The Gender Wage Gap in the New Millennium: An Analysis of the United States 2000-2020

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This study examines the earnings differential in each year from 2000-2020 to determine if the gender pay gap has changed in recent years. We estimate average weekly wages for full-time, year-round workers for men and women to determine women's wages relative to men's wages for each year. Our results show that although average earnings for women relative to men have increased since 2000 when adjusting for individual worker characteristics, we find little progress in shrinking the gender wage gap. This result is even more discouraging since women's education rates have increased at a significantly higher rate during this time.

Keywords: gender wage gap, earnings differential

INTRODUCTION

The size of the overall earnings gap between men and women in the United States has decreased since 1960 when women earned only fifty-nine percent of men's average annual earnings and by 1968, women's median wages were approximately 60 percent of men's wages (Gayle & Golan, 2011). The gap between women's and men's wages was slowly converging and by 1993, women's median weekly wages had grown to seventy-eight percent of men's wages[1]. This convergence appeared to have stalled in the 1990s, however. The new millennium appeared to bring new hope for gender wage equality. By 2003, the gender earnings ratio of median weekly earnings rose to eighty percent. This progress appears to have stalled, however. As of 2019, women's to men's ratio of median weekly earnings for full-time workers had only risen to 81.5 percent[2].

Several federal initiatives were intended to increase wage equality. Congress passed the Lilly Ledbetter Fair Pay Restoration Act in early 2009. The Lilly Ledbetter Fair Pay Restoration Act of 2009 gives employees the right to file a claim under Title VII within one hundred eighty days of their most recent illegal paycheck because each paycheck is a new unlawful discriminatory act (Kulow, 2013). In 2010, President Obama established the National Equal Pay Task Force whose mission was to identify and stop

violations of equal pay laws. President Obama also signed two executive actions in 2014 in hopes of eliminating the gender wage gap. An Executive Order[3], signed in April 2014, banned federal contractors from punishing workers who discuss salaries with their co-workers. This allowed for greater transparency and the ability to identify potential wage violations. Additionally, Obama signed a Presidential Memorandum instructing the Secretary of Labor to establish regulations requiring federal contractors to publish wage data by sex and race. This legislation and these two executive actions intended to eliminate unknown wage discrepancies in the United States that, in theory, would make the gender wage gap shrink. Although the gender earnings ratio reached an all-time high of eighty-three percent in 2011, it has remained fairly constant since then. It would appear that the convergence in the wage gap has stalled in the new millennium, particularly in recent years. Even after controlling for the various explanations described in the literature, the wage differential persists.

Much of the existing literature attempts to determine the causes of the persistent gender wage gap. Numerous studies show earnings differences between men and women are impacted by differences in the average number of hours worked per week, choice of occupation, and the number of career interruptions (Barbulescu & Bidwell, 2013; Bertrand, Goldin, & Katz, 2010; Blau & Beller, 1988; Cha & Weeden, 2014; Goldin, 2014; Goldin & Katz, 2008). A newer line of research examines gender differences in personality traits, or noncognitive skills as explanations for trends in the earnings gap (Bowles, Gintis, & Osborne, 2001; Cattan, 2013; Mueller & Plug, 2006). In contrast, literature examining trends in the wage gap highlights the reversal of the gender education gap and occupation changes (Blau, Ferber, & Winkler, 2014; Blau & Kahn, 2017; Goldin, Katz, & Kuziemko, 2006). This study, however, examines how the size of the gender wage gap has changed over time in the United States.

Determining the causes of the earnings differential between men and women is challenging since many factors and varying individual characteristics, many of which are difficult to measure, attribute to one's educational and career path and ultimately one's salary. This makes the identification of clear-cut discrimination challenging. In this paper, we examine how the earnings differential has changed over time by examining the gender wage gap in the United States since 2000. We employ the standard Blinder–Oaxaca decomposition technique to determine earnings for men and women each year and estimate the difference in earnings between the two. We use methods similar to Koral and Mercan (2021) who examine trends in the wage gap in Austria and Böheim, Fink, and Zulehner (2020) who analyze how the gender earnings gap has changed over time in Turkey. We can mitigate the effects of possible bias because we examine how wages have changed over time.

We use OLS regressions to estimate wages for men and women in separate regressions using year-fixed effects and then expand the model to control for individual worker traits to see if the gender wage gap has improved over time. From 2000-2020, women's weekly wages grew at a rate of 2.87% per year on average. During that same time period, men's wages grew at a rate of 2.41% in the baseline model. In the model that adjusts for individual worker characteristics, women's wages are growing at a rate of 2% over the sample period compared to a 2.1% average growth rate for men's wages.

On average, the ratio of women's earnings relative to men's was 0.777 in our baseline model and 0.945 in the adjusted model. Although the gender earnings ratio appears to grow from 0.745 in 2000 to 0.819 in 2020, once we control for individual worker traits, we do not find any growth in women's wages relative to men's wages. In our adjusted model, the gender earnings ratio was 0.948 in 2000 and reached a high of 0.96 in 2009 and 2013. In 2020, women earned only $0.95 on average relative to each dollar earned by men. Although a greater proportion of women are obtaining higher levels of education, they continue to earn less than their male counterparts.

TRENDS IN THE US GENDER WAGE GAP

The narrowing of the gender wage gap from the 1960s through the mid-1990s is due largely in part to women's increased education and workforce participation (Miller, 2018). Although the size of the earnings gap has decreased since women began entering the workforce in large numbers, the earnings gap is still of concern since, in many U.S. households, women's wages constitute a major source of family income. In

nearly two-thirds of all households, women work outside of the home and contribute at least a quarter of the family's earnings. In forty-two percent of US families, mothers are the primary or sole wage earners. Although the gender wage gap is not a phenomenon unique to the United States, the wage gap in the U.S. is approximately 2.5 percentage points larger than the Organization Economic Co-operation and Development (OECD) average and currently larger than many other industrialized nations (Council of Economic Advisers, 2016).

The gender wage gap decreased significantly during the 1980s when the pay ratio increased from sixty-three percent in 1979 to seventy-four percent in 1989. Women's earnings relative to men's earnings increased another 6 percent from 1989 to 1998 (Blau & Kahn, 2006). Mulligan and Rubinstein (2008) suggest the narrowing of the gender wage gap reflects changes in the composition of the female workforce. From the late 1970s through the late 1990s, women's wages have increased relative to men's wages. At the same time, changes in women's labor force selection, as well as increases in labor force attachment and human capital investment, have led to a growing increase in inequality within gender. Mulligan and Rubinstein find the majority of the measured relative growth in women's wages would not have occurred if the changes in the composition of the female labor force had not occurred concurrently.

The 1980s saw not only a falling gender pay gap but also rising inequality among men and women in the labor market. The inequality rose both within and between education and experience groups. Changes in wage structure account for much of the wage inequality during this time. Wage differentials rose markedly by education, occupation, age, and experience groups (Autor, Katz, & Kearney, 2008). Blau and Kahn (1997) use a technique developed by June et al. (1991) to determine the effect the within-group wage inequality has on the gender wage gap during this time. Although rising rewards to skill caused greater within-group wage inequality, women were better able to counterbalance this than their male counterparts due to increases in women's relative levels of experience and improved occupational distribution. Women also fared better than men from the impact of de-unionization because they were less likely to be in unions.

O'Neill and Polacheck (1993) find increases in women's years of experience, a relative increase in women's level of education, return to schooling, and structural changes in the economy that favored women account for much of the decline in blue-collar wages and account for twenty percent of the narrowing of the wage gap in the 1980s. This effect, however, was offset by the rise in relative wages in both higher-skilled and male-dominated occupations.

A decline in labor market discrimination towards women could also account for some of the narrowing of the wage gap since the mid-1970s. This could be due in part to antidiscrimination policies as well as a general change in social acceptance of women in the labor markets. Leonard (1989), however, does not find government policies aimed at reducing discrimination during the 1980s had any impact on the gender wage gap during this time.

Leveling off of the female labor force participation rate, slowing integration of occupations, and normalized attitudes towards gender in the workplace all signaled a slowing or even a stalled convergence in gender inequality in the 1990s (Blau, Brinton, & Grusky, 2006; Cha & Weeden, 2014; Hegewisch, Liepmann, Hayes, & Hartmann, 2010). Cha and Weeden focus on the increasing prevalence of long work hours (defined as fifty or more hours per week) and find that the changing culture and increased returns to overwork combined with the essentially stable differences in the proportion of men and women able and willing to work long hours each week has offset wage-equalizing trends. They find the effect of overwork on the gender wage gap accounts for approximately 10 percent of the total wage gap. The overwork effect on wage inequality is comparable in magnitude to the positive impact education and rising returns to education have on women's wages, thereby essentially offsetting the effect.

The pace of the convergence in the gender wage gap appeared to have slowed or even stalled in the 1990s. Women's labor force participation rates, after decades of steadily increasing, plateaued in the mid-1990s. The unexplained gap is typically used to estimate gender discrimination. Blau and Kahn (2017) find the unexplained gap, after narrowing drastically in the 1980s has been subsequently stable since then.

Our goal is to examine whether this trend continues in the new millennium. We contribute to the literature by examining women's and men's earnings since 2000 to measure how the gender wage gap has changed over time. Additionally, we compare how the gender wage gap has changed over time based on

educational attainment. This is of particular interest since women are becoming increasingly more educated relative to their male counterparts.

DATA AND METHODOLOGY

Blau and Beller (1988) show the importance of using weekly earnings to measure the gender wage gap. Comparing only full-time year-round workers in 1971 to those in 1981, they find women's annual earnings were only fifty-nine percent of men's each year. When using weekly earnings for the same years, however, they find a 4.7 percent increase in women's earnings relative to men's earnings. The difference is that using weekly earnings adjusts for time inputs, specifically, hours and weeks worked.

We use the March supplement of the Consumer Population Survey (CPS)[4] for the years 2000 to 2020. The March supplement captures annual survey data and represents average weekly wages for the previous year. Data in each year corresponds to earnings from the prior year.[5] Therefore, we use the log(ln) of weekly wages for the years 2001-2021 to estimate the sample period of 2000-2020. Our sample consists of full-time year-round workers aged 25-64 to reflect the prime-working age. We restrict the sample to individuals who work for salary/wages earning between \$5,000-\$300,000[6] in the previous year. We exclude those individuals that identify as self-employed since weekly wages may not truly reflect their actual income[7].

It can be argued that the methods used to measure the wage gap may not account for many of the explanations for the earnings differential. For example, Hartman and Rose (2008) argue that restricting data to only those who worked full-time for at least 50 weeks per year, it excludes almost half of all women. From 1983-1998, women worked an average of five hundred hours fewer per year. Additionally, less than half of all women had earnings in each of the fifteen years of the sample (compared to 84 percent of men). By accumulating the earnings for men and women, Hartman and Rose show a 62 percent wage gap amounting to approximately a \$449,000 differential in average earnings over the 15-year period. We attempt to address this by defining full-time, year-round workers as those working more than twenty-six weeks per year and thirty or more hours per week on average.

We define a baseline model to estimate average wages using fixed effects for years. Separate equations are estimated for men and women to capture the fixed effects for both genders in each year. This baseline model provides us with average earnings for men and women controlling for changes in income over time.

$$Y = X\alpha + \epsilon \tag{1}$$

Equation (1) is the baseline model where Y denotes average weekly earnings in logs, X is a matrix of dummy variables representing year-fixed effects and ϵ captures the unexplained portion of earnings. Since this model does not control for any individual characteristics that could account for earnings differentials, the baseline model merely serves as a means for analyzing average earnings for men and women each year. This model is useful, however, in determining a baseline gender wage gap. By recovering average weekly earnings for each year for each gender, we can compute the ratio of women's earnings to men's average earnings and allow us to estimate a gender earnings ratio for each year.

Next, we expand the baseline model by adding individual worker characteristic variables. The expanded model estimates average weekly earnings for men and women controlling for such factors as age, education, race and ethnicity, marriage, family, and metropolitan status of the respondent. The expanded model, controlling for individual characteristics becomes:

$$Y = X\alpha + Z\beta + \epsilon \tag{2}$$

where Z is a vector of variables representing individual traits. Equation (2) represents the regression equation estimating avperage earnings using fixed effects for years and controlling for individual worker characteristics. Our main goal is to examine how men's and women's wages are changing relative to one another. Therefore, we choose a parsimonious model adding variables commonly used in many labor economic studies. Specifically, our matrix of Z variables controls for age, quadratic age, education, race

and ethnicity, marital status, number of children, and metropolitan status. This regression equation represents earnings estimated for the entire restricted sample controlling for personal attributes. Similarly, men's and women's earnings based on these individual traits are estimated in separate regressions. We then re-estimate the earnings differential between men and women over the sample period using regression results from Equation (2). We also use Equations (1) and (2) to determine the average earnings for men and women by educational attainment. This enables us to evaluate how educational attainment impacts the pay gap.

TABLE 1
SUMMARY STATISTICS

			Women		**Men**	
	2000	**2020**	**2000**	**2020**	**2000**	**2020**
Asian	0.048	0.072	0.047	0.071	0.041	0.073
Black	0.121	0.127	0.144	0.147	0.106	0.114
White	0.822	0.771	0.799	0.751	0.836	0.788
Other Race[8]	0.009	0.030	0.010	0.032	0.016	0.028
Hispanic	0.123	0.173	0.103	0.155	0.092	0.187
Age	41.29	43.18	41.33	43.24	41.25	43.14
Rural Area	0.168	0.113	0.168	0.115	0.168	0.111
Men	0.556	0.544				
Women	0.444	0.456				
Number of Observations	72,903	51,956	32,697	23,840	40,205	28,116

Source: IPUMS-CPS 2000-2020. Weighted estimates are reported as percentages of the total sample size for race gender, ethnicity, and metropolitan status. Age is the average age of the restricted sample.

Table 1 provides summary statistics for the other categorical variables representing individual worker traits for the entire sample period and also for women and men respectively. Similarly, only summary statistics for the first and last years in the sample are reported. The percentage of black males in the labor force increased from 10.3 percent in 2000 to 11.3 in 2020. Black women represent roughly fourteen percent of the female labor force and have remained relatively constant since 2000. The proportion of Hispanic workers has grown from 11.7 percent to over 17 percent of full-time workers by 2020. Men have a slightly higher proportion of Hispanic workers attributing to 18.7 percent of the male sample by 2020 compared to only 15.5 percent of women. We also note the aging of the population as the average age of workers in the sample was 41.3 in 2000 and 43.2 by 2020.

Before we present empirical results from our regression analysis, we think it is important to note differences in individual traits for men and women in the sample. Although we use the years 2000 through 2020 for our analysis, we present the first and last years in our summary statistics to illustrate the changes in the variables over time. For example, both Figures 1 and 2 show differences in educational attainment for each gender. Figure 1 compares these differences in 2000, the first year in our sample, and Figure 2 displays educational attainment for men and women in 2020. As seen in Figure 1, more women pursue post-secondary education relative to men. Women have a higher proportion of post-secondary degrees in all categories except for terminal degrees where proportionately more men hold a doctorate or professional degree than women in 2000. By 2020, this education gap between women and men widens. As seen in Figure 2, there is a higher proportion of the female population in all categories of higher learning relative to their male counterparts, including terminal degrees.

Although both genders show an increase in overall educational attainment, women are doing so in greater proportions. The proportion of women holding bachelor's degrees increased from 20.9 percent in 2000 to 30.2 percent of females in 2020. In 2000, 20.5 percent of men held bachelor's degrees and that grew to 26.8 percent in 2020. The proportion of the sample that has master's degrees was 8.0 percent in

2000 and 16.4 percent in 2020 for women and 6.8 percent in 2000 and 10.6 percent in 2020 for men. While a greater proportion of men were obtaining terminal degrees in 2000 (3.3 percent of men and 2.1 percent of women), by 2020, 4.2 percent of women and 3.9 percent of men held doctorates or professional degrees.

FIGURE 1
EDUCATIONAL ATTAINMENT IN 2000

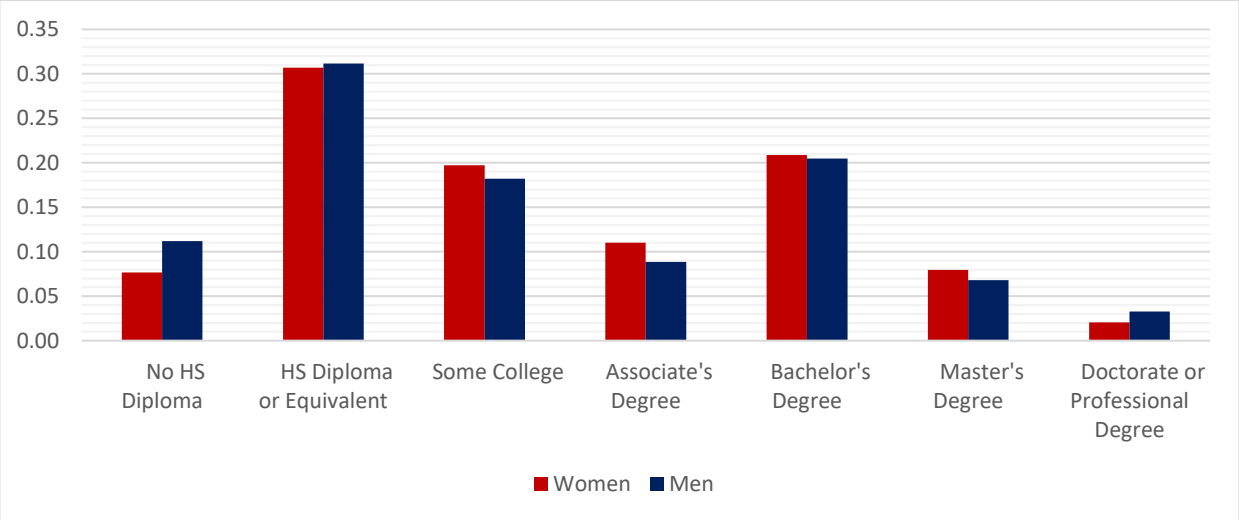
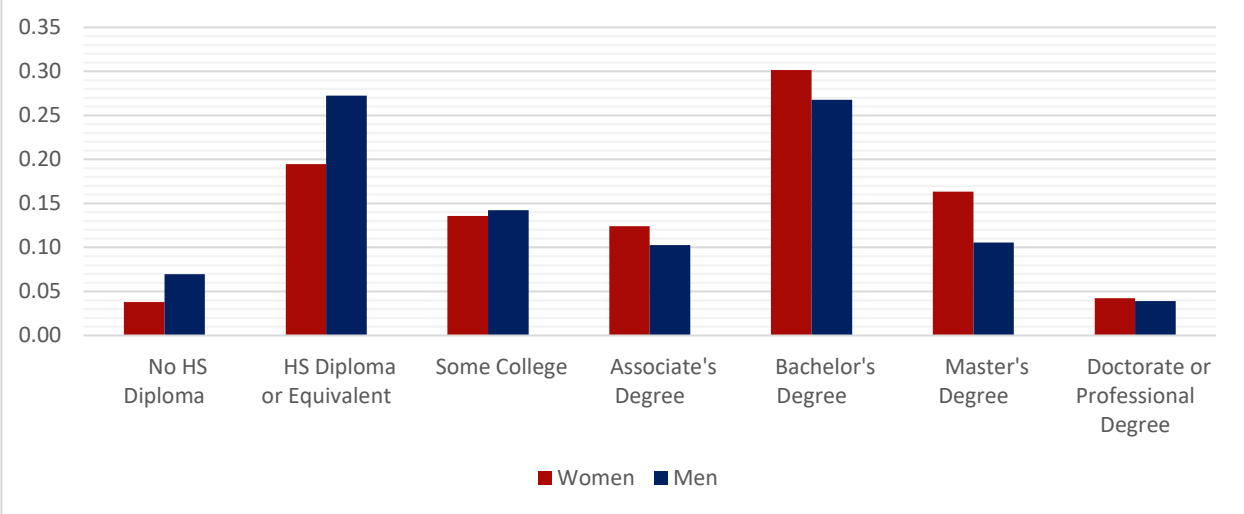


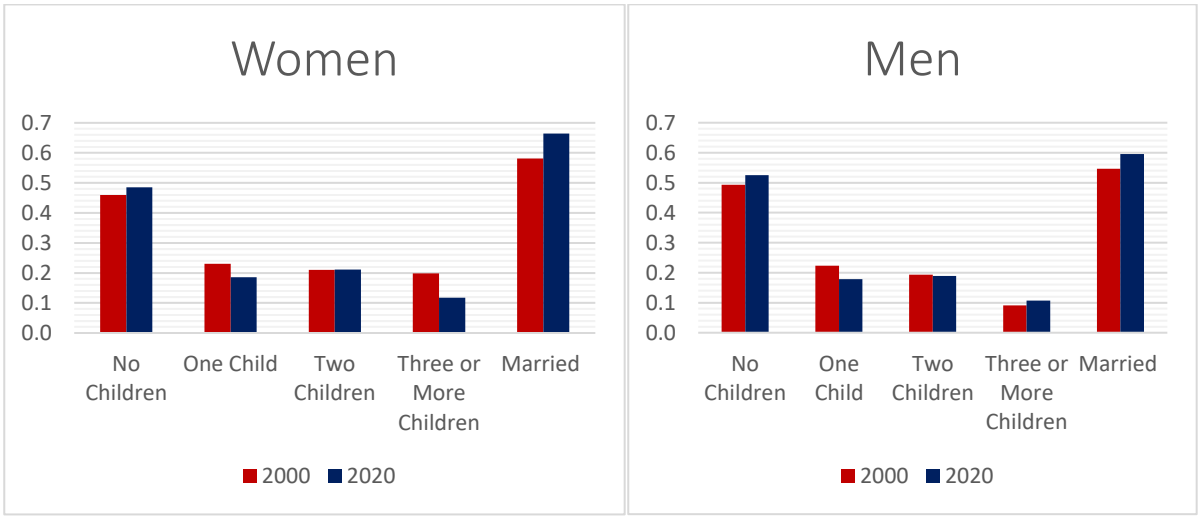
FIGURE 2
EDUCATIONAL ATTAINMENT IN 2020



Not only do we see the differences in educational attainment by gender over time, but we also note that overall, the general population is becoming more educated. In 2000, 31.2 percent of men and 30.7 percent of women held a high school diploma (or equivalent). 11.2 percent of men and 7.7 percent of women held no high school diploma at all. But by 2020, the proportions of the population holding no high school diploma or GED fell to 7.0 and 3.8 percent for men and women respectively. The proportion of women only holding a high school diploma fell over 10 percentage points to 19.5 percent of the sample by 2020. Men also had a decrease in those with no post-secondary education but only fell to 27.3 percent of men in the sample.

Figure 3 presents the proportion of the population with children as well as marital status in 2000 and 2020 for each gender. The number of children has decreased over time for both genders. A greater portion of working men are married relative to women in the sample but overall and proportion that are married[9] has increased for both genders. Additionally, a greater percentage of working men report having no children compared to women but overall, the number of children does not seem to vary greatly between men and women in the sample.

FIGURE 3
MARRIAGE AND FAMILY STATUS IN 2000 AND 2020



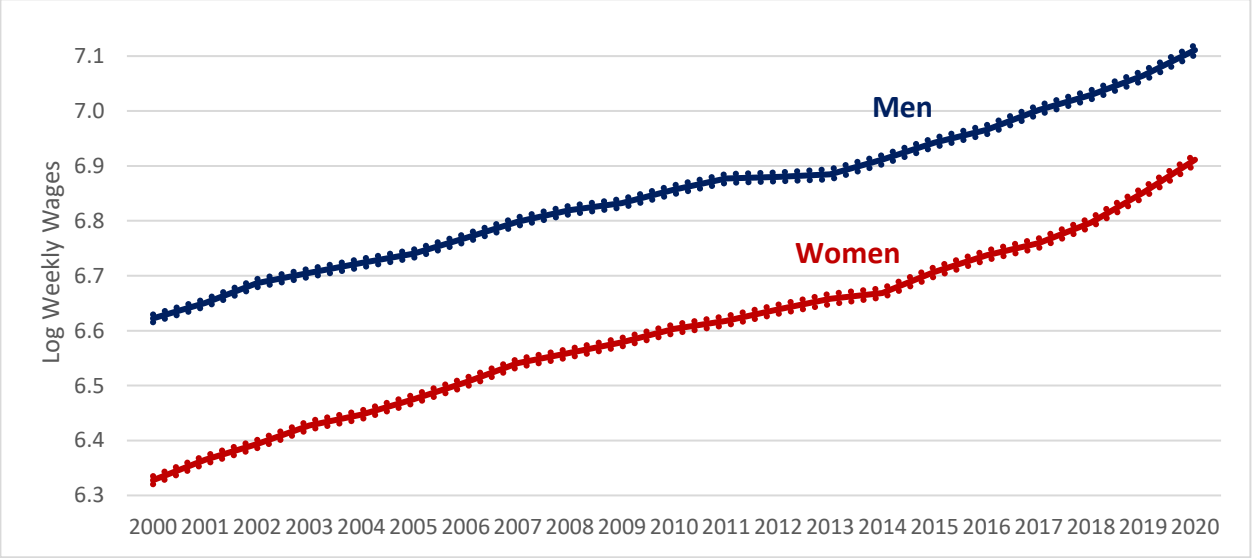
RESULTS

Using our baseline Equation (1), we estimate the average weekly log earnings for each gender for each year. Figure 4 illustrates how each gender's wages have changed over time. Each year represents recovered average weekly earnings for women and men for our restricted sample using the estimated coefficients for the α's from our regression results. On average, it appears that women's earnings are growing faster than men's earnings, particularly in recent years. The year-over-year growth rate of earnings is not consistent over the sample period, however. Both genders saw slightly slower wage growth in the wake of the Great Recession following the financial crisis in 2008, but the effect was slightly amplified for men. Overall, the average growth rate for women's weekly wages from 2000-2020 was 2.87 percent. Men's earnings over the sample only grew on average by 2.41 percent. This would give hope to women making strides at shortening the gap between earnings. But once we control for individual worker characteristics, we find the wage gap widens.

Next, we expand our model to account for individual worker characteristics. The α's now represent the yearly differences in earnings controlling age, education, race and ethnicity, marital and family status, citizenship, and metropolitan status. Individual effects represent the differences in equation (2) for state effects controlling for individual worker characteristics. We use the estimated coefficients to capture the average salary for each gender for each year. We can see from the results presented in Figure 5 that once we adjust for individual worker characteristics, the size difference in earnings per gender shrinks. In our adjusted model, we find men's wages grew at an average rate of 2.0 percent and women's wages only grew by an average of 2.1 percent over the sample period. We use our results to determine the gender wage gap each year for each model. We extrapolate average earnings for each year by recovering estimated weekly wages from each equation. The gender earnings ratio is the ratio of women's to men's earnings. We estimate the gender wage gap for each year using the difference between men's and women's wages. We can see in Figure 6 that although it appears that we continue to make strides in shrinking the gender wage gap, we

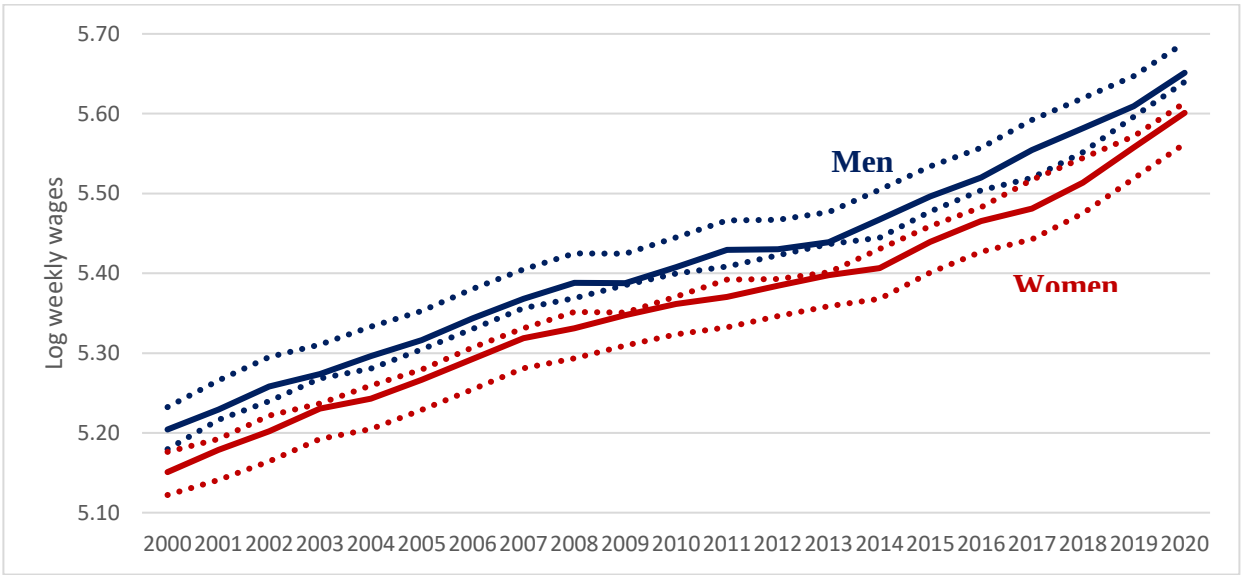
need to use caution in only comparing average salaries for men and women. How the adjusted wage gap changes over time is not consistent with the baseline unadjusted model. Once we control for individual worker characteristics, we can see that the wage gap has remained fairly stable since the new millennium and was largest in 2017 than in any other year in the sample. This implies that when comparing earnings for men and women, we need to account for individual characteristics to properly assess any potential progress.

FIGURE 4
AVERAGE WEEKLY WAGES FOR MEN AND WOMEN



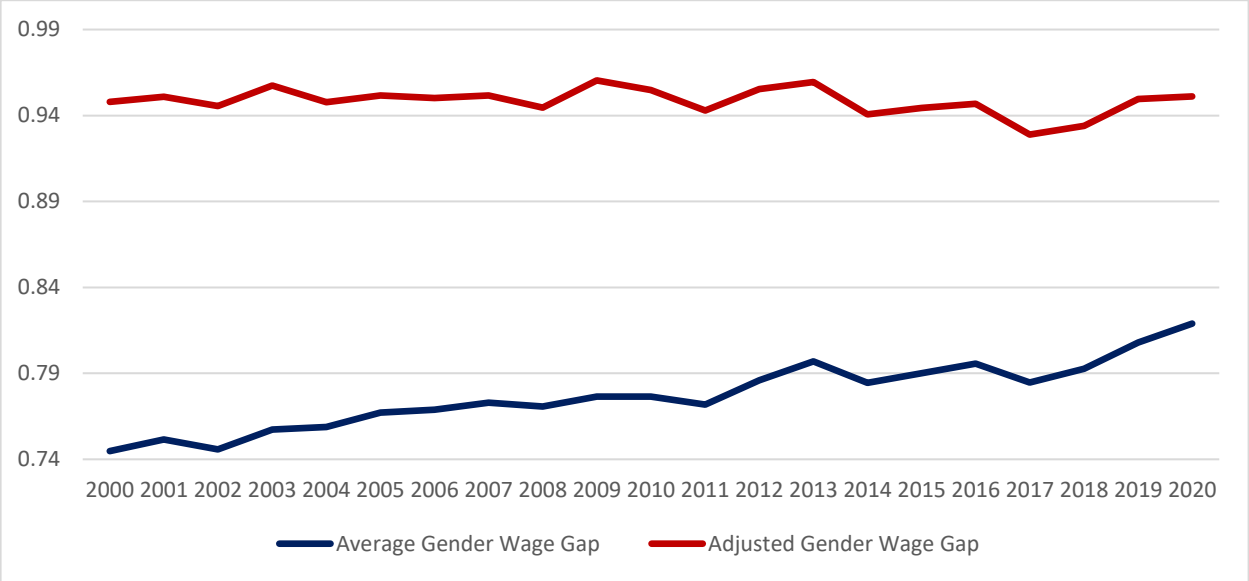
Note: Dashed lines represent 95% confidence interval bands. Data obtained from IPUMS-CPS and author calculations using regression results for Equation (1).

FIGURE 5
ADJUSTED AVERAGE WEEKLY WAGES FOR MEN AND WOMEN



Note: Dashed lines represent 95% confidence interval bands. Data obtained from IPUMS-CPS and author calculations using regression results for Equation (2).

FIGURE 6
GENDER EARNINGS RATIO 2000-2020



Note: Estimates for gender earnings ratios were calculated using estimates obtained from equations (1) and (2) representing the unadjusted and adjusted models respectively.

To further illustrate this, we now turn our focus to educational attainment. We use the results for Equation (2) to re-estimate the gender earnings ratio for each year by educational attainment. To highlight how the ratio has changed over time, we report the gender earnings ratio in Figure 7 for 2000 and 2020 only. The gender earnings ratio for high school graduates increased from 0.699 to 0.751. For those holding a doctorate or professional degree, the ratio increased from 0.820 to 0.834 and represents the highest gender earnings ratio. It is important to note that this group only represents three percent of our sample. In 2000, the gender earnings ratio for Bachelor's degree holders was 0.754. In 2020, however, the ratio has only increased to 0.767.

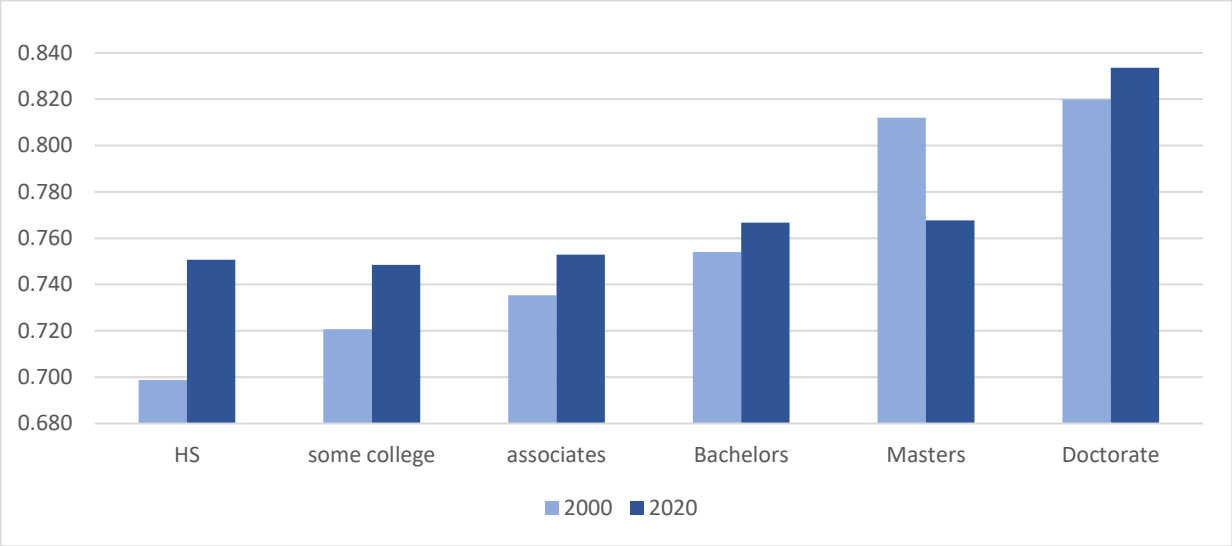
Although there have been improvements in women's earnings relative to men's for high school graduates, and those with some college, Associate's, Bachelor's, and terminal degrees, the wage gap has grown for those holding Master's degrees. Although women with Master's degrees have a gender earnings ratio of 0.768 in 2020, they were earning approximately $0.81 relative to every man's dollar in 2000. This impact is amplified considering that by 2020, approximately 16 percent of the full-time working women in our sample held Master's degrees.

The regression output can be helpful to compare differences in premiums for individual worker characteristics. Columns (1) and (2) of Table 2 show the results from equation (2) for the βs, which represents the estimated coefficients for the individual worker characteristics for women and men respectively. Since wages are measured in logs, the $\beta' s$ on the dummy variables can be interpreted as percentage differences. For example, women with one child earn 2.1 percent less than women with no children. The child "penalty" for women grows with each subsequent child. Women who have three or more children earn 6.3 percent less than those with no children. Conversely, number of children has a positive effect on men's earnings. When compared to those with no children men with one child earn 3.4 percent more and those with two or more earn at least 6.3 percent more. Married men earn 17.5 percent more than single men but married women only earn 4.4 percent more than those that are not married.

The negative impact of race seems to be larger for black men, who earn 19.6 percent less, compared to black women, who earn 9 percent less than their white counterparts. There is a -1.9 percent statistical difference in earnings for Asian women compared to white women, but Asian men earn 9.9 percent less

compared to white men in our sample. Hispanic workers have lower wages compared to non-Hispanic workers, with men having a larger negative impact at 20.3 percent versus 12.3 percent for women.

FIGURE 7
RATIO OF WOMEN'S WAGES RELATIVE TO MEN'S BY EDUCATIONAL ATTAINMENT



Women have a greater return to education than men, however. Women with some college or an Associate's degree earn 16 and 24.7 percent more respectively than those with no post-secondary education. Men, however, only earn 14.3 and 18.8 percent more when they have some college or hold an Associate's degree. Women with a Bachelor's degree earn 51.4 percent more than those with a high school diploma or equivalent but men only earn 44.1 percent more when holding a Bachelor's. When considering those with graduate degrees, women with Master's degrees earn 70.5 percent more and 95.1 percent more when they hold a terminal degree. Men with Master's earn 60 percent and 76.4 percent more with terminal degrees only relative to men who have only a high school education. These results show that women can increase their earnings at a higher rate when they increase their levels of education. Unfortunately, it appears to be doing little to decrease the disparity between their pay relative to their male counterparts.

TABLE 2
ADJUSTED MODEL-OLS REGRESSION RESULTS FOR EQUATION (2)

VARIABLES	Female	Male
Age	0.040	0.047
	(0.001)	(0.001)
Less Than HS Diploma	-0.268	-0.245
	(0.003)	(0.003)
Some College	0.160	0.143
	(0.002)	(0.002)
Associate's Degree	0.247	0.188
	(0.003)	(0.003)
Bachelor's Degree	0.514	0.441
	(0.002)	(0.002)
Master's Degree	0.705	0.600
	(0.003)	(0.003)
Doctorate or Professional Degree	0.951	0.764
	(0.006)	(0.005)
Black	-0.090	-0.196
	(0.002)	(0.003)
Asian	-0.012	-0.099
	(0.004)	(0.003)
Hispanic	-0.123	-0.203
	(0.002)	(0.002)
Married Spouse Present	0.044	0.175
	(0.002)	(0.002)
One Child	-0.021	0.034
	(0.002)	(0.002)
Two Children	-0.020	0.075
	(0.002)	(0.002)
Three or More Children	-0.063	0.063
	(0.003)	(0.003)
Rural Area	-0.187	-0.138
	(0.002)	(0.002)
Constant	5.151	5.204
	(0.015)	(0.014)
Observations	625,536	750,488
R-squared	0.331	0.333

Note: Year-fixed effects and age^2 are not reported. Constant is relative to the omitted variables: High school diploma, no children, not married, white, and residing inside or near a central city. All coefficients are statistically significant at the 99% confidence level. Robust standard errors are in parentheses.

CONCLUSION

This study examines the gender wage differential in the United States over an eighteen-year period. We compare the growth rate of wages for women and men over time by estimating a baseline model as well as an expanded model that adjusts for individual worker characteristics.

Our sample period includes the Lilly Ledbetter Fair Pay Restoration Act of 2009 as well as two Executive Orders signed in 2014 which all were intended to decrease the gender pay gap.

Overall, the average growth rate for women's weekly wages from 2000-2020 was 2.87 percent. Men's earnings over the sample only grew on average by 2.41 percent. This would give hope to women making strides at shortening the gap between earnings. But once we control for individual worker characteristics, essentially there is no improvement in narrowing the wage gap. In our adjusted model, we find men's wages grew at an average rate of 2.1 percent while women's wages only grew by an average of 2 percent over the sample period.

The average ratio of women's earnings relative to men's is 0.777 over the entire sample period in our baseline model. The ratio has increased in the baseline model where the gender earnings ratio was 0.745 in 2000 and increased to 0.819 by 2020. When the model is expanded to account for individual worker characteristics, the gender earnings ratio becomes 0.949. When controlling for individual worker characteristics, however, we have not seen improvements in the wage gap. The gender earnings ratio for the adjusted model was 0.948 in 2000. This ratio stayed fairly constant year over year and fell to 0.951 in 2020. This is even more discouraging considering women's education rates have increased at a significantly higher rate than their male counterparts during this time. These results show that there is still much work to be done to improve the inequities in wages between men and women.

ENDNOTES

1. U.S. Bureau of Labor and Statistics
2. According to the Women's Institute for Policy Research
3. Executive Order 11246
4. obtained from the University of Minnesota's IPUMS database
5. For example, 2001 data represents earnings in 2000.
6. This omits possible errors in reporting and outliers that could possibly bias the results.
7. As a robustness check, we re-estimate our sample and include self-employed workers and the results do not significantly change.
8. Other category for the race variable includes Native American, and those individuals identifying as more than one race. This category was excluded from our analysis due to the small sample size.
9. Defined as married with the spouse being present. Those that are legally married but not residing together are not included in this category.

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APPENDIX

TABLE A1
GENDER EARNINGS RATIOS 2000-2020

Year	Unadjusted Model	Adjusted Model
2000	0.74	0.95
2001	0.75	0.95
2002	0.75	0.95
2003	0.76	0.96
2004	0.76	0.95
2005	0.77	0.95
2006	0.77	0.95
2007	0.77	0.95
2008	0.77	0.94
2009	0.78	0.96
2010	0.78	0.95
2011	0.77	0.94
2012	0.79	0.96
2013	0.80	0.96
2014	0.78	0.94
2015	0.79	0.94
2016	0.80	0.95
2017	0.78	0.93
2018	0.79	0.93
2019	0.81	0.95
2020	0.82	0.95

Estimates for each year's gender earnings ratio were calculated using estimates obtained from equations (1) and (2) representing the unadjusted and adjusted models respectively.