



City Council of Philadelphia

9.22.17

Trend Analysis of Changes to Population and Income in Philadelphia, using 2010-2016 American Community Survey (ACS) Data



Trend Analysis of Changes to Population and Income in Philadelphia, using 2010-2016 American Community Survey (ACS) Data

Executive Summary

Recent analysis highlighted in the [press](#) focused on changes in population, poverty, and income in the City of Philadelphia from 2015 to 2016. However, we believe these reports exaggerate trends and are inconclusive due to the reports' narrow time horizon and statistical margin of errors. The reports, by focusing on one-year trends, potentially create misleading impressions about where the City is headed. We believe a more valuable and statistically valid approach is to compare trends over a longer period of time.

With that in mind, the analysis below highlights areas of interest from the new 2016 American Community Survey [data](#)¹, relevant to the City of Philadelphia (City). The U.S Census Bureau annually conducts ACS surveys to compare to the decennial census. Since the ACS is conducted on a smaller scale, the margins of error make it difficult to compare year-over-year. For this reason, we compare the newly released 2016 ACS data to 2010 ACS data in order to produce an accurate reading of trends.² Please note that the descriptions and definitions of demographics and household types are taken directly from the Census Bureau.

After comparing 2016 to 2010 ACS data, we see that the City experienced considerable growth in higher-income millennials, coupled with a poverty rate that remained relatively flat, suggesting a growing income gap disparity between upper- and lower-income earners. There was significant growth in incomes above \$75,000 for all households, and family households. Joined with the growth in 25- to 34-year-olds out of poverty, the data confirms the trend of Philadelphia's growing high-income millennial population. **The average growth in wages from 2010 to 2016 outpaced the growth in median income, suggesting that the growth in high wages inflated the average, further illustrating an increase in income inequality within the City**

ACS Data	2010 Estimate	2016 Estimate	Change (2010-2016)
Total Population	1,487,471	1,523,651	36,180
Number of Citizens in Poverty	397,083	391,653	(5,430)
Percent in Poverty	26.7%	25.7%	-1%
Median Income: 25 to 44-year olds	\$40,415	\$50,307	\$9,892

Figure 1

¹ Note, the data is not able to be directly linked, as ACS data is found through the Advanced Search function. Search City or County of Philadelphia, and filter by 2016 ACS 1-year estimates. 2016 ACS pages will have direct links to previous years. The same process can be followed to search 2010 ACS data.

² Since the [decennial census](#) and [ACS](#) have different collection methods, we compare ACS to ACS.

Report: Income Shifts and Demographics

As stated in the Executive Summary, some recent headlines highlight negative Philadelphia trends from 2015 to 2016. Again, however, the short amount of time between observations, combined with the statistical margins of error, make these comparisons of little or questionable value. For example, the **margin of error for Philadelphia's total population is +/- 4,025 for the 2016 ACS data and +/- 4,237 for the 2015 ACS data.** **Given the margin of error, the highlighted decline of 1,939 in the City's population is inconclusive.** In fact, many of the changes from 2015 to 2016 fall within the margin of error. To put into further context, studies cannot confidently rely on findings that fall within the margin of error.

When comparing 2016 ACS data to 2010 ACS data, a different, more reliable story emerges. The **City's poverty rate has remained flat, coupled with a growing middle- and upper-income class** that falls outside the margins of error. As shown in Figure 1, the City gained a considerable number of residents in the past six years, while only marginally reducing the Number of Citizens in Poverty. The data strongly indicates that **Philadelphia's growth is being driven by higher income millennials.** Most notably, the City decreased its number of 18- to 24-year-old residents below the poverty line by 25,346, while increasing the number of 55- to 64-year-old residents below the poverty line by 11,207. The City's growing millennial population is further evidenced by the 46,664 increase in 25- to 34-year-olds with non-poverty wages.

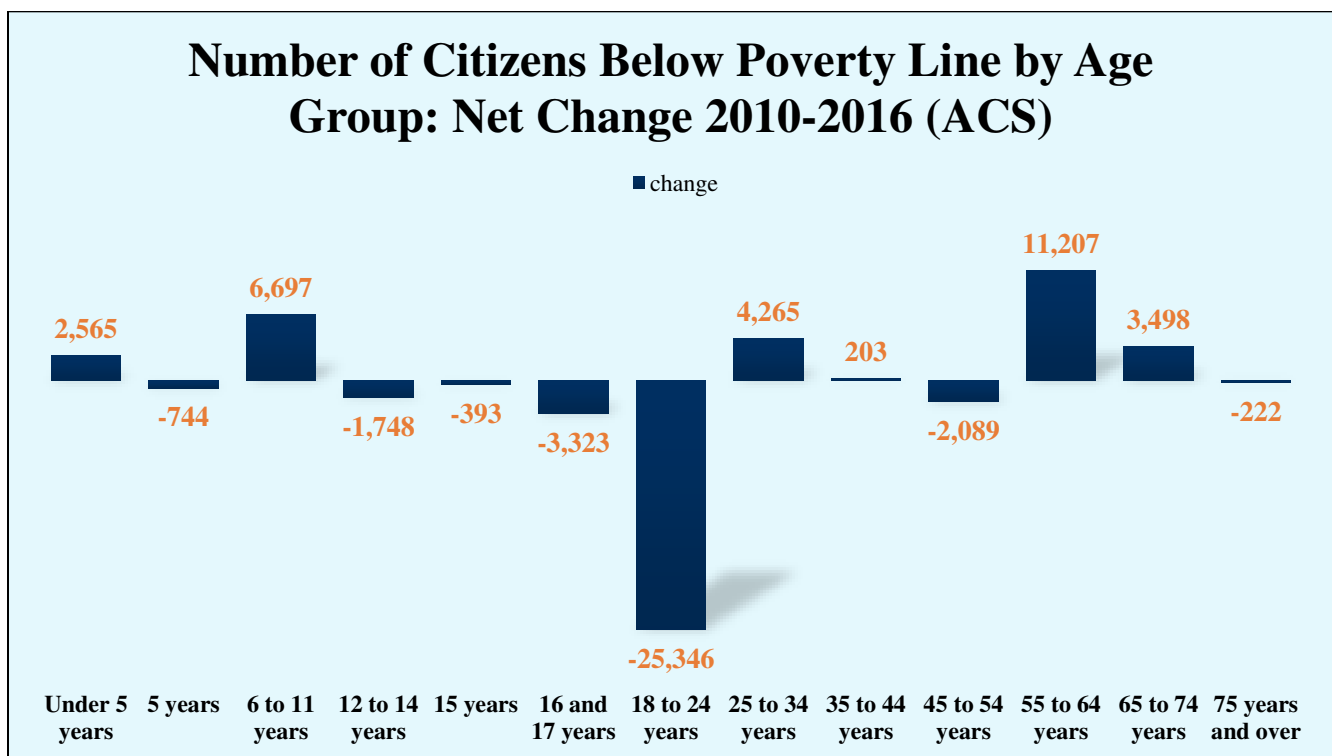


Figure 2

Number of Citizens Above Poverty Line by Age Group: Net Change 2010-2016 (ACS)

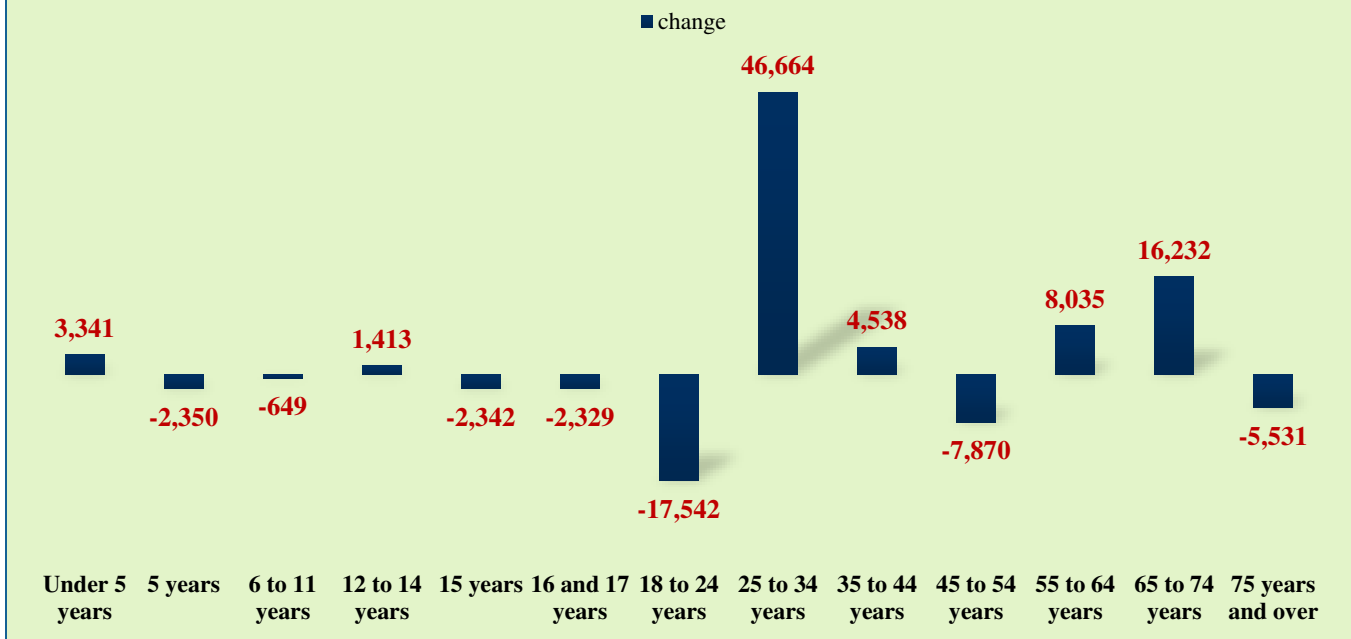


Figure 3

Figure 6 shows the changes in income brackets as a percentage of all households. Unlike the one-year comparison, our comparison shows a **significant level of growth in incomes above \$75,000 for all households and family households. Coupled with the growth in 25- to 34-year-olds out of poverty, the data coincides with the trend of Philadelphia’s growing high-income millennial population.**

Additionally, Figure 8 shows the *mean* (average) growth in wages from 2010 to 2016 far outpacing the growth in *median* income, meaning that the growth in high wages is pulling the average above the rate of median growth. To provide an example of how this phenomenon works in practice, we put together an example data set - *Income Example #1*- which shows \$150,000 as the highest value in Year 1 and \$160,000 as the highest value in Year 5, with the other values remaining stagnant. The increase in the highest value for Year 5 inflates the average to \$89,167 for Year 5, compared to \$87,500 in Year 1. However, the median values remain the same in the data set, illustrating how high values affect averages and increases on the high-end of the spectrum can portray a different trend when only looking at averages. The second example, *Income Example #2*, shows how median incomes can grow above averages when the incomes on the low end of the spectrum rise.

Income Example # 1				Income Example #2			
	Year 1	Year 5	% Change		Year 1	Year 5	% Change
	\$25,000	\$25,000	0.0%		\$25,000	\$25,750	3.0%
	\$50,000	\$50,000	0.0%		\$50,000	\$51,500	3.0%
	\$75,000	\$75,000	0.0%		\$75,000	\$77,250	3.0%
	\$100,000	\$100,000	0.0%		\$100,000	\$102,000	2.0%
	\$125,000	\$125,000	0.0%		\$125,000	\$127,500	2.0%
	\$150,000	\$160,000	6.7%		\$150,000	\$151,500	1.0%
Average	\$87,500	\$89,167	1.9%	Average	\$87,500	\$89,250	2.0%
Median	\$87,500	\$87,500	0.0%	Median	\$87,500	\$89,625	2.4%

In the case of Philadelphia, the presence of additional high-income earners can make it appear as though wages are increasing across the board, even though they are only affecting the average. Therefore, the *median* income measure is a better reflector of over-all economic well-being than the *average* income or per-capital income measure. Figure 4 and Figure 5 further illustrate the importance of distinguishing between median and mean (average) when examining changes in income from 2010 to 2016. Although Figure 4 shows median income growth outpacing average growth in 2013, 2014 and 2015 on a *percentage* basis, **Figure 5 shows that on a *dollar* (rather than percentage) basis, the growth in the average income has consistently outpaced median income. The total average growth from 2010 to 2016 also outpaced the total median income growth from 2010 to 2016 by 3%, mainly attributable to 2011, 2012, and 2016.** This is likely influenced by the City’s recent growth in high-income earners in 2016, and consistent poverty level.

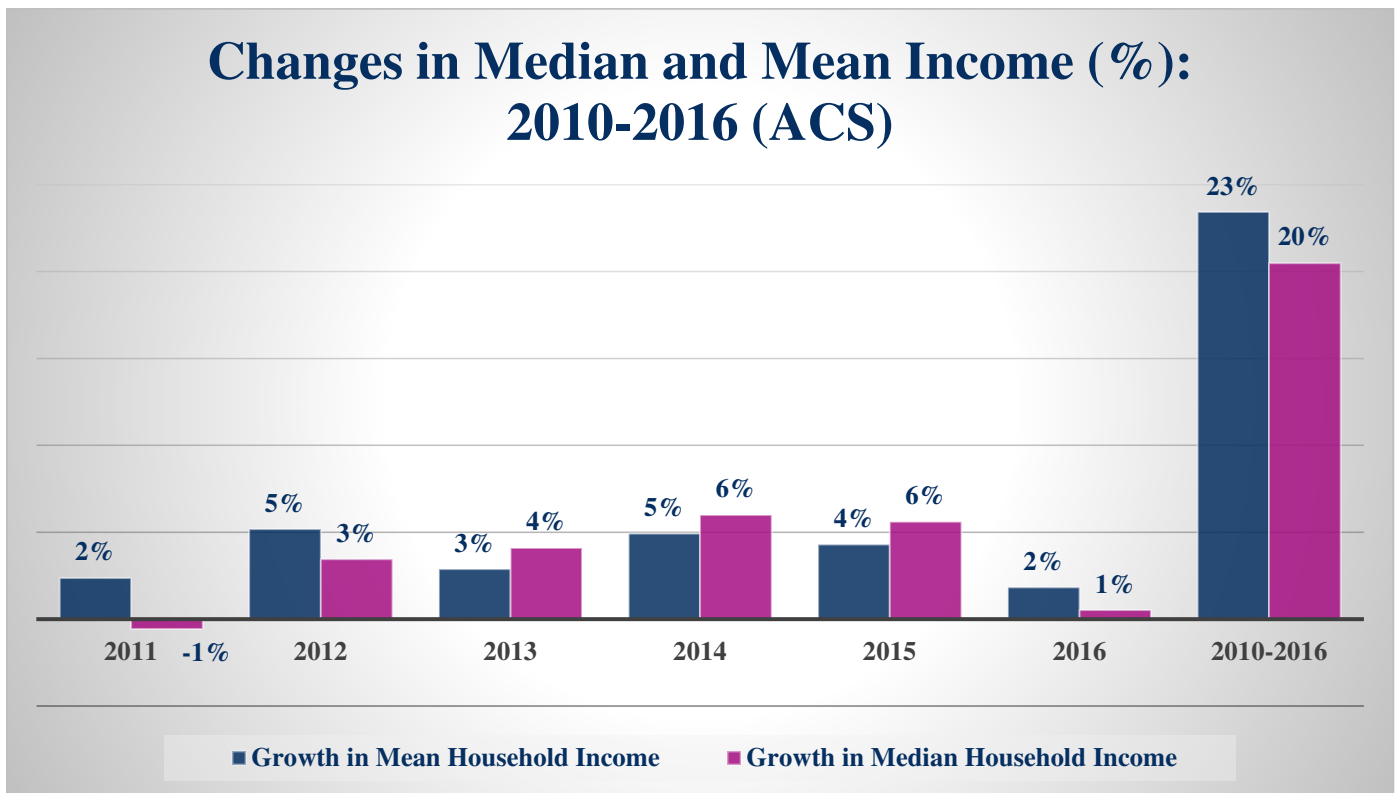


Figure 4

Changes in Median and Mean Income (\$): 2010-2016 (ACS)

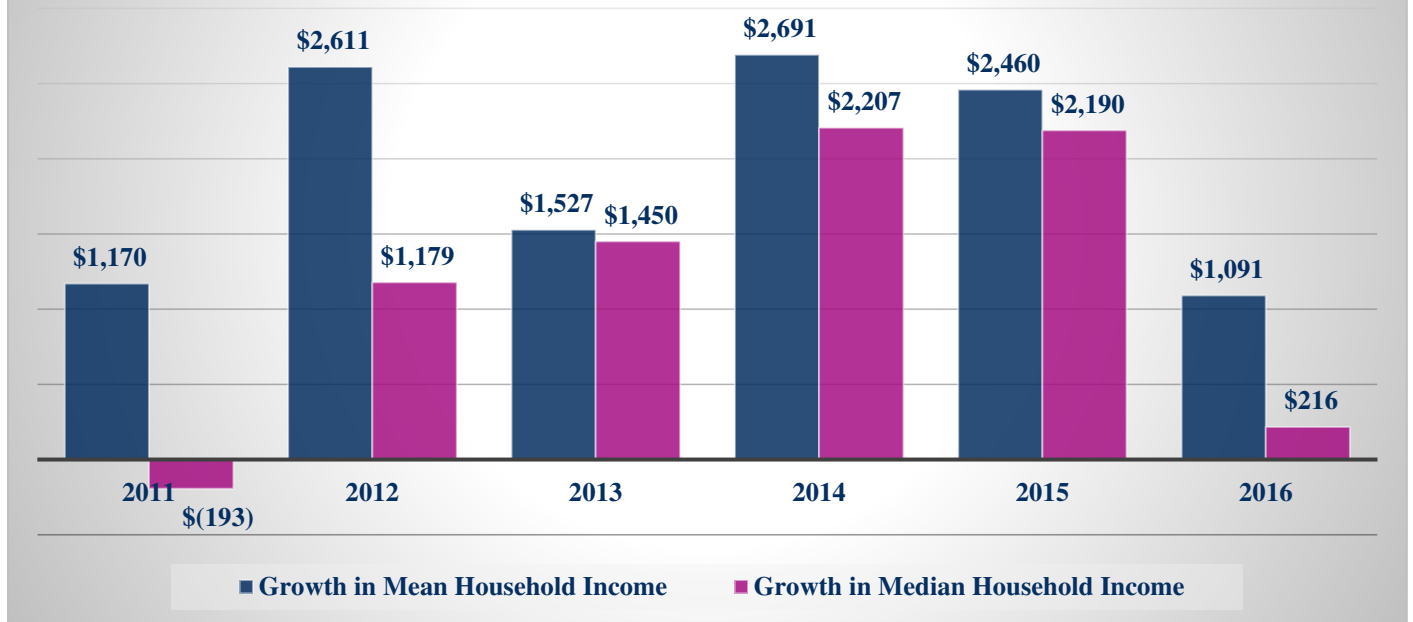


Figure 5

When analyzing the changes in median income by demographic group, interesting trends emerge. As Figure 7 shows, the *largest increase in median incomes was observed in Philadelphians who solely identify as white, increasing from \$45,827 in 2010 to a current value of \$58,808 in 2016.* Almost all other demographic groups also experienced growth in median incomes, but the growth was smaller. The only exceptions are citizens who identify as ‘Native Hawaiian/Pacific Islander’ or ‘American Indian or Alaska Native’; their median income decreased from 2010 to 2016. However, these populations make up less than 1% of the total population, and the resulting high margins of statistical error make the data unreliable.

Percent Change in Income Brackets: 2010-2016 (ACS)

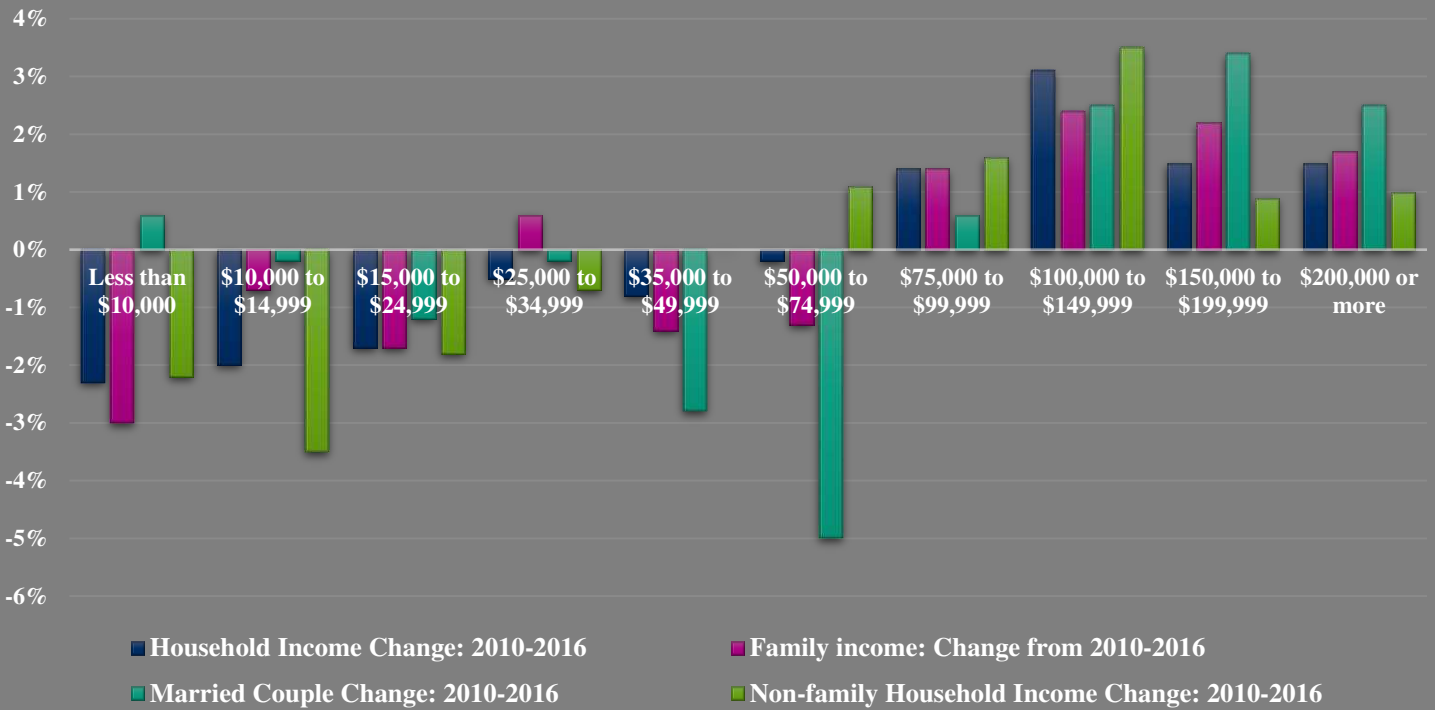


Figure 6

American Community Survey: Median Income by Demographic Group

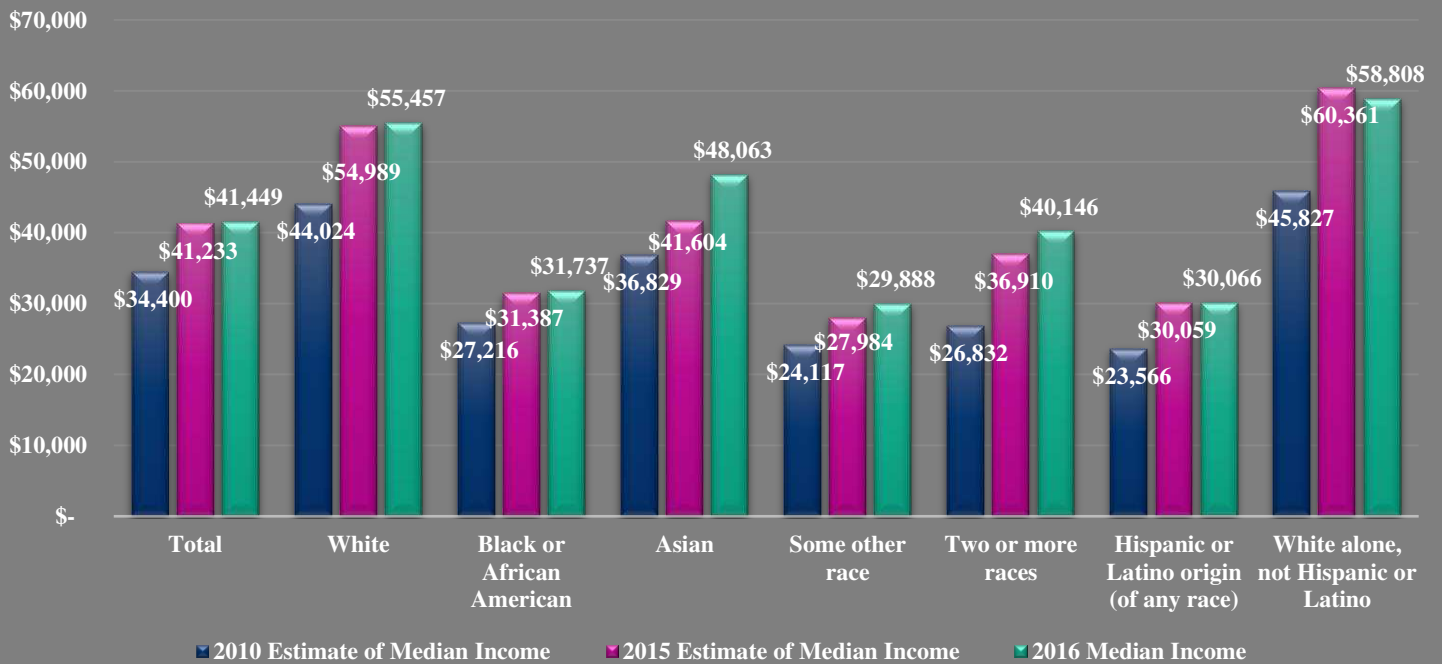


Figure 7

Net Change in Incomes: 2010-2016 (ACS)

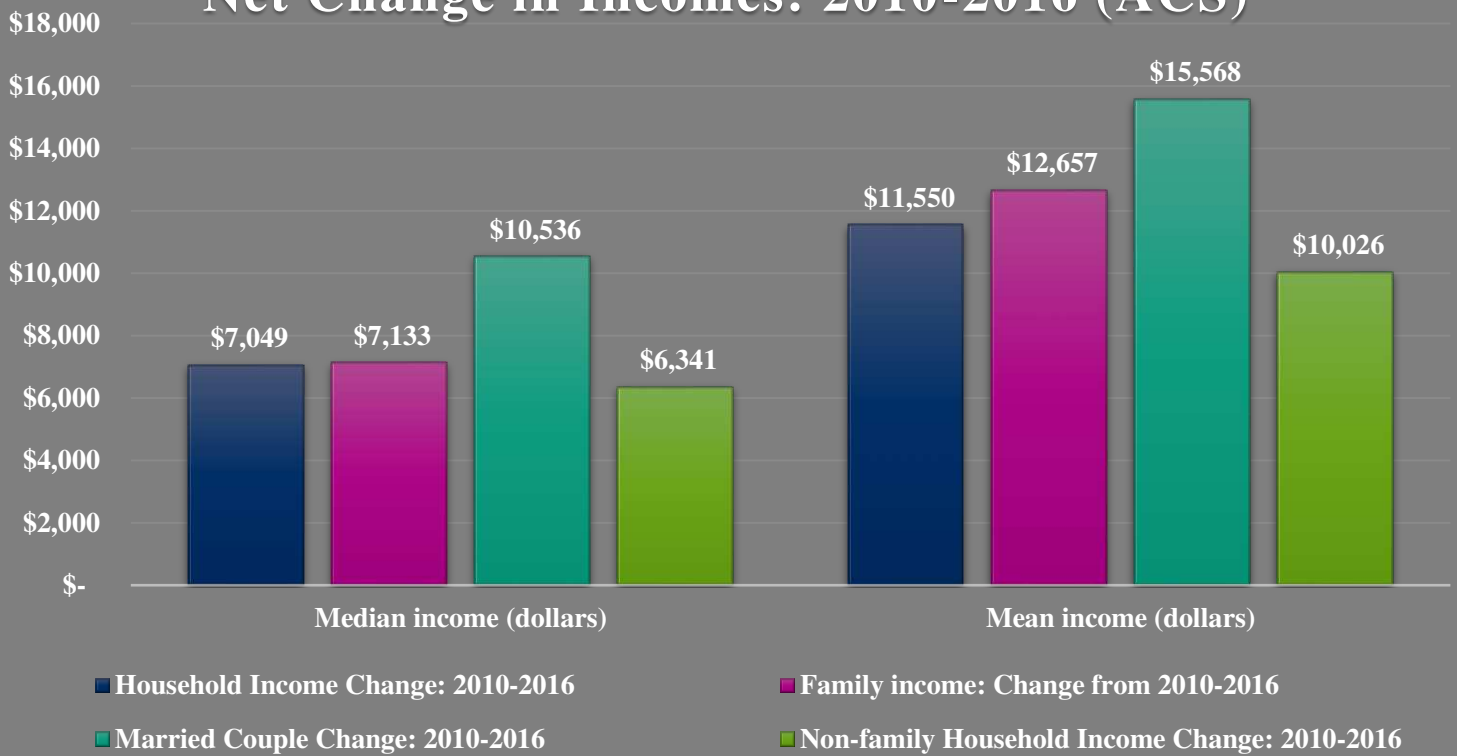


Figure 8

American Community Survey: Median Income by Household Type



Figure 9

Income Shifts by Household Type, and Policy Considerations

The shifts in median income by household type, as defined by the Census Bureau, reveal upward trends in income across all households. That said, *single-female households are experiencing gains, but remain the lowest on the income scale.* One example of a policy that the City has implemented to help single-female households and other working class families is the continued expansion of PHL Pre-K. The expansion should help with the City's children's future educational attainment; give working families the opportunity to save money on pre-k costs; provide additional employment opportunities for potential providers; and allow parents of young children to seek employment. When researching the efficacy of an expanded Pre-K program, New York City found that access to subsidized Pre-K reduced overall childcare expenses and increased labor force participation.³ When Los Angeles contemplated scaling back its subsidized Pre-K program, it was estimated that subsidized Pre-K allowed each parent to work 250 additional hours and earn \$4,150 more annually.⁴

The 2016 ACS data reveals an important correlation between education/training attainment and poverty status. The **2016 data, which is consistent with 2010, show that 35.7% of residents who do not have a high school diploma or G.E.D live below the poverty level.** The Philadelphia School District, understanding the importance of education and training, has made significant strides in increasing the graduation rate. Between 2005 and 2015, the District increased the 4-year graduation rate from 52% to 65%.⁵ Over the long-term, the continued efforts of the Philadelphia School District to increase the graduation rates should help to organically reduce the number of citizens in poverty. Outside of increasing the graduation rate, the School District also expanded its partnership with the Community College of Philadelphia, by offering students the opportunity to earn college credits while in high school through multiple programs, including the newly created 'Parkway Center Middle College'.⁶

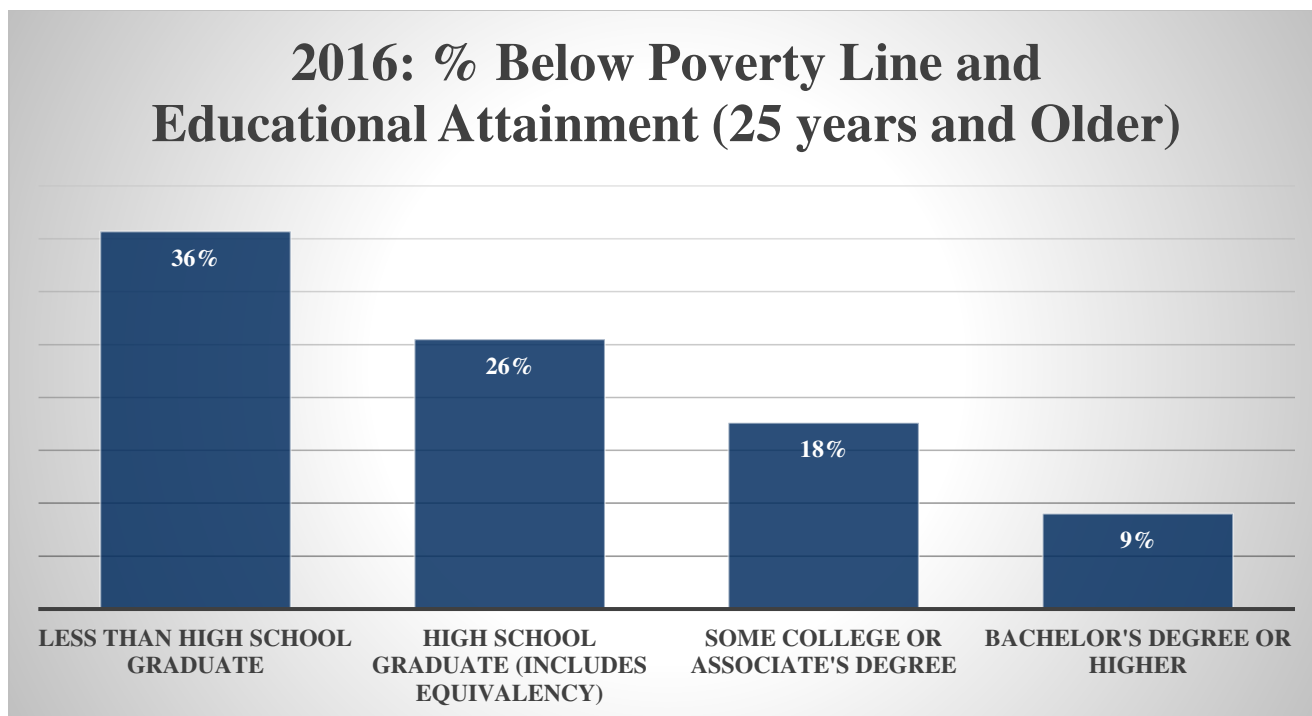


Figure 10

³ Westat (2016): "New York City's Pre-K for All: Family Perceptions"

⁴ Institute for Child Success: "More Than Just Pre-K"

⁵ PEW Charitable Trusts: "State of the City: 2015"

⁶ Parkway Center Middle College

Conclusion

The newly released data is not as alarming as several publications have suggested while focusing on one-year negative trends between 2015 and 2016. Rather, when one compares the data over the longer term, a more accurate and mixed story emerges, which also indicates where to focus policy efforts moving forward.

As stated previously, **the City experienced considerable growth in higher-income millennials, coupled with a poverty rate that remained relatively flat, suggesting a growing income gap disparity between upper- and lower-income earners.** There was a significant level of growth in incomes above \$75,000 for all households and family households. Coupled with the growth in 25- to 34-year-olds out of poverty, the data confirms the trend of Philadelphia's growing high-income millennial population. **The average growth in wages from 2010 to 2016 outpaced the growth in median income, suggesting that the growth in high wages inflated the average. Since median income did not outgrow average income, the data again suggests a growth in income inequality with the City.**

When observing household income demographics, Single-female households experienced gains in income, but still remain the lowest on the income scale. While Pre-K expansion is a notable initiative aimed at countering some of these effects, the City will need to be more creative moving forward to address the potential widening income gap trend emerging among its residents.