



# PULSE REPORT: Applying a Gender Lens to the Wage Gap

April 24, 2017

## About the Women's Fund

The Women's Fund of The Greater Cincinnati Foundation leads our community in ensuring the economic self-sufficiency of women in our region and ignites a shared desire to improve it. Although there are many factors that contribute to a woman's ability to be self-sufficient, we focus on four areas: access to affordable, quality child care, training and education, employment, and getting more women into living wage careers.

### [We research.](#)

The Women's Fund has released groundbreaking studies on the status of women and girls in Greater Cincinnati and has inspired others to apply a gender lens to their work. This research helps us clarify the challenges, educate our leaders, and gives us a road map of which issues to tackle first.

### [We catalyze the community.](#)

Always at the table, The Women's Fund provides a strong voice for women and families in our community. We quicken the pace of change on big community problems by bringing together people from all sectors and providing them with the tools they need to be change agents.

### [We drive systemic change.](#)

We seek out common ground and advocate for policy change that advances women's economic self-sufficiency.



Dear community partners,

At the Women's Fund, we imagine a world where all women can participate, prosper and reach their full potential.

In 2014, when we issued the PULSE Study that applied a gender lens to the 2020 Jobs Outlook Report, we discovered that a gender wage gap existed in every single occupational group. To more fully understand the gender wage gap and the variables that contribute to it, we commissioned the UC Economics Center to study the wage gap and its effect on wealth accumulation. What they found is that the wage gap is not simple; it comprises a complex interrelationship of explained and unexplained differences and the ever-subjective concept of "choice."

As you will read, the results show significant disparities in men's and women's wages, even when controlling for variables like education, hours worked, age, marital status, and the presence of children. The remaining disparity amounts to a significant unexplained difference in wages between men and women. Over time, this disparity in wages leads to hundreds of thousands of dollars lost, forcing women to either work longer or retire with less. For women of color, the disparities are even more profound.

We know that when women thrive, communities thrive. **If we want our community to be a leader in business and industry, we must also be a leader in equity.**

So what can we do? After reading this report, the most important action you can take is to explore wages in your own workplace. You can:

- **Conduct a pay equity analysis at your company.**

We have assembled resources on how to do this on our website: [cincinnatiwomensfund.org](http://cincinnatiwomensfund.org). If doing it yourself seems daunting, you may want to hire a professional. Myriad variables will be at play including education level, years of service, promotion and raise structures, as well as more subtle practices that may affect pay including negotiation styles. A solid economic analysis can help your organization assess your wage data.

- **Use your findings to inform your actions.**

Knowing the information is only the beginning. If your company uncovers a gender wage gap, develop a plan to address it. Refer to our website for some helpful resources.

- **Share your story with us!**

Let us know how conducting a pay equity analysis affected your organization. You can share your story on our website.

Let's use this information to energize our community and address these inequities together.



Meghan Cummings

Executive Director

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For more resources, visit:  
[www.CincinnatiWomensFund.org/PayEquity](http://www.CincinnatiWomensFund.org/PayEquity)

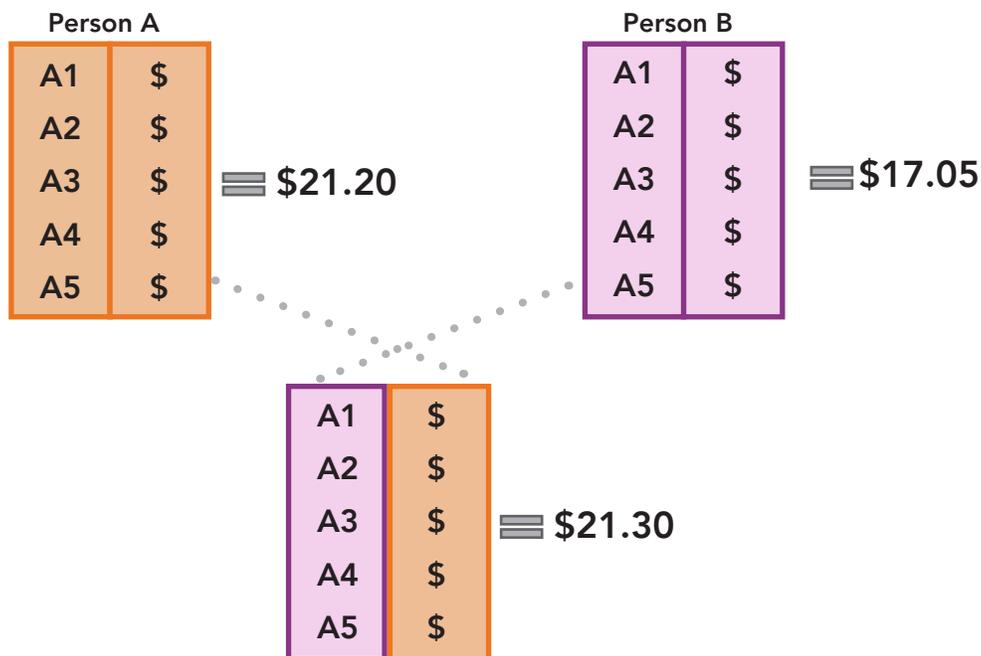
## WHEN WE COMPARE THE WAGES

of men and women, we're looking at both the levels of various attributes as well as the returns on those attributes. This provides a much deeper understanding of what contributes to wage gaps. While a significant amount of research on the topic explores the average wages of men and women, this research delves into the return structure: **how much would women make if they were rewarded at the same rate as men?**



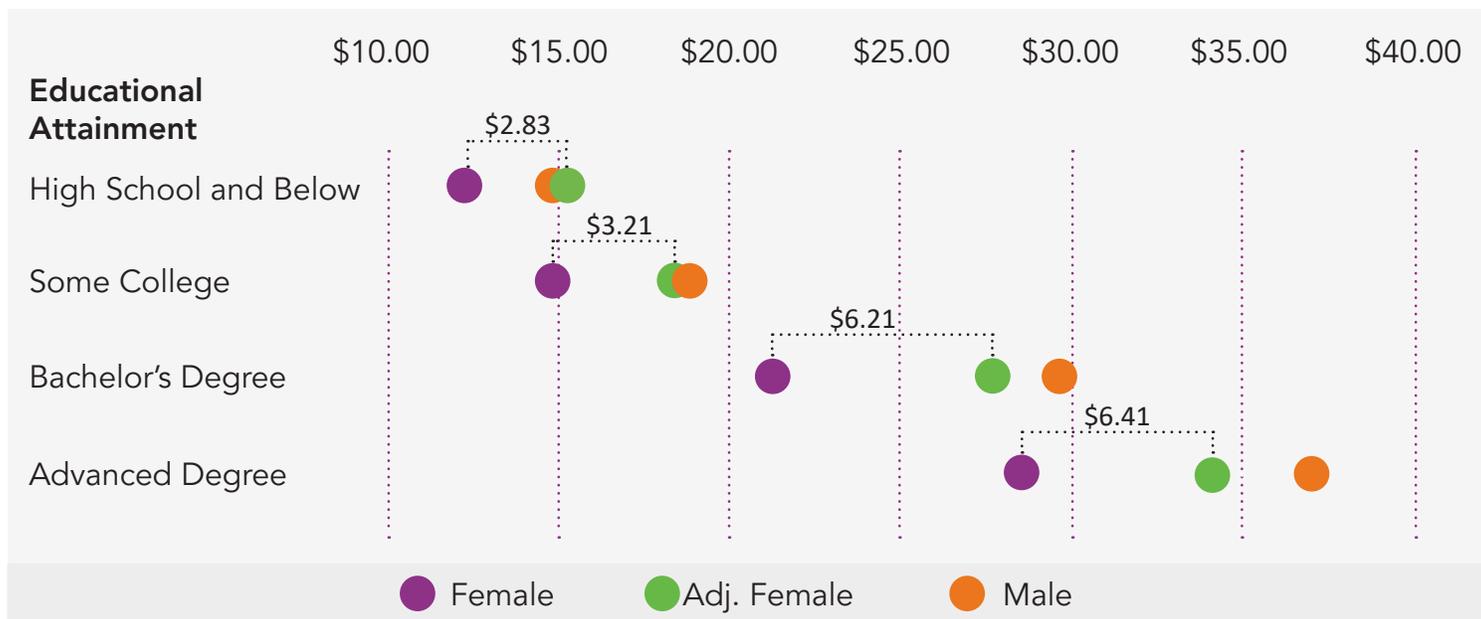
For example, imagine two individuals. They both possess various levels of the same attributes (education, experience, etc.). They also have rates of returns for each respective attribute.

Person A is the average male within the Cincinnati MSA whereas Person B is the average female within the Cincinnati MSA.



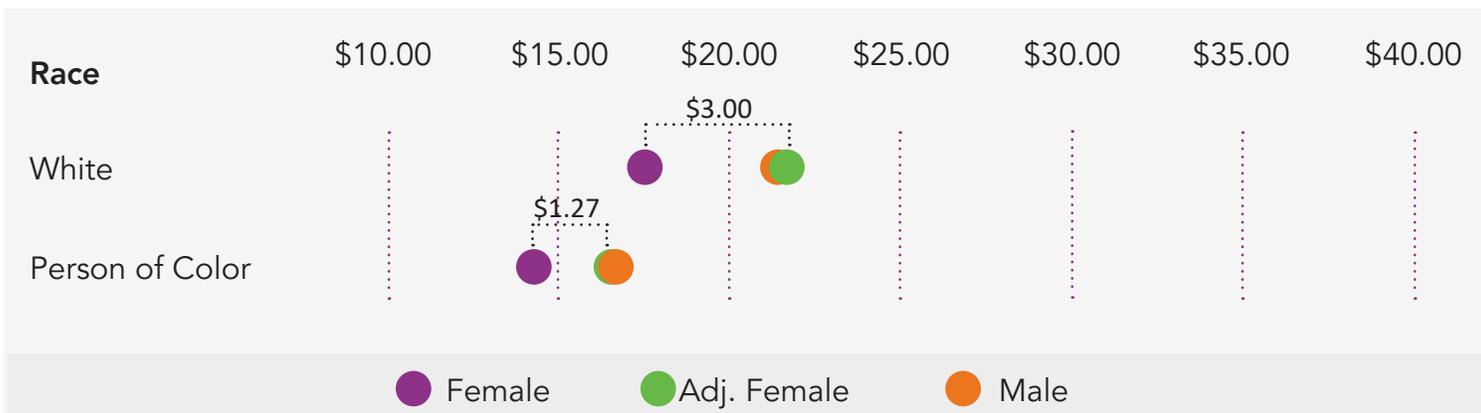
When we use the female's levels of attributes with the male's returns on attributes, we find that the average woman in the Cincinnati MSA should actually be out-earning her average male counterpart. This new "person", which from hereon will be called an Adjusted Female (Adj. Female) to represent the constant level of attributes from female-to-female but using the female-to-male return weights.

Mean Hourly Wages by Gender



The difference in mean hourly wages between men and women takes on additional impact when coupled with level of education. The acquisition of education has long been touted as the great equalizer—the way to achieve self-sufficiency, financial independence, and to level the playing field. However, the data indicate that as educational attainment increases, the gap between the actual hourly wage of men and women, and the gap between the wage of women and the adjusted wage of women (F-M wage) grows larger. In fact, as can be seen from the chart above, the actual average wage of women with an advanced degree is less than the average wage of men with a bachelor's degree. Adjusting women's wage to reflect men's returns only partially closes these gaps, gaps that increase the higher the education level. Even after incorporating men's returns into women's wages, these adjusted women's wages remain below that of men for all educational levels except high school and below.

Mean Hourly Wages by Race



As with education, applying a racial lens to the data reveal some interesting findings. Wages for females of color are affected by both gender and race effects. For persons of color, actual male, actual female, and adjusted female wages are much less dispersed than for whites, and all fall below the associated levels for their white counterparts. In fact, all three measures of wages are less than the lowest of the associated white wages—actual wages for males of color is less than the actual wage for white women.

# How much does the wage gap end up costing women?

The wage gap of \$0.80 on the dollar for women to men adds up over time. The wage gap reduces the amount of take-home pay that women receive but it also has implications on saving for retirement, debt-to-income ratios, and employer contributions to savings accounts.

The following wage gap comparisons are based on the difference between our average women and the adjusted women. All attributes of the average female in the Cincinnati MSA were held constant, however, the male reward rates were used. This follows the previous examples to establish the adjusted female. Then, we compare females with adjusted females.

The first comparison is at the one hour of work level. The wage differential for females and the adjusted females is more than the cost of a breakfast meal at most fast-food restaurants.

One hour of the wage gap is equal to \$4.26 an hour, or a meal at most fast food restaurants.



The United States Department of Agriculture prepares weekly and monthly cost estimates for the cost of food at home at four different cost plan levels. The four levels are thrifty, low-cost, moderate-cost, and the liberal cost plan. All plans exceed the national standard for a nutritious diet. The gap in monthly wages between females and adjusted females in Cincinnati is approximately \$170. The thrifty food plan for a family of four is between \$128 and \$147, depending on the age of dependents. The low-cost plan, which is commonly used in lawsuits to determine alimony or child support, ranges from \$163 to \$193.



Assuming full-time work, one week of wage gap is equivalent to the grocery budget for a family of four.

The hourly wage gap represents \$745 over the course of a month, assuming full-time employment. The median home price for currently listed (April, 2017) homes in Cincinnati, Ohio is approximately \$157,000.

Based on current interest rates and a 30-year mortgage, the amount of wage gap experienced per month would exceed the \$742 monthly mortgage cost associated with a median home. For the average female working full time, the wage gap literally is enough to pay for a house.

The wage gap results in a lost \$745 every month for the average female, or more than the mortgage payment on the average Cincinnati home.



Lastly, over the course of a year, the accumulated wage gap is equivalent to a used car. For example, a 2012 Honda Civic's Kelly Blue Book value is \$8,900, just \$50 shy of the annual \$8,950 wage gap for the Cincinnati MSA.



For full-time employees, the wage gap experienced by females is approximately the same as buying a used car.

The annual wage gap of \$8,950 also exceeds the Child Care Aware of America and Ohio's estimates for Ohio's average cost of full-time infant child care. The accumulated yearly losses due to wage gap would provide care at an Ohio based child-care center for a year, which coincidentally would free up full-time work effort if an individual was trading off a workplace discontinuity in order to provide home care.

**THE EXTENSION OF THE WAGE GAP** to look at weeks, months, and years includes a number of assumptions. First, all of the levels of attributes are held constant except for age and age squared. This ensures the most apples-to-apples comparison between female and adjusted female as well as female to male.

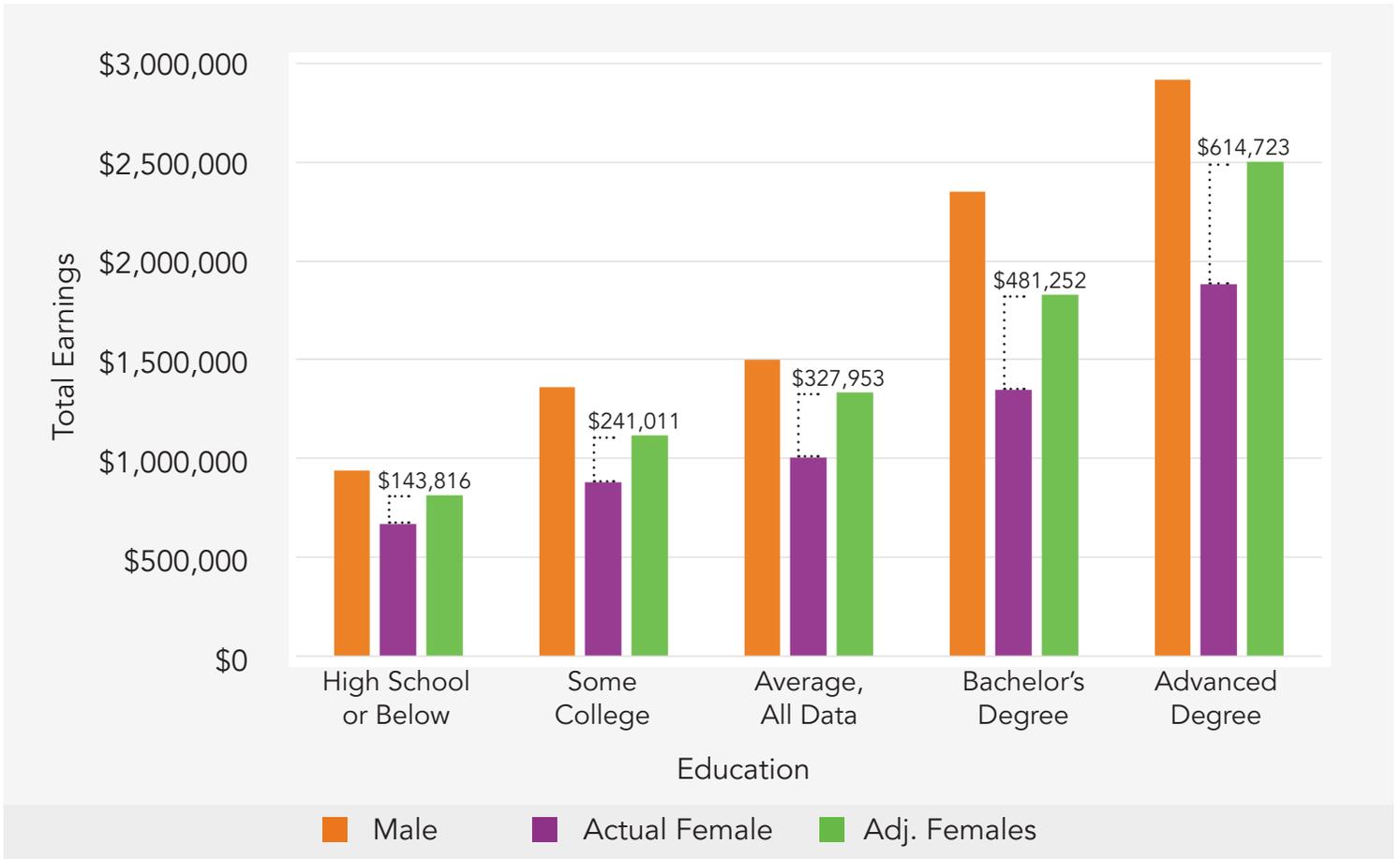
By controlling levels, we are not artificially introducing any labor force discontinuities that may happen in the future. Examples of labor force discontinuities are taking time off for child care, education, or elder care. Labor force discontinuities are relatively common and previous research has shown that the burden of discontinuities often falls on females more than males.

Additionally, any labor force discontinuity that has already taken place is endogenous to the model. In other words, if a discontinuity resulted in a loss of wages in the past, the model would capture that during the 2015 snapshot in time and the impacts would already be included. Therefore, forecasting out other discontinuities becomes challenging and potentially harmful to the model's performance as well as the unbiased nature of the model. These amounts do not show the total amount of money that individuals have in retirement accounts or savings accounts.

The graph on the right represents the total earnings from ages 40-67 calculated for males, females, and adjusted females for a number of educational achievements as well as racial differences. Total earnings includes all earned income (wages or salaries) plus returns on an assumed savings rate. These numbers were prepared by combining the wage gap research with Survey of Consumer Finance research on savings rates by age and income quartiles and estimated expected returns on savings. This age-income matrix allows for a dynamic calculation of assumed percent of income saved as individuals made varying levels of income, as well as when individuals aged into the next age quartile. Overall, these numbers are a conservative representation of the potential long-term impacts of gender gaps in pay.

The orange and purple bars are representative of males and females, respectively. The green bars signify what female lifetime wealth accumulation would look like if females were rewarded similarly to men. The green bars show what happens if we simply apply the male rate of returns on the attributes of a female. This difference is also called the unexplained difference between male and female wages.

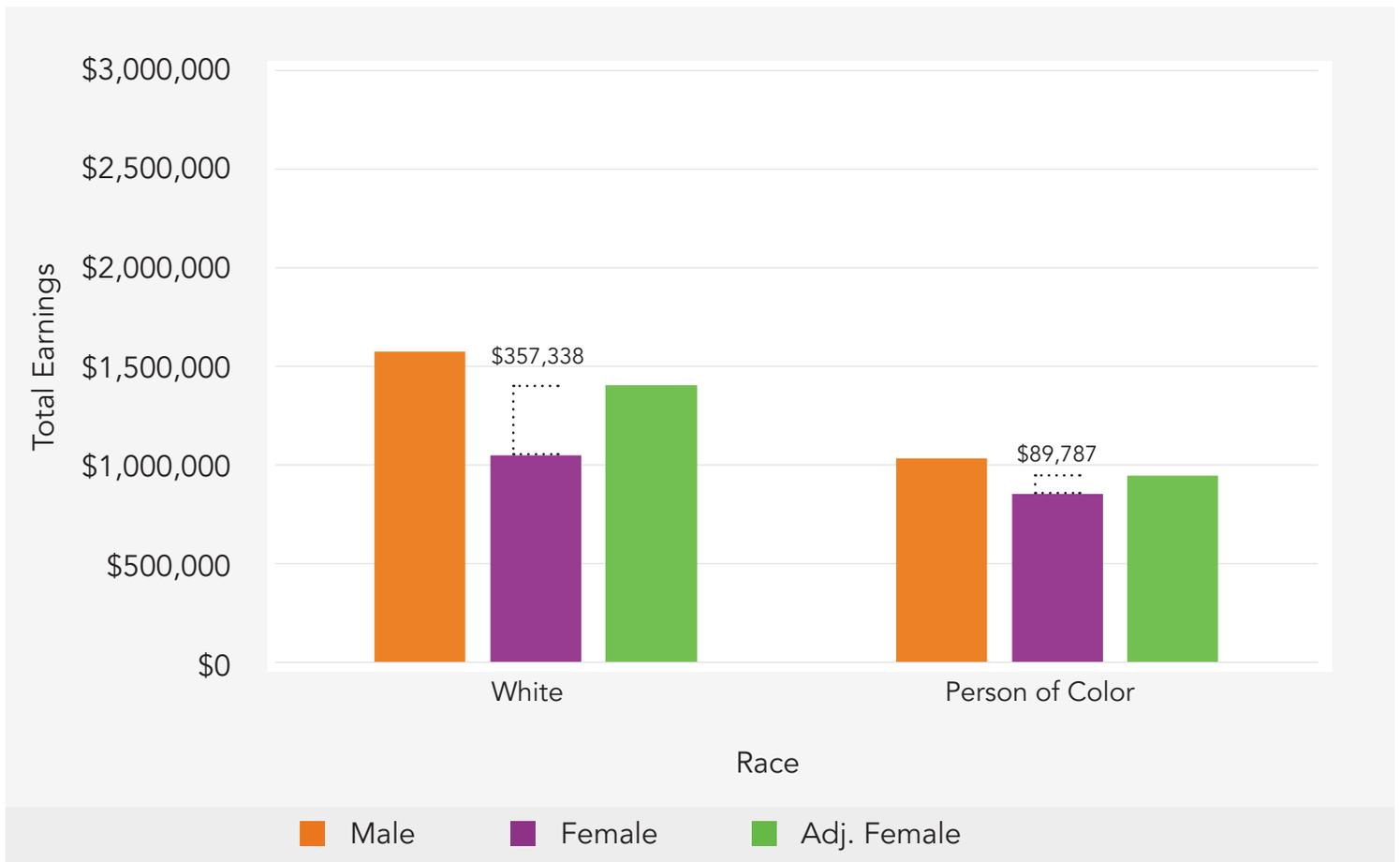
Total Earnings in the Cincinnati MSA, Age 40-67,  
by Gender and Educational Attainment



The graph above shows clearly that, on average, income scales upward with education. The average person with some college generally has a higher earnings profile than someone with a high school degree or below and someone with a bachelor's generally earns more than someone with some college. This trend continues from high school and below to advanced degree.

A few interesting considerations, however, are that while wages keep increasing with education, the returns by gender are not consistent within the same educational attainment. For example, females with some college earn less than a male with high school and below education. This offset stays constant throughout all educational achievements. One of the main reasons for the size of the earnings gap for ages 40-67 is that there are explained differences (the difference between the green bar and orange bar) due to certain variables such as hours worked per week or weeks worked per year. Therefore, the unexplained (purple bars to green bars) differences show a very clear difference in total earnings due to a number of unexplained effects.

Total Earnings in the Cincinnati MSA, Age 40-67,  
by Gender and Race



The above chart shows the relationships between wage, race, and gender. The first key finding is that all of the totals for persons of color are lower than those for white individuals. Also, the differences between female and male, as well as female and adjusted, are smaller for persons of color nominally and percentage wise. This may be due to the already apparent gender effects having a more limited impact due to a lower wage at the start.

Opposed to the previous hourly dot charts which indicated that white females should out earn white males, we see the opposite when comparing the green and orange bars for white. This transition to males earning more than adjusted females is due to the differences in levels for hours worked per week and weeks worked per year. However, the impact on those work-effort attributes may be due to other pre-market choices or responsibilities outside of work such as child or elder care.

# What are some other considerations?

There are a number of other considerations when continuing to explore the causes and effects of a gender or race based wage gap. For example, women have higher rates of educational attainment which may also lead to a student debt gender gap. Continuing this line of thought, women not only make less money but may also owe at a higher rate or incidence. Additionally, this disparity or gap in the debt-to-income ratio may contribute to different rates of home ownership for females and males or lower levels of equity and retirement savings.

## Caveats

While this analysis informs many questions about the local wage gap and its components, there remain several issues that it does not address. The unexplained portion of the wage gap is just that—unexplained by the model. That means that this portion could be due to variables that could not be included because of data limitations, such as on-the-job tenure, in-occupation tenure, occupation, explicit labor market discontinuities and/or labor market discrimination.

We also cannot address the cause of the explained differences. Empirically controlling for differences in attributes begs the question as to why there are differences in attributes at all. These differences could arise because of perceptions of differences in future labor market returns, explicit choices, or other factors that cannot be quantified.

## Data

The following are the data sources used in this analysis. A more detailed methodology and report is available at the [EconomicsCenter.org](http://EconomicsCenter.org) website.

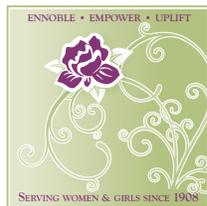
The wage gap analysis was completed with Integrated Public Microdata Series provided by the Minnesota Population Center at the University of Minnesota. This data is a harmonized dataset of the 2015 American Community Survey.

The total earnings between 40 and 67 years old was calculated by the estimated earned income through work as well as the estimated savings and savings return rates by age and income quartile. To ensure the most descriptive and representative samples for savings returns, the population was split into a matrix of four incomes and four ages that the various individuals (Male with Some College, Female with an advanced degree, etc.) were transitioned through. For example, the estimated savings rates differ based on the individual's age as well as their earned income.

The four framing examples for the wage gap by hour, week, month, and year were using prices as of April 2017. The prices were collected primarily online with the exception being a fast food meal price where the authors checked both online menus as well as in person. The weekly numbers for groceries are available as of January 2017 here: <https://www.cnpp.usda.gov/sites/default/files/CostofFoodJan2017.pdf>. The monthly estimated mortgage costs were assuming a 30-year fixed interest mortgage at a 3.92% interest rate and a \$157,000 median home price. Lastly, the price of a car was using an excellent quality Honda Civic with 60,000 using the Kelly Blue Book online price calculator.



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THE CHARLOTTE R. SCHIDLAPP FUND  
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