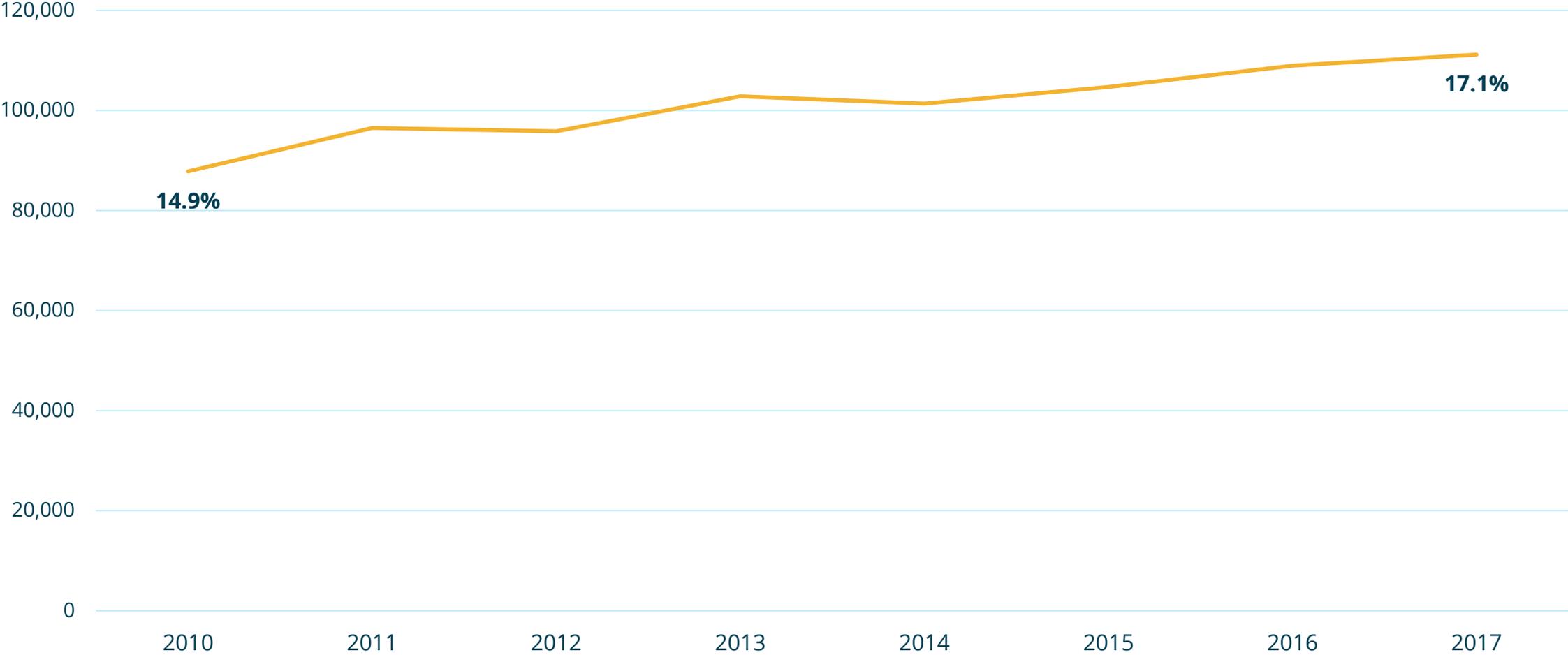
# Language Spoken at Home (Age 5 & Older)

- The share of English only speakers decreased to 61.5%, while the share of residents speaking a language other than English at home increased to 38.5%.



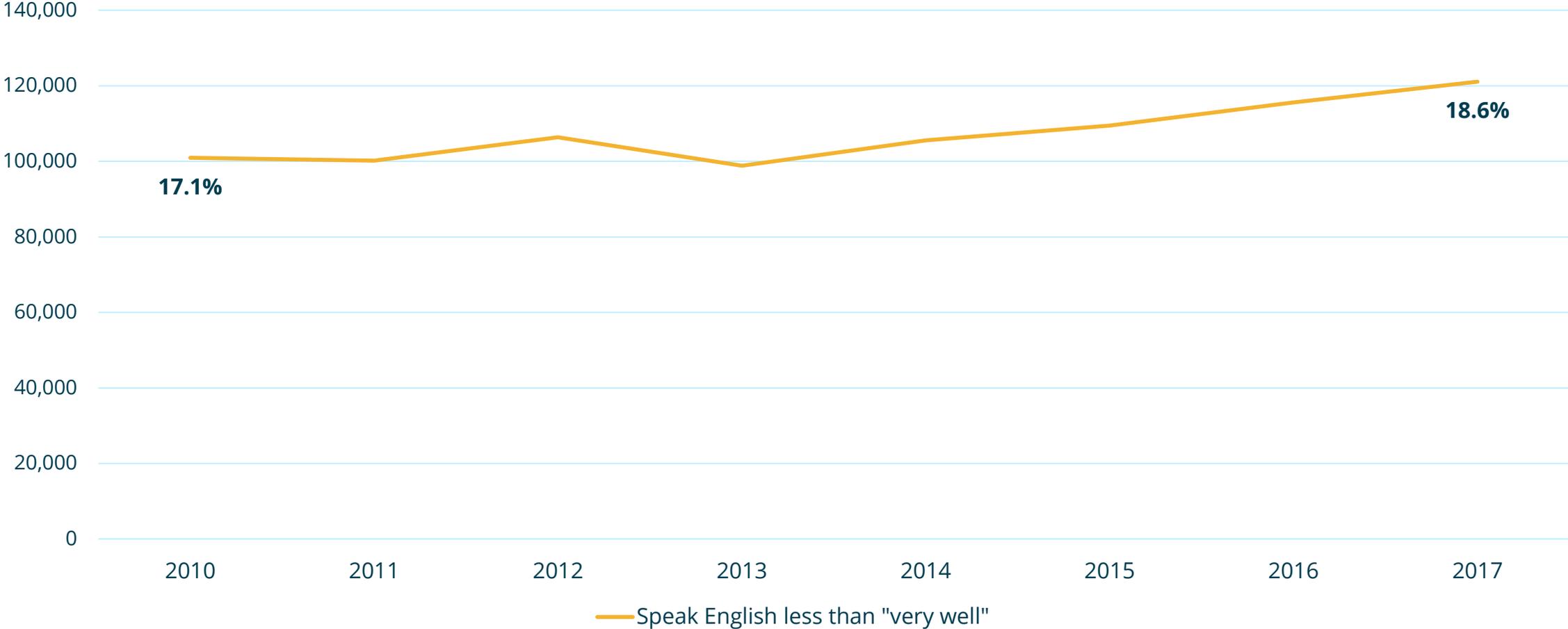
# Spanish Speakers (Age 5 & Older)

- The share of Spanish speakers increased to 17.1%.



# Limited English Proficiency (Age 5 & Older)

- The share of residents age 5 and older who state they speak English “less than very well” has increased to 18.6%.

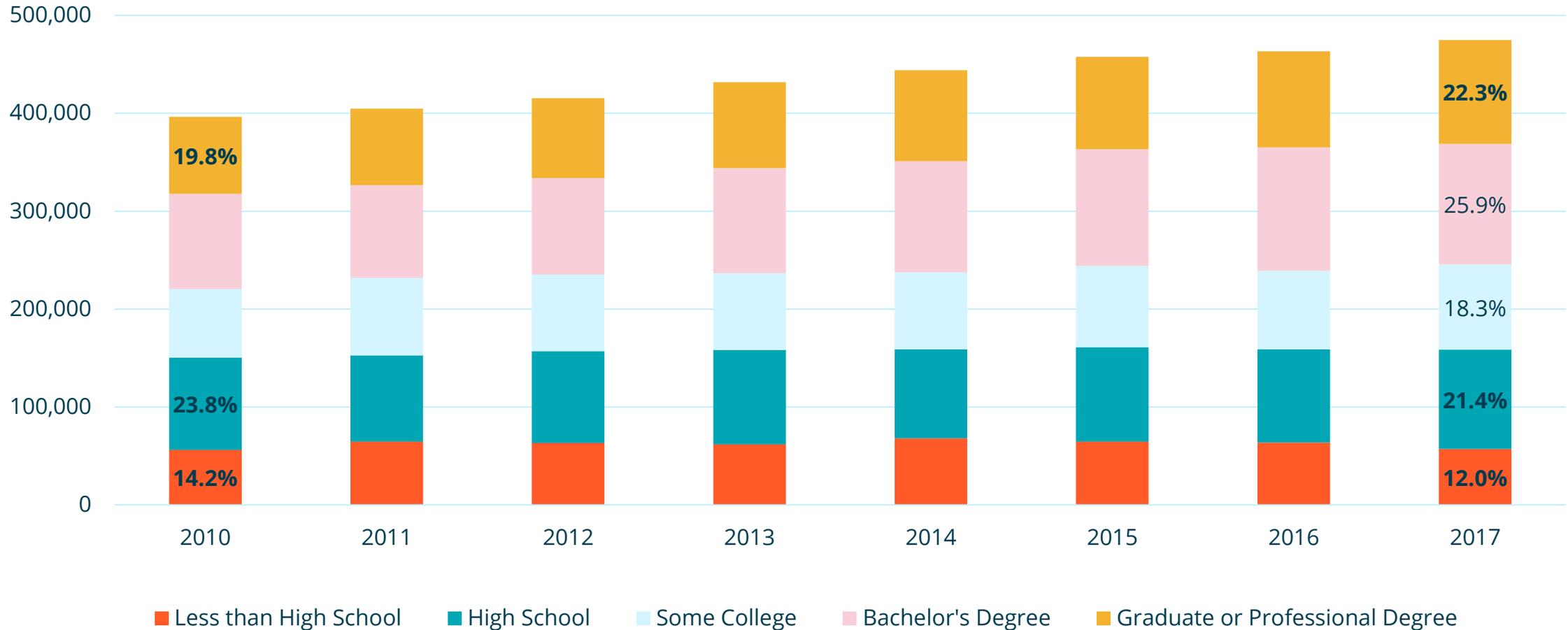


# Educational Attainment & Labor Force Participation



# Educational Attainment (Age 25 & Older)

- The educational attainment of Boston residents increased.
- The share of individuals age 25 and older with a high school education or less decreased from 38.0% to 33.4%.
- The share of residents age 25 and older with a graduate or professional degree increased to 22.3%.

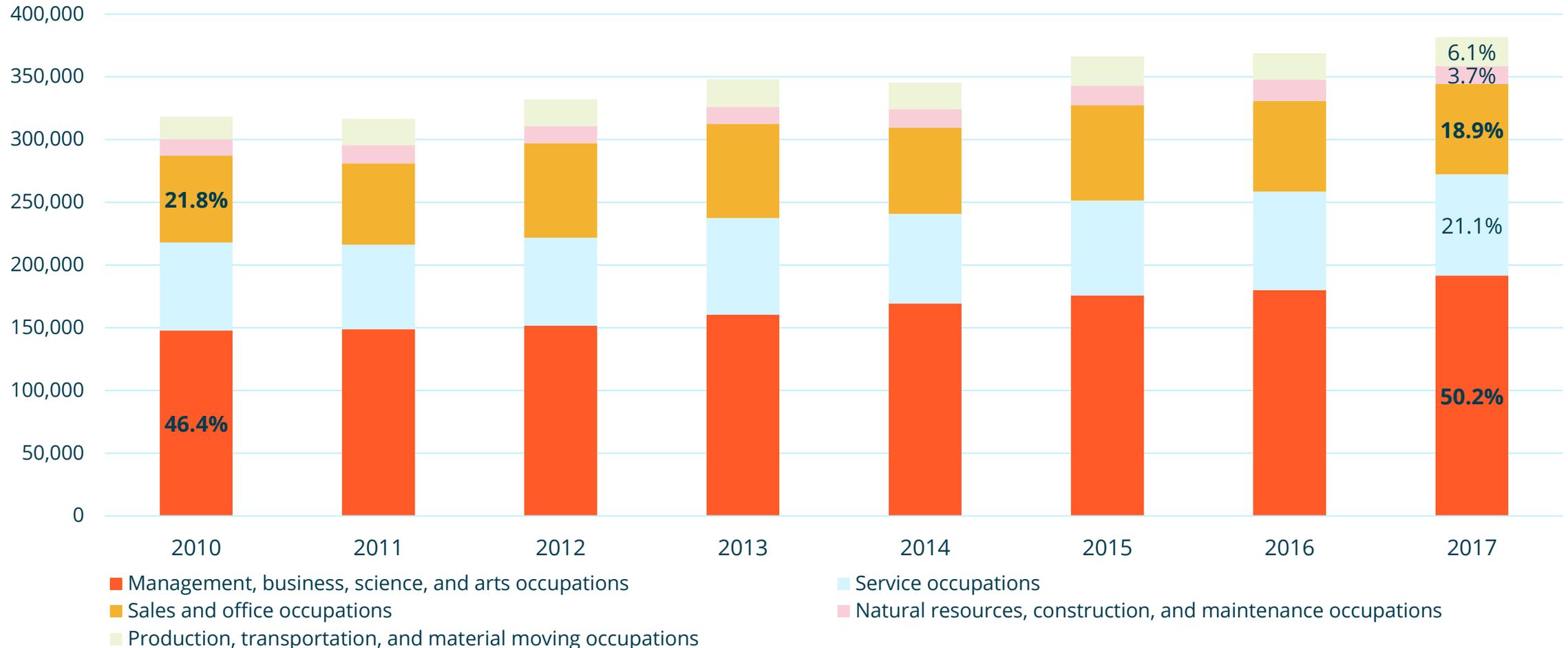


U.S. Census Bureau, 2010-2017 American Community Survey, BPDA Research Division Analysis.

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# Occupations (Age 16 and Older)

- The share of residents age 16 or older who participate in the labor force remained unchanged at about 69%.
- Management, business, science and arts occupations increased to 50.2% of workers.
- Sales and office occupations decreased to 18.9% of workers.



U.S. Census Bureau, 2010-2017 American Community Survey, BPDA Research Division Analysis.

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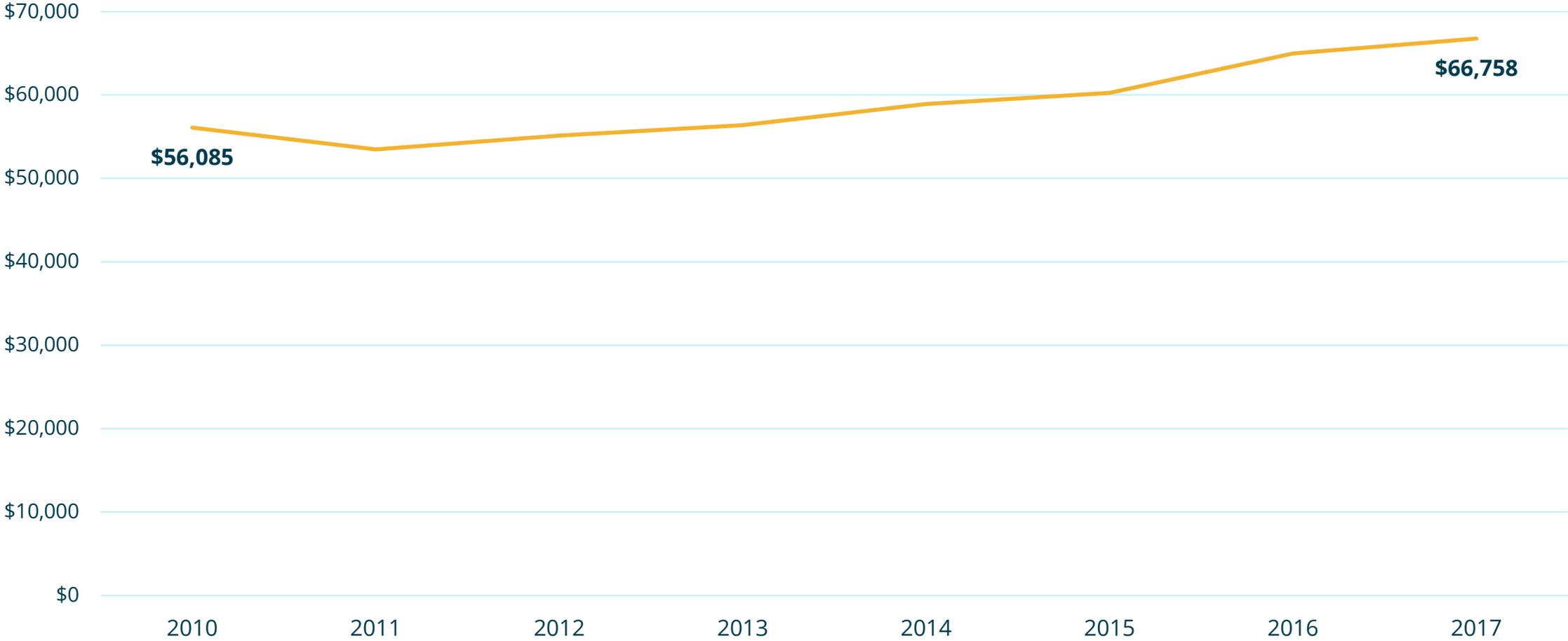
# Income, Poverty, & Health Insurance



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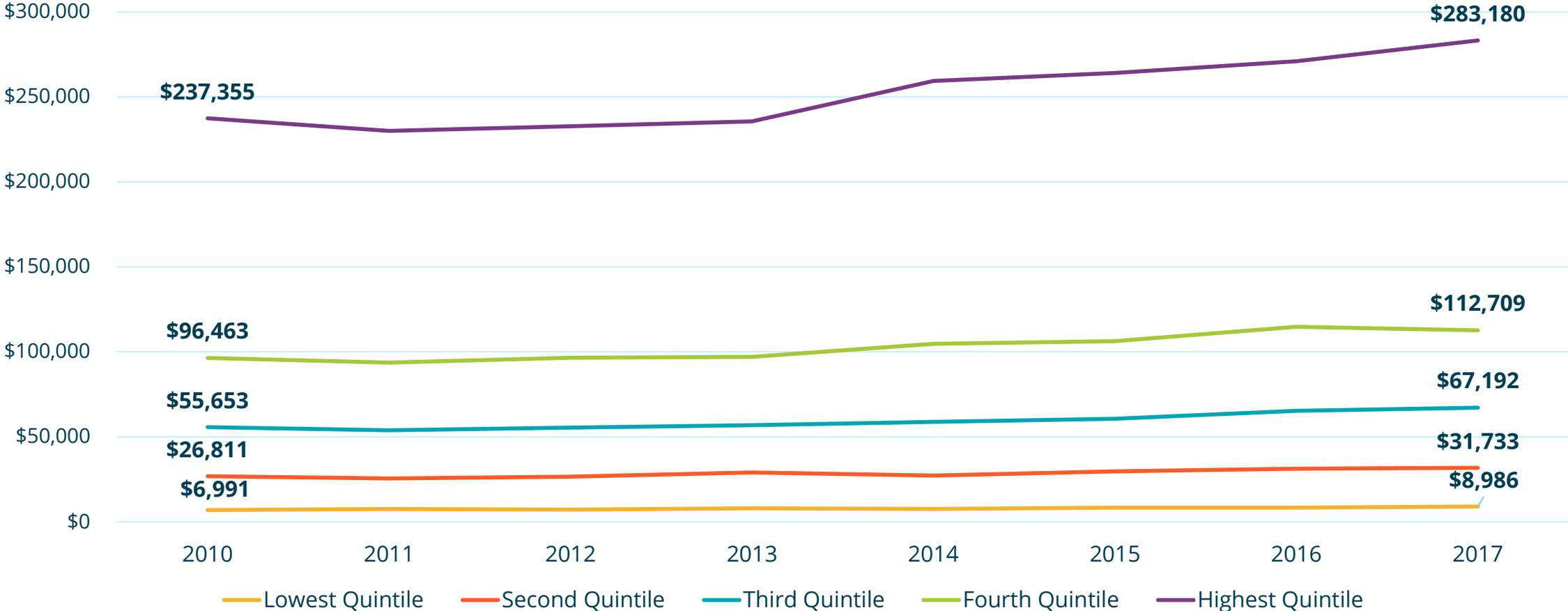
# Real Median Household Income in the Past 12 Months

- Real median household income increased to \$66,758, up from \$56,085 (in 2017 dollars).



# Mean Real Household Income by Quintile

- Each quintile’s mean household income (in 2017 dollars) increased by at least 17%.
- The lowest quintile showed the largest percentage gains – 29% growth in mean household income.

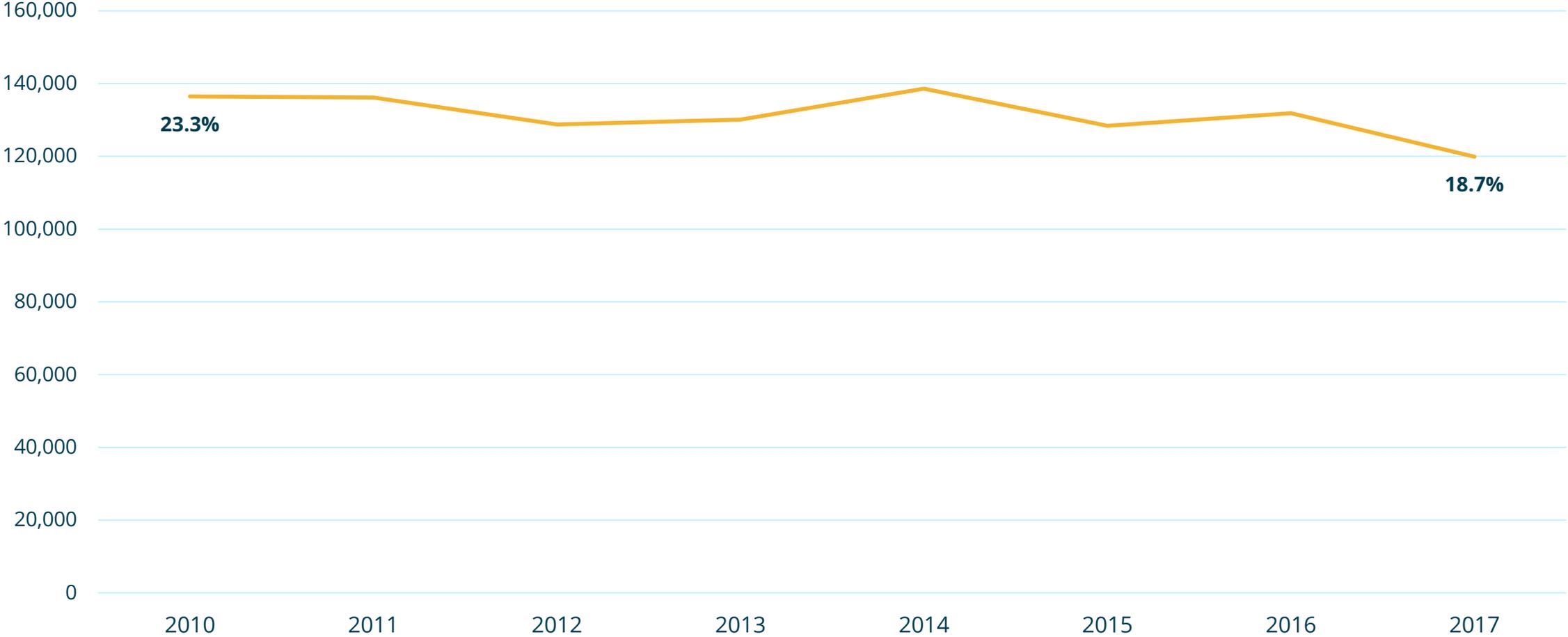


2010-2017 American Community Survey, BPDA Research Division Analysis

Note: A quintile is one-fifth of the households ranked by household income. Households in the lowest quintile earn less than \$18,083 with mean earnings of \$8,986.

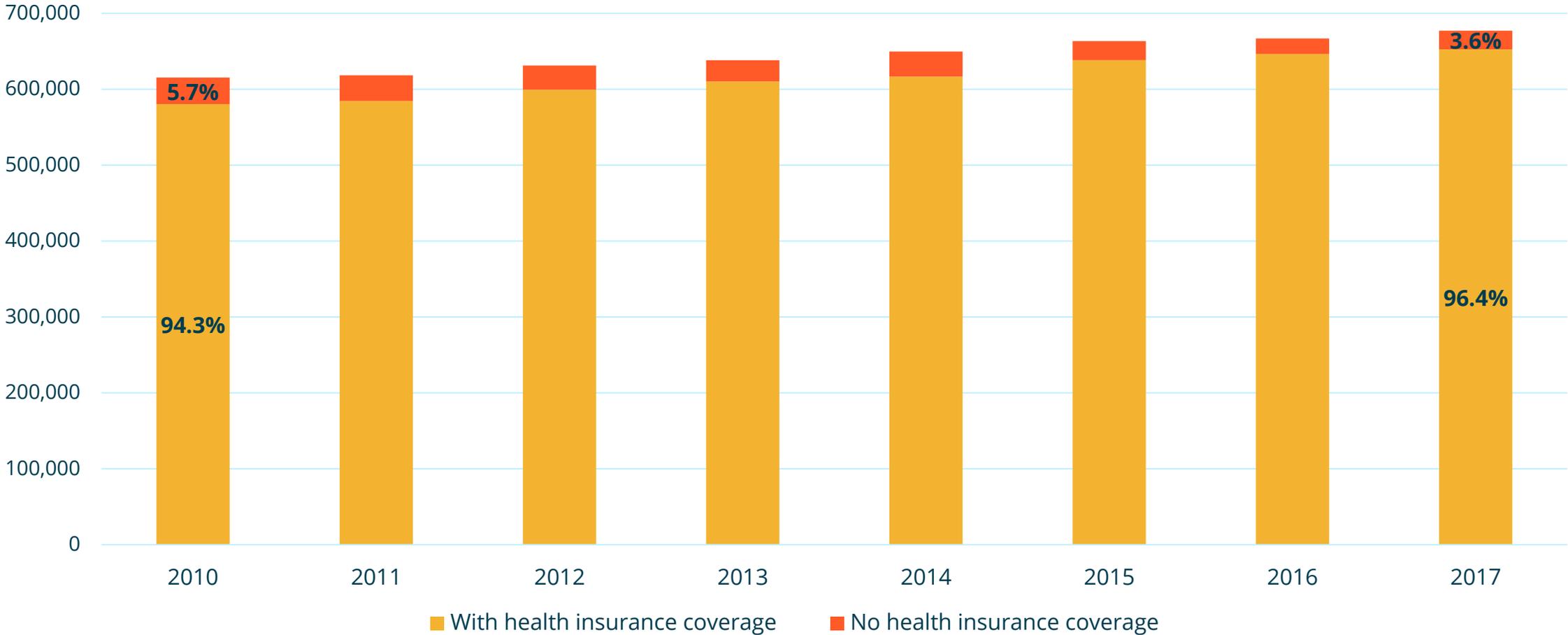
# Poverty Status

- The share of residents living below the poverty threshold decreased to 18.7%.



# Health Insurance Coverage

- The share of the population without health insurance coverage decreased to 3.6%.



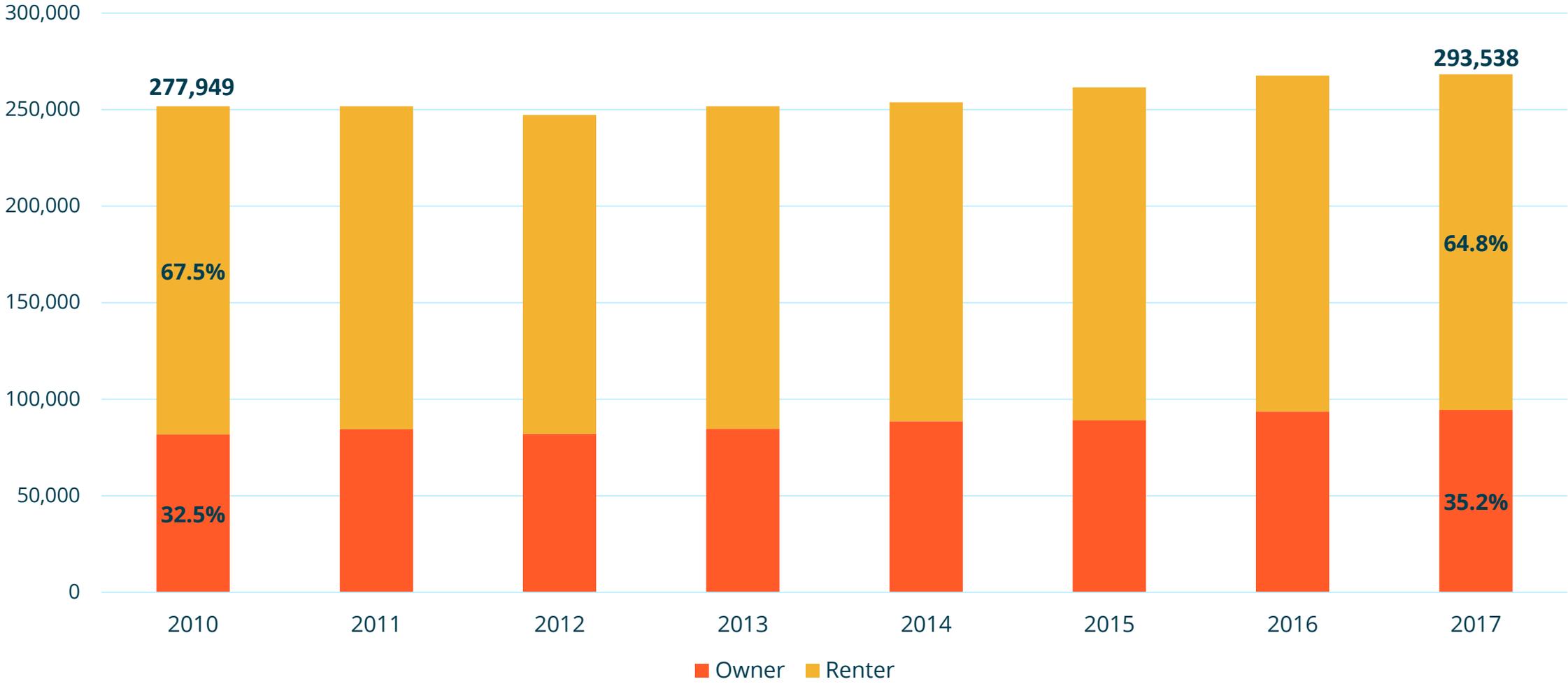
# Housing



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# Housing Units by Tenure

- About 15,000 units of housing were built in Boston, and the occupancy rate remained stable at around 91%.
- The share of owner occupied units increased to 35.2%.



2010-2017 American Community Survey, BPDA Research Division Analysis

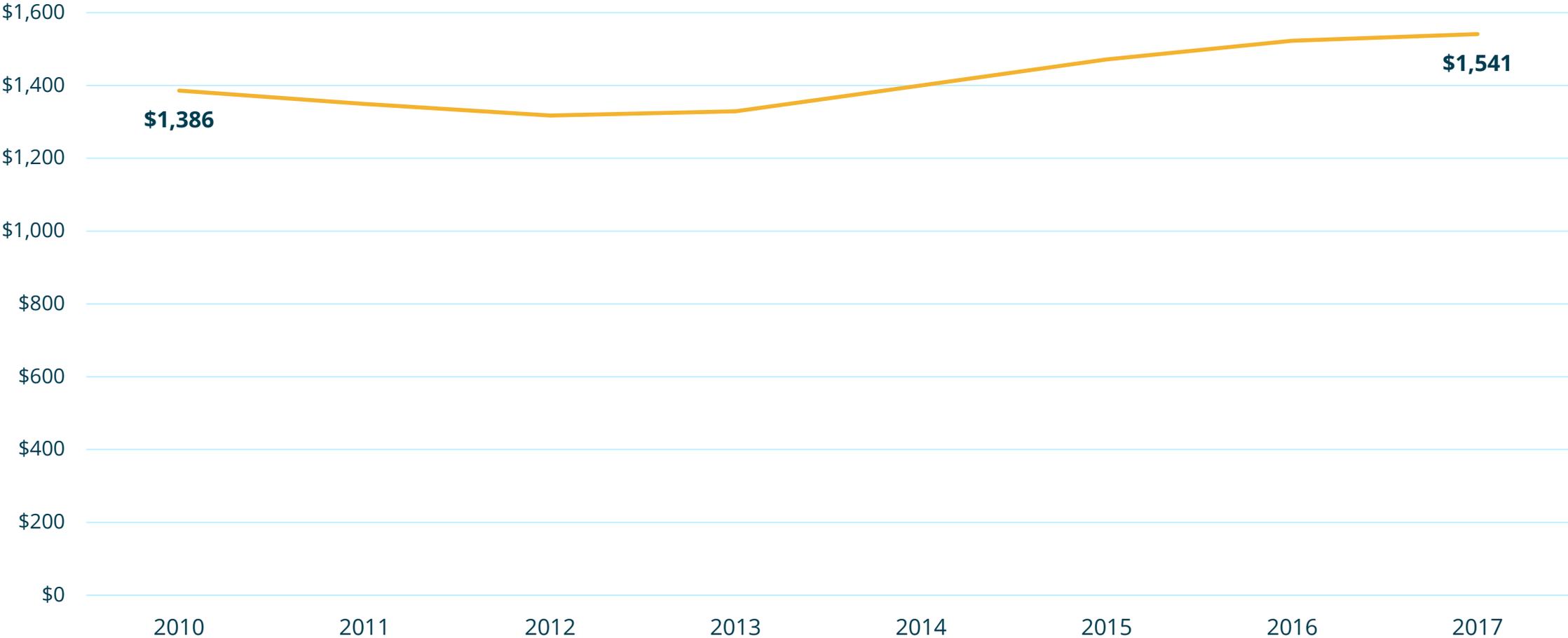
# Average Household Size

- The average household size increased for all housing units to 2.37.
- This increase was due to an increase in renter occupied units to 2.32, as no difference was detected for owner occupied units.
- There was no difference in the composition of family and non-family households, 52% and 48% respectively.



# Real Gross Monthly Rent

- Gross monthly rent increased to \$1,541 up from \$1,386 (in 2017 dollars).



2010-2017 American Community Survey, BPDA Research Division Analysis

Note: Monthly rent from the ACS depicts rent plus utilities paid by current tenants, including those in subsidized units, and may be lower than asking rent for available market rate units.

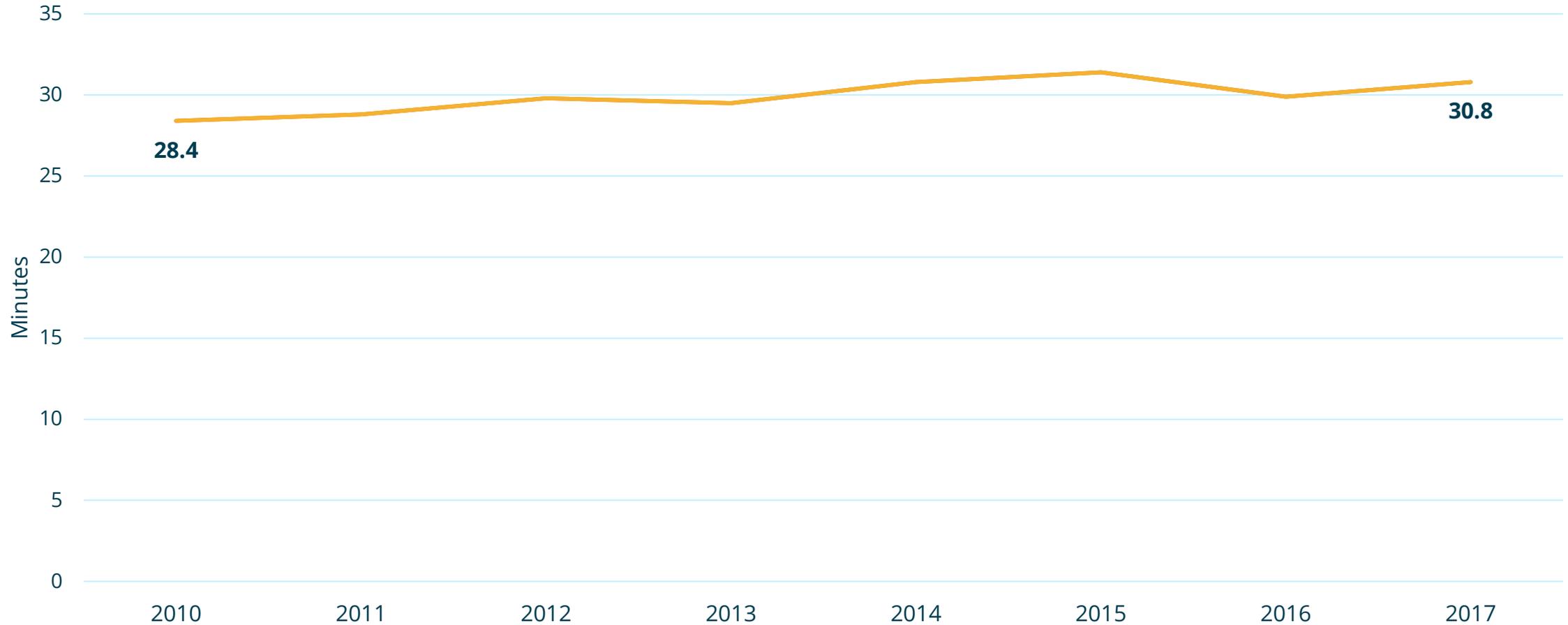
# Transportation



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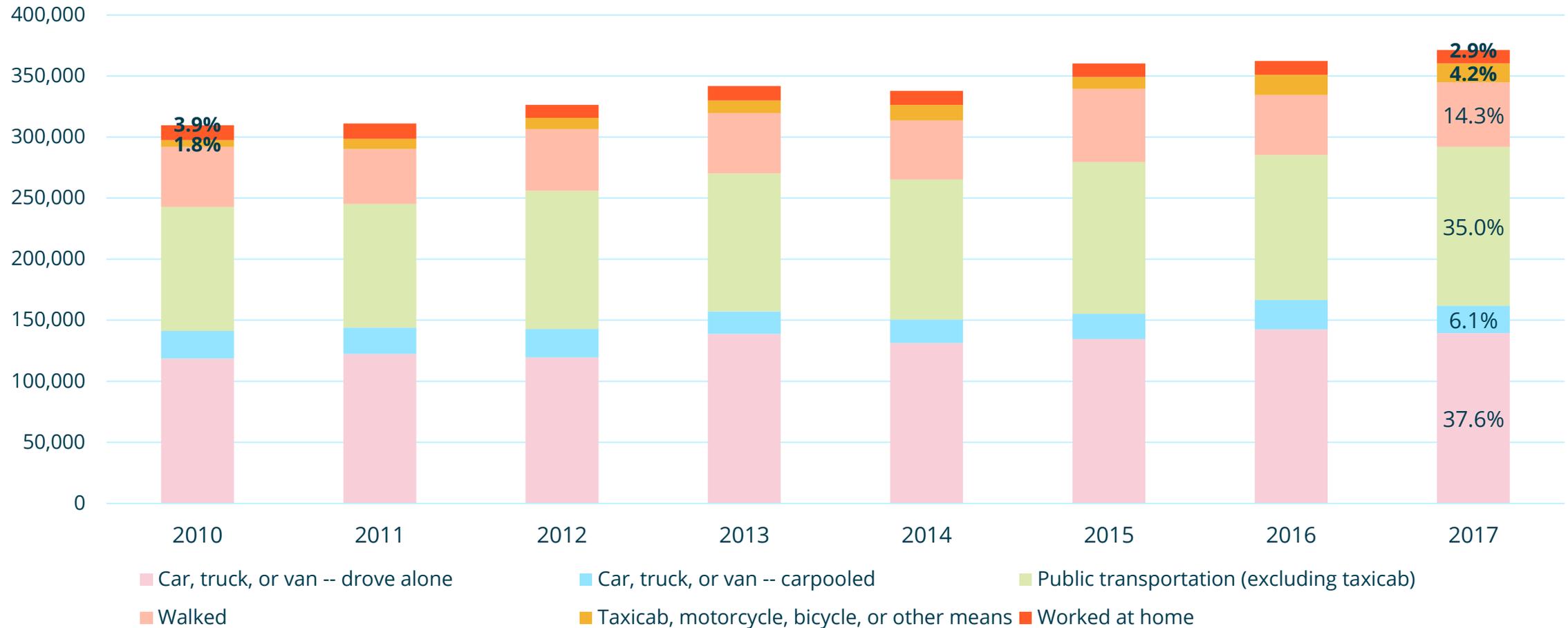
# Travel Time to Work (16 Years and Older)

- The average commute time to work increased by over 2 minutes to nearly 31 minutes each way.



# Transportation to Work (16 Years and Older)

- There was little change in commute mode from 2010 to 2017.
- The share of workers commuting by taxicab, motorcycle, bicycle, or other means increased to 4.2%.
- The share of workers who worked at home decreased to 2.9%.

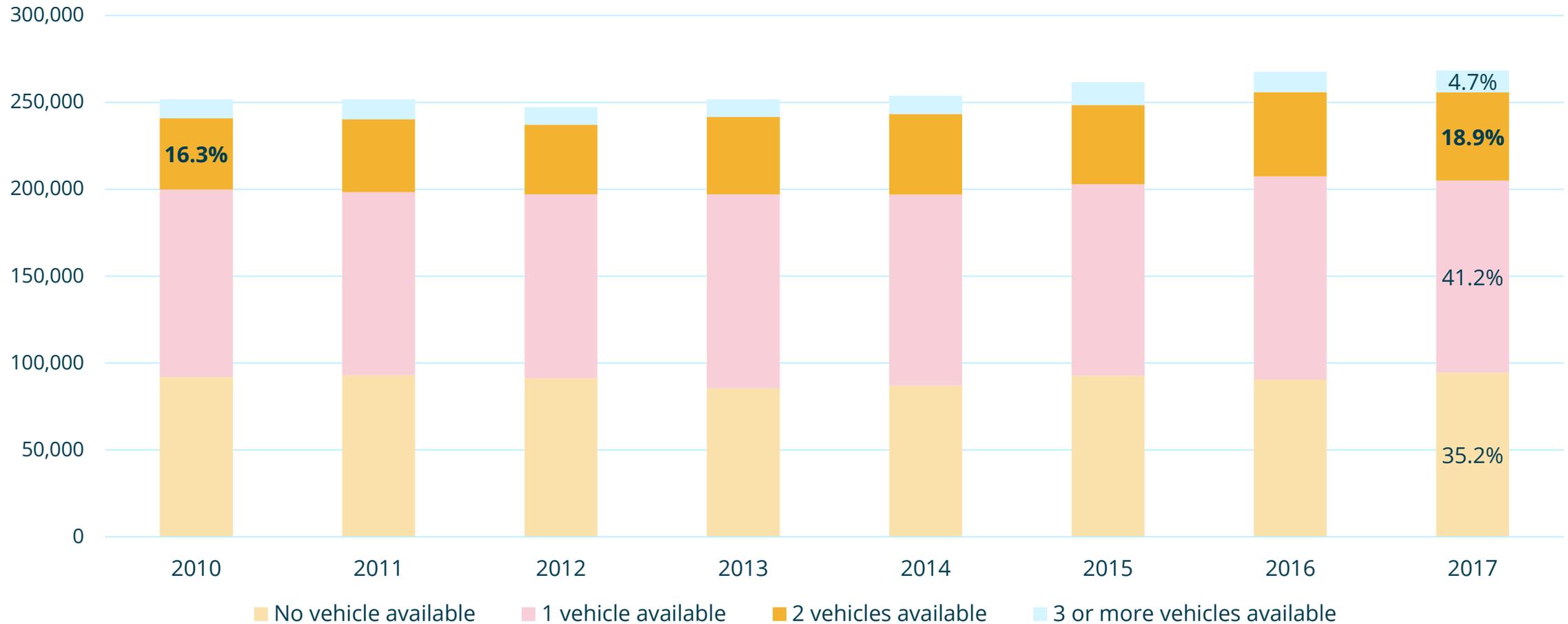


U.S. Census Bureau, 2010-2017 American Community Survey, BPDA Research Division Analysis.

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# Vehicles Available per Household

- The share of households with two available vehicles increased to 18.9% from 16.3%.
- The share of households without a vehicle remained at about 35%.



U.S. Census Bureau, 2010-2017 American Community Survey, BPDA Research Division Analysis.

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# Appendix



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# Z-Score test for statistically different change

- The difference between the estimates in 2017 and 2010 is the numerator of the Z-Score.
- The margin of errors (moe) are divided by 1.645 to convert them to standard errors, and the square root of the sum of each standard error squared produces the denominator of the Z-Score.

$$Z = \frac{\text{Estimate 2017} - \text{Estimate 2010}}{\sqrt{\left(\frac{\text{moe 2010}}{1.645}\right)^2 + \left(\frac{\text{moe 2017}}{1.645}\right)^2}}$$

- A Z-Score greater/less than +/-1.645 signifies at the 90% confidence level that a statistically significant change occurred.

# Z-Score Test for Non-Hispanic Whites

- For example, the Non Latino-Hispanic White share estimate in 2010 was 47.6% (.476) with a moe of +/-0.7% and in 2017, 43.9% (.439) with a moe of +/-0.6%.

- $$Z = \frac{.439 - .476}{\sqrt{\left(\frac{+/-0.007}{1.645}\right)^2 + \left(\frac{+/-0.006}{1.645}\right)^2}}$$

- $$Z = \frac{-.037}{\sqrt{0.000018 + 0.000013}}$$

- $$Z = \frac{-.037}{0.005605}$$

- $Z = -6.6017$  Because -6.6017 is less than -1.645, the 3.7% decrease is a statistically different change for Non Hispanic White residents.

# Z-Score Test for Black or African-Americans

- The Black or African-American alone share estimate in 2010 was 23.0% (.230) with a moe of +/-0.5% and in 2017, 23.1% (.231) with a moe of +/-0.5%.

- $$Z = \frac{.231 - .230}{\sqrt{\left(\frac{+/-0.005}{1.645}\right)^2 + \left(\frac{+/-0.005}{1.645}\right)^2}}$$

- $$Z = \frac{.001}{\sqrt{0.000009 + 0.000009}}$$

- $$Z = \frac{.001}{0.004299}$$

- $Z = 0.2326$  Because 0.236 is less than 1.645, the 0.1% increase is not a statistically different change for Black or African American alone residents.