

The Gender Pay Gap in the United States

1. Introduction

The gender pay gap in the United States is represented by the comparative ratio of female to male using median or mean of the annual earnings among full-time employees. In most cases, discrimination is a significant variable that has led to differences in gender wage, however, it is difficult to quantify such differences, as there is a large amount of ‘confounding variables’. Some studies found the existence of an unexplained wage gap, even though the measurable factors which may impact earnings have already been controlled. For instance, many jobs recruiter hired women when the applicant's gender is unrecognized during the process of recruiting. In the United States, women's participation in the labor force has increased dramatically, where women are working longer hours and enrolling in college in greater numbers than men. Despite this development, considerable wage disparities exist between men and women, particularly among women of color. According to the mean calculated in 2021, American working women have been paid 82 cents for every dollar that working men made in the United States. Precisely, Latina women in the U.S. had worked severely in 2020 to 2021 to gain as much the wages of the white U.S. men in only 2020. Hence, what is the wage disparity between men and women? This research paper would illustrate how the gender pay gap in the United States may arise, and how much it has existed.

2. Literature Review of Gender pay gap

Blau and Kahn (2017) were the first to compare gender pay gaps in a systematic way. They focus on cross-country variability in market returns to talents, both measured and unmeasured, in a series of studies. They discovered that in nations with higher overall income disparity, the gender pay gap is wider because female workers are more likely to be situated at the bottom of wage distributions. In most major career categories in the United States, the gender wage gap is a recurring issue. Women have worked for decades to close the salary gap between men and women, but unfortunately, it resulted in a larger income disparity today. The most essential aspects of the gender wage difference are discussed in the article called “Distributional Changes in the Gender Wage Gap” (Kassenboehmer, 2014). It employed a panel analysis of income dynamics data comparing wage differences for men and women over a long period of time and across the full wage distribution, rather than focusing on a single group. However, this article presented a broad view of the gender wage gap in the United States without focusing on a single demographic.

Pay secrecy and the gender wage gap in the United States (Kim, 2015) are primarily concerned with pay secrecy, its prevalence, and the law in the United States. It is yet another piece that focuses solely on the gender gap. Marlene Kim, the author of this article, claims that her research revealed that "states that criminalize pay secrecy minimize the gender wage gap." Pay secrecy refers to the rules, policies, and practices that prevent employees from discussing or sharing information about their pay. According to Kim's article, it could be a method to closing the gender gap and bringing

men and women closer to equality. She performed a natural experiment in which she compared states in the United States that prohibit pay secrecy versus states that do not.

The article called "Gender and Economic Inequality" (Wienclaw, 2015), covers the clearest explanation of the gender wage gap in economic inequality between the genders, asserts that economic inequality persists in the United States. The author Ruth Wienclaw delves into all the possible theories for why inequality persists. She begins this article by displaying graphs and tables depicting women's salaries in the early twenty-first century. Education, household duty, work devaluation, women, and poverty are some of the primary elements discussed in this article on inequality. Wienclaw also conducted income inequality research in order to better understand the rise and fall of economic inequality between men and women, as well as the human rights and social justice of all individuals.

"Employer Attitudes, the Marginal Employer, and the Ethnic Wage Difference" (Carlsson/Rooth, 2016) is a paper that focuses on the numerous countries in Europe and the facts on how the gender wage gap impacts the working class. The article then goes into greater detail about one specific country in Europe, Sweden. Readers will learn more about "the role that prejudice plays in the formation of the ethnic pay gap in one of Europe's most equal states" (Carlson/Rooth, 2016) from this article.

"The Gender Pay Gap and 'Women's Work'" (Schieder/Gould, 2016) is an article about how most of the country perceives what is deemed women's labor. "How discrimination, societal norms, and other variables influence women's career choices — and pay" (Schieder/Gould, 2016). According to the authors of this article, women should not be blamed for economic transformations that have occurred over time. They say that the American economy should be the focus of all efforts to comprehend the wage disparity.

The wage gap is defined as "the difference in men's and women's median earnings, commonly represented as either the earnings ratio between men and women or as an actual pay gap," and it can also be referred to as the pay disparity (Miller, K., 2016). This salary disparity has narrowed over the previous few decades, beginning in the 1960s, but it remains significant. According to the publication *The Simple Truth* by AAUW, The American Association of University Women, there is a 20% salary discrepancy between working full-time women and working full-time men. This indicates that these women are only paid 80% of what men are paid. Pay equity could be achieved by 2059, based on the recent change in women's pay rates from 1960 to last year. Unfortunately, the rate of improvement in pay rates has slowed, and at the current rate, women will not be paid equally to men until 2152.

3. Data and Research Methods

In this paper, it has implemented the public data from <https://www.census.gov/> which is officially provided by the United States' government. The data shows the statistics of the income of the US citizens from 1947 to 2019 which divided into three categories: sex, age, and race. The age and race data also further divided into subgroup by sex which we will see the differences of income that grouped by specific range of age and in each individual race. Since the website provides last amount of data and some might not be significant and relate to the present world, the paper, therefore, consider only the data and statistics of the last ten years, 2011-2019, which is the most recent and reliable sources of information.

Statistics:

The statistics used in this paper are the “mean” and “median”. The mean is the average of the income. In other words, it combines all the values and divide by the number of a particular element (n). For instance, if the income data of all US citizens are provided, $X = \{x_1, x_2, \dots, x_n\}$, the mean of this data set is computed by the following formula,

$$\text{mean} = \frac{x_1 + x_2 + \dots + x_n}{n},$$

where n is the number of the sample.

The other statistics is the median which is the central value of the data. To explain the idea of median, we first order the data by their value and then select the data which is at the middle of the list, and that is the median of the data set. The median is different from mean because it does not consider the outlier or extreme value in the data set.

We also consider the ratio of the income of female/male. It is more intuitive by consider the following example; if in 2021 we have the female/male ratio of 0.85, it is mean that every 1 dollar earned by a male, a female only earns 0.85 dollar. Now, it is clear that if the value is far from 1 that means there is a huge gap of the inequality between female and male; on the other hand, if the value is closed to 1 that means the gap is in significant.

Tool:

In this report, it is mainly focused on using the “Google Data Studio” to visualize the statistics and data. In addition, it is an online tool used to convert data into customizable required information. It is an open-source application program which can provide different tools to create graphs and table as well as clean and organize the data.

4. Result Analysis

- Salary Overall

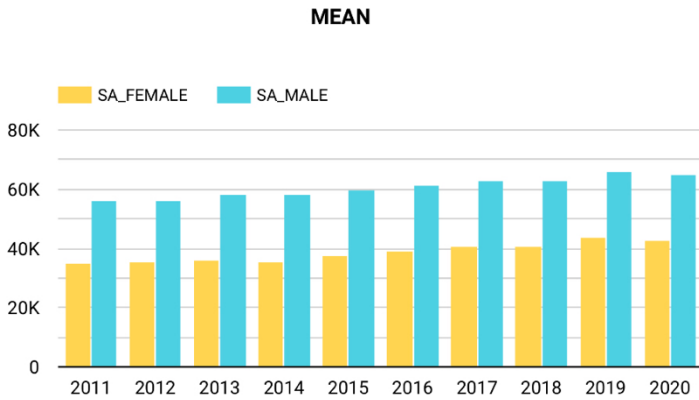


Figure 1: Mean salary of male and female

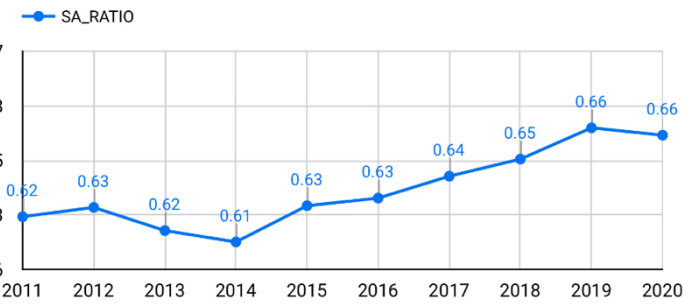


Figure 3: Mean salary ratio of male and female

Year	SA_FEMALE	SA_MALE	SA_RATIO
1. 2020	43,071	65,106	0.66
2. 2019	43,856	65,957	0.66
3. 2018	41,030	63,066	0.65
4. 2017	40,543	63,078	0.64
5. 2016	39,001	61,642	0.63

Table 1: Comparative mean ratio of male and female

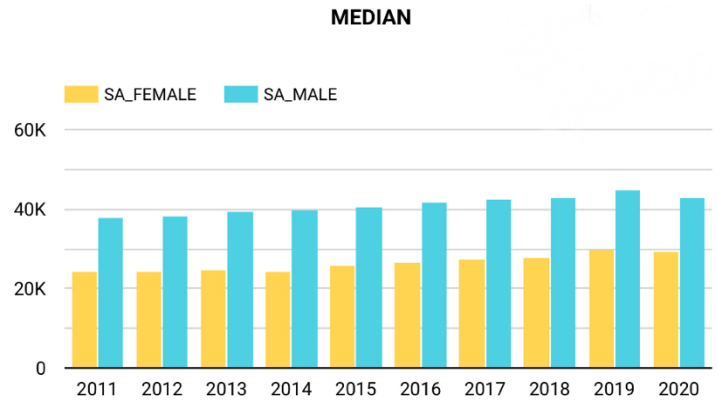


Figure 2: Median salary of male and female

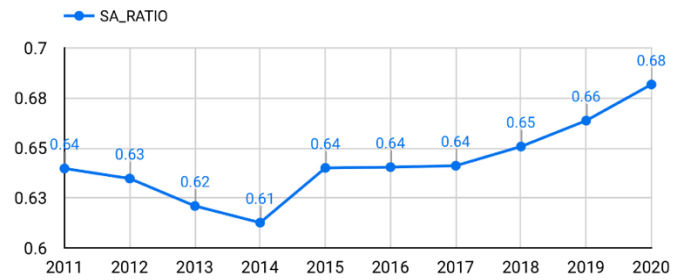


Figure 4: Median salary ratio of male and female

Year	SA_FEMALE	SA_MALE	SA_RATIO
1. 2020	29,261	42,921	0.68
2. 2019	29,774	44,863	0.66
3. 2018	27,914	42,898	0.65
4. 2017	27,346	42,655	0.64
5. 2016	26,850	41,927	0.64

Table 2: Comparative median ratio of male and female

Data Visualization:

In the overall analysis of income, the paper has classified information into two major classifications; mean on the left side, and median on the right side respectively. The data shows the significant inequality between men and women all over the decade, mainly from 2011 to 2020, which can be seen from its comparative ratio. Similarly, Figure 2 represents the median income of both males and females, where both genders have derived positive trends of their salary, which shows a good sign for them.

In Figure 1, the bar charts illustrate the mean salary obtained by males (yellow) and females (blue). In this case, it can be clearly observed that the income of males is obviously more than women in all respective years. However, both genders have gained a positive trend of income throughout 2011 until 2020. With the positive trends, it implies that the income gap is getting smaller.

In explanation, for example, if we look at the mean salary ratio of males and females in Figure 3, the first point 2011 represents that if a male can gain one additional dollar, the female will gain an average of 0.62 dollars as their additional pay. Another example if we look at Figure 4, in 2019, can be interpreted that if the income of males rose by 1 dollar, the median additional pay of females would then be 0.66 dollars.

As can be seen, Table 1 demonstrates the overall trends of the mean salary of both genders and their ratio. It has been concluded that the salary of males has been highest in 2019 with an average of 65,957 dollars, whereas females' highest average income is also the year 2019, with 43,856 dollars, where both males and females have the same salary ratio of 0.66.

Finally, Table 2 concluded the overall trends of the median salary of both genders and their ratio. It has resulted that the salary of males has been highest in 2019 with a median of 44,863 dollars, whereas females' highest income is also the year 2019, with 29,774 dollars, where both males and females have the same salary ratio of 0.66.

• Salary by Age

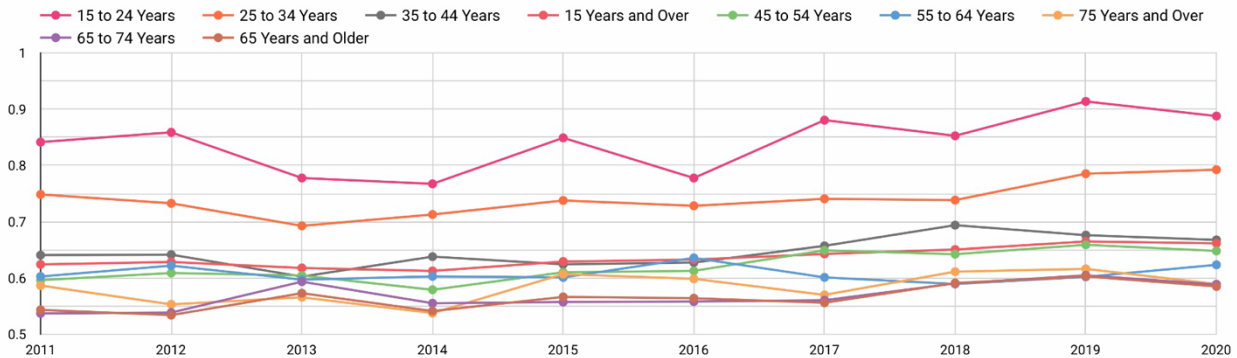


Figure 7: Salary ratio of different ages

	Year / SA_RATIO										
TABLE	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
75 Years and ...	0.59	0.55	0.57	0.54	0.61	0.6	0.57	0.61	0.62	0.59	
65 to 74 Years	0.54	0.54	0.59	0.56	0.56	0.56	0.56	0.59	0.6	0.59	
65 Years and ...	0.54	0.53	0.57	0.54	0.57	0.56	0.56	0.59	0.6	0.59	
55 to 64 Years	0.6	0.62	0.6	0.6	0.6	0.64	0.6	0.59	0.6	0.62	
45 to 54 Years	0.6	0.61	0.6	0.58	0.61	0.61	0.65	0.64	0.66	0.65	
35 to 44 Years	0.64	0.64	0.6	0.64	0.62	0.63	0.66	0.69	0.68	0.67	
25 to 34 Years	0.75	0.73	0.69	0.71	0.74	0.73	0.74	0.74	0.79	0.79	
15 to 24 Years	0.84	0.86	0.78	0.77	0.85	0.78	0.88	0.85	0.91	0.89	
15 Years and ...	0.62	0.63	0.62	0.61	0.63	0.63	0.64	0.65	0.66	0.66	

Table 3: Summary ratio of salary of different ages

In this case, we take into consideration the age of working people from 15 years old to 75 years old onwards. This is because, the age range below 15 may have been illegal to work. It can be summed up that, the age range 15 to 24 years, people tend to have the least income inequality compared to the others.

The gap seems to increase when people are older, as we can see in the Table 3; in the age range 65 years and older, the income ratio of female/male are significantly small and tend to have the very least improvement from the year 2011 to 2019.

• Salary by Race

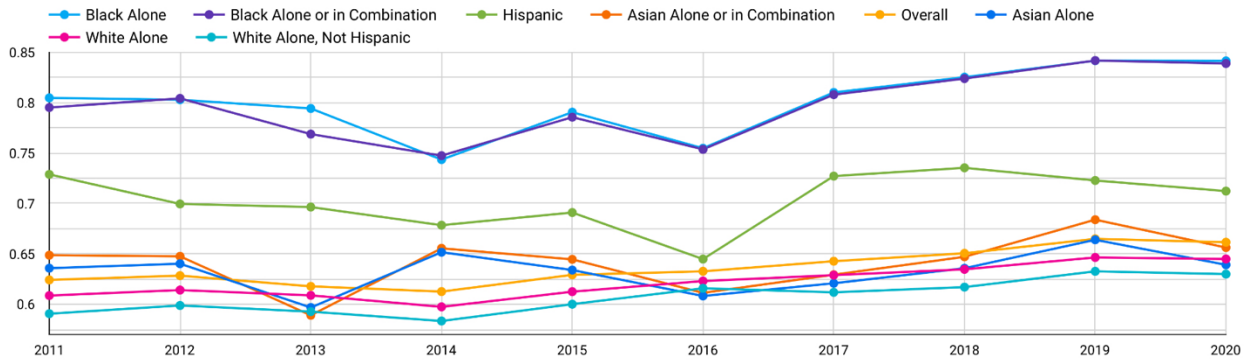


Figure 8: Salary ratio of different races

	Year / SA_RATIO									
TABLE	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
White Alone, ...	0.59	0.6	0.59	0.58	0.6	0.62	0.61	0.62	0.63	0.63
White Alone	0.61	0.61	0.61	0.6	0.61	0.62	0.63	0.63	0.65	0.64
Overall	0.62	0.63	0.62	0.61	0.63	0.63	0.64	0.65	0.66	0.66
Hispanic	0.73	0.7	0.7	0.68	0.69	0.64	0.73	0.74	0.72	0.71
Black Alone o...	0.8	0.8	0.77	0.75	0.79	0.75	0.81	0.82	0.84	0.84
Black Alone	0.8	0.8	0.79	0.74	0.79	0.75	0.81	0.83	0.84	0.84
Asian Alone o...	0.65	0.65	0.59	0.66	0.64	0.61	0.63	0.65	0.68	0.66
Asian Alone	0.64	0.64	0.6	0.65	0.63	0.61	0.62	0.64	0.66	0.64

Table 4: Summary ratio of salary of different races

In this case, we take into consideration the races of working people, including ‘Black alone’, ‘Black alone or in combination’, ‘Hispanic’, Asian alone or in combination’, ‘Asian alone’, ‘White alone’, ‘White alone, not Hispanic’, and ‘Overall’. This is because, it is believed that, ever since, race has also been a major factor in differences of wage pay.

Beyond that, one might think that when come to the race, white people might have the least in income equality compared to the others race; surprisingly, white people have largest income ratio. Besides, the black race has the least income gap, where the second best is the Hispanic.

Additional Analysis and Key Findings

The wage disparity between men and women is measured by the gender wage gap. It is usually determined by dividing women's wages by men's wages, and it's expressed as a percentage or in dollars. This informs that how much a woman earns for every dollar a guy earns. The current gender pay ratio is 0.796, or 79.6 percent, when measured for year-round, full-time workers, and compares the annual wages (of hourly wage and salaried workers) of the median ("typical") man with those of the median ("typical") woman; when measured in this way, the current gender pay ratio is 0.796, or 79.6 percent. Over the last 15 years or more, the pay difference between men and women in the United States has been rather steady. According to the U.S. census center survey of median hourly wages of both full-time and part-time workers in 2020, women earned 84 percent of what men earned. Women will need an additional 42 days of labor to earn the same amount as men in 2020, according to this prediction. (Robin Bleiweis, 2020 : 1)

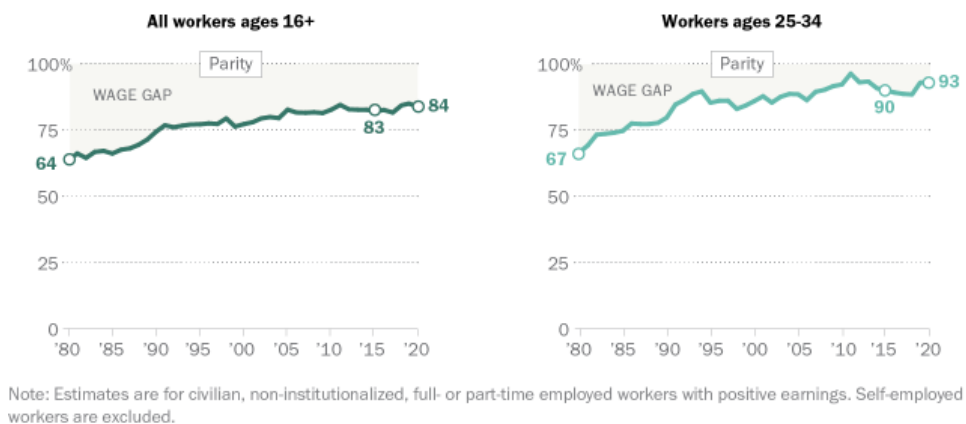


Figure 9: The gender gap in pay

From Figure 9, workers aged 25 to 34 had a lower wage difference in 2020 than workers aged 16 and up. On average, women aged 25 to 34 earned 93 cents for every dollar earned by men in the same age range. Women between the ages of 25 and 34 earned 33 cents less than men in 1980, compared to 7 cents in 2020. In 2020, the predicted gender pay difference for all workers will be 16 cents, down from 36 cents in 1980.

The income disparity between men and women is not only complicated and nuanced, but it is also persistent. The salary gap between men and women has only narrowed by 4 cents in more than a decade due to a lack of current and complete equal pay reform. Women are not expected to achieve salary parity with men until the year 2059 if current trends continue.

Women require updated comprehensive equal pay legislation, such as the Paycheck Fairness Act, to begin closing the wage gap between men and women. This legislation will improve existing protections and eliminate discriminatory behaviors. Other strong work-family policies are also

needed to effectively address the complex gender wage gap, so that women, who disproportionately shoulder many of the caregiving obligations in their families, are not unfairly disadvantaged by taking time to care for their families (Sarah Jane Glynn, 2018).

Access to paid sick days and a comprehensive paid family and medical leave program, for example, are only two of the critical policies that would help employees avoid job loss and improve their economic security. Beyond public policy, society must address cultural biases that continue to damage women, especially women of color, by undervaluing their work and restricting them to gender norms. The United States can only begin to remove patriarchal mechanisms that systematically disadvantage and shortchange women and their families by passing critical policies and transforming cultural attitudes (Reskin and Bielby, 2005).

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5. Conclusion

While the wages difference between men and women may narrow marginally with each new set of Census Bureau data, it will not close anytime soon without deliberate effort. Efforts to close the wage gap must address the various determinants as well as the numerous biases that hold women and their families behind, particularly women of color, LGBTQ women, and women with other diverse identities. This is a matter of economic security and equality, and women and their families can't afford to wait.

Moreover, the overall analysis of income of mean and median of each genders found that both mean, and median has shown a positive relationship for both genders, which would result in the smaller pay gap in the future. In addition, it has been analyzed that the salary of males and female has been highest in 2019, with the same salary ratio. Simultaneously, both genders have also had the highest median salary in 2019 with the same ratio. Moreover, for the age differences, the research found that the age range 15 to 24 years tend to have the least income inequality compared to the others, and the income gap seems to increase when people are older. Finally, for the race differences, it can be concluded that white people have largest income ratio, followed by the Hispanic, while the black race has the least income gap.

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