

Gender-Related Pay Equity by State and Industry

Ronald Sowadski

College of Doctoral Studies, Grand Canyon University, Arizona, the United States

Email address:

RonnieC312@gmail.com

To cite this article:

Ronald Sowadski. Gender-Related Pay Equity by State and Industry. *Journal of Human Resource Management*. Vol. 10, No. 1, 2022, pp. 22-29. doi: 10.11648/j.jhrm.20221001.14

Received: February 18, 2022; **Accepted:** March 7, 2022; **Published:** March 12, 2022

Abstract: The purpose of this quantitative nonexperimental comparative study was to examine whether and to what extent there are differences in gender-related pay equity in the public sector, among states, and among industries in the United States. The theoretical framework for this study was provided by John S. Adams's equity theory. The study was conducted with archival data from The American Community Survey. The analyzed dataset included 1,834 cases, with data for gender-related pay equity (measured as a percentage of females' pay relative to males' pay), state (51 states (including D.C.)), industry (five major industries), and subindustry (36 subindustries). District of Columbia lacked data from two subindustries. The data for the dependent variable had been aggregated from an original sample 2,145,639 survey participants. Two research questions addressed the differences in gender-related pay equity among the 51 states and among the five industries. The results of two one-way ANOVAs showed a significant difference in the gender-related pay equity among the 51 states (including D.C.), $F(50, 1740) = 1.69, p = 0.019$, and among the five major industries, $F(4, 1735) = 17.00, p < 0.01$. The study findings point to the national scope of pay equity problem, across states and across the major industries. These empirical findings provide a basis for the development of policies needed to address pay inequity, which negatively affects 74.6 million female American workers in the public sector only.

Keywords: Pay Inequity, Pay Equity, Inequality, Wage Equity, Gender-Related Pay Equity, Gender Pay Gap

1. Introduction

Since 1964, pay equity has been a social issue that the government, the entity responsible for the regulation of pay, has not been able to solve. This is due—in part—to the lack of a complete dataset [22]. This study and the problem of pay equity are based on equity theory, fair distribution of contributions, and benefits for each person [1]. Previous scholars have utilized equity theory to research pay equity [6, 16, 19]. Various laws and acts have been implemented; however, little progress has been made with this social issue. Regardless of the multiple federal laws implemented, women still earn less than men [23]. Over the last century, the gender-related pay equity issue has narrowed, but it remains sizable [14]. The federal government has stated that the pay equality gap is 20% and will take another 130 years to solve [9, 14, 16]. This study may expose what states and industries contribute to the social problem of inequity and provide evidence that can provoke change.

The body of research on pay equity has common themes, including laws, acts of legislation, government changes, societal awareness, and human resource departments'

responsibilities [4, 6, 19, 21]. Future research requires an assessment of why the gender-related pay equity issue has not been researched more thoroughly. This is so despite the Pay Equity Pay Act being passed in 1963. At the current rate, the gender-related pay equality issue will not be closed until the year 2152 [11, 14, 16]. This study's findings may result in changed legislation at all levels of government and society, thereby improving the risk of obesity, heart attacks, depression, and social/financial inequity of 74.6 million women.

Additional scientific knowledge of pay equity is required. This study's benefits may provide societal results that can change the U.S. economy while enhancing the discipline of industrial-organizational psychology. An additional 512.6 billion dollars would be entering the United States economy if women were paid equally as men [18]. The United States gross national profit is 19.61 trillion dollars and provides almost a 3% increase in the United States economy. A 512.6 billion dollar per year influx into the economy would positively change American society as a whole.

The adverse effects of the gender-related pay equity issue are felt throughout the economy and society. Pay equity is a topic that affects 74.6 million women workers in the civilian

labor force [7]. Equal pay between men and women would reduce poverty for working women from 8.2 to 4%. Each of the 50 individual states would benefit from an increase of funds into their economies [20]. The most significant adverse effect of gender wage inequality is that pay equity issues contribute to increased anxiety and depression rates among women [15]. In a partnership with the Center for Workplace Mental Health, the American Psychiatric Association expressed significant concern on the topic of gender-related pay equity. The President of the American Psychiatric Association stated that gender-related pay equity issues are more impactful than economic issues and contribute to mental disorders [2]. Furthermore, more recent researchers have shown that income inequality increases the risk of obesity and heart attack [13]. It is fair to say that the adverse effects of gender-related pay equity are significant to American society.

Previous researchers studying this topic have used limited and small sample sizes, which required additional research. Obloj and Zenger (2020) researched pay equity with a sample size of only eight of the 50 states [12]. Additionally, these authors focused on 139 institutions, representing a limited sample size within the eight states. Cortés and Pan (2019) researched pay equity, finding the study's most significant limitation to be sample size and the need to assess industry data [5]. The sample size only included 25 United States cities, not representing all 50 states or entire states, and did not consider industry data. Goldin (2017) identified a limitation of his pay equity studies, which included 23 out of the 50 states of the United States and only included metropolitan areas, not the entire state [10]. Blau and Kahn (2017) researched the gender-related pay equity issue utilizing a sample size that only consisted of less than 25,000 participants, not representing all 50 states, and requested an entirely nationally representative dataset [3]. Rosado (2018) researched gender-related pay equity issues trends but identified limitations in her qualitative study [16]. Rosado requested future research to provide a larger sample size, industry assessment, and the use of a quantitative research methodology. The previous literature gap of limited sample size has led to the need for a qualitative nationwide data set that includes all 51 states (including D.C.) and industry assessment.

Additional gaps were found in the previous literature. Previous literature utilized outdated sample data, which required further research. Many previous studies that had limitations of sample size also utilized outdated datasets. Cortés and Pan's (2019) researched pay equity and used a dataset that was eight years old at completion [5]. The dataset that was used was the 2011 American Community Survey data. Blau and Kahn's (2017) gender earning equity study utilized a 2010 dataset that was seven years old at completion and requested future research to assess occupation and industries [3]. Goldin (2017) researched gender earning equity utilizing a 17-year-old dataset from the year 2000 [10]. In the current study, the researcher used the most up-to-date dataset to ensure the validity of the results.

The U.S. Census Bureau and American Community Survey

data is the most appropriate dataset for assessing state and industry-level data. Statistics are given from a national perspective to cover individual states and industries. This study may provide gender-related pay equity data by state and industry, with added analyses of potential social and economic factors contributing to pay equity issues.

2. Methods

The purpose of this quantitative, nonexperimental, comparative study was to examine differences in gender-related pay equity across states and industries in the U.S. economy's public sector. The study was conducted using archival data from the 2017 American Community Survey. Out of 3,526,808 responses to that survey, only 2,145,639 were retained in the final dataset because the United States Census Bureau only accepts fully completed surveys. The researcher downloaded survey data aggregated at the subindustry level by state. The dataset analyzed in this study included 1,834 data points representing 36 subindustries X 51 states (including D.C.). District of Columbia lacked data from two subindustries within the major industry of Natural resources, construction, and maintenance (i.e., farming, fishing, forestry, and construction and extraction occupations). This explains why the total number of cases in the data file was 1,834 instead of 1,836. There were 36 subindustries within each state, with the exception of the District of Columbia, which had only 34 subindustries. Subindustry data points best represented the total population.

The independent variables were state and industry and compared 1,834 data points for 36 subindustries within each of the 51 states (including D.C.) The dependent variable was gender-related pay equity, operationalized as the proportion of women's pay relative to men's pay at the subindustry level in each state (measured on a ratio scale, as a percentage). Previous scholars have called for an investigation on this topic using a quantitative research method approach [16, 17, 21]. A more robust conclusion of statistical assessment to compare data between the studies and variables may increase analytical and generalized effectiveness utilizing a quantitative research method. The data analysis provided information about gender-related pay equity in all 50 states plus the District of Columbia and the industries within each state.

Analyses of gender-related pay data were conducted with IBM SPSS Statistics software to assess gender-related pay equity specifics. The U.S. Census Bureau administered the 2017 American Community Survey, and this dataset provided a significant amount of gender-related pay data for men and women at an individual state level. Gender-related pay data retrieved from the United States Census Bureau (American Community Survey) were analyzed to assess the gender-related pay equity percentage between men and women. The American Community Survey raw data provided the percentage of gender-related pay equity for each subindustry within each state. In this study, the percentage of gender-related pay represents the compensation ratio between men and women. Higher percentages indicated better pay

equity for women relative to men. Values below 100% indicated that women were paid less than men, and percentages above 100% indicated that women were paid more than men. States were broken into the five major industries to assess industry bias. The 2017 American Community Survey raw dataset provided all data points (percentages).

The variables were gender-related pay equity, state, and industry. It is important to note that the dependent variable of gender-related pay equity was utilized for both research questions. The analysis involved two ANOVA tests comparing states and industries in terms of the dependent variable. A Bonferroni (1936) correction was applied to the level of statistical significance to prevent inflation of Type I error. The corrected alpha became .025 ($.05 / 2 = .025$). The following research questions and corresponding hypotheses guided this quantitative comparative study:

RQ1: Are there any statistically significant differences in gender-related pay equity among the 51 states (including D.C.) in the United States public sector?

H1₀: There is no statistically significant difference in gender-related pay equity among the 51 states (including D.C.) in the United States public sector.

H1_a: There is at least one statistically significant difference in gender-related pay equity among the 51 states (including D.C.) in the United States public sector.

RQ2: Are there any statistically significant differences in gender-related pay equity among the five major industries in the United States public sector?

H2₀: There is no statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

H2_a: There is at least one statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

2.1. Population and Sample Selection

This study's general population was 2.1 million respondents to the American Community Survey of men and women from the United States public sector. All 50 states, as well as the District of Columbia, were included. Additionally, the five major industries in each state were included. The original 2.1 million data points were archival data from the United States Census Bureau. Data authorization was obtained from the United States Census Bureau, Center for Economic Studies (CES), which provides public-use data. Email confirmation of approval and authorization to utilize the United States Census

Bureau data was completed. If authorization from the United States Census Bureau had not been obtained, other public archival databases would have been considered.

Addressing the problem statement and answering both gender-related pay equity research questions required two one-way ANOVAs of aggregated archival data collected from the United States Census Bureau data (American Community Survey). The aggregated archival was retrieved from the 2017 ACS dataset. Raw data were aggregated to provide a single data point for each of the 36 subindustries from each of the 51 states (including D.C.), representing the 1,834 data points (District of Columbia lacked data from two subindustries). The unit of observation in the survey was the individual respondent and the unit of analysis subindustry identified by state, utilized for analysis. The unit of analysis had dual identification: subindustry X state (36 subindustries X 51 states = 1836 cases). Since the unit of analysis had dual identification, pay data (unit of analysis) from the 36 subindustries represent the dataset for both questions.

The ACS data are archival and publicly accessible, indicating that no participant approvals were needed. Sample and target sizes were the same because the archive includes a total of 2.1 million data points. The original 2017 ACS dataset included 3,526,808 responses. The final data set consisted of 2,145,639 data points because the United States Census Bureau only accepts fully completed surveys. From the original 2.1 million data points, data were compared to 1,834 data points for analyses (i.e., 51 states (including D.C.) and the 36 subindustries within each state). District of Columbia lacked data from two subindustries, resulting in a total dataset of 1,834 compared to 1,836. The two subindustries not represented in the District of Columbia are within the major industry of Natural resources, construction, and maintenance. The two subindustries are farming, fishing, forestry, and construction and extraction occupations.

The United States Census Bureau has a minimal standard confidence level of 90%, with the margin of error (MOE) = $1.645 \times \text{S.E.}$. S.E. stands for Standard Error (S.E.), the foundational measure of the variability of an estimate due to sampling. The Census Bureau states alternate confidence levels in data 95% and 99%, $\text{MOE} = 1.96 \times \text{S.E.}$, and $2.58 \times \text{S.E.}$. Achieving the highest level of confidence in information is critical; utilizing a larger geographical size and combining estimates across characteristics and geographies lowers the risk of estimate sampling variability [8]. This researcher utilized a large geographic size consisting of all characteristics to achieve 99% confidence in data integrity.

Table 1. United States Census Bureau Confidence Chart.

Confidence Level	Margin of Error (MOE)	MOE for Example Estimate
90%	$1.645 \times \text{S.E.}$	+/- 3,778
95%	$1.96 \times \text{S.E.}$	+/- 4,501
99%	$2.58 \times \text{S.E.}$	+/- 5,925

2.2. Instrumentation

The source of all data used in this study was the U.S.

Census Bureau, which collected the data through the American Community Survey (ACS). The 2017 ACS collected data from 2.1 million public sector employees. The

United States Census Bureau collects data through two survey methods: online and paper. The United States Census Bureau seeks to obtain a significant majority of data collected through the website, online survey, and a mail-in option. The U.S. Census Bureau results are required under law 13, U.S. Code, Sections 141, 193, 221, and inform how 675 billion dollars of federal dollars are dispersed across the country. The distribution of 675 billion dollars is 29 percent of all United States federal assistance.

2.3. Data Analysis

Two one-way ANOVA analyses were used to compare gender-related pay equity across states and industries. IBM SPSS statistics software was used for the entire analysis. Previous researchers have analyzed incomplete data that did not consist of national data broken down by state, requiring a larger, more diverse sample size [3, 5, 10, 12]. The minimum sample size for this quantitative, nonexperimental, comparative research was estimated in G*Power 3.1.9.7. for two one-way ANOVAs (fixed effects, omnibus, one-way) with the same dependent variable and distinct, independent variables. The input included an expected medium effect size ($f = .25$), corrected alpha (.025), minimum power .95 (meaning 5% risk of type II error), and the maximum number of compared groups (51). The estimated minimum sample was 816 cases (gender-related pay ratio between men and women) with complete data for each research question (see Appendix F). The researcher added that 15% (123 cases) to discard outliers or use nonparametric tests in case of unresolved assumption violations for the preferred parametric analysis. This raised the minimum sample size to 939 cases. The final sample included 1,834 cases (gender-related pay ratio between men and women) and exceeded the minimum sample size for both research questions.

IBM SPSS 25 premium statistics were performed with a multi-step process.

State data were downloaded from the United States Census and American Community Survey databases in a CSV format that is importable to IBM SPSS premium statistics software.

Each state, the District of Columbia, and industry was assigned a number representing analysis for SPSS.

A state and the District of Columbia data point included 36 individual industries within each state and the District of Columbia.

State and the District of Columbia data were calculated to represent a total dataset of 1,834 data points for analyses (51 states, including D.C.) and the 36 subindustries within each state).

A CSV file was organized to represent the gender-related pay equity for 1,834 data points for analyses (51 states, including D.C.) and the 36 subindustries within each state).

The five major industries are defined from the original 36 subindustries. Archival data provide significant industry data points.

The CSV file was imported into IBM SPSS 25 premium statistics software.

The analysis process compared the means through the

gender-related pay equity rate test variable of the 1,834 data points.

With the collection of state data into IBM SPSS format, a CSV file was imported into IBM SPSS 25 premium statistics software.

The six assumptions for one-way ANOVA were tested using the Shapiro-Wilk test, Levene's test, and Kolmogorov-Smirnov test.

If the sample failed assumptions, then a nonparametric test had to be performed for both sets of independent groups.

IBM SPSS univariate options were set to descriptive statistics and homogeneity of variance test.

The level of statistical significance was corrected to .025 to mitigate inflation of type I error (Bonferroni correction).

The one-way ANOVA analysis process sought to assess data interaction utilizing a general linear model and univariate analysis.

The univariate analysis variables defined a dependent variable of rate (gender-related pay equity), state, and industry factors.

IBM SPSS was used to analyze the data.

3. Results

In this nonexperimental comparative study, the researcher compared data collected from the United States Census, American Community Survey, 2017. The dataset enabled the researcher to examine a nationwide sample. The nonexperimental comparative method provided the research framework to compare gender-related pay equity between men and women of all 50 states, the District of Columbia, and five significant industries (36 subindustries).

The dependent variable was gender-related pay equity. This variable was operationalized as the proportion of women's pay relative to men's pay at the subindustry level, by state. In addition, the sample of data is per individual state data in the United States. The descriptive statistics summaries of the gender-related pay equity are shown in Tables 2 and 3. The mean gender-related pay equity is 74.73% ($SD = 14.24\%$) for the general population.

The highest gender-related pay equity in the dataset is 118.16%, while the lowest gender-related pay equity of the general population is 32.71%, shown in Tables 2 and 3. It should be noted that male samples have higher pay data than female samples because the percentage is below 100%. This means that men are in favor of women (women are paid less than men). Thus, a gender-related pay equity issue was observed; however, the significance of the difference of the gender-related pay equity was determined using a one-way ANOVA to determine a significant difference in gender-related pay equity by states and industry of the United States public sector.

Table 3 refers to the composite abuse scale revised (CAS_R -SF). Composite abuse scale revised refers to the relationship we mean a current partner. A main interpretation of CAS_R -SF is to validate the reliable brief of self-reporting measurement developed while utilizing a mixed-method

approach. The majority focus of CAS_{R-SF} is to focus on the severity and intensity of the data point captured.

Table 2. Descriptive Statistics Summaries of Gender-Related Pay Equity Data.

Median earnings (%)	N	Minimum	Maximum	M	SD
Gender-Related Pay Equity	1791	32.71%	118.16%	74.73%	14.24%

Table 3. Descriptive Statistics for Gender-Related Pay Equity Variables of Measured as CAS_{R-SF} (N = 1,791).

CAS _{R-SF}	Mean	Median	Standard Deviation	Standard Error	z-Skewness	z-Kurtosis
Median Earnings	74.73%	74.71%	14.24%	0.34%	-0.02	0.13

RQ1: Are there any statistically significant differences in gender-related pay equity among the 51 states (including D.C.) in the United States public sector?

The results presented in Table 4 indicate a statistically significant difference across the 51 states (including D.C.) in terms of gender-related pay equity, $F(50, 1740) = 1.69$, $p = 0.019$. The difference is significant because the p -value is below the corrected level of significance value ($\alpha = .025$). No posthoc tests were performed because of the very large

number of compared groups (51). Based on these findings, which showed statistically significant differences in gender-related pay equity across the 51 states (including D.C.) for U.S. public sector employees, the null hypothesis for Research Question 1 was rejected.

Table 4. Results of One-Way ANOVA for Gender-related Pay Equity by State.

	Sum of Squares	df	Mean Square	F	p
Between Groups	16,864.70	50	337.29	1.69	0.019*
Within Groups	346,794.85	1740	199.30		
Total	363,659.56	1790			

States with the lowest gender-related pay equity, women were paid lowest to men (measured as percent difference between the median values for males and for females) were Idaho ($M = 66.91\%$; $SD = 16.55\%$), Utah ($M = 67.53\%$; $SD = 15.35\%$), Louisiana ($M = 69.53\%$; $SD = 12.66\%$), Wyoming ($M = 70.80\%$; $SD = 18.93\%$), and Connecticut ($M = 71.58\%$; $SD = 13.31\%$). The states with the highest (i.e., best) gender-related pay equity were the District of Columbia ($M = 81.69\%$; $SD = 13.31\%$), Nevada ($M = 81.18\%$; $SD = 73.86\%$), Arizona ($M = 80.67\%$; $SD = 11.75\%$), Vermont ($M = 79.55\%$; $SD = 17.82\%$), and Maryland ($M = 79.15\%$; $SD = 14.17\%$).

RQ2: Are there any statistically significant differences in gender-related pay equity among the five major industries in the United States public sector?

The categorical independent variable defined five groups that were compared: (1) management, business, science, and art occupations, (2) service occupations, (3) sales and office occupations, (4) natural resources, construction and maintenance occupations, and (5) production occupations. A level of significance of .025 was also used in the one-way ANOVA. The one-way ANOVA results determined the significance of the difference in gender-related pay equity by industry; the results are shown in Table 5. The one-way ANOVA revealed a significant difference in the gender-related pay equity among the five major industries, $F(4, 1735) = 17.00$, $p < .001$ (Table 5). There is a significant difference because the p -value corresponding to the F statistic is lower than the corrected level of significance ($\alpha = .025$). It is important to note that analysis of the major industries had 51 fewer data points since "civilian employed population 16 years and over with earnings" does not have a specific industry since it represents all data points that were not specifically classified under one of the 5 major industries.

The posthoc test results of the Games-Howell tests (Table 6) identified the statistically significant differences for multiple

pairings of groups. Specifically, there were significant differences in the gender-related pay equity between management, business, science, and art occupations; and natural resources, construction, and maintenance occupation ($p < 0.001$) by a mean difference of 4.34%. There were significant differences in the gender-related pay equity between management, business, science, and art occupations; and production occupations ($p < 0.001$) by a mean difference of 8.35%. There were significant differences in the gender-related pay equity between service occupations; and natural resources, construction, and maintenance occupation ($p = 0.01$) by a mean difference of 4.14%. There were significant differences in the gender-related pay equity between service occupations and production occupations ($p = 0.001$) by a mean difference of 4.75%. Also, there was a significant difference in the gender-related pay equity between sales and office occupations and production occupations ($p < 0.001$) by a mean difference of 5.43%. There was a significant difference in the gender-related pay equity between natural resources, construction, and maintenance occupations, and production occupations ($p = 0.04$) by a mean difference of 4.01%.

Table 5. Results of the One-Way ANOVA for Gender-Related Pay Equity by Major Industry.

	Sum of Squares	df	Mean Square	F	p
Between Groups	13,660.15	4	3,415.03	17.00	<0.000*
Within Groups	348,449.65	1735	200.83		
Total	362,109.80	1739			

*Significant difference at the level of significance of 0.025.

Table 6. Results of the Games-Howell Test for Gender-related Pay Equity by Major Industry*.

(I) Industry	(J) Industry	Mean Difference (I-J)	S. E.	Sig.**	95% Confidence Interval	
					Lower Bound	Upper Bound
1	2	0.20%	0.87%	1	-2.18%	2.58%
	3	2.91%	1.25%	0.14	-0.50%	6.33%
	4	4.34%	1.16%	0.00**	1.18%	7.50%
	5	8.35%	1.11%	0.00**	5.31%	11.39%
2	3	2.72%	1.35%	0.26	-0.97%	6.41%
	4	4.14%	1.27%	0.01**	0.68%	7.60%
	5	8.15%	1.23%	0.00**	4.80%	11.50%
3	4	1.43%	1.55%	0.89	-2.81%	5.66%
	5	5.43%	1.52%	0.00**	1.29%	9.58%
4	5	4.01%	1.44%	0.04**	0.06%	7.95%

* Industries: (1) management, business, science, and art occupations, (2) service occupations, (3) sales and office occupations, (4) natural resources, construction, and maintenance occupations, and (5) production occupations.

** The mean difference is significant at the 0.05 level.

The comparison of means in Table 7 show that the industries with the highest gender-related pay equity (i.e., the lowest percentage of female earnings relative to male earnings) were production occupations ($M = 68.18\%$; $SD = 11.84\%$); and natural resources, construction, and maintenance occupations ($M = 72.18\%$; $SD = 16.53\%$). The industries with the lowest gender-related pay equity (i.e., highest percentage of female earnings relative to male

earnings) were management, business, science, and art occupations ($M = 76.53\%$; $SD = 12.29\%$) followed by service occupations ($M = 76.33\%$; $SD = 14.95\%$). These results provided evidence of statistically significant differences in gender-related pay equity across the five main industries for the United States public sector. Based on these findings of the one-way ANOVA, the null hypothesis for Research Question 2 was rejected.

Table 7. Descriptive Statistics for Gender-related Pay Equity across the Five Major Industries.

Main Industry*	N	M (%)	S. D. (%)	Min (%)	Max (%)	z-Skewness	z-Kurtosis
1	810	76.53	12.29	37.55	116.33	-0.07	0.52
2	391	76.33	14.95	32.71	116.42	0.00	0.07
3	153	73.61	20.01	37.03	111.03	-0.15	-1.22
4	184	72.18	16.53	35.83	118.16	0.25	0.01
5	202	68.18	11.84	36.92	114.34	0.37	0.72
Total	1740	74.80	14.43	32.71	118.16	-0.03	0.06

*Note. Main industry classification: (1) management, business, science, and art occupations; (2) service occupations; (3) sales and office occupations; (4) natural resources, construction, and maintenance occupations; and (5) production occupations.

4. Discussion

The study results have profound practical implications and applications regarding gender-related pay equity. The study results suggest that gender-related pay equity is significantly influenced by the individual state in which a woman lives and industry. As stated, before the adverse effects of gender-related pay equity are felt throughout our economy and society. Pay equity is a topic that affects 74.6 million women workers in the civilian labor force [7]. Equal pay between men and women would reduce poverty for working women from 8.2 to 4 percent. Each of the 50 individual states would benefit from an increase of funds into their economies [20]. Another negative effect of gender wage inequality is that gender-related pay equity contributes to increased rates of anxiety and depression among women [15]. In a partnership with the Center for Workplace Mental Health, the American Psychiatric Association expressed significant concern on the topic of gender-related pay equity. The President of the American Psychiatric Association, Renee Binder, MD, stated that gender-related pay equity is more impactful than

economic issues and contributes to mental disorders [2]. Researchers have shown that income inequality increases the risk of obesity and heart attack [15].

Scholars have suggested that gender-related pay equity is significantly based on the state of the United States; therefore, more resources can be implemented into areas of need. Such resources can include money, economic pressure, social pressure, and education. Because gender-related pay equity has significant adverse health effects, there is a need to increase the countries mental and physical health resources. Federal funding can be withheld from states for not following federal laws.

The implications of finding out that states have not adhered to previous legislation will create challenging questions. Negative findings could cause a halt of billions of dollars of federal funds. Federal funding is meant to assist the state in infrastructure, education, relief, and economic benefits. This is a completed dataset that will provide practical applications as the blueprint of gender-related pay equity, proving Americans' information to apply legislation and political pressure for change and benefit 74.6 million American women workers. States of the United States are not protecting the

women that live within them. The mental, physical, social, and economic health of these women is negatively effective by gender-related pay equity. It has been discovered that individual states are not protecting women workers. The failings of state governments, businesses, and organizations can no longer go unnoticed. Future researchers have provided the framework for assessing why their state influences gender-related pay equity. More state and industry-specific research can be conducted to evaluate gender-related pay equity at the state and industry levels.

5. Conclusion

The purpose of the quantitative, non-experimental, comparative study was to examine differences in pay in the U.S. public sector by gender and state and then by gender and industry, using archival data collected by the U.S. Census Bureau through the 2017 American Community Survey. As stated, two one-way ANOVA was conducted to address both research questions of this study. The mean comparison showed that the male state data have significantly higher pay data in terms of median earnings in U.S. dollars by percentage in comparison to female state data. For Research Question 1, the one-way ANOVAs showed significant differences between gender-related pay equity and the United States public sector states. For Research Question 2, the one-way ANOVA results showed a significant difference between gender-related pay equity and industry of the United States public sector.

Research Question 1 asked: Are there any statistically significant differences in gender-related pay equity across the 51 states (including D.C.) in the United States public sector? The one-way ANOVA was based on the average of the 36 subindustries of each of the 51 states (including D.C.). The one-way ANOVA results presented through inferential statistics that a significant difference between gender-related pay equity and states of the United States exists. The level of statistical significance was established at .025 to adapt a Bonferroni correction. This p -value is less than .025, indicating a statistically significant difference between the two variables. Thus, the null hypothesis was rejected.

Research Question 2 asked Are there any statistically significant differences in gender-related pay equity across the five major industries in each state of the United States public sector was answered? A one-way ANOVA statistics test was performed. The results indicated that there is a significant difference between gender-related pay equity. The level of statistical significance was established at .025 to adapt a Bonferroni correction. This p -value is less than .025, indicating a statistically significant difference between the two variables. Thus, the null hypothesis was rejected.

Based on data analysis and data interpretation, limitations were acknowledged. There were limitations to the data source. A small percentage of the target populations was analyzed in comparison to the total data set. Another limitation was archival sample data was collected through the American Community Survey, not the researcher. It is important to note

that despite the limitations of this study, the limitations were no detrimental to this study's outcome. Future research can utilize this study as the framework for continued studies.

Declaration of Conflict of Interest

The author declares no conflict of interest.

References

- [1] Adams, J. S. (1965). Inequity in social exchange. *Advances in Experimental Social Psychology*, 2, 267-299. <https://www.sciencedirect.com/science/article/pii/S0065260108601082>.
- [2] American Psychiatric Association. (2020). Gender pay gap contributes to increased rates of depression and anxiety among women. *Workplace Mental Health*. <http://workplacementalhealth.org/Mental-Health-Topics/Depression/gender-pay-gap-depression-rates>.
- [3] Blau, F. D., & Kahn, L. M. (2017). The gender wage gap: Extent, trends, and explanations. *Journal of Economic Literature*, 55 (3), 789-865.
- [4] Burn, I. (2018). Not all laws are created equal: Legal differences in state non-discrimination laws and the impact of LGBT employment protections. *Journal of Labor Research*, 39 (4), 462-497. <https://doi.org/10.1007/s12122-018-9272-0>.
- [5] Cortés, P., & Pan, J. (2019). When time binds: Substitutes for household production, returns to working long hours, and the skilled gender wage gap. *Journal of Labor Economics*, 37 (2), 351-398. <https://www.journals.uchicago.edu/doi/abs/10.1086/700185>.
- [6] Dennis, G. (2016). Gender pay disparity among women. *Exceptional Children*, 85 (2), 124. <https://doi.org/10.1177/0014402918811447>.
- [7] DeWolf, M. (2017). 12 stats about working women. *U.S. Department of Labor Blog*. <https://blog.dol.gov/2017/03/01/12-stats-about-working-women>.
- [8] Fuller, S. (2018). Using American community survey estimates and margins of error *U.S. Census Bureau, Decennial Statistical Studies Division*. <https://www.census.gov/en.html>.
- [9] Geoghegan, F. J. (2018). *The gender wage gap: How paid family leave affects women of childbearing age* (Master's thesis, Georgetown University). ProQuest Dissertations & Theses Global. (2039410428).
- [10] Goldin, C. (2017). The expanding gender earnings gap. *American Economic Review*, 107 (5), 110-114. <http://www.econis.eu/PPNSET?PPN=1011787970>.
- [11] Lobel, O. (2020). Knowledge pays: Reversing information flows and the future of pay equity. *Columbia Law Review*, 120 (3). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3373160.
- [12] Obloj, T., & Zenger, T. (2020). The influence of pay transparency on inequity, inequality, and the performance-basis of pay in organizations. *SSRN Electronic Journal*. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3523828

- [13] Pabayo, R., Fuller, D., Lee, E., Horino, M., & Kawachi, I. (2018). State-level income inequality and meeting physical activity guidelines: Differential associations among U.S. men and women. *Journal of Public Health*, 40 (2), 229-236. <https://doi.org/10.1093/pubmed/idx082>.
- [14] Phillips, A. N. (2018). Promulgating parity: An argument for a states-based approach to valuing women's work and ensuring pay equity in the united states. *Tulane Law Review*, 92 (3), 719-743. <https://www.tulanelawreview.org/>.
- [15] Platt, J., Prins, S., Bates, L., & Keyes, K. (2016). Unequal depression for equal work? How the wage gap explains gendered disparities in mood disorders. *Social Science & Medicine*, 149, 1-8. <https://doi.org/10.1016/j.socscimed.2015.11.056>.
- [16] Rosado, O. M. (2018). *Trends in gender wage gaps: A qualitative study* [Doctoral dissertation, Northcentral University]. ProQuest Dissertations & Theses Global. (2051466225).
- [17] Schulze, E. (2018). Closing the gender pay gap could have big economic benefits. *CNBC*. <https://www.cnbc.com/2018/03/08/closing-the-gender-pay-gap-could-have-big-economic-benefits.html>.
- [19] Smit, B. W., & Montag-Smit, T. (2019). The pay transparency dilemma: Development and validation of the pay information exchange preferences scale. *Journal of Applied Psychology*, 104 (4), 537-558. <https://doi.org/10.1037/apl0000355>.
- [20] Status of Women. (2020). *The economic impact of equal pay by state*. <https://statusofwomendata.org/featured/the-economic-impact-of-equal-pay-by-state/>.
- [21] Swain, P. (2019). *The lived experiences of U.S. female employees who encountered gender-based wage disparity* [Doctoral dissertation, Capella University]. ProQuest Dissertations & Theses. <https://search.proquest.com/docview/2333567557>.
- [22] Wade, M., & Fiorentino, S. (2017). Gender pay inequality: An examination of the Lilly Ledbetter Fair Pay Act six years later. *Advancing Women in Leadership Journal*, 37. <https://doi.org/10.18738/awl.v37i0.11>.
- [23] White, K. (2019). *The effect of union affiliation on salary for female community college faculty* [Doctoral dissertation, University of Missouri – St. Louis]. <https://irl.umsl.edu/dissertation/913/>.