Gender-Related Pay Equity by State and Industry

Submitted by

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DISSERTATION COMMITTEE APPROVAL:

The following committee members certify they have read and approve this dissertation and deem it fully adequate in scope and quality as a dissertation for the degree of Doctor of Philosophy in General Psychology.

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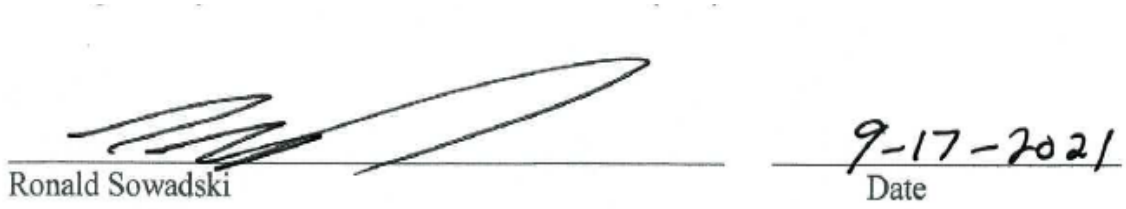

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Date

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

Dedication

This dissertation is dedicated to all the inequity that exists in the world today. The issue of gender-related pay equity is a topic that should be at the forefront of every person globally. As a father to a daughter and son, I wish for a better world for both my children. The hope is that this dissertation will provide more visibility into women's equality and all equality moving forward.

Acknowledgments

The list of people that have contributed to the success of this process is extensive. I would like to thank my committee, Dr. Miron, Dr. Paladino, Dr. D'Urso, and Dr. Carver. Second, I would like to thank my fellow cohorts, Jenna Marsh and Shelley (Carol) Whitehurst. Our biweekly calls left me with motivation and focused. Last, I would like to thank my family. I want to thank my wife Julie Sowadski, daughter Alexa Sowadski, and son Jaxon Sowadski for their support. The sacrifices that my family made have not gone unnoticed.

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Chapter 1: Introduction to the Study

Introduction

The purpose of this quantitative, nonexperimental, comparative study was to examine differences in pay in the U.S. public sector by pay equity and state and pay equity and industry, using archival data collected by U.S. Census Bureau with the 2017 American Community Survey. The original 2017 ACS dataset included complete survey responses from over 2.1 million public sector employees. The researcher retrieved a dataset of 1,834 cases representing data for gender-related pay equity aggregated at the subindustry level, by state. The retrieved file included data for the following variables: gender-related pay equity, state, major industry, and subindustry.

Gender-related pay equity was operationalized as the proportion of women's pay relative to men's pay at the subindustry level, by state. This variable was measured on a ratio scale, as a percentage. The analyzed dataset included 1834 cases. All 51 states (including D.C.) were represented. The five major industries were (1) management, business, science, and arts occupations, (2) service occupations, (3) sales and office occupations, (4) natural resources, construction, and maintenance occupations, and (5) production occupations. The 36 subindustries are presented in Appendix L.

Two comparative analyses using one-way analysis of variances (ANOVAs) were used to assess differences in gender-related pay equity across the 51 states (including D.C.), and across the five major industries. This study provided the information currently missing and needed to develop policies to improve gender-related pay equity by industry and state, in the United States.

Previous investigators of pay equity have cited the need for additional scientific knowledge to examine state and industry-level data. This allows for proper legislation, sanctions, and enhanced social understanding. The adverse effects of pay inequality may include obesity, heart attacks, depression, social and financial inequity (Platt et al., 2016; Schulze, 2018). A significant number of previous researchers indicated the need to fulfill the gap in gender-related pay equity. Thus, a quantitative study to assess gender-related pay equity data at the state and industry levels was needed (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018).

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. 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. The sample size only includes 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. 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. Rosado (2018) researched the trends in gender-related pay equity issues but identified limitations in her qualitative study. 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 8 years old at completion. 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 7 years old at completion and requested future research to assess occupation and industries. Goldin (2017) researched gender earning equity utilizing a 17-year-old dataset from the year 2000. 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 that could 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.

The body of research on pay equity has common themes, including laws, acts of legislation, government changes, societal awareness, and human resource departments' responsibilities (Burn, 2018; Dennis, 2016; Pena, 2016; Rosado, 2018; Smit & Montag-Smit, 2019; Swain, 2019). Future research requires an assessment of why the gender-related pay equity issue has not been researched more thoroughly. This is so despite the fact that the Pay Equity Pay Act was passed in 1963. At the current rate, the gender-related pay equality issue will not be closed until the year 2152 (Lobel, 2020; Phillips,

2018; Rosado, 2018). 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. A study performed by the Institute for Women's Policy Research (2017) suggested that if pay equity were corrected, women's poverty rate would be cut in half. An additional 512.6 billion dollars would be entering the United States economy if women were paid equally as men (Schulze, 2018). 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 (DeWolf, 2017). 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 (Status of Women, 2020). The most significant adverse effect of gender wage inequality is that pay equity issues are presently contributing to increased anxiety and depression rates among women (Platt et al., 2016). 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 issues are more impactful than economic issues and

contribute to mental disorders (American Psychiatric Association, 2020). Furthermore, more recent researchers have shown that income inequality increases the risk of obesity and heart attack (Pabayo et al., 2018). It is fair to say that the adverse effects of gender-related pay equity are significant to American society.

Background of the Study

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 (Wade & Fiorentino, 2017). This study and the problem of pay equity is based on equity theory, fair distribution of contributions, and benefits for each person (Adams, 1965). Previous scholars have utilized equity theory to research pay equity (Dennis, 2016; Rosado, 2018; Smit & Montag-Smit, 2019; Swain, 2019; White, 2019). 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 (White, 2019). Over the last century, the gender-related pay equity issue has narrowed, but it remains sizable (Phillips, 2018). The federal government has stated that the pay equality gap is 20% and will take another 130 years to solve (Geoghegan, 2018; Phillips, 2018; Rosado, 2018). This study may expose what states and industries contribute to the social problem of inequity and provide evidence that can provoke change.

The Department of Labor stated that the national gender pay gap is roughly 20%, which means that governments in specific areas are not regulating wages under existing laws. Through the current study, the researcher aimed to provide critical information on this topic. Federal funding can be withheld from states for not following federal

regulations. This study may provide the leverage needed to correct this social issue. If state and local governments contributed to gender-related pay equity, the government's potential failure would affect the 74.6 million American women workers of the United States and the resulting males. This has led to the problem statement of this study.

The problem that the researcher addressed through this study was aligned to the gap in extant literature. Published studies recommended additional research to better assess gender-related pay equity for state love data. Previous researchers have argued that pay equity exists but have not provided the empirical evidence needed to implement the proper legislation and social pressure (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018).

This study's problem statement was established based on the background of gender-related pay equity and gaps discovered in previous literature. It is not known whether there exists a difference between gender-related pay equity at the state and industry level totaled from a dataset of 2.1 million total men and women from the United States public sector. A more extensive, more diverse gender-related pay equity dataset representing all states and industries is required. Previous literature requires additional scientific knowledge to examine state and industry-level data so proper legislation, sanctions, and social pressure to provoke change can be enacted.

Goldin (2017) conducted a study seeking to assess the gender-related pay equity issue, in which the author identified limitations in sample data necessitating additional research. Goldin acknowledged that only 23 of the 50 states are represented in his study, and of the 23 states, the entire population was not considered. Of the firm's pay data studied, only the 50 largest Primary Metropolitan Statistical Areas (PMSA) were utilized,

not representing the entire state. The data source had a second limitation; data were collected from the LEHD-2000 Census. At the time of the study's completion, the dataset was 17 years old (Goldin, 2017). A complete national extensive data set that includes all 50 states collected from more current data was required. The current researcher utilized the 2017 United States Census Bureau and American Committee Survey data from all 50 states.

Blau and Kahn (2017) conducted a study researching the gender-related pay equity issue, which identified limitations that require additional research. Blau and Kahn utilized a Panel Study of Income Dynamics (PSID) from the years 1980-2010, which caused a limitation in data coverage. The dataset that these scholars utilized was 17 years old and a smaller size at completion. The literature requested additional data on the gender-related pay equity issue used in a fully national data set and assessment of industry-level data (Blau & Kahn, 2017). A full nationwide dataset that includes all 50 states collected from more current data would add valuable insight into gender-related pay equity. The current researcher addressed this limitation by collecting the 2017 Census Bureau data from all 50 states.

Cortés and Pan (2019) conducted a study to assess the variables of gender-related pay equity. Limitations were identified, which requires additional research of all 50 states and industry assessment. These researchers utilized the same United States Census Bureau and American Community Survey dataset that the current researcher used. The limitation was that this study's scope was restricted to only 25 United States cities, occupations were not considered, and the scholars utilized a 2011 dataset. The data were 8 years old at the time of the study and did not include all 50 states. Only 25 individual

cities within the small number of states were considered. A full nationwide dataset that consists of all 50 states collected from more current data would add valuable insight into gender-related pay equity.

Rosado (2018) conducted a study researching trends in gender-related pay equity, which identified limitations in research additional research. Rosado indicated that future research in this area is needed and that such studies should utilize a larger sample size, industry, quantitative research methodology (Rosado, 2018). This study was conducted with a quantitative research methodology that considers a larger data set, understanding that the prior studies fell short. The current study's data came from a large nationwide dataset that reflected all 50 states.

Obloj and Zenger (2020) conducted a study to assess equality related to pay within organizations. The study dataset consisted of federal public data, but limitations were identified, which require additional research. The sample data was limited to only eight states and totaled 997,839 data points. The current study's dataset reflected all 50 states with a total of over 2.1 million data points.

Assessing gender-related pay equity within cultures and areas of the United States is a modern concept. Ulrich-Schad and Duncan (2018) researched the topic of people left behind in work, culture, and politics in the rural United States. Smit and Montag-Smit (2019) researched the topic of pay transparency. Both sets of scholars looked to assess cross-cultural differences of pay but have limited sample sizes and requested large, more diverse sampling. The current researcher collected data from all 50 states to determine the influences of pay equity. There is a possibility of cross-culture differences that affect the social perspective of pay equity (Ulrich-Schad & Duncan, 2018).

The government regulates wages of gender-related pay equity. This study may provide data by state and industry establishing an assessment of local governments. Governments in specific areas are not regulating wages under existing laws, and this study may provide information to the contrary. Federal funding can be withheld from states for not following federal regulations. This study provided the needed knowledge to correct this social issue. Many questions would need to be answered if state and local governments were contributing to pay equity.

Definition of Terms

This non-experimental comparative quantitative research study of gender-related pay equity has definable terms that need to be addressed in order to assess the study variables. The variables were state, industry, and pay data. An appropriate breakdown of terms is required to assess the technical terms, exclusive jargon, variables, concepts, and specialized terminology. Below are definitions of the terms used.

American Community Surveys (ACS). 13 U.S.C. authorizes the American Community Survey. § 141 and 13 U.S.C. § 193, and the United States Federal Court has deemed the American Community Survey form constitutional (Guzman, 2018). The federal government, local governments, businesses, and researchers have utilized ACS data for decision-making purposes and future planning.

Census Bureau. The term Census Bureau refers to the United States Census Bureau, an United States Federal Statistics System agency. The U.S. Census Bureau is responsible for providing data to describe the American people and the United States economy (U.S. Census Bureau, 2017). Census Bureau data is a critical source to assess the American people and government structure. The census data results have significant

influences on seats of the United States House of Representatives, federal funding, police departments, fire departments, schools, hospitals, infrastructure, and transportation.

Feminism. Feminist is a political and social movement and is considered an ideology to achieve social, economic, political, and personal equality for all sexes. Mary Wollstonecraft, the author of *A Vindication of the Rights of Woman* in 1794, is considered the mother of feminism by many today (Menig, 2018). Individuals of any sex can identify as feminists, but a significant focus is on women's rights, women's power, and equality.

Gender Norm. The term gender norm seeks to describe sex roles, gender behaviors, acceptable gender descriptions, and appropriate descriptions of biological or perceived gender roles. The terms male and female have been questioned due to the emergence of the lesbian, gay, bisexual, and transgender (LGBT) community. Gender inequality exists within the LGBT community based on traditional gender norms (Mukhopadhyay, 2018). Previous scholars have suggested that when resumes are evaluated, perceived heterosexual women are discouraged from participating in masculine behavior versus jobs, and perceived LGBT women are not (Gorsuch, 2019). Society is instilled with traditional gender norms. Women stay home, cook, clean, take care of the children, and men provide. These gender norms have been rapidly changing.

Industry. The industry is significant for this study. Industries are groups of businesses or organizations that provide a particular service or product for a consumer. This variable was used to compare 36 units, industry categories, and five major industries within each state.

Inequality. In mathematics, inequality describes the relationship between two different values or variables. Inequality is commonly referred to as social inequality in

the context of wage inequality (Lukianchikova & Iamshchikova, 2017). Pay inequity is related to the topic of gender-related pay equity.

LBGT. The term LBGT is stated for lesbian, gay, bisexual, and transgender but encompasses gender-based identity and diverse sexuality for all gender identities (Cech & Rothwell, 2020). Descriptive labels for different types of gender identities exist, including agender, bigender, cisgender, gender expression, MX, third gender, transgender, and Ze/Hir (Cech & Rothwell, 2020).

Pay Data. Pay data was a variable of this study. Pay data describes the employee's total compensation, including economic value, salary, wages, royalties, and employee benefits. Pay data is considered total compensation for an employee.

Pay Equity. Pay equity is defined as equal pay for work of equal value. Pay equity is also commonly utilized when referring to equal pay for equal work for men and women (Ebrahim, 2017). The Pay Equity Act requires organizations to pay female employees the same as male employees for comparable work (Blau & Kahn, 2017; Rosado, 2018).

State. Potential states are ratified by the United States Constitution or were admitted by the union. This variable was used to compare 51 units (i.e., 51 states (including D.C.)). In this study, Washington D.C. is considered one of the 51 states.

Taboo. The term taboo refers to a religious or social discussion of practice or negative associations to a person, place, or thing. Society and education have always understood and taught taboo topics due to dictionaries and encyclopedia limitations (Rata & Samfira, 2017). Taboo is forbidden or dangerous to speak in society.

Anticipated Limitations

Limitations are situations out of the control of research but can affect the research study and are considered potential weaknesses. This study was associated with several limitations that this researcher considered throughout the process of this study. The following limitations were present in this study:

- Limitations of data sources.
- A limitation was that the numbers of responses to The American Community Surveys (ACS) from the states were not in exact proportion to the populations of the states. For example, of the 2,145,639 survey responses, California had the highest the highest number (201,604 responses, representing 9.39% of the sample), and Wyoming has the lowest number (4,110 responses, representing 0.19%). It is important to note that the population of California (39,865,590 people) represents 12.01% of the U.S. population, and the population of Wyoming (577,737 people) represents 0.17% of the U.S. population. Future survey research should consider the importance of accurate proportional representation of states, industries, and subindustries in the sample.
- The collected data were outside of the researcher's control. The American Community Surveys (ACS) were utilized as the data source. The United States Census Bureau is entrusted by the United States government and other researchers to collect and organize complex datasets (Burn, 2018; Cortés & Pan, 2019).

Summary and Organization of the Remainder of the Study

This study's findings add to assessing gender-related pay equity data at the state and industry levels. Pay equity results are affected at all levels of society, human resources, management, employment, and government. These have produced laws and acts to force companies and organizations to pay equally for equal work, but federal data suggests that companies and organizations are not following the rules, and the issue itself maybe never be closed (Phillips, 2018; Rosado, 2018). The discipline of industrial-organizational psychology and 74.6 million American women workers may benefit from this study's results. Industrial-organizational psychology provides the foundation and

psychological principles behind workplace behavior and development, and gender-related pay equity is a critical factor of an organization.

The federal government currently focuses on pay equity at a national level, and the breakdown of pay data is rarely viewed. Literature evidenced the need for more massive, more diverse data sets at the state level (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). The findings of this study may provide value, research, and assessment at the state level that has not been previously studied and that will have the ability to affect state and federal legislation. Because only national gender-related pay equity data were presented, individual state inequalities and industries have previously gone unnoticed.

The gender-related pay equity topic has enlisted a response from previous and current research and continues to move into the future Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020). In Chapter 2, the researcher presents previous research findings in order to deepen the assessment of gender-related pay equity's current state and identify previous literature gaps. In Chapter 3, the researcher describes the rationale behind the selection of a quantitative nonexperimental comparative research design to examine state and industry-level data of 2.1 million individuals from the United States public sector. In Chapter 4, the researcher rationalizes the nonexperimental comparative design, and the one-way ANOVA analyses are proposed to assess the differences in gender-related pay equity and state and then by gender and industry. IBM SPSS statistics software was used to test for univariate outliers and to compare the results from national pay data of gender with a sample size of 2.1 million total men and women from the United States public sector. Finally, in Chapter 5,

the researcher discusses the implications of the results and the resulting recommendations for research and practice.

Chapter 2: Literature Review

Introduction to the Chapter and Background to the Problem

The literature review provides a detailed assessment of gender-related pay equity variables and the quantitative nonexperimental comparative study. The purpose of this study is to address literature gaps in gender-related pay equity by state and industry. The literature review includes discussions of the theoretical framework, literature topics, research questions, design theory, and literature gaps. Gender-related pay equity is an issue that affects the vast majority of the 74.6 million women of the United States (DeWolf, 2017).

Chapter 2 is organized into five significant sections. The introduction is the first section that will describe the background and problem of gender-related pay equity. Historical gaps in the literature that have required future research have been identified. In the second section, the researcher identifies the gap in extensive detail. The researcher presents the theoretical foundation and conceptual framework in the third section, where the theory and framework are identified. The literature review is the fourth section, which offers an extensive review of previous literature expanding the history of gender-related pay equity, themes, variables, methodology, data source, and research materials. The themes include previous laws and acts, new government changes, social awareness, and human resources. The variables will be state, industry, and pay data. The study utilized a quantitative research method and nonexperimental comparative research design of public and federal data on gender-related pay equity data. The fifth and final section synthesizes all information from prior sections of the literature reviews.

Pay equity has many terms, and all other pay equity terms need to be explored to assess the situation to the fullest. Pay equity or lack of equity is described as pay discrimination, pay disparity, pay inequality, economic inequality, pay secrecy, income inequality, the gender-related pay equity issue, wage discrimination, the wealth gap, and gender equality (Burn & Kettler, 2019; Dennis, 2016; Engstrom, 2018; Obloj & Zenger, 2020). In many cases, the term pay can be interchanged with the phrase wage, so all aspects of surveying literature are considered. The research was acquired utilizing different scholarly databases, the Grand Canyon University Library, and Google Scholar. An additional factor was considered when reviewing peer-review literature, age of the article. To have appreciated current literature, research articles used for this study are to be taken from research that was conducted within the last 5 years from the date of the review.

Since 1964, pay equity has been an issue that the government has not been able to solve. Scientific knowledge is required to provide a dataset that can change future legislation and social understanding. The Fair Pay Act was passed in 1964, but there have been limited positive results over the last 50-plus years (Dennis, 2016; Phillips, 2018; Rosado, 2018). The federal government discloses national data yearly, and the federal government states that the pay equality gap is 20%. Women make 20% less than men for equal work. A true assessment of state and industry data is needed to provide a more realistic blueprint of pay inequalities. Perhaps at that time, they can correct the issue. Not assessing state and industry data may lead to the negative current state of pay equity, where change is needed. This study may provide information on such changes.

The governing bodies of pay data information, the Department of Labor and Bureau of Labor Statistics, only provide overall national wage data forcing individuals to research through The Census Bureau to assess state by state data. Pay inequality for women versus men has always been an issue (Phillips, 2018). The purpose of the Fair Pay Act of 1963, passed almost 60 years ago from the time of this paper's publication, was to stop the wage discrepancy, but the gender-related pay equity issue still exists. It will take another 130 years to solve the gender-related pay equity issue (Phillips, 2018; Rosado, 2018). The issue of pay equity that affects 74.6 million women of the United States requires scientific knowledge to end the inequality.

Various laws and acts have been written into law with few positive results; gender-related pay equity still exists (Lobel, 2020). These include the Equal Pay Act of 1963, Title VII of the Civil Rights Act of 1964, and the Lilly Ledbetter Fair Pay Act of 2009 (Phillips, 2018; Rosado, 2018; Wade & Fiorentino, 2017). The Lilly Ledbetter Fair Pay Act of 2009 is more recent and amends the Civil Rights Act of 1964 to declare that an unlawful employment practice occurs when: (a) a discriminatory compensation decision or other practice is adopted; (b) an individual becomes subject to the decision or practice; or (c) an individual is affected by application (Phillips, 2018; Wade & Fiorentino, 2017). The problem still exists, and government regulations and influence have done little to change the inequality, as local states and governments do not have to answer why Federal data is only presented at the national level. Society is now applying pressure on government and organizations to change long-standing discrimination. This study may provide a scientific evaluation to correct social issues.

Gender-related pay equity needs to be understood at a state and industry level, not by all-encompassing national averages that do not allow for better assessment. States and industries are mostly contributing to inequality. Rather than limiting data to smaller populations, having a more extensive, diverse data set that represents all locations, industries within all states is needed (Blau & Kahn, 2017; Cortés & Pan, 2019; Dennis, 2016; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). Gaps in previous research require future research to correct the inequality of women's wages. This study may provide the information required to fulfill those gaps.

Identification of the Problem Space

The gap and need for future research on gender-related pay equity are critical in addressing a 50-plus-year-known social issue. Identifying the problem space was discovered and required additional research to assess gender-related pay equity for state and industry. Previous literature only provides small sample sizes within individual states and does not represent the entire state or all 50 states and industries within each state (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). Industry and the occupations within each industry assessment are significant problems that this study will address (Blau & Kahn, 2017; Cortés & Pan, 2019; Rosado, 2018). The topic of gender-related pay equity requires scientific knowledge to discontinue a 50-plus-year social issue.

When the federal government provides statistics, the government only offers data for the entire nation. The percentages of the gender-related pay equity by state and industry can be hidden in the overall number. The current data states that women make 20% less than men for equal work (Dennis, 2016; Phillips, 2018; Rosado, 2018). The

literature demands more research is deemed necessary on gender-related pay equity, which affects 74.6 million women workers in the civilian labor force (DeWolf, 2017). It is fair to say a social issue that affects 74.6 million American women workers is critical. Gaps in previous research require additional scientific research to affect 74.6 million American women workers positively.

Gender-related pay equity is a topic that has been developing with the additional evolution of research, necessitating a change in future research. The most evolved question asked is by Burn (2018). Burn performed research seeking to assess legal differences by the states on discrimination of laws that impact LGBT employment and disparity in pay (Burn, 2018). The literature requests future research in individual states to assess if different states' laws are harmful to the term gender, which is changing with the evolution of the lesbian, gay, bisexual, and transgender community (Burn, 2018). The limitations and the need for future research are evident for a large, nationwide dataset and containing a diversity of all 50 states.

Pay equity, equal pay for men and women for equal work, is a topic that requires future research. Previous literature requests the need for the statement to be answered. It was not known whether there is a difference between gender-related pay equity at the state and industry level based on a dataset of 2.1 million total men and women from the United States public sector. The existing body of literature has provided many themes that have presented themselves through literature gaps in previous research. Previous research was conducted on small datasets, which only consisted of small areas and did not represent most individuals. Instead of individual states, a complete fifty-state nationwide dataset is required. Lastly, a more diverse dataset is needed. Instead of

looking at one variable, a comprehensive data set containing all age ranges, industries, and jobs, it is required to assess the social issue of gender-related pay equity fully.

Filling the gap and need for gender-related pay equity by examining state and industry-level data provided data to facilitate proper legislation, sanctions, and social pressure that can evoke positive change while enhancing the discipline of industrial-organizational psychology. Statistics are given from a national inclusive perspective providing cover for individual states and industry. Through the current research inquiry, it was possible to provide a dataset that can inform legislation at all government and society levels.

Theoretical Foundations

The theoretical framework for this quantitative, nonexperimental, comparative study was equity theory. Equity theory was first developed in the 1960s by Adams, who was a behavioral psychologist and defined gender-related pay equity variables, with equity theory catalyzing the defining research questions for this study (Adams, 1965). The variables for this study were state, industry (IVs), and pay (DV). The statistical tests proposed to generate the information needed to answer the two research questions are two one-way ANOVAs comparing gender-related pay equity and state. The other compared gender-related pay equity by industry. The analysis was performed using IBM SPSS software.

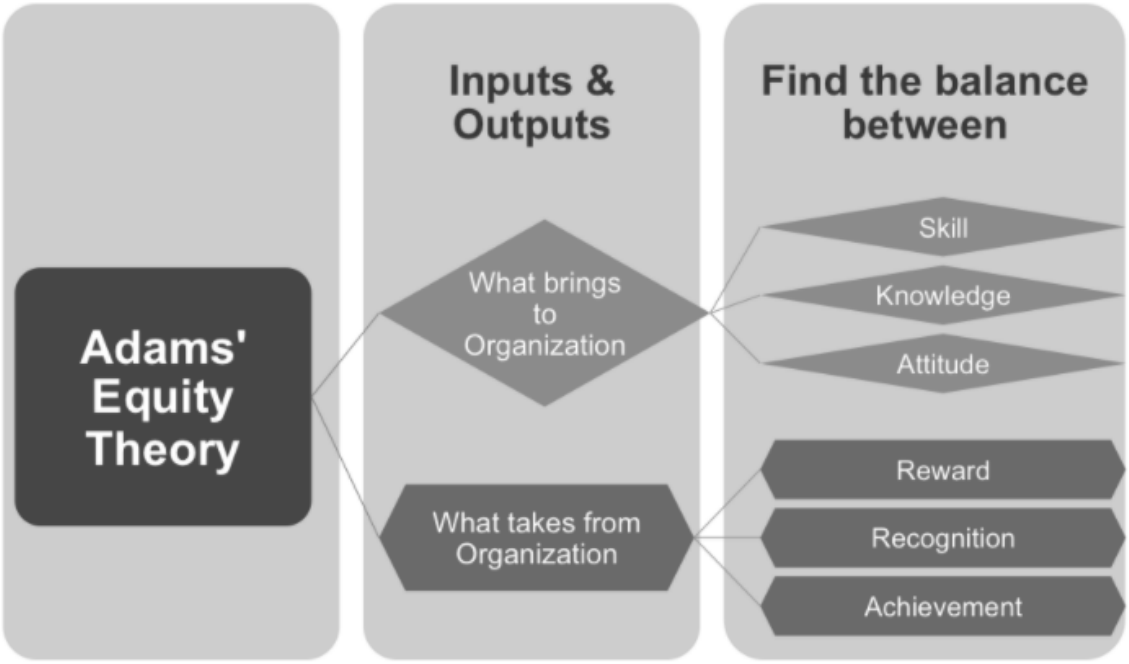
Equity is a concept that has been discussed by not merely philosophers but politicians, scientists, economists, government, and others. Equity theory, developed by Adams in the 1960s, looked to assess the fairness of distribution of resources to both relational partners. According to Adams, equity is measured by comparing the ratio of

contributions, commonly referred to as costs, and benefits widely attributed to rewards. Adams was a workplace (business) and behavioral psychologist who focused his efforts so employees would seek to maintain equity in their positions. Employees measure equity within the workplace based on the input to the outcome, the ratio of input an employee puts into their job, and the total result of their employer's reward (Adams, 1965). Equity theory has a direct correlation of gender-related pay equity because the concept of both variables is interchangeable. Adams's work refers to employees' contributions and the rewards they receive, which were both variables in the current study: gender and pay.

Equity theory is utilized to provide a framework for previous research studies. Because equity theory seeks an assessment of input and output, work and reward of employees, it is commonly used when researching pay equity (Dennis, 2016; Rosado, 2018; Smit & Montag-Smit, 2019). Previous literature depends on the concept of equity theory, where the framework is to discover if existing guidelines operate partially concerning pay equity disparity (Swain, 2019). Equity is defined as the perception of the exchange's fairness, not merely of employer and employee but employee to an employee for comprising a day's work (White, 2019). Gender meanings of roles and behavior within the workforce cause gender differences that equity theory outlines (Dennis, 2016). Lastly, equity theory provides data on wage information to evaluate workplace fairness (Adams, 1965; Smit & Montag-Smit, 2019). The concept of equity theory provides the framework needed to address the variables and questions of gender-related pay equity (see Figure 1).

Figure 1.

Adams's Equity Theory Process



Feminist theory was considered as the foundation of the study. Feminist theory is founded in the analyses of gender inequality, discrimination, sexual objectification, stereotyping, oppression, aesthetics, contemporary, women's rights, equality, and above all, celebrating women. Mary Wollstonecraft wrote a publication called *A Vindication of the Rights of Woman* in 1794, and she is considered the mother of feminism by many today (Menig, 2018). The concepts of feminist theory have evolved since its original publication in 1794. A contemporary idea under feminist theory is sex workers' rights. In 2007 the phrase *Respect Sex Workers All Around the World* was memorialized by Belle's statue in Amsterdam (Boztas, 2019). The feminist theory seeks to assess the nature of gender inequality and celebrates women.

Equity theory was ultimately chosen over feminist theory based on the concept of equality versus equity. Equity theory focuses on the distribution of resources fairly between employees in the workplace. Workplace, in this instance, refers to a business environment. Feminist theory focuses on gender inequality and equality for women. Feminist theory is a broader concept of women's rights and celebrating women. Equity theory has a significant focus on the contribution (work) and reward (pay) between two individuals (men and women). The questions asked are, is there a difference in gender-related pay equity between states and industry of the United States public sector. It appears equity theory best represents the proper framework to answer both questions. Table 1 provides definitions and examples.

Table 1.

Description of Building Blocks for the Theoretical Foundation Section

Types of Building Blocks	Definition of the Building Blocks	Examples of the Building Blocks
Theories	Equity theory seeks to assess input and output, work and reward of employees; equity theory is used when researching gender-related pay inequity.	Game theory Expectancy Theory Social exchange Theory Predicted outcome value Theory
Models	Modeling is based on the relationship of equality/fairness: input and output or effort and reward.	Fairness model
Concepts or Ideas	The concept of equity theory is related to social comparison. It is fair to believe that employees are expected to expect a fair return for their contributions, input/output ratios. Implications of equity are employee morale, turnover, productivity, and efficiency.	Effort Ability Experience Skills

The theoretical foundation of equity theory addresses the problem space of this quantitative nonexperimental comparative study. Previous literature requires a more holistic assessment of gender-related pay equity for state and industry data. Previous

researchers have presented data that gender-related pay equity exists but have not furnished the data needed to implement legislation and social pressure. The study variables of gender-related pay equity data, state, and industry are directly related to equity theory. The theoretical foundation provided the framework of this study.

Review of the Literature

Through this literature review, the researcher provides a thorough assessment of the problem statement of gender-related pay equity. The literature examination included themes that evolved throughout the history of gender-related pay equity, methodologies, designs, variables, and instrumentation utilized to analyze data. No research previously has studied the concept of gender-related pay equity by state and industry. Scientific knowledge is required to examine state and industry-level data. It allows proper legislation, sanctions, and social pressure to implement change while enhancing the discipline of industrial-organizational psychology. Presently, statistics are given from a national perspective providing "cover" for individual states and industries. Define cover

Gender-related pay equity affects all women working in the United States, and the United States Department of Labor states there are 74.6 million women workers in the civilian labor force (DeWolf, 2017). There is an opportunity for states, local governments, and the public to have the proper dataset to apply the pressure and respond appropriately to stop the tragedy of inequality for women. Because the federal government's data only provides an average of the pay gender-related pay equity at the national level, it is critical to assess which states and industries of the United States contribute to gender-related pay equity's adverse effects.

The effects of pay inequality are felt through society and all aspects of life. Women pay the same tuition for education, pay equally for their homes, and pay the same food prices. They are at a disadvantage because they receive less in wages. Women work the same positions, with the same title, in the same industries and states, with the exact requirements and same hours, but their compensation is economically unequal (Jenner et al., 2018). There has been a lack of attention to this situation, and the only answer is taboo. Taboo because laws have been put into place to regulate pay equity, but corporations and organizations needed to make the change are traditionally male. The facts to this point show the gender-related pay equity issue may never be closed (Phillips, 2018; Rosado, 2018). This study may provide the detail needed to provide a change to the issue of gender-related pay equity.

The topic of pay equality is at the heart of industrial-organizational psychology. Industrial-organization psychology is an applied discipline within psychology that studies the science of human behavior related to an organization's work and principles. The gender-related pay equity issue reflects an organization's principles that affect human capital and their way of life. This study may positively impact the discipline of science that directly concerns half of the American working population, 74.6 million women workers. Industrial-organizational psychology may benefit from an improved assessment of factors that contribute to pay equity.

To assess and change the current trend of pay inequality, additional research at the state and industry level can provide significant assessment where more attention on this situation is necessary (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). There have been laws, acts, federal and presidential

executive orders passed, but companies and organizations have still not addressed the pay equity issue. Companies and organizations have not followed the requirement placed on them. There are many questions to be answered by high-ranking officials within organizations and government if found to be ignoring state and federal law. The findings of this study may enable practitioners to address the social issue of gender-related pay equity between men and women. The results provide evidence that individual state governments are not abiding by federal laws, resulting in billions of federal dollars held from the states not abiding by federal law. This study and the discipline of industrial-organizational psychology provided the results required.

Additional scientific knowledge of gender-related pay equity is required; this study's benefits may provide society with results that can change the United States economy while enhancing the discipline of industrial-organizational psychology. A 2017 study performed by the Institute for Women's Policy Research suggested that women's poverty rate would be cut in half if gender-related pay equity were corrected. An additional 512.6 billion dollars would be entering the United States economy if women were paid equity as men (Milli et al., 2017; Schulze, 2018). The United States gross national profit is 19.61 trillion dollars; thus, a 512.6 billion dollars per year influx into the economy would positively change American economics or society as a whole.

Since 1963, gender-related pay equity has been a social issue that the government has not solved through legislation, partly because a proper dataset has not been provided to the American people. Laws and acts have been written into law with little positive results. More scientific knowledge is required, such as proper legislation and influences can be established. Throughout American history, regulations and statutes have been

passed to combat the gender-related pay equity issue; the Equal Pay Act of 1963, the Equal Employment Opportunity Act of 1972, Title VII of the Civil Rights Act of 1964, and the Litty Ledbetter Fair Pay Act of 2009 (Blau & Kahn, 2017; Dennis, 2016; Pena, 2016; Phillips, 2018; Rosado, 2018; Wade & Fiorentino, 2017). The history of gender-related pay equity has not provided women the results they deserve, and this study may change that.

Previous researchers have stated that pay equity equality has a minimal positive effect over the last 50 or more years of the social issue of pay equity (Blau & Kahn, 2017; Dennis, 2016; Pena, 2016; Phillips, 2018; Rosado, 2018). The federal government has acknowledged that the United States' pay equality gap is 20%, meaning that women make 20% less than men for equal work. Statisticians have projected that it will take another 130 years to solve the gender-related pay equity issue (Phillips, 2018; Rosado, 2018). Additional scientific knowledge may provide further insight to state and industry governments and societies so that change can begin.

The Equal Pay Act of 1963, signed into law on June 10, 1963, by John F. Kennedy, is an amendment to the Fair Labor Standards Act of the United States. The Equal Pay Act of 1963 aimed to eliminate gender wage disparity in the United States (Causevic, 2018; Watkins, 2018). The Equal Pay Act of 1963 provoked change not just within the United States but within other nations. The Equal Pay Act of 1970 reflects the Equal Pay Act of 1963, an act enacted into parliament of the United Kingdom, which protected women from receiving equal pay for equal work compared to their male counterparts (Dalingwater, 2018). Under the Equal Pay Act of 1963, employers are subject to a penalty for discrimination between employees based on sex by paying wages

(pay) unfairly for equal work. The Equal Pay Act of 1963 and the Equal Pay Act of 1970 established that gender-related pay equity was a significant government focus for the American and British people.

Under the Equal Pay Act, employers are forbidden from paying men and women different wages for equal work. Employers refute the notion that wage inequality is different based on merit, seniority, skills, and work quality. Still, prior wages are an essential factor in determining compensation. The United States Federal Court indicated that employers could not utilize previous salary information to determine future compensation. If it is known that women are not receiving equal compensation for equal work, this would have interesting implications. Future compensation based on previous compensation (i.e., inequality) is unconstitutional.

In the immediate aftermath of the signing of the Equal Pay Act of 1963, President Johnson signed the 1964 Civil Rights Act, Title VII. Additional legislation was needed to combat the growing concern of discrimination of privately held organizations. The primary focus of Title VII was to prohibit any employer who employed 15 or more employees from discrimination against any individuals based on sex (Budow, 2019). Title VII outlawed discrimination not only based on sex but equally against race, color, and national origin.

There is an act referred to as one of humanity's most fundamental aspirations (Bisom-Rapp, 2018). The Equal Employment Opportunity Act of 1972 was signed into law by Richard M. Nixon on March 24, 1972. The Equal Employment Opportunity Act provides the Equal Employment Opportunity Commission (EEOC) the authority to sue in the United States federal court when employers are discriminated against based on

national origins, color, race, religion, and sex. In the 1970s, society was becoming more diverse, and achieving equality became more complex and challenging. The Equal Employment Opportunity Act of 1972 was the congresses of the United States' fourth attempt to improve Title VII. From March 24, 1972, and beyond, state and local governments are no longer exempt from Title VII, and the federal government itself was now subject to Title VII sanctions.

Rizo vs. Yovino is a court case filed under the Equal Pay Act (EPA) and is signed under the topic of discrimination on April 9, 2018, in the United States Court of Appeals for the Ninth Circuit (2018). The court case's verdict concluded that employers could no longer justify wage inequality between men and women based on prior salaries as a contributing factor. *Rizo vs. Yovino* brought society one step closer to combating the gender-related pay equity issue (Timpson, 2019). The Ninth Circuit Court established the framework that employees' salaries are required to be based on job-related factors, experience, skills, and other nonsex-related factors. Women that previously paid unequally would no longer be negatively affected toward moving forward.

A new argument presented itself with the 1964 Civil Rights Act, Title VII. The LGBT community claims that the rights of the LGBT community are violated under the federal sex discrimination laws, and an amendment is needed to support anti-LGBT discrimination (Eyer, 2019). The question was asked, can an employee be terminated based on being gay or transgender (Budow, 2019)? The transgender individual will become the centerpiece of future gender-related pay equity conversation because transgender individuals question the traditional term gender. Due to the societal demands for a more precise definition of gender, Title VII may evolve once again.

Gender ‘norms’ have changed through history and are now being questioned with the increasing attention brought to the surface of the LGBT community. Gender inequality exists within the LGBT community based on traditional gender norms (Mukhopadhyay, 2018). Literature suggests that when resumes are evaluated, perceived heterosexual women are discouraged from participating in masculine behavior versus perceived LGBT women are not (Gorsuch, 2019). Discrimination based on nontraditional gender norms will become the next evolution of gender laws (Parrington, 2019). It seems that gender discrimination is present within the female community based on the perception of gender norms. Future researchers should consider the definition of gender norms.

Gender-related pay equity has a term called a ‘motherhood penalty.’ The motherhood penalty was suspect throughout history, but proper research was not conducted. Recent research studies suggest that a portion of gender-related pay equity is due to women with children. Hipp (2019) indicated that discrimination by employers against women with children is taking place. Women with children are discriminated against; men with children are not. The motherhood penalty is known across many countries, including Sweden and Germany (Hipp, 2019). Scholars have shown that discrimination begins during the hiring process. Parental status is the cause of discrimination; employers view childbearing women’s work as (Mari & Luijkx, 2020). Gender-related pay equity and the bias it causes is penalizing the framework of the household of society.

In recent history, the Lilly Ledbetter Fair Pay Act of 2009, signed by President Barack Obama on January 29, 2009, is a United States federal statute. The Lilly

Ledbetter Fair Pay Act of 2009 is an amendment of Title VII of The Civil Rights Act of 1964, which allows a 180-day statute of limitations of filling an equal pay lawsuit of pay discrimination or pay inequality (Wade & Fiorentino, 2017). The benefit for employees is that the Lilly Ledbetter Fair Pay Act of 2009 makes it easier for employees to express concern and perception of pay disparity by their employer and simultaneously providing more transparency of wage discrimination (Connell & Mantoan, 2017). Employees have more power to express concern about discrimination and were granted a path to file a grievance against an employer participating in wage discrimination.

President Obama, in April of 2014, signed an executive order to prevent and reduce pay discrimination. Previous laws and acts have attempted to reduce pay discrimination, and the executive order by President Obama empowered employees by allowing them to have additional control when negotiating. President Obama signed a Presidential Memorandum, a directive issued by the President of the United States, mandating the Secretary of Labor to require all federal contractors to report employees to pay by race and gender. This executive order allows employers and organizations to ensure equal pay for equal work for all employees proactively.

On August 26, 2015, President Obama declared Women Equality Day to be celebrated in the United States. Women Equality Day was initially adopted in 1920 based on the Nineteenth Amendment (Amendment XIX). Women Equality Day represents the pledge by Congress to protect women's rights and, more significantly, fight for equality of women (Dennis, 2016). August 26 signifies equality for all women. The day celebrates the struggles that women have faced harshly in the past, so they will not be forgotten in the future.

The Equal Employment Opportunity Commission (EEOC) is a federal agency that administrates and enforces workplace discrimination and civil rights laws. On September 30, 2019, the Equal Employment Opportunity Commission required employers to report wage (pay) data to be broken down by sex, race, and ethnicity. Employers were required to report on the 2017 and 2018 payroll data to ensure that no discrimination or inequality occurred. The EEO-1 form is the required document of employers to file with the United States federal government. President Barack Obama's administration revised the EEO-1 form, and under President Donald Trump's administration, provisions were suspended (Nagele-Piazza, 2019). Employers and organizations can no longer hide their women's inequality; imbalance will be reported, but reporting will continue to change in the coming years. New EEO-1 proves that switching is the agenda of the government.

This study focused on gender-related pay equity within the United States. Nevertheless, it is important to note that gender wage inequality is a global issue. The motherhood penalty is being researched across the United States, Sweden, and Germany (Hipp, 2019). Vietnamese women are suffering from gender wage discrimination (Chowdhury et al., 2019). In the Philippines, they seek a new way to measure human capital to assess the gender-related pay equity issue (Zveglich et al., 2019). South Korea is seeking to narrow the gender-related pay equity issue (Tromp, 2019). Europe and the many counties within the union investigate human capital validation and the gender-related pay equity issue (Tverdostup & Paas, 2019). The issue of gender wage equity and gender wage discrimination has a dark history felt around the globe.

The history of gender-related pay equity has evolved and changed since 1963, but the desired goal has not. The fight for equal pay for equal work between men and women

is a struggle that requires more insight. This study may provide specific state and local governments, companies, organizations, and, most significantly, society, resulting in proper legislation and positive change while enhancing the discipline of industrial-organizational psychology. Scientific knowledge is needed in such areas as appropriate legislation and social pressure, which can address—and hopefully resolve—this social issue that affects 74.6 million women.

Themes

Gender-related pay equity is an issue and concept that affects many aspects of society. Four themes are prominent in the body of literature on this topic. The four themes of gender-related pay equity are previous laws and acts, new government changes, societal awareness, and human resources. The themes of gender-related pay equity help assess the effects, correct the issue, and define additional support needed. Additional scientific knowledge will provide the framework for new legislation and holding governments for their social acceptability for their role in inequality. Outlining the factors that cause the issue allows corrections can be made.

Previous Laws and Acts. Legislation requirements and actions are discussed and are prevalent in a considerable number of gender-related pay equity studies. Laws and acts are designed and constructed to make it illegal for organizations to pay women less than men for equal work; gender-related pay equity discrimination. The most significant previous laws and acts enacted into legislation are the Equal Pay Act of 1963, Title VII of the Civil Rights Act of 1964, and the Lilly Ledbetter Fair Pay Act of 2009 (Blau & Kahn, 2017; Engstrom, 2018; Rosado, 2018; Swain, 2019; Wade & Fiorentino, 2017; White,

2019). The topic of gender-related pay equity has been a significant issue consulted by multiple generations and Presidential administrations.

The American federal government proclaims that gender wage discrimination is referred to as gender-related pay equity. Organizations that employ 50 or more employees must apply additional rules, regulations, and reporting. Even known laws and acts have been signed into legislation. It is still the responsibility of the employer and organization to obey them. Gender-related pay equity inequality is illegal under American federal law; additional scientific knowledge may provide the insight needed to combat the gender-related pay equity issue.

The original act to protect workers was the Fair Labor Standards Act of 1938 (FLSA), and a significant number of current acts are amendments to the original law. The Fair Labor Standards Act of 1938 was drafted by Senator Hugo Black in 1932 and was resisted heavily by the American government. Senator Hugo Blacks 1932 version required that employers adopt a 30-hour workweek. The Fair Labor Standards Act of 1938 was to be the first labor standard act of its time, and the process of finalizing the proposed law would take many years.

On June 25, 1938, President Franklin D. Roosevelt signed 121 bills, one of which was the Fair Labor Standard Act of 1938. The Fair Labor Standard Act of 1938 is the revised version of Senators Hugo Black's 1932 proposed new legislation (Rahman, 2017). This Act implemented an 8-hour workday and a 40-hour workweek. Overtime is considered; workers can earn additional wages for an extra 4 hours (overtime) paid at one and a half times the original rate (Gorsuch, 2019). Protection for employers is now a

requirement, not a-bonus. Before the Fair Labor Standard Act of 1938 was signed, a fair day's work was a dream, not a right.

The Fair Labor Standard Act of 1938 does not present an argument for women specifically but provides the grounds for future women's rights. Children are sighted under the new act, stating children under the age of eighteen and sixteen have specific restrictions regarding work. The restrictions include dangerous jobs that children under the age of eighteen cannot perform, and children under the age of sixteen cannot perform manufacturing and mining jobs during the school day. Seven hundred thousand American works benefited from the Fair Labor Standard Act of 1938 and were given raises (Grossman, 1978). American workers greatly benefited from The Fair Labor Standard Act of 1938. Children would no longer be taken advantage of under the new act.

The Equal Pay Act of 1963 is an amendment to the Fair Labor Standards Act of the United States (White, 2019). The Equal Pay Act of 1963 aimed to eliminate gender wage disparity in the United States (Causevic, 2018; Watkins, 2018; Wulf, 2017). Under the Equal Pay Act of 1963, employers are subject to a penalty for discrimination between employees based on sex by paying wages (pay) unfairly for equal work. The Equal Pay Act of 1963 was the catalyst for gender-related pay equity and set a precedent for future legislation.

After the 1960 United States Census results, Howard Worth Smith, a United States Representative from Virginia, argued that more women than men in the United States described a grave injustice to womankind. Howard Smith called on Congress to take immediate steps to correct the issue for women, as his colleagues laughed (Brown, 2014). The topic presented by Howard Smith is presented on February 8, 1964, the day

the House of Representatives discussed the critical problem of the Civil Rights Act of 1964.

The 1964 Civil Rights Act, Title VII, added additional legislation that is needed to combat the growing concern of discrimination of privately held organizations. The primary focus of Title VII was to prohibit any employer who employed 15 or more employees from discrimination against any individuals based on sex (Budow, 2019). Title VII has been considered the *ghost of salary past* and a failure to protect women against discrimination (Land, 2019; Watkins, 2018). It is fair to say that many acts of legislation have failed to protect women.

A particularly pivotal year was 1974 for women's wage discrimination. For the first time, the court system considered an Equal Pay Act claim. Corning Glass Works v. Brennan, 417 U.S. 188. was heard on the basis that Corning Glass Works paid women less than men for equal work. The United States Supreme Court concluded and cited many Corning Glass Works infractions. Corning Glass Works had ongoing discrimination and disparity of wages for women. Corning utilized the phrasing of neutral factors other than sex contributed to gender wage inequity (Safstrom, 2019). Brennan and the plaintiff's legal team worked closely with the ACLU (American Civil Liberties Union) Women's Rights Project. The Women's Rights Project was established early in the 1970s was supporting women's rights.

In 1972, Ruth Bader Ginsburg founded the Women's Rights Project, which worked in tandem with the ACLU. The purpose of the ACLU's Women's Rights Project was to empower poor women, immigrant women, and poor women who have been the recipient of gender bias and inequality (Campbell, 2002). The American Civil Liberties

Union (ACLU) is a nonprofit organization founded in 1920 to defend every person's liberties, and individual rights in the United States protected under the United States Constitution. The ACLU and the Women's Rights Project sought to protect and defend women's rights against discrimination.

Swain (2019) suggested that employees have not been fully aware of acts like the Lilly Ledbetter Act of 2009, protect women and wage discrimination. The current trend is improving; employees, especially women, are becoming more aware of production laws, providing direction. An organization that is commenting on gender wage disparity will note forthcoming to the employees of their wrongdoing (Swain, 2019). The employee must assess their rights, and the employee cannot rely on companies and organizations to provide that information.

The U.S. Court of Appeals' verdict for *Rizo vs. Yovino* indicated that employers could no longer justify wage inequality between men and women based on prior salaries as a contributing factor. Jim Yovino, the Fresno County Superintendent of Schools versus Aileen Rizo, was overseen by the honorable Judge Reinhardt, who sadly passed away prior to filing his verdict (Rains, 2019). *Rizo vs. Yovino's* decision brought society one step closer to combating the gender-related pay equity issue (Timpson, 2019). The Ninth Circuit Court established the framework that employees' salaries are required to be based on job-related factors, experiences, skills, and other factors unrelated to sex.

As stated, the U.S. federal government has implemented many laws to combat gender wage inequality, but not every state has equal laws or any current laws at all. Presently, states like Alabama and Mississippi do not have specific state gender wage laws, while some states have state, county, and city laws. State governments must follow

government guidelines, but individual states do have the right and responsibility to govern state issues through state government.

More recent pay equity laws for individual states and counties went into effect in 2019. Four states and two counties have limited the request of salary history: Alabama, Connecticut; Hawaii; Maine; Kansas City, Missouri; and Suffolk County, New York. Nebraska has implemented a wage transparency law to provide more visibility to the government and society. Individual states are amending or expanding preexisting state laws: California, Illinois, Maryland, New York, Washington, and Wyoming. States and counties are passing laws to force organizations, companies, and employers to abide by equality laws. Unfortunately, organizations, companies, and employers are looking to get around current regulations. As an example, employers cannot ask for salary history in many states; employers will simply ask about salary expectations. Like many laws and regulations, there will always be individuals that seek to manipulate the system (Sammer, 2019).

Previous legislation implements the requirements of employers to protect American works. The laws and acts to protect from discrimination started as early as 1938 and the protection of women specifically in 1963; The Equal Pay Act of 1963, Title VII of the Civil Rights Act of 1964, and the Lilly Ledbetter Fair Pay Act of 2009 (Blau & Kahn, 2017; Engstrom, 2018; Rosado, 2018; Swain, 2019; Wade & Fiorentino, 2017; White, 2019). Gender-related pay equity has been a significant issue concluded by multiple generations, past Presidential administrations, and possibly future Presidential administrations because laws have already passed and gone into effect during the next presidential cycle. Legislation has not been effective, and a proper dataset that this study

may provide is needed. Recent government changes will require additional changes in the future.

In summary, previous laws and acts are directly related to this quantitative nonexperimental comparative study on gender-related pay equity. The questions seek to assess whether there is a difference in gender-related pay equity at the state and industry levels and that assessing previous laws and acts is significant. Current and future government legislation is influenced by previous legislation. The alternative is some states and areas of the United States do not have specific legislation mandating gender-related pay equality. States and areas are required under federal law to pay women equally to men, but that may not be the case.

New Government Changes. The U.S. federal government and local state governments implement and negotiate new legislation changes on gender-related pay equity. New government changes are directly correlated to the dissertation topic of gender-related pay equity, in that the government regulates how much men and women are paid and should be paid equally. New government changes directly affect gender-related pay equity; it is considered a significant theme to this study. Alternatively, the theme of government changes was considered but not included due to the theme's significance; however, it was ultimately added. This quantitative nonexperimental comparative study seeks to assess the difference between gender-related pay equity at the state and industry levels. New government changes within areas may influence the dissertation topic results.

The federal government regulations and reporting laws of gender-related pay equity are moving forward to innovative ideas, vision, and the definition of gender (Burn,

2018; Dennis, 2016; Engstrom, 2018; Rosado, 2018). As society changes, interpretations of previous laws and acts may need to be reexamined. Laws and Acts are being questioned and challenged for more clarification. Additional gender wage reporting and clarification for employers are the latest legislation stage because employers are still committing gender wage discrimination (Dennis, 2016; Phillips, 2018; Rosado, 2018; White, 2019). New government changes are essential to current and future literature in an ever-changing world of gender and pay equality.

The term men and women and the traditions of both are noticeably different than when The Civil Rights Act of 1964, Title VII, was implemented. The U.S. Supreme Court is currently analyzing whether the Civil Rights Act of 1964, Title VII, protects against discrimination of gay and transgender employees (Budow, 2019; Eyer, 2019). Twenty-one states have laws that state that an employee cannot discriminate against any employee due to gender identity or sexual orientation. Three states are currently interpreting current state laws, prohibiting discrimination based on sexual orientation or gender identity (Budow, 2019). New assessments and clarifications of gender identity have left dozens of states that still do not address the gender-related pay equity issue.

Federal and state governments are currently seeking to account for the new gender identity terms, terms that have evolved and are currently evolving. Gender equity and reform have been topics for employers and government, but the ever-changing term gender adds additional confusion. Gender-related pay equity looks to identify wage discrimination between men and women, but the sexual orientation of gender is a concern; the wage discrepancy between straight women and lesbian women is not classified and cannot be evaluated (Martell & Hansen, 2017). The LGBTQ community

has evolved the term gender identity to now LGBTQ+, unfamiliar terms like nonbinary gender, androgynies, cisgender, and transsexual and will need to be defined and classified (Parmenter et al., 2020). In the future, the term gender-related pay equity will evolve as the term gender evolves, which may cause current legislation to understand.

The LGBTQ community is growing and will become the next generation's wage inequality debate where the government will need to adjust previous legislation. Previous literature has made a correlation that the pay equity issue between gay men and lesbians is related to male to female pay equity (Wang & Gunderson, 2019). The government has been unable to correct the gender-related pay equity issue, and new government changes will be challenged with the increasing questions of the LGBTQ. H.R.5 – Equality Act will be discussed in Congress to address discrimination against the LGBTQ community. The Equality Act will provide consistent and straightforward anti-discrimination for the LGBTQ community. Protections include employment, education, services, federally funded programs, credit, and housing. The Equality Act (H.R.5) is the most significant equality act currently proposed for legislation (Senate of the United States, 2019).

In recent history, on September 30, 2019, the Equal Employment Opportunity Commission required that employers report wage data to be broken down by sex, race, and ethnicity. Employers are required to report the 2 most recent years' payroll data (2017 and 2018) to ensure that no discrimination or inequality has taken place. New Equal Employment Opportunity Commission required has led to current and future reporting. The updated EEO-1 form requires that employers must file an amended version that did not require extensive information in the past (Nagele-Piazza, 2019). The Equal Employment Opportunity forces employers and organizations to report themselves for

inequality or proactively not to participate in inequality. The idea that employers will report themselves for wrongdoing seems suspect, but current legislation is proving the framework for change.

The Paycheck Fairness Act is the most recent legislation representing the evaluation of the Equal Pay Act of 1963 and the Fair Labor Standards Act. The goal of the Paycheck Fairness Act is to provide protection and strengthen equal pay for women. The new act prohibits employers from requesting wage details from previous employment. Additionally, employers are prohibited from upcoming wage inequality from workers who voluntarily share previous wage information (Causevic, 2018). The Paycheck Fairness Act is a significant adjustment in government thinking on equal pay for women men.

Reporting requirements and training are more significant. Employers need to report wage information to the Department of Labor and, more significantly, demonstrate wage inequalities based on factors that are not based on the sex of the employee. Additional training is funded under the new bill; this training can provide the Equal Employment Opportunity Commission with the skills required to identify and adequately manage wage disputes. The federal government is providing the resources needed to teach and train under the Paycheck Fairness Act.

The United States women's national soccer team players filed a 67-million-dollar lawsuit against the United States Soccer Federation claiming pay inequality. The lawsuit addresses gender-related pay equity and sex-based wage discrimination (Jessani, 2018). The action taken by the United States women's national soccer team contributed by Senator Dianne Feinstein of California and Senator Patty Murray of Washington to

introduce S. 2083 – Athletics Fair Pay Act. The Athletics Fair Pay Act would require equal compensation and equal pay for amateur and Olympic athletes. Senator Joe Manchin of West Virginia added to the proposed act to prevent any federal & funding utilized towards the 2026 World Cup unless the United States Soccer Federation pays equally. The Athletics Fair Pay Act seeks equality for national teams. The men and women are paid equally, equal pay for equal play.

It is important to note that the Athletics Fair Pay Act does not take into consideration entertainment revenue. Critics express that men's soccer produces more revenue than does women's soccer—thus, men's soccer players are paid more. The revenue dollars do not support the critics; in the last couple of years, the United States women's soccer generated 50.8 million dollars compared to 49.9 million dollars by men. In most cases, it is a fact that men's sport does generate more revenue, but it is debated whether this should translate into pay discrepancies.

Former 2020 United States presidential candidate and current Vice President Kamala Harris from California proposed a strategy for closing the gender-related pay equity issue. The new concept is called the equal pay proposal, with companies with 100 or more employees are required to participate. The proposed strategy would require companies to disclose pay data, which is not a new concept but moving forward, the company would reweave an "equal pay certification." If companies do not receive equal pay certification, the companies are fined. The concept is an aggressive stance to force companies and organizations to pay fairly.

Significant years for gender-related pay equity are 2019 and 2020, with the implementation of additional new state and county laws, in the summer of 2019, Suffolk

County in New York and Washington state ban salary history. Alabama, Maine, Illinois, Kansas City, and Missouri implemented more laws to affect the gender-related pay equity issue positively. It is expected that Colorado, in 2021, will begin to enforce new gender-related pay equity laws. The United States and local governments seek to apply legal pressure to organizations and companies to pay women equality.

New government changes are presented to benefit the gender-related pay equity issue. Newley implemented EEO-1 reporting and proposed acts like the Paycheck Fairness Act and Athletics Fair Pay Act will pressure the government and organizations to correct a problem that has affected women. This study may provide scientists with knowledge and a significant dataset to where the pressure should be applied to stop inequality and the social and economic reasons for the issue.

In summary, new government changes are directly related to this quantitative nonexperimental comparative study on gender-related pay equity. The questions seek to assess if there is a difference in gender-related pay equity at the state and industry levels and that assessing new government changes is significant. New government changes are presented to benefit the gender-related pay equity issue. Newley implemented EEO-1 reporting and proposed acts like the Paycheck Fairness Act and Athletics Fair Pay Act will pressure the government and organizations to correct an issue that has affected women. The alternative is some states and areas of the United States do not have and do not plan to have specific legislation mandating gender-related pay equality. This study may provide scientists with knowledge and a significant dataset to where the pressure should be applied to stop inequality and the social and economic reasons for the issue.

Society Awareness. Current times have proven that society is focused on social and equality issues. The dissertation topic of gender-related pay equity is a social and equality issue, and social awareness is significant to this study's topic. Alternatively, the theme of social awareness was considered not to be included, but it was added due to the significance of the theme. This quantitative nonexperimental comparative study seeks to assess the difference between gender-related pay equity at the state and industry levels. National and local society awareness may influence the dissertation topic results.

Society changes and raising awareness for gender-related pay equality have influenced literature on equity (Burn, 2018; Dennis, 2016; Geoghegan, 2018; Rosado, 2018; White, 2019). Gender-related pay equity affects individual women, children, families, and society. The new civil rights movement for women is provoked by societal changes, which require a more welcoming working environment for women (Swain, 2019; White, 2019). Society is demanding more transparency and change on the topic of gender-related pay equity.

One clear indicator that gender-related pay equity is a priority for society is the evidence that the number of nationwide lawsuits filed in state and federal courts has risen. A class-action lawsuit against a national retail chain, a significant employer, Walmart, found the defendant in contempt for discrimination against 1.5 million women. One and a half million women are paid less and denied raises than their male counterparts (Dennis, 2016). Society and discriminated women have made it known that wage discrimination is no longer acceptable, with multiple billion-dollar companies are not immune to discrimination.

The societal perception that a man is the alpha and should be the breadwinner, which provides men more power and advancement opportunity, is changing. Gender roles are a historical trend that has influenced gender-related pay equity negatively (Rosado, 2018). Society is changing women's historical view from being the family caretaker to handling the same responsibilities as men. Still, the federal government has a negligible effect on minimalizing gender-related pay equity (Geoghegan, 2018). Historical trends have less influence on society, and new-age thinking will provide positive change for women. Society is demanding change to the social issue and problem of gender-related pay equity for women.

There has been a significant movement of both men and women throughout the world with the expectation to change the mindset of business, governments, and organizations' gender-related pay equity. The movement to correct gender wage inequality is called #TimesUp. The #TimesUp movement has a simple goal to solve the gender-related pay equity issue within all of society (Sbrocchi, 2019). The campaign requests that women speak up. There is no better time than now to express the harmful effects of the gender-related pay equity issue. This study may provide scientific knowledge to divulge political and social pressure that needs to be placed, contributing significantly to the political movement. This study is not intended to be viewed as political; however, gender equality will always have a political stage.

The National Committee on Pay Equity (NCPE) was founded in 1979 to lobby for women's and civil rights to eliminate sex-based wage discrimination and accomplish gender-related pay equity. The National Committee on Pay Equity named March 31 as Pay Equity Day, requesting that all individuals wear red to symbolize how far women

are, unfortunately, in the red. The National Committee on Pay Equity is one of many organizations seeking to bring social awareness to gender-related pay equity and women's equality.

March 31, Pay Equity Day, is one of many pay equity days that society has deemed significant. Cultures within society bring attention to inequalities and celebrating women's rights every year. Many days are significant for women; February 11 is Asian American Women Day, March 31 is White Women day, June 4 is Moms Day, August 13 is African American Women's Day, October 1 is Native American Women's day, and November 2 is Latinas Day (Diversity Best Practices, 2018). Society in the United States and worldwide understands the significance of previous inequalities, and billions of women worldwide are bringing social awareness to anyone and everyone who will listen.

International Women's Day (March 8) is perhaps the most well-known and celebrated Women's Equality Day (Cundy, 2017). The 2020 theme was labeled #EachforEqual. The mission is to champion women of all backgrounds who dare to innovate, lead, and uplift others towards a more equal and inclusive workplace (International Women's Day, 2020). International women's day is celebrated in Bulgaria, Cameroon, Chile, Croatia, Herzegovina, Romania, Bosnia, and the United States as a non-holiday. The day is significant around the world as an official holiday in Afghanistan, Angola, Armenia, Azerbaijan, Belarus, Burkina Faso, Cambodia, China (for women only), Cuba, Georgia, Guinea-Bissau, Eritrea, Kazakhstan, Kyrgyzstan, Laos, Madagascar (for women only), Moldova, Mongolia, Nepal, Russia, Tajikistan, Turkmenistan, Uganda, Ukraine, Uzbekistan, Vietnam, and Zambia. March 8, 2020, was a unique day because it is Daylights Saving Time in the United States and Europe, which

resulted in International Women's Day being cut short (International Women's Day, 2020). Many individuals raised the question of how International Women's Day, a day promoting equality, could be only 23 hours long.

Television, media, and movies have always provided insight into society's awareness, needs, and wants. The health and success of all media are dependent on viewership, and media executives must assess what societies will spend their free time viewing, reading, and listening to. On April 15, 2020, a television series on network television called "Mrs. America" debuted. Mrs. America is a drama about the political movement of the equal rights amendment. The television series tells a backlash by conservative and feminist women that altered the political landscape.

The American Association of University Women (AAUW) is a 139-year-old nonprofit that advances equity for girls and women. The AAUW was founded in 1881 and currently has a network of 170,000 supporters and members, 800 university/college partners, and 1,000 local branches. The AAUW concept seeks to assist college students in providing them the skills, resources, and networks that provide positive change within the female community nationwide. In 2011 the American Association of University Women launched a campaign to vote in the 2012 election and sought to assist in sexual harassment of school-age children. The students that the American Association of University Women protect hold leadership conferences held annually in the District of Columbia.

In summary, society awareness is directly related to this quantitative nonexperimental comparative study on gender-related pay equity. The questions seek to assess whether there is a difference in gender-related pay equity at the state and industry

levels and that assessment of social awareness is significant. Society and raising awareness of gender-related pay equity become stronger every day. Women from all parts of society now take place in the fight to cure pay inequality. Organizations like the National Committee on Pay Equity have fought the issue of gender-related pay equity for decades (Wax, 2013). International Women's Day is celebrated worldwide. Professional women's soccer players utilize their platform to stop inequality, and even presidential candidates require gender-related pay equity from companies and organizations. The social issue and problem of gender-related pay equity involve positive change, and society needs change.

Human Resources. Human resources have a significant influence, responsibility, management, assessing, and effect on pay equity (Burn, 2018; Dennis, 2016; Geoghegan, 2018; Pena, 2016; Rosado, 2018; Smit & Montag-Smit, 2019; Swain, 2019). In most organizations, the responsibility for implementing labor law and labor regulation is the human resource department. For organizations with gender wage discrimination issues, human resource departments should possess the skills and training to implement a strategic plan to influence and change wage discrimination. Alternatively, the human resources theme was considered not to be included, but its significance was added. This quantitative nonexperimental comparative study seeks to assess the difference between gender-related pay equity at the state and industry levels. Human resource departments may influence the dissertation topic results.

Organizations implore their human resource department to develop strategies, techniques, and fair and equitable systems. A gender wage system and strategy are responsible for the human resource department's leadership and organization leadership.

Human resource leaderships are reasonable to review current policies and compensation structures (White, 2019). The effectiveness of existing systems and compensation structures need to be considered for fairness and ensure no discrimination continues. If gender wage discrimination is found to be present, a proper strategy and plan must be placed in effect to ensure women are being paid equally as men for equal work (Swain, 2019; Wulf, 2017). The human resource department is critical and has been considered the most influential department for combating gender gay inequality.

Previous scholars have discovered a gap in research that required additional support from the human resource department. The human research department manager is responsible for being included in future studies to assess if employees perceive providing a fair, equitable, and healthy working environment for both men and women (Rosado, 2018). Because the human resource department is critical and most influential to adjusting the gender-related pay equity issue, is it reasonable to believe more information is needed from the human resource department to develop future strategies. If gender-related pay equity is consistent across the nation, then the human resource department can catalyze that effort.

Human resources have a significant influence on gender-related pay equity, but more controls are required. Human resource practices and workers' qualification levels are directly correlated to gender-related pay equity. The theory has been that having more women in management will reduce the gender wage equity issue versus women in lower qualification positions. Results have shown that human resource practices do moderate job level qualifications and gender wage inequality. Still, more women in management

and supervisory positions do not automatically bridge the gap of gender wage inequality (Abendroth et al., 2017). Bridging the gap of gender wage equality is critical.

Human resource leadership and the human resources department are in a unique position. The human resource department services work with many sides of a company, from the employees to executive organizational leadership (Ashton, 2014). The role of human resource leadership and personal is to inform organizational leadership and employees of employee rights (Burn & Kettler, 2019). It is an awkward position for the human resource team to inform an employee that they are potentially being discriminated against and staying employed under executive leadership.

The human resource department is a significant influence overpay gender-related pay equity, but alternatively, other organization departments can be considered significant. Organizational leadership ultimately decides on organization policy. An example is the human resource department may assess that the organization has a gender-related pay equity issue. The organizations' President or Chief Executive Officer may choose to ignore the situation. Many organizations have human resource managers, vice presidents, and directors, but not all organizations have human resource executive officer representation. An organization may have a human resource executive representation, such as a Chief Human Resource Officer, but ultimately, the President or Chief Executive Officer has the final say.

In summary, the human resource department is directly related to the current quantitative nonexperimental comparative study on gender-related pay equity. Leadership within human resources can significantly influence organizational decisions. Human resources assign and place employees in the United States, arrange for overseas

promotions opportunities, recommend opportunities, advocate wages, and raise wage strategy. Human resource management has a significant influence, but it is dependent on organizational and company executive leadership to implement the proper policy to reduce gender-related pay equity.

Gender. The gender of men and women is the first variable for the study. This quantitative nonexperimental comparative study aimed to determine whether there is a difference in gender-related pay equity at the state and industry levels. Gender is significant in that assessing of the dissertation topic of gender-related pay equity. Within this study, gender is related to gender-related pay equity, equal pay for equal work between men and women. The research questions, theoretical foundations, and conceptual framework of gender-related pay equity directly correlate with the variable of gender. Gender has been one of the critical variables in previous literature on pay equity (Blau & Kahn, 2017; Goldin, 2017; Pena, 2016; Phillips, 2018; Rosado, 2018; Smit & Montag-Smit, 2019). Gender is the catalyst for assessing gender-related pay equity.

Gender substantially correlates with equity theory, which was first developed in the 1960s by J. Stacy Adams. Adams, a workplace and behavioral psychologist, defined gender-related pay equity variables and drove the defining research questions for this study (Adams, 1965). Equity theory looks to assess the fairness of resources distribution to both relational partners, partners being men and women. Pay equity, equity theory, and the discipline of industrial-organizational psychology are all directly connected.

Equity theory has provided the framework for previous research studies to assess gender. Because equity theory seeks an assessment of input and output, work, and reward of employees based on gender, equity theory is the chosen framework when researching

pay equity (Dennis, 2016; Pena, 2016; Rosado, 2018; Smit & Montag-Smit, 2019; Swain, 2019). Previous literature depends on the concept of equity theory to determine whether existing gridlines operate concerning pay equity disparity (Swain, 2019). The idea of equity theory provides the structure needed to address the variable of gender.

Previous scholars have requested future studies to answer two questions; if gender-related pay equity exists by states of the United States and to what extent gender-related pay equity exists by industry of the United States. Both questions are developed from the framework of equity theory and are a variable of gender. The development of both questions in this study follows the structure and historical model of equity theory, which attempts to assess gender-related pay equity in the workplace.

It is important to note that the term gender is evolving, and ‘gender norms’ are changing as a result of the increased attention brought to the surface of the LGBT community. The LGBT communities believe there is a different relation to being male or female. A descriptive label for different types of gender identities includes agender, bigender, cisgender, gender fluid, genderqueer, MX, third gender, transgender, and two-spirit. Future research on this topic will require additional gender description analyses.

In summary, the variable of gender is directly related to this quantitative nonexperimental comparative study on gender-related pay equity. The questions seek to assess if there is a difference in gender-related pay equity at the state and industry levels and that assessing gender is significant. The gender of men and women is a significant variable of the study related to the theory of equality theory. Gender has been a critical variable in previous literature on pay equity (Blau & Kahn, 2017; Engstrom, 2018;

Goldin, 2017; Pena, 2016; Phillips, 2018; Rosado, 2018; Smit & Montag-Smit, 2019; Swain, 2019). This study may research the significance of gender-related pay equity.

Pay Data. Pay data between men and women is the second variable for the study. This quantitative nonexperimental comparative study aimed to determine whether there is a difference in pay equity at the state and industry levels. Pay data are significant to the assessment of the dissertation topic of gender-related pay equity. Within this study, payday is related to gender-related pay equity, equal pay for equal work between men and women. The research questions, theoretical foundations, and conceptual framework of gender-related pay equity directly correlate with the variable of pay data. Pay data has been one of the critical variables in previous literature on pay equity (Blau & Kahn, 2017; Goldin, 2017; Phillips, 2018; Rosado, 2018; Smit & Montag-Smit, 2019). Pay data is the most significant defining variable of gender-related pay equity.

Like gender, pay data has a significant relationship with equity theory, which was first developed in the 1960s by J. Stacy Adams. Pay data was traditionally referred to as compensation for work or employment. Adams, a workplace and behavioral psychologist, defined gender-related pay equity variables; this theory informed the defining research questions for this study (Adams, 1965). Equity theory looks to assess the fairness of distribution of resources and pay to both relational partners. Equity theory seeks to determine pay within a working environment and defining pay data as variables. Equity theory has established the research questions for this study. Employees measure equity through the payment they receive, payment data. Based on the input, the work employees work output; there is an expectation of the pay that employees will receive

from their employer (Adams, 1965). Adams's work refers to the contributions of employees and the rewards (pay) they receive.

The variable of pay data of gender-related pay equity defines the two questions asked: (a) if gender-related pay equity exists by states of the United States and (b) if and to what extent gender-related pay equity exists by industry of the United States. Both questions are developed from the framework of equity theory and are a variable of pay data. The development of both questions in this study follows the structure and historical model of equity theory to assess gender-related pay equity in the workplace.

Equity theory was the chosen framework for several previous research studies. Because equity theory seeks an assessment of input and output, work and reward of employees, and equity theory then researching pay equity (Dennis, 2016; Pena, 2016; Rosado, 2018; Smit & Montag-Smit, 2019; Swain, 2019). Previous literature depends on the concept of equity theory, where the framework is to discover if existing gridlines operate somewhat concerning pay inequity disparity (Swain, 2019). Equity can be defined as the perception of the exchange's fairness between employer and employee and employee to an employee for compensating day's work (White, 2019). Gender meanings of roles and behavior within the workforce cause gender differences that equity theory outlines (Dennis, 2016). Lastly, equity theory provides data on wage information utilized to evaluate workplace fairness (Adams, 1965; Smit & Montag-Smit, 2019). The concept of equity theory provides the framework needed to address the variables and questions of gender gay equity.

Industry. Industries are critical data points for this study. This quantitative nonexperimental comparative study aimed to determine whether there is a difference in

gender-related pay equity at the industry level. Industries and are significant in that assessment of the dissertation topic of gender-related pay equity. To assess gender-related pay equity, the question is asked: whether and to what extent gender-related pay equity exists by industry of the United States. The question is developed from the framework of equity theory, and the questions look to determine if and to what extent gender-related pay equity exists. The development of both questions in this study follows the framework and historical model of equity theory to assess gender-related pay equity in the workplace.

Previous literature requests that the variables of gender and pay data be researched against industry-level data. Previous researchers analyzed incomplete data that did not fully assess all industries, requiring a more diverse sample size (Blau & Kahn, 2017; Cortés & Pan, 2019; Rosado, 2018). Industry-level data provided valuable insight into the topic of gender-related pay equity. The need to assess industry-level data is a requirement and the purpose of this study.

Researching industry data is critical to correcting the issue of gender-related pay equity. An extensive dataset that included all 50 states and thirty-six significant industries in each state of the United States will provide the information needed to supply government, industry leaders, and society with the knowledge required to apply pressure to society. Industry leaders will have complicated questions that need to be addressed if discovered industries contribute to gender-related pay equity

State. State are critical data points for this study. This quantitative nonexperimental comparative study aimed to determine whether there is a difference in gender-related pay equity at the state level. State and are significant in that assessment of

the dissertation topic of gender-related pay equity. To assess gender-related pay equity, the question is asked: whether and to what extent gender-related pay equity exists in states of the United States. The question is developed from the framework of equity theory, and both questions look to determine if and to what extent gender-related pay equity exists. This study's development follows the framework and historical model of equity theory to assess gender-related pay equity in the workplace. To assess the variables, gender, and pay data, and state data are needed to answer the research questions.

Previous literature requests that the variables of gender and pay data be researched against state-level data. Previous researchers analyzed incomplete data that did not consist of national data broken down by state, requiring a larger, more diverse sample size (Blau & Kahn, 2017; Goldin, 2017; Pena, 2016; Rosado, 2018; Swain, 2019). State-level data provided valuable insight into the topic of gender-related pay equity.

Researching state data is critical to correcting the issue of gender-related pay equity. An extensive dataset that included all 50 states and thirty-six significant industries in each state of the United States will provide the information needed to supply government and society with the knowledge required to apply pressure to the government and society. State governments and companies will have complicated questions that need to be addressed if discovered individual states contribute to gender-related pay equity.

The United States of America has a population of over 328 million people. The state is a critical data point to assess where legislation and political pressure need to be the ability to discontinue gender-related pay equity. The population for all 50 states varies tremendously, and it is essential to note the significant difference between state

populations. California represents the most significant percentage at 12.01% of the United States population at 39,865,590, and Wyoming represents the small percentage at .017% of the United States population at 577,737. The states' population is significant in that the population has many critical by-products, such as state funding, federal funding, number of United States representatives, and emergency funding.

Between states, the treatment and laws related to discrimination are unequal. Not all states have specific equity laws (e.g., Alabama and Mississippi). The perception of gender laws of some states like California, Illinois, and New York has different county and city requirements. When a state has different laws per county and city, managing equity and discrimination can change from city to city depending on geographic area. This study may provide a dataset to assess gender-related pay equity at the state level. It is critical to identify state-by-state laws on the topic (see Appendix H) to outline state-by-state equity laws (Paycor, 2019). Appendix I will describe the participants who initially survived and finally survived the 2017 American Community Survey results.

Methodology and Instrumentation/Data Sources/Research Materials

The current researcher employed a quantitative research method and a nonexperimental comparative research design of public and federal data on pay inequity. This nonexperimental comparative study utilized a one-way ANOVA statistics test to determine whether there is a difference in gender-related pay equity between states and industry. IBM SPSS version 25 premium statistics software, 2017, a licensed property of IBM Corp, was the testing platform for univariate outliers, organizations, and comparing results from national pay data of gender. The 1,834 data points are the average of the 36 subindustries within the 51 states (including D.C.) from an original 2,145,639 sample

size. The dataset was collected from the United States Census and American Community Survey data. American Community Survey is a department within the United States Census Bureau that collects wage data.

The American Community Survey is a demographics survey program that is conducted under the guidelines of the United States Census Bureau. The American Community Survey data is utilized by many in the private sector, public sector, and nonprofit communities. The American Community Survey has 3.5 million participants yearly. Previous researchers have deemed the United States Census Bureau data valid and reliable (Chambers et al., 2014; Gallup Poll, 2018). This study utilized the 2017 American Community Survey dataset with analysis performed in IBM SPSS statistics software.

IBM SPSS statistics software was first developed by Norman Nie, Dale Bent, and Hadlai Hull. In 2009 IBM acquired and then licensed the technology under the IBM trademark. SPSS stands for Statistical Package for the Social Sciences. IBM SPSS is commonly utilized when performing statistical analysis. IBM SPSS does offer different versions. The current researcher selected version 25, the 64-bit edition.

Previous researchers have applied similar methods of data collection. The U.S. Census Bureau and American Community Survey data is a valid and reliable source of gender wage data. The Census Bureau must not release any data or information that can directly identify a household, protecting all participants. This study may have a significant advantage of utilizing a large 2.1 million sample size that includes all 50 states and industries from the United States Census and American Community Survey data.

Previous researchers have applied similar methods of data collection and analysis. In 2019 a study to assess the gender-related pay equity issue utilized the 2011 Census and ACS data (Cortés & Pan, 2019). A 2017 study used 2000 United States Census data from the 50 largest Primary Metropolitan Statistical Areas (Goldin, 2017). A study researching wage discrimination in 2018 utilized the United States Census Bureau and American Community Survey data (Burn, 2018). Like Burn's study, an additional 2018 research study used both the United States Census and American Community Survey data to assess work and wages (Ulrich-Schad & Duncan, 2018). The United States Census and American Community Survey data will provide a large, diverse dataset.

It is important to note that the United States Census Bureau and American Community Survey data are commonly implemented when researching United States wage and gender data. A significant amount of current research studies performed have implemented the same data collection method of the United States Census Bureau and American Community Survey data to collect wage and gender information (Brucker & Rollins, 2019; Clemens et al., 2018; Clemens, 2018; Ikpebe & Seeborg, 2018; Pasha et al., 2020). The current researcher utilized the same methods that have been successful in previous research studies.

Stinebrickner et al. (2018) researched the topic of gender-related pay equity. Stinebrickner et al. needed to assess the quantitative relationship between essential variables of the gender-related pay equity. The study was successful through quantitative task measurements to interpret results quickly. The study's data set was 3,271, which makes a quantitative research method effective. The United States Census Bureau and American Community Survey data is the dataset chosen. The conclusion that gender

differences in job tasks are crucial to assess the gender wage issue from the quantitative study provided valuable insight into the gender-related pay equity issue.

Keller (2019) researched the topic of gender differences focusing on gender-related pay equity. Keller posited that a quantitative method would accurately measure critical variables in factors that directly affect gender wage differences. Multiple variables were collected, which presents a large dataset that is most applicable to utilizing an effective quantitative research method. Successful analyses of results were recorded, and a continuous assessment of gender occupational choices can provide additional insights (Keller, 2019). This study will use the same methodology and data source.

Bhalotra and Fernandez (2018) researched the topic of the distribution of gender-related pay equity. The study states that a quantitative method is essential to determine significant distributional consequences. A large dataset was collected from the United States census data spanning 50 years. Moving forward, that same process of data sourcing will utilize the United States census data as a source. The study included many variables with multiple subsets of data collected. A successful analysis of results was recorded with a small error rate suggested (Bhalotra & Fernandez, 2018). Through this study, the researcher adhered to the requirement of a larger collection of United States census data from all 50 states.

Dennis (2016) researched the topic of gender-related pay equity disparity among women. The findings of this study suggested that a quantitative research methodology best represented the ability to investigate the relationship between job function and the employee's pay. The dataset was limited to Virginia government 2014 GS14 pay grade archival records. The dataset was large but was limited to one pay grade within one state.

Dennis requested future studies to broaden the population to represent the entire United States (Dennis, 2016). The current researcher extended Dennis's research and utilized an archival dataset from all 50 states to compare results. A quantitative research methodology best represents the most effective methodology to study gender-related pay equity and will be utilized (Park & Park, 2016).

Different research method processes are requested, gaps in research request a quantitative research method approach so more complex assessment can be found. Rosado (2018) and Swain (2019) cited that the most beneficial method to measure the effects of gender-related pay equity within the current economy is a quantitative research method. A more robust conclusion of statistical assessment of the relationship between the studies and variables is likely to increase analytical and generalized effectiveness utilizing a quantitative research method (Rosado, 2018; Swain, 2019). Using a quantitative method versus a qualitative method is needed because previous studies have conducted a quantitative approach. Previous researchers have requested that future research implement a quantitative research method versus a qualitative method. The American Community Survey participants include over 2.1 million men and women. A quantitative research method benefitted the current study.

The instrument to analyze data was IBM SPSS Statistics, version 25, 2017, 64-bit edition software of Census Bureau wage data of gender at an individual state level. Wage data were collected and analyzed to assess the percentage of the pay equity between men and women. IBM SPSS statistics software was used to test for univariate outliers and to compare results from national pay data of gender with a sample size of 2.1 million total men and women from the United States public sector. Previous researchers have

implemented IBM SPSS statistical software when researching gender wage equality (Dennis, 2016). IBM SPSS statistical software is chosen for this research study from previous success to generalized data.

The selected methodology, data sources, instrumentation, and processes align with the successful methods of previous research. Previous scholars have successfully implemented a quantitative research method and prior literature that utilized a qualitative research method had requested a quantitative methodology. Data were collected through measurable Census data, compared, and analyzed through statistical inferences. The collected data will be reported publicly for statistical analyses.

Problem Statement

Prior to this study, it was not known to what extent states and industries in the public sector of the U.S. economy differed in terms of gender-related pay equity. The study's goal is to assess gender-related pay equity better and, in turn, address the problem of equity. Gender-related pay equity will be operationalized in this study as the difference in pay between male and female employees. This variable will be measured as the difference (percentage) between the median pay of males and the median pay of females. Previous literature indicates gaps in assessing the relationship between larger, more diverse industry and state-level gender-related pay equity data sets. Previous researchers have looked at smaller data sets, individual states, or sub-levels of data, which does not provide a holistic assessment of pay equity (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). The general population that is affected by the issue of gender-related pay equity is 74.6 million American workers. This

study's location and units of measure included men and women from all 50 states of the United States and industry.

The target population was 2.1 million individual men and women from the United States public sector jobs. The general population affected by the problem statement and sample data were adults 16 years or older, full-time workers with earnings gathered under five major industries and thirty-six subcategories of job titles from all 50 states, and the District of Columbia from the United States public sector.

The federal government presents gender pay equity data at a national level. The Women's Bureau within the United States Department of Labor deciphers the gender wage pay by industry, age, and race, but not at the state or industry level, only nationally (Women's Bureau, 2020). In April of 2015, President Obama's administration had the Council of Economic Advisers present a briefing to explain the trends and explanations for the gender-related pay equity that existed at that time. Once again, gender-related pay equity data was only presented at a national level (Council of Economic Advisers, 2015). More specific research is needed to assess what states contribute to the problem of pay equity and why this conundrum exists (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017).

A non-experimental comparative study of pay equity was most effective in addressing the problem statement. The variables were state, industry, and pay data. Pay inequality is felt throughout society and all aspects of life because women are not paid as much as men simply due to their gender. Pay inequality is present daily and has been since men and women have been paid wages to perform a task. Women work the same positions, with the same title, same requirements, and the same hours, yet women are

economically unequal (Jenner et al., 2018). Pay equity is a topic that affects 74.6 million women workers in the civilian labor force (DeWolf, 2017). Gender wage inequality contributes to increased rates of anxiety and depression among women (Platt et al., 2016). It has also been stated that wage inequality leads to a risk for obesity and heart attacks (Pabayo et al., 2018). Society and the discipline of industrial-organizational psychology can no longer allow the human rights, physical and mental health of 74.6 million women to be negatively affected.

There has been a lack of attention to this situation, and the answer may be inviolable. This is due to the laws that have been passed to regulate pay equity. Still, corporations and organizations needed to make the change are traditionally male, and the facts show the gender-related pay equity issue may never be closed (Phillips, 2018; Rosado, 2018). With a more extensive, more diverse data set of state data, many outcomes could negatively reflect numerous state and local government officials. There are laws, acts, federal and presidential executive orders passed to correct pay equity (Blau & Kahn, 2017; Burn, 2018; Wade & Fiorentino, 2017). Companies and organizations have still not addressed the pay equity issue and have followed their requirement. Questions need to be answered by high-ranking officials within organizations. The government may be found in contempt, possibly being subject to fines.

The importance and scope have presented the opportunity to address gender-related pay equity, as stated before. Previous literature indicates research gaps that do not provide a holistic assessment of pay equity (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). Gender-related pay equity negatively affects the mind, body, and society. Equal pay between men and women

would reduce poverty, anxiety, depression, obesity, mental disorders, and heart attacks among women (American Psychiatric Association, 2020; Platt et al., 2016; Status of Women, 2020). The problem of gender-related pay equity remains to be addressed**.**

Summary

It was not known if and to what extent gender differences in pay currently exist at the state and industry levels in the United States public sector. This study's problem statement provided the basis of the literature review, background of the problem, gaps in previous research, population, theoretical foundation, methodology, data sources, and instrumentation. Gender-related pay equity is an issue that affects a vast majority of the 74.6 million women of the United States. The federal government and society have required that action be taken, and a proper data set is needed to address the issue. This study may provide a dataset that will change legislation and society.

A study of state and federal data that would explain the relationship of pay gender-related pay equity of industry and state data is required. The effects of pay equity are felt at all levels, society, human resources, management, employment, and government. Legislation has produced laws and acts to force companies and organizations for equal pay for equal work, but Federal data suggests that companies and organizations are not following the rules, and the gap itself maybe never be closed (Phillips, 2018; Rosado, 2018).

The federal government currently focuses on pay equity at a national level. A breakdown of pay data is rarely viewed, but the evidence suggests the need for larger, more diverse data sets at the state and industry level (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). This study may provide value

and research at the state and industry level that has not previously been studied and affect the industry, state, and federal legislation. Because only national gender-related pay equity data have been presented, certain states and industry inequalities have likely gone unnoticed.

The study's design was equity theory, which seeks an assessment of input and output, work, and employee reward. Equity theory is utilized when researching gender-related pay equity according to previous literature. Previous researchers have successfully applied equity theory as the framework of studies to assess pay inequity (Rosado, 2018; Smit & Montag-Smit, 2019). Equity theory provides wage information data to evaluate workplace fairness and equal pay for equal work (Adams, 1965; Smit & Montag-Smit, 2019). The concept of equity theory provides the framework needed to address the variables and questions of gender-related pay equity.

A quantitative research method approach provides the structure necessary to assess gender-related pay equity questions successfully. Previous researchers have suggested that a quantitative method is needed to provide valuable data to assess variables to measure gender-related pay equity (Dennis, 2016; Rosado, 2018; Smith & Fernandez, 2017). Previous research conducted in the qualitative research method requested that future research be done in a quantitative research method versus a qualitative approach in order to provide more statistical analyses of the larger dataset (Rosado, 2018; Swain, 2019). The quantitative research method provided the necessary framework to analyze a large, nationwide dataset.

Chapter 3: Methodology

Introduction

In Chapter 3, the researcher discusses the selected methodology for this quantitative nonexperimental comparative research study. The purpose of this 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. From the original 2.1 million sample size, data were compared to compare 1,834 data points. The researcher retrieved a dataset of 1,834 cases representing data at the subindustry level, by state. There were 36 industries within each state. Previous researchers studying this topic had analyzed incomplete data that did not consist of national data broken down by state, industry and requiring a larger, more diverse sample size (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). Gender-related pay equity influences 74.6 million women workers in the civilian labor force (DeWolf, 2017). The effects of pay equity are felt at all levels of society, human resources, employment, and government.

In this chapter, the researcher provides a detailed guideline for this quantitative nonexperimental comparative research study. This chapter's sections include the problem statement, research questions, hypothesis, methodology, design, population, validity, reliability, data collection, analyses of data, ethical consideration, and limitations. This quantitative nonexperimental comparative research study provided the insight required to properly view gender-related pay equity and the tools to stop a 60-year-old social issue.

Purpose of the Study

The purpose of this quantitative, nonexperimental, comparative study was to examine differences in gender-related pay equity across states and across industries in the public sector of the U.S. economy. 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 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, and 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 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 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 (Rosado, 2018; Swain, 2019). 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.

Examining pay equity at the state and industry levels may contribute to organizational and industrial psychology decision-making. Organizations and companies within individual states may be enlightened or unaware they are not paying women equally. There are laws, acts, federal and presidential executive orders passed to correct pay equity (Blau & Kahn, 2017; Burn, 2018; Wade & Fiorentino, 2017). Even with the extensive government influence, the pay equity gap is still close to 20%, and—at the current rate—will take another 130 years to solve (Geoghegan, 2018; Phillips, 2018; Rosado, 2018).

Correcting the issue of gender-related pay equity would positively affect 74.6 million American women workers. If gender-related pay equity were corrected, working women's poverty level would be cut in half from 8.2 to 4% (Status of Women, 2020). An additional 512.6 billion dollars could be entering the United States economy if women were paid equity (Schulze, 2018). Each of the 50 individual states would benefit from an increase in each state's economy (Status of Women, 2020). An additional negative effect of gender-related pay inequality is increased anxiety and depression rates among women (Platt et al., 2016). Scholars have stated that wage inequality leads to the risk of obesity and heart attacks (Pabayo et al., 2018). This issue of gender-related pay equity affects Americans' economic stability.

This study may serve as a guide for future comparative research on pay equity. Cultural unrest and social diversity are currently top stories in the news (Milanesi, 2020). This study may act as the blueprint and baseline dataset. Future research can continue

from the foundation of this study to better assess if cultural, social, political, economic, or sexism is a factor that contributes to gender-related pay equity.

Research Questions and Hypotheses

This quantitative, nonexperimental, comparative study involved a comparative analysis of archival data for gender-related pay equity in the public sector, comparing states and industries to answer the research questions and hypotheses. The unit of analysis had dual identification: subindustry by state (36 subindustries X 51 states = 1836 cases). The analyzed dataset included 1834 cases, with data for gender-related pay equity (operationalized as the proportion of women's pay relative to men's pay at subindustry level; measured as a percentage), state (51 states (including D.C.)), industry (five industries), and subindustry (36 subindustries). District of Columbia lacked data from two subindustries. The data for the dependent variable had been aggregated from respondent level to subindustry level, by state, from an original sample of 2,145,639 survey respondents.

Generating information about differences in gender-related pay equity depending on geographic location and industry was necessary for correcting gender-related pay equity issues. Previous researchers had collected insufficient data that did not provide a holistic, industry-specific, nationwide dataset (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). The research questions enlisted a response that directly affect an issue that influences the lives of 74.6 million women workers (DeWolf, 2017). This study may fulfill the requirements requested from previous research. The researcher of this quantitative study collected archival data from the United States Census Bureau and American Community Survey 2017 dataset. The quantitative

method best represents the method needed because data were analyzed through numerical comparison and statistical inferences (Campbell & Stanley, 1966).

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 of the subindustries within each state. In this study, the percentage of gender-related pay represents the ratio of compensation 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 United States Census Bureau utilizes “O*Net” descriptions, the government process for organizing data. The Occupational Information Network (O*Net) is a database that provides hundreds of occupational definitions to provide business and workforce development professionals a standard guideline of job descriptions. The U.S. Census Bureau data is a critical source to determine the American people and government structure. The census data results have significant influences on American life itself, seats of the United States House of Representatives, federal funding, police and

fire department funding, and funding for schools, hospitals, infrastructure, and transportation. U.S. Census Bureau data has been utilized in previous research related to gender and pay data.

Keller (2019) researched the topic of gender differences focusing on gender-related pay equity. Keller cited that a quantitative method would accurately measure critical variables in factors that directly affect gender wage differences. Multiple variables were collected, which presents a large dataset that is most applicable to utilizing an effective quantitative research method (Keller, 2019). Keller collected data from the United States Census Bureau and American Community Survey 2017 dataset, which the current researcher emulated in this study.

Bhalotra and Fernandez (2018) researched the topic of the distribution of gender-related pay equity. This researcher indicated that a quantitative method is essential to assessing significant distributional consequences. A large dataset collected from the United States census data from across 50 years is researched (Bhalotra & Fernandez, 2018). The study results provide a dataset that the increase of women in labor forces gender-related pay equity distribution. The current researcher utilized the United States census data from all 50 states. The added benefit was a larger sample size than Bhalotra and Fernandez's study.

The research questions asked answered the problem statement of gender-related pay equity. Prior to this study, it was not known to what extent states and industries in the public sector of the U.S. economy differed in terms of gender-related pay equity. Gaps in previous research resulted in questions of whether gender-related pay equity exists by states and industries of the United States. The data about gender-related pay equity was

collected from the U.S. Census Bureau's proven sourcing and American Community Survey data. Analyses of wage and gender data were conducted with IBM SPSS, Statistics, 2017, version 25, software to assess gender-related pay equity specifics. The questions of gender-related pay equity were answered through this study.

The unit of analysis was pay data. Pay data (unit of analysis) had dual identification: subindustry X state (36 subindustries X 51 states = 1836 cases). The analyzed dataset included 1834 cases, with data for gender-related pay equity (operationalized as the proportion of women's pay relative to men's pay at subindustry level; measured as a percentage), state (51 states (including D.C.)), industry (five industries), and subindustry (36 subindustries). Since the unit of analysis had dual identification, the pay data from the 36 subindustries represent the dataset for both questions.

This study's variables can be defined as independent, dependent, categorical, ratio, and measurement levels and directly correlated to the research questions. The dependent variable measurement level represents gender-related pay equity at the state and industry levels. Gender-related pay equity was operationalized as the proportion of women's pay relative to men's pay at the subindustry level by state (measured on a ratio scale, as a percentage). The independent variables are state and industry and are defined as categorical. Research Question 1 had one independent variable, the state, and Research Question 2 had one independent variable, the industry. Gender-related pay equity (pay data) is the dependent variable for both research questions. The hypotheses stated that there is a difference in gender-related pay equity at the state and industry levels.

Table 2.

Variables for Both Research Questions

RQ#	Variable Name	Role	Type of Data
1	State	Independent	Categorical
2	Industry	Independent	Categorical
1 & 2	Gender-related Pay Equity	Dependent	Ratio (percentage)

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 then 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:

RQ_1: Are there any statistically significant differences in gender-related pay equity among the 51 states (including D.C.) in the United States public sector?

$H1_0$: There are no statistically significant difference in gender-related pay equity among the 51 states (including D.C.) in the United States public sector.

H1a: 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.

RQ_2: Are there any statistically significant differences in gender-related pay equity among the five major industries in the United States public sector?

$H2_0$: There is no statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

H2a: There is at least one statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

Rationale for a Quantitative Methodology

To conduct this study, the researcher used a quantitative research methodology with a nonexperimental comparative design. This research study's questions, data analysis process, data collection method, variables, and instrumentation determined the study's methodology. Both research questions inquired about the interaction between different groups, which requires a statistical analysis based on probability theory. Quantitative research focuses on testing theories through statistical analyses, numerical comparison, and measurable data (Campbell & Stanley, 1966). A quantitative method was needed because data were analyzed through numerical comparison and statistical inferences. A non-experimental comparative research design attempts to assess the cause and effects of variables. Gender-related pay equity data is reported through statistical analyses, and a number-based study is required to define results.

Utilizing a quantitative method versus a qualitative approach was necessary for several reasons. Qualitative research seeks to assess human behavior, while quantitative research aims to discover social phenomena (Park & Park, 2016). In this study, the researcher utilized archival statistical data and test a hypothesis by systematic collection to analyze (Campbell & Stanley, 1966). A quantitative research method represented the best method to perform statistical analysis; in contrast, those using a qualitative approach seek to explore ideas and experiences.

The researcher aimed to determine gender-related pay equity at the state and industry levels while discovering the social phenomenon of wage disparity. Qualitative

research data sources are collected through observation and interviews. In contrast, the current researcher collected data from archival data from the United States Census Bureau and American Community Survey data; thus, the study had its own set of differences than studying a numerically driven study in real-time.

Previous studies conducted their research using a quantitative research approach. Previous qualitative research requested that future research implement a quantitative method versus a qualitative approach (Rosado, 2018; Swain, 2019). Prior studies have stated that a quantitative approach is needed to provide valuable data to assess variables better. The data required to measure gender-related pay equity are numeric and provide the reader with a clear picture of the phenomenon (Dennis, 2016; Rosado, 2018; Smith & Fernandez, 2017). Quantitative data are measured through numerical data and statistics, and the current researcher collected numerical archival data. Data were collected, compared, and analyzed through statistical inferences.

The mixed-method research methodology utilizes quantitative and qualitative research methods to seek knowledge of the phenomenon of interest. Grand Canyon University does not recommend using mixed-method research as the methodology because the timeline to complete mixed-method research is often time-consuming. The quantitative research method was chosen over the mixed methodology due to the required time constraints.

Research results are critical to answering the question of gender-related pay equity based on state and industry data. The federal government only provides pay data at a national level. Historically women make 20% less than men for equal work, and this gap has become stagnant over the past 5 years (Phillips, 2018; Rosado, 2018). The

resulting data can negatively affect the distribution of billions of federal dollars to individual states that are not abiding by federal gender-related pay equity laws. The results may lead to a halt in federal funding for states allowing gender inequality.

Rationale for Research Design

This quantitative research study used a nonexperimental comparative design to compare gender-related pay equity at the state and industry levels. The purpose of selecting a nonexperimental comparative design was to determine whether the relationship between gender-related pay equity and state and industry data exists. Quantitative designs include descriptive/survey, correlational, nonexperimental comparative, quasi-experimental, and experimental. In the end, the researcher determined that a nonexperimental comparative design best suited the purpose of this study.

The non-experimental comparative research design was chosen to determine the cause and effect of gender-related pay equity variables and the variables' relation to different specific parts of the country. A non-experimental comparative design aims to compare variables, independent and dependent, after an action has occurred. The analysis involved two one-way ANOVAs to compare gender-related pay equity and state and then gender-related pay equity and industry. State data points were totals per state, and a percentage was provided.

Correlational research design seeks to assess what kind of relationship has accrued between variables, determining if two or more variables are related. Additionally, correlations focus on the same group or dataset collected. This researcher aimed to examine and compare potential differences between states and industries (groups or datasets); different datasets (groups) present an issue for correlational research design.

The research question was: Is there a difference in gender-related pay equity between the state and industry of the United States public sector? (Campbell & Stanley, 1966). This researcher aimed to compare data, not to explain how the variables are related. The non-experimental comparative research design study aims to compare differences between groups (datasets). This researcher aimed to compare groups for differences, while correlational scholars aim to find the correlation to determine the relationship(s) between variables. For this reason, correlational research was an unacceptable design.

A descriptive research design seeks to describe a population's characteristics to collect quantifiable data for statistical analyses of the sample size. A descriptive research design allows researchers to collect large datasets and suggest critical claims based on the total sample size (Byrne, 2007). The current researcher utilized a large sample size and attempted to determine whether a variable causes other variables' change. Characterizing the population was not required, which led to the selection of a nonexperimental comparative research design.

The final two research designs are quasi-experimental and experimental. A quasi-experimental research design manipulates the independent variable without random assignment of participants (i.e., data points). An experimental research study is under the direct control of the researcher with a strong relationship through cause-effect relationships (Anderson & Wolf, 2017; Campbell & Stanley, 1966). The quasi-experimental and experimental research designs were easily discounted because there was no manipulation of participant data.

The researcher employed a quantitative research methodology and a nonexperimental comparative design because they best met the needs of the study. Many

other designs were considered but did not provide the design needed to answer the problem statement, research questions, and assessment of variables. The variable structure of the unit of analysis and unit of observation was clearly defined. The unit of observation was state and industry, and the unit of analysis was pay data.

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 (see Appendix B.). 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 research questions of gender-related pay equity 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, which meant 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, and 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 x SE. SE stands for Standard Error (SE), the foundational measure of the variability of an estimate due to sampling. The Census Bureau states alternate confidence levels in data 95% and 99%, MOE = 1.96 x SE, and 2.58 x SE. 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 (Fuller, 2018). This researcher utilized a

large geographic size consisting of all characteristics to achieve 99% confidence in data integrity.

Table 3.

United States Census Bureau Confidence Chart

Confidence Level	Margin of Error (MOE)	MOE for Example Estimate
90%	1.645 x SE	+/- 3,778
95%	1.96 x SE	+/- 4,501
99%	2.58 x SE	+/- 5,925

The United States Census Bureau and American Community Surveys evaluated reliability by measuring what is known as the coefficient of variation. The coefficient of variation is equal to the standard error, SE (U.S. Census Bureau, 2017). The coefficient of variation is divided by the estimated variable multiplied by 100 to produce a percentage. The standard of error (SE) can be derived from the margin of error (MOE) as a published estimate. The formula is stated below.

$$CV = \frac{SE\ (estimate)}{estimate} \text{ X } 100$$

Quantitative Sample Size

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 with complete data (Appendix F). The researcher added that 15% (123 cases) to be able 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 and exceeded the minimum sample size.

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.

Research Data

The ACS survey aims to collect basic information about all United States citizens and significantly affect the United States' infrastructure. The survey results inform the allocation of billions of dollars of federal funding to communities, transportation roads, schools, and public services. Emergency readiness needs are dependent on results, such as police, fire, and hospitals. The House of Representatives and all political representation are directly correlated to survey results; each state's total number of seats is the byproduct of Census data.

The scale of the American Community Survey was provided through the archival dataset. All variables, pay data, five major industries in each state, and state were

collected from the archival dataset. Data were labeled and sub-labeled from one man and one woman of equal job title under 36 subcategories. The 2017 American Community Survey dataset provided a total of 2.1 million survey results. The sum of individual data points per state provided a single data point that the researcher compared and analyzed. Five major industries in each state data point were collected from individual states represented by industry; such data were compared and analyzed (see Appendices J). Table 4 represents labels and totals of the American Community Survey dataset. Table 5 presents the sample's demographic information.

Table 4.

The 2017 American Community Survey Dataset

Labels	Totals
Respondents (U.S. public sector employees)	2,130,210
State and District of Columbia	51
Subindustries	36

Table 5.

Intended Demographic Information

Location (US)	Industry	Gender	Job Title	Pay
50 States	5 significant categories	Men	Equal Job title from same state and industry	Wage data (annual compensation)
District of Columbia	36 Subcategories	Women		

Previous researchers have applied similar methods of data sourcing. In 2019, researchers conducted a study to assess gender-related pay equity utilized the 2011 Census and American Committee Survey data (Cortés & Pan, 2019). A 2017 study researching gender-related pay equity used 2000 Census data from the 50 largest Primary Metropolitan Statistical Areas (Goldin, 2017). A study researching wage discrimination

in 2018 utilized United States Census and American Community Survey data (Burn, 2018). Like Burn's study, an additional 2018 research study utilized both United States Census and American Community Survey data (Ulrich-Schad & Duncan, 2018). The United States Census Bureau data are considered top-level data. Previous researchers have deemed the United States Census Bureau data valid and reliable (Chambers et al., 2014; Gallup Poll, 2018).

It is important to note that U.S. Census and American Community Survey data are commonly implemented when researching United States wage and demographic data (Brucker & Rollins, 2019; Clemens, 2018; Clemens et al., 2018; Ikpebe & Seeborg, 2018; Pasha et al., 2020). The U.S. Census Bureau is required not to release any data or information that can directly identify a household, in which case data are scrubbed of identity markers. This survey provided scientific knowledge to uncover what state governments are not abiding by current legislation.

To ensure data collection reliability, the Census Bureau implements the American Community Surveys (ACS). The American Community Survey is authorized by 13 U.S.C. § 141, and 13 U.S.C. § 193, and the United States Federal Court has deemed the American Community Survey form constitutional (Guzman, 2018). The United States federal government, local governments, businesses, and researchers have utilized ACS data for decision-making purposes and future planning.

Participation in confidentiality and privacy is critical for the United States Census Bureau. The United States Census Bureau is required by law to uphold the highest level of protection of data collected. Collected data is protected under Title 13 of the U.S. Code. The United States Census Bureau must not release any data or information that can

directly identify a household. The Federal Cybersecurity Enhancement Act of 2015 ensures that data are protected from cybersecurity risks associated with screening and data collection methods that transmit data. All data submissions were encrypted to ensure confidentiality.

Table 6.

Summary of Study Variables for Research Question 1

Variable Name	Type	Measured By	Measurement Level
State	Independent	Standard	Categorical
Pay Data	Dependent	ACS Survey	Ratio (percentage)

Table 7.

Summary of Study Variables for Research Question 2

Variable Name	Type	Measured By	Measurement Level
Industry	Independent	Standard	Categorical
Pay Data	Dependent	ACS Survey	Ratio (percentage)

Validity

Validation of data is essential for any quantitative research study. Validity is the critical indicator of how sound a research study is and represents that the claims are validated and reliable. The American Psychological Association Committee requires the identification of validation of testing and results. Transparency of results is critical for a successful research study; limitations are equally important (Connors et al., 2019).

The current researcher collected data from the United States Census Bureau, a trusted department by the American people and its government. The United States Census Bureau has a minimal standard confidence level of 90%, with the margin of error (MOE) = 1.645 x SE. The United States Census Bureau states alternate confidence levels in data 95% and 99%, MOE = 1.96 x SE, and 2.58 x SE. Achieving the highest level of

confidence is critical. Utilizing a larger geographical size and combining estimates across characteristics and geographies provides the highest level of confidence requirements. The current researcher used a large geographic scope.

This study utilized archival United States Census Bureau and American Community Survey data, which has undergone validation testing under section 4.1.2.1 of the United States Census Bureau Operation Plan (U.S. Census Bureau, 2015). The validation testing process involves two separate components: The Partial Block Canvassing Test (PBC) and MAF Model Validation Test (MMVT). The Census Bureau additionally utilizes Boundary and Annexation Surveys as geographic partnership programs. The highest level of validation is considered; the Census Bureau's data are trusted by organizations across the country, including the government.

Reliability

Reliability is closely related to validity to ensure a research study maintains proper quality levels of measurements. Reliability must first be quantified before the study can be validated. For a quantitative research study to be reliable, consistency of analyses is required, or the instruments measuring data are performed the same each time under the same conditions (Middleton, 2020).

Previous researchers have reported U.S. Census Bureau data to be valid and reliable (Chambers et al., 2014; Gallup Poll, 2018). Referring to validity, the U.S. Census Bureau has a minimal standard confidence level of 90%, the margin of error (MOE) = 1.645 x SE. SE stands for Standard Error (SE), which is the foundational measure of the variability of an estimate due to sampling. The U.S. Census Bureau states alternate confidence levels in data 95% and 99%, MOE = 1.96 x SE, and 2.58 x SE. Achieving the

highest level of confidence is critical. Utilizing a larger geographical size and combining estimates across characteristics and geographies provides the highest level of confidence requirements.

To ensure data collection reliability, the U.S. Census Bureau administers the American Community Surveys (ACS). The United States Federal Court has deemed the American Community Survey form constitutional. The U.S. federal government, local governments, businesses, and researchers have utilized ACS data for decision-making purposes and future planning.

Data Collection and Management

Data collection was accomplished through an MSI GE72, Intel® Core™ i7-6700HQ, CPU @ 2.60 GHz, 64-bit operating system, x64 based processor laptop that was password-protected to input data from approved state and federal public databases, the U.S. Census Bureau, and American Community Survey data. A non-experimental comparative design with two two-way ANOVA analyses was used to compare gender-related pay equity by state and then gender-related pay equity by industry. IBM SPSS statistics software was used for the entire data analysis. The variables were state, industry (IVs), and pay (DV). The analysis of 1,834 data points (51 states, including D.C.) and the 36 subindustries within each state) from the original 2.1 million sample size may produce valuable results to impact gender-related pay equity in the United States.

Data collection utilized an MSI GE72, Intel® Core™ i7-6700HQ, CPU @ 2.60 GHz, 64-bit operating system, x64 based processor laptop password-protected to input data from approved state and federal public databases, the United States Census Bureau, and American Community Survey data. A non-experimental comparative statistics study

utilized a one-way ANOVA statistics test to compare the difference between gender-related pay equity and state and industry data. IBM SPSS statistics software tested for univariate outliers, organizations, and comparison of results from state pay data of gender. A non-experimental comparative research design was utilized because it best represents the need to assess the cause and effect of multiple data points. The non-experimental comparative design enabled the researcher to collect quantifiable data for statistical analyses. The variables were state, industry, and pay data from the United States. A 2.1 million sample size may produce valuable results to impact gender-related pay equity in the United States.

Previous researchers have applied similar methods of data collection. In 2019 a study to determine the gender-related pay equity issue utilized the 2011 United Census Bureau and American Community Survey data (Cortés & Pan, 2019). In a 2017 study, the author used 2000 Census data from the 50 largest Primary Metropolitan Statistical Areas (Goldin, 2017). In a study researching gender-related pay discrimination in 2018, the author utilized Census and American Community Survey data (Burn, 2018). Like Burn's study, an additional 2018 research study utilized both Census and American Community Survey data (Ulrich-Schad & Duncan, 2018).

It is important to note that Census and American Community Survey data are commonly implemented when researching United States wage and demographic data (Brucker & Rollins, 2019; Clemens, 2018; Clemens et al., 2018; Ikpebe & Seeborg, 2018; Pasha et al., 2020). The Census Bureau must not release any data or information that can directly identify a household; raw data is scrubbed of identity markers. This

survey provided scientific knowledge to uncover what state governments are not abiding by current legislation.

The Census data were categorized by occupations, sex, and median earnings of the employed civilian populations aged 16 years and over. Occupation code is defined as 4-digit codes based on the 2010 Standard Occupational Classification (O*Net). The Occupational Information Network (O*Net) is a database that provides hundreds of occupational definitions to provide business and workforce development professionals a standard guideline of job descriptions. Significant categories may have multiple subcategories and are the variables of industry. Categories are listed below:

1. Civilian employed population 16 years and over with earnings
2. Management, business, science, and arts occupations
3. Management, business, and financial occupations
4. Management occupations
5. Business and financial operations occupations
6. Computer, engineering, and science occupations
7. Computer and mathematical occupations
8. Architecture and engineering occupations
9. Life, physical, and social science occupations
10. Education, legal, community service, arts, and media occupations
11. Community and social services occupations
12. Legal occupations
13. Education, training, and library occupations
14. Arts, design, entertainment, sports, and media occupations
15. Healthcare practitioner and technical occupations

16. Health diagnosing, treating practitioners, technical occupations
17. Health technologists and technicians
18. Service occupations
19. Healthcare support occupations
20. Protective service occupations
21. Firefighting, prevention, other protective service workers
22. Law enforcement workers, including supervisors
23. Food preparation and serving related occupations
24. Building and grounds cleaning and maintenance occupations
25. Personal care and service occupations
26. Sales and office occupations
27. Sales and related occupations
28. Office and administrative support occupations
29. Natural resources, construction, and maintenance occupations
30. Farming, fishing, and forestry occupations
31. Construction and extraction occupations
32. Installation, maintenance, and repair occupations
33. Production, transportation, and material moving occupations
34. Production occupations
35. Transportation occupations
36. Material moving occupations

Data were collected through the approval of the United States Census Bureau; public data does not require a special invitation (see Appendix J). Wages by state, occupation, and gender were downloaded into IBM SPSS statistics software. Industry included all respected industry categories defined by the United States Census Bureau;

(1) management, business, science, and arts occupations; (2) service occupations; (3) sales and office occupations; (4) natural resources, construction, and maintenance occupations; and (5) production occupations. Total numbers of wage data were provided for numbers of full-time workers, positions title, median weekly earnings, and the number of workers for men and women.

Data Analysis Procedures

The researcher provides a detailed description of the process taken to complete data analyses for this quantitative, nonexperimental, comparative study in the data analysis section. Two one-way ANOVA analyses were used to compare gender-related pay equity across states and then across 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 (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020).

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 be able 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.

The purpose of the current quantitative, nonexperimental, 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 United States Census Bureau with the 2017 American Community Survey. Research questions were aligned, developed, and analyzed for the purpose of the study. The statistical significance level was corrected to prevent inflation of the type I error (Bonferroni, 1936). The dependent variable data were utilized in two analyses corresponding to the two research questions. The Bonferroni correction involves dividing the standard .05 alpha to the number of analyses: .05 / 2 = .025. The corrected alpha was used to estimate the minimum sample size for the ANOVAs. Below are the research questions and hypotheses that guided this study.

Analyses of gender-related pay data was conducted with IBM SPSS Statistics software from the United States Census Bureau wage and American Community Survey data. The American Community Survey provides a dataset that cannot be collected elsewhere (Guzman, 2018). Entities, including the U.S. federal government, local governments, businesses, and researchers, have utilized American Community Survey data for decision-making purposes and future planning.

Analyzing the gender-related pay equity issue is critical because the adverse effects of gender-related pay equity gaps are felt throughout American society and its economy. Every state had a median earning differential of the pay gap between genders. Industry median earning differential were provided through archival data. Industry and state data were then compared against each other to answer the research questions. Both

research questions were answered through a quantitative research method and a nonexperimental comparative research design tested with a one-way ANOVA. IBM SPSS 25 premium statistics were performed with a multi-step process.

1. 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.
2. Each state, the District of Columbia, and industry was assigned a number representing analysis for SPSS.
3. A state and the District of Columbia data point included 36 individual industries within each state and the District of Columbia.
4. 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).
5. 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).
6. The five major industries are defined from the original 36 subindustries. Archival data provide significant industry data points.
7. The CSV file was imported into IBM SPSS 25 premium statistics software.
8. The analysis process compared the means through the test variable of the gender-related pay equity rate of the 1,834 data points.
9. With the collection of state data into IBM SPSS format, a CSV file was imported into IBM SPSS 25 premium statistics software.
10. Testing the six assumptions for one-way ANOVA was tested using the Shapiro-Wilk test, Levene's test, and Kolmogorov-Smirnov test.
11. If the sample failed assumptions, then a nonparametric test had to be performed for both sets of independent groups.
12. IBM SPSS univariate options were set to descriptive statistics and homogeneity of variance test.
13. The level of statistical significance was corrected to .025 to mitigate inflation of type I error (Bonferroni, 1936).

14. The one-way ANOVA analysis process sought to assess data interaction utilizing a general linear model and univariate analysis.
15. The univariate analysis variables defined a dependent variable of rate (gender-related pay equity), state, and industry factors.
16. IBM SPSS was used to analyze the data.

Ethical Considerations

The National Research Act in 1974 was signed by President Richard Nixon (Centers for Disease Control and Prevention, n.d.). The latest research act's primary purpose was to establish that the National Commission for Human Subjects of Biomedical and Behavioral Research protection would identify basic ethical principles, such as those written in the Belmont Report. The three fundamental principles and ethical standards are respect for the person, beneficence, and justice. Currently, the Belmont Report is a significant reference for the institutional review board (IRB). The Belmont Report was significant and beneficial in researching human subjects; an upgrade is required to address human subject studies' globalization (Friesen et al., 2017). The Belmont Report and institutional review board guidelines were significant in the completion of this study.

The researcher intends to conduct this current quantitative nonexperimental comparative study to place no human subject at risk of the Belmont Report violations or ethical concerns. Ethics and participant protection were considered, and participants were protected from identification, were autonomous, and data were de-identified when downloaded. Beneficence was critical, and the study was protected against any physical, mental, or social harm and the well-being of all participants. Lastly, the study was a fair and equal distribution of benefits and risks of all participants involved, and no participants were recruited to contribute. Data were collected from Census data, which is

protected under Title 13 of the U.S. Code. The Census Bureau is required not to release any data or information that can directly identify a household. The Federal Cybersecurity Enhancement Act of 2015 ensures that data are protected from cybersecurity risk from screening and data collection methods that transmit data; all data submissions were encrypted to ensure confidentiality.

The 2.1 million sample size was collected from archival the United States Census Bureau data. The study is protected against any physical, mental, or social harm because all participant data were collected anonymously and volunteered; no participant was recruited to contribute. Ethical consideration for participants' protection and identity has been considered. Participants cannot be identified or harmed, protecting them from the three fundamental principles and ethical standards: respect for the person, beneficence, and justice.

The researcher maintained all data on password-protected equipment, and other data or notes will be contained in a locked drawer in the researcher's office for 3 years following the completion of the study. All data will be destroyed through proper data disposal methods after 3 years. The researcher was required to gain approval from Grand Canyon University, College of Doctoral Studies (CODS), Institutional Review Board (IRB), Academic Quality Review (AQR), and Dean’s approval.

Assumptions and Delimitations

Assumptions

Assumptions are the acceptance of the truth or confidence without proof that are out of the control of the researcher (Leedy & Ormrod, 2010). The researcher

acknowledges assumptions in the following areas: methodological, theoretical, or topic-specific. All assumptions are stated below.

The first assumption is that all survey responses have been answered honestly. Survey data is collected from the United States Census Bureau utilizes the American Community Survey. The researcher's assumption is all data points collected are valid.

The second assumption is that all data collected from the American Community Survey was collected correctly. The United States Census Bureau is entrusted by the United States government and other researchers to collect and organize complex datasets (Burn, 2018; Cortés & Pan, 2019; Ulrich-Schad & Duncan, 2018). The researcher's assumption is all results have been collected and organized correctly.

Delimitations

Delimitations are choices that are made by the researcher that should be described and mentioned and are in control of the researcher (Leedy & Ormrod, 2010). Delimitations are different than limitations in that delimitations can influence the validity of results. The following delimitations were present in this study.

One delimitation of the study was the scope of the American Community Survey questions asked on the survey. The United States Census Bureau utilizes the American Community Survey, which is authorized and trusted by the United States government. The researcher did not utilize data outside of the scope of pay data by state and industry.

The second delimitation of the study was the scope of the five major industries. The five major industries were chosen for their significance. The United States Census Bureau considered them significant and are utilized in all government categories. No other industries were considered then than five provided from the United States Census

Bureau. The research did not utilize any other industries that were not in the original dataset.

The third delimitation was the age of the participant. The American Community Survey only collects data from civilians that are 16 years or older in age. The research did not utilize employee pay data that were not at least the age of 16 years old.

Another delimitation was the use of the District of Columbia and no other territory. The United States has other territories around the world (American Samoa, Guam, Northern Marian Islands, Puerto Rico, and the Virgin Islands). The research did not collect data from any other territories of the United States.

Summary

This quantitative nonexperimental comparative research study utilizing equity theory was developed and executed to address the problem statement. It was not known to what extent states and industries in the public sector of the U.S. economy differed in terms of the gender-related pay equity. The alignment was represented throughout the study, problem statement, purpose statement, research questions, hypotheses, methodology, design, data collection, instruments, and analyses. Chapter 2 provides a detailed review of the literature, outlined the background of the problem, and provided the methodology's foundation. In this section, the researcher reviews the key points of Chapter 3 and provides a transition into Chapter 4.

This study's research questions asked whether and to what extent gender-related pay equity exists in states and five major United States industries. A quantitative research methodology was chosen to provide the best approach to describe and compare variables. A quantitative method was needed because data were analyzed through numerical

comparison and statistical inferences. Gender-related pay equity data were reported through statistical analyses, and a number-based study was required to identify the statistical significance of the results.

Previous studies have been conducted utilizing the qualitative method; such researchers requested that future research be performed using a quantitative approach, making the findings' generalizability higher (Rosado, 2018; Swain, 2019). Previous researchers have indicated that a quantitative method provides the proper methodology to examine whether pay equity exists (Dennis, 2016; Rosado, 2018; Smith & Fernandez, 2017). A non-experimental comparative research design was utilized to compare archival data to answer the following research questions by testing their associated hypotheses:

RQ_1: Are there any statistically significant differences in gender-related pay equity among the 51 states (including D.C.) in the United States public sector?

$H1_0$: There are no statistically significant difference in gender-related pay equity among the 51 states (including D.C.) in the United States public sector.

H1a: 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.

RQ_2: Are there any statistically significant differences in gender-related pay equity among the five major industries in the United States public sector?

$H2_0$: There is no statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

H2a: There is at least one statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

The sample population was identified through gaps in previous literature on gender-related pay equity. The study produced a general population of 2.1 million total men and women from the entire United States. Data points extracted the same job titles of men and women from all 51 states to examine gender-related pay equity based on state and industry. Gender-related pay equity data were collected from approved state and federal public databases, the United States Census Bureau, and American Community Survey data, which is unaffiliated through the Department of Labor and Bureau of Labor Statistics. The collection of a 2.1 million sample size provided valuable results to impact gender-related pay equality in the United States.

The instrumentation for this nonexperimental comparative research study was the U.S. Census Bureau and American Community Survey 2017 dataset. The 2017 dataset was utilized because after 2017, the Census Bureau generalized results and does not provide raw results anymore. The U.S. Census collects data through two different methods of survey methods: online and paper. To ensure data collection reliability, the Census Bureau implements the American Community Surveys, which provides a dataset that cannot be collected elsewhere (Guzman, 2018).

Analyses of gender-related pay data was conducted with IBM SPSS Statistics software of gender, state, industry, and pay. A one-way ANOVA test of the United States Census Bureau gender-related pay data of gender at an individual state and industry level was conducted. The researcher performed statistical calculations using wage data to determine the percentage of the wage equity between men and women. States were categorized into five major industries to recognize bias. Analyzing the issue of gender-

related pay equity was critical; every state had an average percentage of the pay gap between genders. Industry averages were also calculated in their respective categories.

The purpose of this quantitative, nonexperimental, 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. This study's results and analyses may provide needed scientific knowledge to examine state, and industry-level data so proper legislation, sanctions, and social pressure can provoke change. Statistics are given from a national perspective providing cover for individual states and industries. This scientific knowledge may provide additional insight into state governments and industry societies to trigger change. In Chapter 4, the researcher presents the results of the data analyses.

Chapter 4: Data Analysis and Results

Introduction

Prior to this study, it was not known to what extent states and industries in the public sector of the U.S. economy differed in terms of gender-related pay equity. This quantitative comparative study aimed to generate new knowledge regarding gender-related pay equity in the United States as a basis for addressing the problem of inequity. Gender-related pay equity was operationalized in this study as the proportion in pay for women compared to men. In this study, 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. The dependent variable, gender-related pay equity, was a ratio variable.

The researcher examined gender-related differences in pay in the U.S. public sector by state and then across the five major industries, using archival data originally collected by the U.S. Census Bureau through the 2017 American Community Survey. The 2017 ACS dataset included complete survey responses from over 2.1 million public sector employees. The data retrieved for this study had been aggregated from respondent level to subindustry level, by state. The dataset included 1834 entries: 36 subindustries by 51 states (50 states plus the District of Columbia). District of Columbia lacked data from two subindustries. The data file included variables for state, industry, subindustry, and gender-related pay equity.

Two comparative analyses (one-way ANOVAs) were used to assess differences in gender-related pay equity across the 51 states (including D.C.), and then across the five major industries: (1) management, business, science, and arts occupations; (2) service

occupations; (3) sales and office occupations; (4) natural resources, construction, and maintenance occupations; and (5) production occupations. The following research questions and corresponding hypotheses guided this study:

RQ_1: Are there any statistically significant differences in gender-related pay equity among the 51 states (including D.C.) in the United States public sector?

$H1_0$: There are no statistically significant difference in gender-related pay equity among the 51 states (including D.C.) in the United States public sector.

H1a: 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.

RQ_2: Are there any statistically significant differences in gender-related pay equity among the five major industries in the United States public sector?

$H2_0$: There is no statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

H2a: There is at least one statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

Previous gaps in the research indicated the need for this study. Obloj and Zenger (2020) researched gender-related pay equity with a sample size only consisted of 8 of the 50 states and required additional research of all 50 states. Cortés and Pan (2019) researched pay equity, which presented a significant study limitation in that their sample was 8 years old at completion, only included 25 United States cities and did not consider industry information. Goldin (2017) identified a limitation of his gender-related pay equity studies. The sample size only included 23 out of the 50 states of the United States and only included metropolitan areas, not the entire state. Additionally, the dataset was

17 years old at completion. In Blau and Kahn's (2017) gender-related pay equity study, the scholars utilized a 2010 dataset that was 7 years old at completion and requested future research utilizing nationwide data. Rosado (2018) requested future research to consist of a larger sample size, a quantitative research method, and comparisons of data across industries. The need for additional research is clear. A quantitative study to assess gender-related pay equity data at the state and industry levels are required.

The equity theory provided the theoretical framework for this quantitative comparative study. Equity theory that was developed in the 1960s by Adams, a workplace and behavioral psychologist. He defined gender-related pay equity variables and stated questions that guided research in this problem area (Adams, 1965). Equity theory explains resource distribution's fairly between relational partners, with these partners being men and women's gender. Equity theory seeks an assessment of input and output, work, and employee reward, based on gender. Equity theory is utilized when researching gender-related pay equity (Smit & Montag-Smit, 2019).

Changes are important and need to be presented from the researcher's original plan. From the original research plan presented throughout chapters 1-3, no significate changes were required. The one-way ANOVA, American Community Survey, and a quantitative comparative study were all implemented for this study, as stated throughout chapters 1-3. Since data is archival in nature, many anticipated issues and situations were considered. Moving forward throughout chapters 4 and 5, no significate changes were made from the researcher's original plan.

Chapter 4 is structured by outlining sample data demographics, research questions, analyses, reliability, and conclusions. The research questions asked whether

there is a difference in gender-related pay equity between states and industry in the United States public sector. Answering these questions required two one-way ANOVA statistics tests to compare the difference between gender-related pay equity and state and industry. IBM SPSS statistics software was used to test for univariate outliers and to compare the results from national pay data of gender with a sample size of 1,834 data points from the U.S. public sector.

Preparation of Raw Data for Analysis and Tests of Assumptions

Preparation of Raw Data for Analysis

The preparation of raw data for analysis is critical for the success of this study. The American Community Survey archival data was the single source of sample data. The process of preparation of raw data is stated below:

1. The download of archival data was conducted first. The American Community Surveys allows raw data files to be downloaded directly from their File Transfer Protocol (FTP) server.
2. Raw data were converted into state and industry categories. Converted files were saved as a Microsoft 365 Excel file.
3. Data points were checked for duplicates; no duplicates were discovered.
4. Sample data were checked for outliers, outliers were discovered.
5. Data were checked for reliability and validity. The United States Census Bureau has a minimal standard confidence level of 90%, with the margin of error (MOE) = 1.645 x SE. SE stands for Standard Error (SE), the foundational measure of the variability of an estimate due to sampling. The Census Bureau states alternate confidence levels in data 95% and 99%, MOE = 1.96 x SE, and 2.58 x SE. 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 (Fuller, 2018). This researcher used all geographic areas consisting of all characteristics to achieve 99% confidence in data integrity.
6. The post hoc sample size was compared to the a priori calculation for sample size in G*Power. The total sample size used for analysis was 1,834. G*Power 3.1.9.7 analyses utilized a corrected alpha error of .025, minimum power .95, and an

additional 15% to discard outliers, and required a total sample size of at least 939. The dependent variable data were utilized in two analyses corresponding to the two research questions, which required the Bonferroni (1936) correction; the alpha error was corrected .025. The 1,834 data points are the average of the five major industries (36 subindustries) within the 51 states (including D.C.) from an original 2,145,639 sample size. 1,834 is significantly higher than the required 939. To properly represent all states (including Washington D.C.) and industries, a more extensive dataset was needed.

7. Raw data is presented as gender-related pay equity. Women's earnings are downloaded as a percentage of men's earnings. Median earnings (dollars) for females and median earnings (dollars) for males are downloaded as a percentage as gender-related pay equity.

8. Assumptions tests were performed through SPSS software: boxplots, Shapiro-Wilk test, Kolmogorov-Smirnov test, and Levene's test. Within Chapter 4, all assumptions tests and results are presented.

9. Raw and converted data were uploaded into a new folder in the LDP, Grand Canyon University's online secure portal.

10. After the preparation of raw data, a clean and prepared dataset was provided by the researcher for analysis. There was a total of 1,834 data points from the United States public sector. The dataset consisted of 51 states (including D.C.), wherein each of the states has 36 industry datasets. The dataset consisted of 50 states, the District of Columbia, five major industries, and 36 subindustries (see Appendix L and Appendix M).

Tests of Assumptions

As stated, two one-way ANOVAs were conducted to address both research questions. The one-way ANOVA is a parametric test for which the data have to meet the following assumptions: (a) the dependent variable should be measured on an interval scale; (b) the independent variable should be categorical, defining two or more independent groups, (c) independence of observations, (d) no significant outliers in any of the groups defined by the independent variable, (e) the dependent variable should be approximately normally distributed in all groups defined by the independent variable, and (f) homogeneity of the dependent variable variance among all groups defined by the

independent variable. Each of these assumptions was tested, and the results are presented below. The following paragraphs present the findings of the assumption checks.

The Dependent Variable Should be Measured on an Interval Scale. The first assumption is the dependent variable should be measured on an interval scale. The dependent variable is archival data collected by U.S. Census Bureau with the 2017 American Community Survey. This is satisfied as the dependent variable of gender-related pay equity is a ratio variable (measured as a percentage); it is computed as the proportion of women's compensation to men. If the percentage is below 100%, then men favor women (women are paid less than men). If the percentage is above 100%, then women favor men (women are paid more than men).

The Independent Variable Should be Categorical, Defining Two or More Independent Groups. The second assumption is the independent variable should be categorical, defining two or more independent groups. The independent variables of state (51 groups) and industry (five major industries) have categorical groupings of more than the required number of two. Thus, the second assumption is satisfied.

Independence of Observation. The third assumption of independence of observations. Independence of observations means that there should be no relationship between the observations in each group or between the groups themselves. This assumption was satisfied as each case had a single category for state, a single category for industry, and a single category for subindustry.

No Significant Outliers in any of the Groups Defined by the Independent Variable. This assumption states that there should be no outliers in the distribution of the data for the dependent variable in any of the groups defined by the independent variables.

Investigation of the presence of outliers was performed through visual inspection using boxplots. Boxplots were generated for the dependent variable of gender-related pay equity for all 51 states (See Figure 2 in Appendix N) and for all five main industry (See Figure 3 in Appendix N).

Investigation of the boxplots of the dependent variable of gender-related pay equity data showed the presence of outliers in groupings of the independent variables of state and main industry. There were extreme outliers observed in the data of gender-related pay equity by state (See Figure 2 in Appendix N). There were also outliers observed in the data of gender-related pay equity by main industry (See Figure 3 in Appendix M). Extreme outliers are data points outside the boxplot, which are those data points marked as an asterisk in the graphs. In total, there were 43 extreme outliers present in the different groupings of states and industries. These 43 extreme outliers, which were including to 43 data points, were removed from the dataset. Thus, the final dataset used in the one-way ANOVA to address the two research questions included a total of 1,791 cases.

Investigation of the boxplots of the final dataset of gender-related pay equity data after removal of the outliers, including the final dataset of 1,791 samples (data points), showed no longer any presence of extreme outliers in each grouping of the independent variables of state (See Figure 4 in Appendix P) and main industry (See Figure 5 in Appendix Q). The outlier assumption was satisfied after the removal of outliers in the initial data set.

The Dependent Variable Should be Approximately Normally Distributed in all Groups Defined by the Independent Variable. The fifth assumption tested the

assumption of normality, meaning that the dependent variable should be approximately normally distributed in all groups defined by the independent variable. Normality was tested using the Shapiro-Wilk test. The results of the Shapiro-Wilk test are shown in Table 8. The results of the Shapiro-Wilk test of normality showed that gender-related pay equity data did not follow a normal distribution in three out of the 51 state groupings and also two out of the five main industry groupings. For state groupings, these include the state grouping of Idaho ($KS(34) = 0.90$, $p = 0.004$), Indiana ($KS(35) = 0.93$, $p = 0.030$), and Utah ($KS(32) = 0.93$, $p = 0.50$). For main industry groupings, these include Management, Business, Science, and Arts ($KS(810) = 0.99$, $p < 0.001$) and Sales and Office ($KS(153) = 0.95$, $p < 0.001$). Normal distribution was based on the Shapiro-Wilk statistics having a *p*-value greater than the level of significance, set at 0.05, which was not the case of the result. With this result, the assumption of normality was violated by the dependent variable of gender-related pay equity in some groupings of both the independent variables of state and main industry. This indicated that the assumption of normality was not satisfied by the dependent variable of gender-related pay equity for in some groupings of the independent variables of state and main industry.

Table 8.

Results of the Shapiro-Wilk Test of Normality of Gender-Related Pay Equity by Major Industry

Main Industry	*SW*	*df*	*p*
Management, Business, Science, and Arts	0.99	810	.000*
Service	1.00	391	.284
Sales and Office	0.95	153	.000*
Natural Resources, Construction, and Maintenance	0.99	184	.281
Production, Transportation, and Material Moving	0.99	202	.082

*Non-Normal

Homogeneity of Variance of the Dependent Variable Among all Groups Defined by the Independent Variable. The sixth and final assumption was homogeneity of the dependent variable variance among all groups defined by the independent variable, which were investigated using Levene's test. For Research Question 1, Levene's test of homogeneity of variances cannot be performed for the dependent variable gender-related pay equity by the independent variable of the state according to SPSS results. This was because there were too many groups for states which comprised 51 groupings. Only 50 groups are allowed by IBM SPSS 25 premium statistics software. For Research Question 2, Levene's test results showed that the variance of the dependent variable of gender-related pay equity ($F(4, 1735) = 17.0$, $p < 0.001$) was not homogeneous or equal across the five major different industries of the independent variable of the industry shown in Appendix R (Table 16). Homogeneity of variance was not achieved as the *p*-value was less than the level of significance value of 0.05. Thus, the researcher determined that the homogeneity of variance assumption was not satisfied based on Levene's test result. Although there was a violation of homogeneity of variance, the ANOVA can still be conducted to address the study's research questions and hypotheses. The one-way ANOVA is considered a robust test against homogeneity and normality assumption testing. A Games-Howell test instead of a Tukey post hoc test should be conducted due to the violation of the homogeneity of variance assumption (Blanca et al., 2017). The researcher decided to still conduct the one-way ANOVA regardless of the assumption not being satisfied based on Levene's test results. The assumption of homogeneity of variance is that the variance within each of the populations is equal. This is an assumption of analysis of variance (ANOVA). ANOVA works well even when this

assumption is violated except in the case where there are unequal numbers of subjects in the various groups (Blanca et al., 2017).

Table 9.

Results of Test of Homogeneity of Variance

Dependent Variable	Independent Variable	Levene Statistic	*df1*	*df2*	*p*
Gender-Related Pay Equity	State	Test of homogeneity of variances cannot be performed for Gender-related pay equity because there are too many groups (IBM SPSS statistics software).			
	Major industry	31.08	4	1735	0.000

Summary of Results of Assumption Testing. As a summary of the assumption testing results, only four out of the six required assumptions of the one-way ANOVA were satisfied by the data. These include (a) the dependent variable should be measured on an interval scale; (b) the independent variable should be categorical, defining two or more independent groups, (c) independence of observations, (d) no significant outliers in any of the groups defined by the independent variable. Two assumptions of (e) the dependent variable should be approximately normally distributed in all groups defined by the independent variable, and (f) homogeneity of the dependent variable variance among all groups defined by the independent variable were not satisfied. The researcher determined data transformation was not an option. Data transformation would present many consequences. Consequences include the interpretation of the model coefficients. (Pyle, 1972). Although there were violations of the two required assumptions, the one-way ANOVA can still be conducted to address the study's research questions and hypotheses (Blanca et al., 2017). For normality, although the data of all dependent variables did not follow a normal distribution, the statistical analysis of the one-way

ANOVA, which used the *F*-test, was robust to the violation of normality when there is no presence of outlier in the dataset (Blanca et al., 2017). In this case, the final dataset of 1,791 samples after removing the initial outliers. Also, for this study, a stricter level of significance of 0.025 was used for the two one-way ANOVAs to address the issue of violation of the required assumptions of normality and homogeneity of variance. This allowed for the analysis to go on as planned. Thus, the one-way ANOVA was conducted to address the study's research questions (Blanca et al., 2017).

Descriptive Findings

In this non-experimental comparative study, the researcher compared data that were collected from the United States Census, American Community Survey, 2017. The dataset enabled the researcher to examine a nationwide sample. The non-experimental 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 significate industries (36 subindustries). Later in Chapter 4, the analysis procedures and results will be presented.

Sample

Sample data were collected from the United States Census, American Community Survey, 2017. The United States Census Bureau implements American Community Surveys (ACS). The American Community Survey is authorized by 13 U.S.C. § 141 and 13 U.S.C. § 193, and the United States Federal Court has deemed the American Community Survey form constitutional. Individual sample data were categorized by state, five major industries (with 36 subindustries), median earnings (dollars) for males, median earnings (dollars) for females, women's earnings as a percentage of men's earnings, and women's earnings as in dollars of men's earning. All data points were then used in the ANOVA test of mean score difference in order to provide results of the comparison of the final sample of 1,791 data points from the U.S. public sector in five major industries (36 subindustries) within the 51 states (including D.C.). The data collection summary process flow chart is included (see Appendices G and H). Data is presented as gender-related pay equity (percentage), which is the average pay equity between women to men.

Occupation codes are 4-digit codes based on the 2010 Standard Occupational Classification (O*Net). Gender-related pay equity was measured in U.S. dollars by the percentage of median income between males and females. Significant categories may have multiple subcategories. Previous scholars have stated that the American Community Survey provides a dataset that cannot be collected elsewhere (Guzman, 2018). The use of archival data was appropriate for this study. Individual sample data were categorized by state, 5 major industries (36 subindustries), median earnings (dollars) for males, median earnings (dollars) for females, women's earnings as a percentage of men's earnings, and women's earnings as in dollars of men's earning.

After removal of the outliers, Research Question 1 had a total of 1,801 data points (n = 1,791) representing the 51 states (including D.C.) of the United States. The 1,791 data points for analyses (51 states/ District of Columbia and the 36 subindustries within each state) data points represented the pay ratio (gender-related pay equity) between men and women for each state and the District of Columbia of the United States public sector. The percentage of gender-related pay equity is utilized since it is more accurate to an assessment of pay equity.

After removal of the outliers, Research Question 2 had 1,740 data points (n = 1,740) representing the five major industries in each state of the United States public sector. The 1,740 data points for analyses data points represented the pay ratio between women to men for each state industry of the United States public sector. 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 within each state.

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 10 and 11. The mean gender-related pay equity is 74.73% (SD = 14.24%) for the general population. *SD* refers to standard deviation; the percentage of the values lie within 1 standard deviation(s) of the mean in normal distribution. In statistics, the standard deviation (SD, also represented by the Greek letter sigma σ or the Latin

letter s) and is a measure that is used to quantify the amount of variation or dispersion of a set of data values.

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 10 and 11. 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 11 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 10.

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 11.

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

Data Analysis Procedures

The data analysis section provides a summarized, detailed description and assumptions of the process taken to complete data analyses of this quantitative comparative research study. Two one-way ANOVA analyses were used to test gender-related pay equity across states and then across the industry. IBM SPSS statistics software was used for the entire analysis. Previous researchers studying this topic had analyzed incomplete data that did not consist of national data broken down by state, requiring a larger, more diverse sample size (Cortés & Pan, 2019; Blau & Kahn, 2017; Goldin, 2017; Obloj & Zenger, 2020). G*Power 3.1.9.7 analyses utilizing an alpha error of .025, minimum power .95, and the additional 15% for the ability to discard outliers or use nonparametric tests indicated the need for a total sample size 929 (see Appendix F). The dependent variable data were utilized in two analyses corresponding to the two research questions, which required the Bonferroni correction; the alpha error was corrected to .025.

The 1,834 cases in the raw date file represent gender-related pay equity at subindustry level, by state (including the District of Columbia). The size of the raw data file was larger than the minimum sample size of 816 cases estimated in G*Power (Appendix F), which increased test sensitivity, enabling the researcher to capture as statistically significant even small size effects. Industry data points best represented the total population; every industry was represented equally throughout all states and provide data equality. Utilizing industry data points also provided the blueprint for future research. Random sampling was considered but not chosen due to its lack of consideration of all industries and employees within each industry equally. Random

sampling would have only represented a fraction of a percentage of the total sample size unequally.

The purpose of this quantitative, comparative study was to examine differences in gender-related pay equity in the U.S. public sector by state and then by industry, using archival data collected by United States Census Bureau through the 2017 American Community Survey. The level of statistical significance was corrected to prevent inflation of the type I error (Bonferroni, 1936) due to the repeated use of dependent variable data. The correction involved dividing the standard .05 alpha to the number of analyses that used the same dependent variable: .05 / 2 = .025. The corrected alpha was used to estimate the minimum sample size for the ANOVAs and to interpret the significance of the test results. Two-one way ANOVAs were utilized to obtain the information needed to answer the two research questions. The independent variables were state for RQ1 and industry for RQ2. Below are the research questions and the corresponding hypotheses that framed this study.

The research questions and corresponding pairs of hypotheses were the following:

RQ_1: Are there any statistically significant differences in gender-related pay equity among the 51 states (including D.C.) in the United States public sector?

$H1_0$: There are no statistically significant difference in gender-related pay equity among the 51 states (including D.C.) in the United States public sector.

H1a: 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.

RQ_2: Are there any statistically significant differences in gender-related pay equity among the five major industries in the United States public sector?

$H2_0$: There is no statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

H2a: There is at least one statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

Analyses of gender-related pay data were conducted with IBM SPSS Statistics software from the U.S. Census Bureau gender-related pay and American Community Survey data. The American Community Survey provides a dataset that cannot be collected elsewhere (Guzman, 2018). The United States federal government, local governments, businesses, and researchers have utilized American Community Survey data for decision-making purposes and future planning.

Both research questions were answered through a quantitative research method and a comparative research design tested with a one-way ANOVA. IBM SPSS 25 premium statistics were performed with a multi-step process.

1. 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.
2. Each state, the District of Columbia, and industry were assigned a number for SPSS analysis.
3. 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.
4. Each state, the District of Columbia, and industry were assigned a number for SPSS analysis.
5. State and the District of Columbia data were calculated to represent a total dataset of 1,834 data points, after the removal of outliers, for analyses. These final samples can be broken down in 51 states (including District of Columbia) and in five major industries (36 subindustries within each state).

6. A CSV file were organized to represent the gender-related pay equity for 1,834 data points for analyses (51 states/District of Columbia and the 36 subindustries within each state).
7. The CSV file was imported into IBM SPSS 25 premium statistics software.
8. The analysis process compared the percentages of gender-related pay equity through the test variable of the gender-related pay equity rate of the 1,834 data points.
9. With the collection of state data into IBM SPSS format, a CSV file was imported into IBM SPSS 25 premium statistics software.
10. Six assumptions for one-way ANOVA were tested using boxplots (for outliers), Shapiro Wilks' test (for normal distribution), and Levene's test (for homogeneity of variance).
11. After the removal of extreme outliers, the final sample used in the statistical analysis was 1,791 data points.
12. IBM SPSS univariate options were set to descriptive statistics and homogeneity of variance test.
13. The level of statistical significance was corrected to .025 to mitigate inflation of type I error (Bonferroni, 1936).
14. The analysis process of the one-way ANOVA sought to assess the interaction of data utilizing a general linear model and univariate analysis.
15. The univariate analysis variables defined a dependent variable of rate (gender-related pay equity), state and industry factors.
16. IBM SPSS processed data to produce results.

The data analysis was improved to provide a higher level of scientifically significant analysis. The data analysis section provided a detailed description of the process taken to complete data analyses of this quantitative nonexperimental comparative research study. No significant difference was required for analysis that was not presented in chapters 1-3. A non-experimental comparative study utilizing a one-way ANOVA statistics test to compare the difference between gender-related pay equity and state and industry data will be implemented. IBM SPSS statistics software will be the testing used

for univariate outliers, organizations, and comparing results from national pay data. Preparation of the data files, validity, and reliability of data was also presented. Data analysis is critical to the success of the results of data.

Results

Presentation of Results

The researcher used a comparative design and two one-way ANOVAs to assess gender-related pay equity by state and then by major industry. The analysis was performed on archival data. Archival data was collected from the 2017 American Community Survey (ACS) dataset. 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). After the removal of outliers, the final dataset included a total of 1,791 samples/data points.

RQ_1: Are there any statistically significant differences in gender-related pay equity among the 51 states (including D.C.) in the United States public sector?

$H1_0$: There are no statistically significant difference in gender-related pay equity among the 51 states (including D.C.) in the United States public sector.

H1a: 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.

A one-way ANOVA was performed to address Research Question 1 to determine whether there are significant differences in the gender-related pay equity among the 51

states (including D.C.) for the United States public sector. The independent variable defined 51 independent groups. The continuous dependent variable was gender-related pay equity measured as the percentage difference in earnings. A corrected level of significance of .025 was used to evaluate the statistical significance of the results.

A one-way ANOVA was performed to address Research Question 1 to determine whether there are significant differences in the gender-related pay equity among the 51 states (including D.C.) for the United States public sector. The independent variable defined 51 independent groups. The continuous dependent variable was gender-related pay equity measured as the percentage difference in earnings. A corrected level of significance of .025 was used to evaluate the statistical significance of the results.

The results presented in Table 12 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 post-hoc 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 12.

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

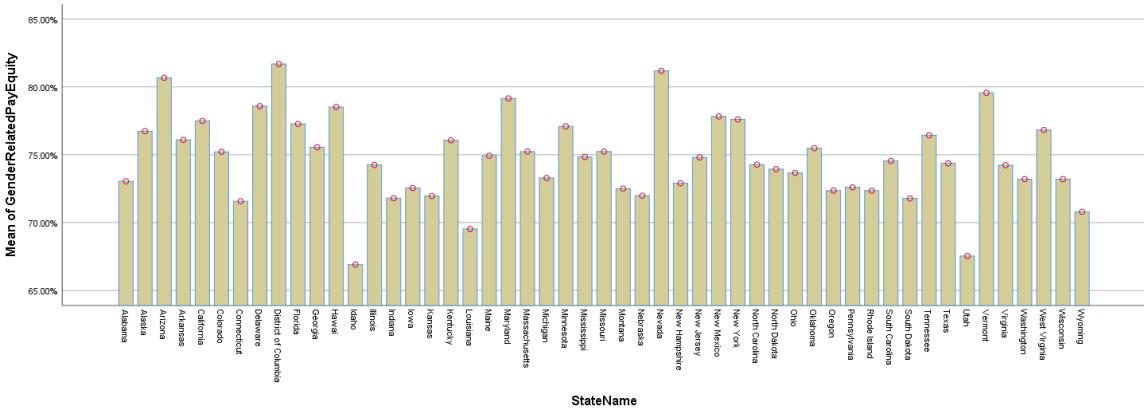
	Sum of Squares	*df*	Mean Square	*F*	*p*
Between Groups	16,864.70	50	337.29	1.69	0.019*
Within Groups	346,794.85	1740	199.30		
Total	363,659.56	1790			

*Significant difference at a corrected level of statistical significance of 0.025.

Figure 2 provides a visual representation of the gender-related pay equity by state. Most differences range between 70% and 80%. States with higher values have more severe gender-related pay equity. The gender-related pay equity problem is less severe in states with lower values for gender-related pay equity.

Figure 2.

Plot of Gender-Related Pay Equity by State



Based on the mean comparison shown in Appendix S. (Table 17), 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%).

RQ_2: Are there any statistically significant differences in gender-related pay equity among the five major industries in the United States public sector?

$H2_0$: There is no statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

H2a: There is at least one statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

A one-way ANOVA was also conducted to address Research Question 2 to determine whether there are significant differences in gender-related pay equity among the five major industries for U.S. public sector employees. 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 13. A detailed list of category titles and subindustries are described in Appendix L and Appendix M. 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 13). There is a significant difference because the *p*-value corresponding to the *F* statistic, which is lower than the corrected level of significance ($\alpha = .025$). It is important to note that analysis of the major industries had 51 less 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 results of the post-hoc test of Games-Howell tests (Table 14) 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 were 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 were significant difference in the gender-related pay equity between natural resources, construction and maintenance occupation; and production occupations ($p = 0.04$) by a mean difference of 4.01%. Figure 3 provides a visual representation of the gender-related pay equity by major industries.

Table 13.

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 14.

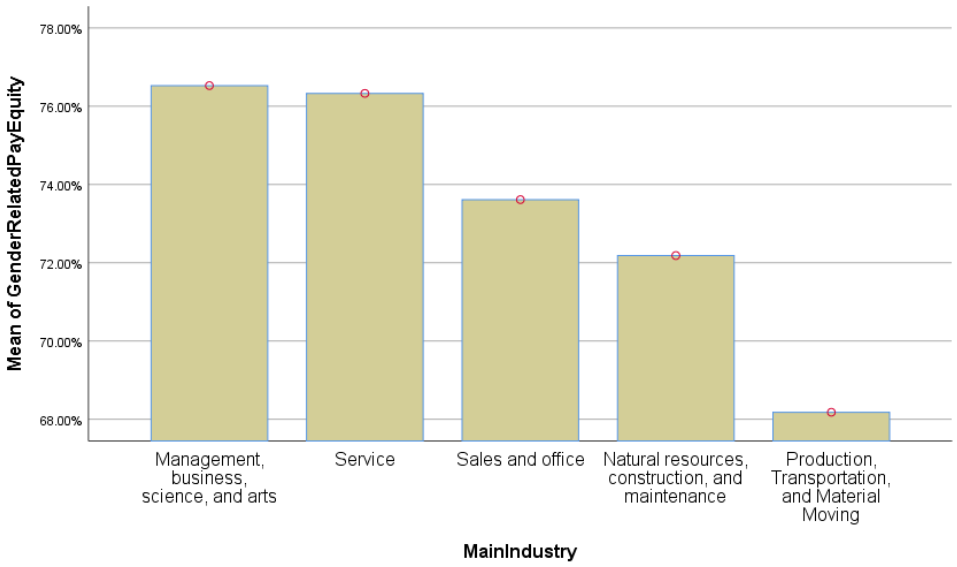
*Results of the Games-Howell Test for Gender-related Pay Equity by Major Industry**

(I) Industry	(J) Industry	Mean Difference (I-J)	*SE*	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.

Figure 3.

Plot of Gender-related Pay Equity by Major Industry



The comparison of means in Table 15 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 15.

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

Main Industry*	*N*	*M (%)*	*SD (%)*	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.

Limitations

Limitations are situations out of the control of the researcher, but that can affect the research study. A set of anticipated limitations were presented in Chapter 1; the following limitations were discovered throughout the completion of this study. This

section is the added benefit from the previous determinations of the limitations of this study. It is essential to acknowledge and define all limitations and weaknesses of any scientific study. The following additional limitations were determined.

The associated consequences for the generalizability of the findings are defined. The study's sample population to the larger population is most appropriate. The original sample size consisted of over 2.1 million data points. The five major industries (36 subindustries) within each state are represented equally to represent the total population best. The researcher acknowledges representing such an enormous dataset is difficult and assessing all industries' equality best represents the total population. An added benefit to assessing each state and industry equally, the median percentage was implemented other than implemented dollars. It is fair to assume that an individual state's earnings could be higher or lower than others. Utilizing the percentage of median earnings best represented gender-related pay equity.

There were several limitations regarding the data source. A total of 1,834 data points were chosen for data analysis. The 1,834 data point points used are above the required 920 total sample, but still a small percentage of the original dataset. In addition, post-hoc testing could not be performed to answer RQ1 because the data set was greater than 50 groups. Finally, the archival sample data were collected through the American Community Survey; thus, the researcher was not able to choose the questions asked.

There were also limitations associated with the framework of the study. The focus of this study was restricted to gender-related pay equity by state geographic location; no other demographic factors other than industry were included. In addition, the industry

was chosen for their significance, but data point totals were not equal across all industries.

Summary

The purpose of the quantitative, nonexperimental, 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.

The next chapter concludes the study. The implications of the results of the data analysis are discussed in detail in Chapter 5. This chapter also includes suggestions on how the findings may be applied in an organizational setting and a set of recommendations for future investigators studying this topic.

Chapter 5: Summary, Conclusions, and Recommendations

Introduction and Summary of Study

The problem of gender-related pay equity led to the development of this quantitative nonexperimental comparative study. This study's framework aligns with equity theory, which was first developed in the 1960s by Adams. The researcher asked whether gender differences in pay currently exist at the state and industry levels in the United States public sector. The analysis compared 1,834 data points representing 36 subindustries within each of the 51 states (including D.C.). Two comparative analyses (one-way ANOVAs) were used to assess differences in gender-related pay equity across the 51 states (including D.C.) and then across the five major industries. The researcher analyzed variance with the state, industry, and gender as the independent variables and paid data as the dependent variable to test the research question and hypotheses. Gaps in previous literature require additional scientific knowledge to examine state, and industry-level data, so proper legislation, sanctions, and social pressure can possibly provoke change.

Chapter 5 is structured by outlining sample data demographics, research questions, analyses, reliability, and conclusions. The research questions required a one-way ANOVA statistics test to compare the difference between gender-related pay equity and state and industry data. IBM SPSS statistics software was used to test for univariate outliers, organization and to compare results from national pay data of gender with a sample size of 1,834 data points from the United States public sector. Below is the sample data summary and demographics.

Summary of Findings and Conclusion

Overall Organization

Gender-related pay equity between men and women is a known social issue that the government has not solved due to the lack of a complete dataset (Wade & Fiorentino, 2017). The Equity Pay Act was passed in 1963, but at the current rate, the gender-related pay equity issue will not be closed by the year 2152 (Lobel, 2020; Phillips, 2018). The Department of Labor has indicated that the national gender pay gap is roughly 20 percent, which means that governments in specific areas are not regulating wages under existing laws. This study provided critical information on gender-related pay equity.

The purpose of the current quantitative, nonexperimental, 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 United States Census Bureau with the 2017 American Community Survey. The original 2.1 million data points will be compared to 1,834 data points for analyses (51 states (including D.C.) and the 36 subindustries within each state). The findings of this study have the potential to address social understanding, improve women's mental health, boost the economy, expose why state governments are not following federal law, protect 74.6 million American women workers, and enhance the discipline of industrial-organizational psychology. Future research will benefit from this study. This study can serve as a guideline and provide the framework for assessing gender-related pay equity and the gender-related pay equity issue in the United States.

The research questions, theoretical foundations, and conceptual framework of gender-related pay equity have a direct correlation with the variable of pay data. The

following research questions and their associated hypotheses guided this quantitative study:

RQ_1: Are there any statistically significant differences in gender-related pay equity among the 51 states (including D.C.) in the United States public sector?

$H1_0$: There are no statistically significant difference in gender-related pay equity among the 51 states (including D.C.) in the United States public sector.

H1a: 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.

RQ_2: Are there any statistically significant differences in gender-related pay equity among the five major industries in the United States public sector?

$H2_0$: There is no statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

H2a: There is at least one statistically significant difference in gender-related pay equity among the five major industries in the United States public sector.

To answer both research questions, archival census data were collected and analyzed. U.S. Census data was obtained to calculate and analyze the interaction to offer state and industry analysis. Gender-related pay data are collected through American Community Surveys. The American Community Surveys allows data files to be downloaded directly from their FTP (File Transfer Protocol) server. The American Community Surveys' wage data are gathered from one man and one woman of equal job title under 36 industry categories.

Equity theory and the quantitative nonexperimental comparative study provided the framework to answer both research questions and better assess the problem of gender-

related pay equity. The current quantitative nonexperimental comparative study required analyzing the cause and effect of gender-related pay equity at the state and industry level, and equity theory is directly related to this study's variables. The findings indicated that there was a significant difference in the gender-related pay equity data among the 51 states (including D.C.) ($F(50, 1740) = 1.69$, $p < 0.019$). There was a significant difference in the gender-related pay equity data between the five major industries ($F(4, 1735) = 17.00$, $p = 0.00$).

Both research questions were researched, analyzed, and ultimately answered. The answer to Research Question 1 is that there is a significant difference in gender-related pay equity data among the 51 states (including D.C.). The researcher answered Research Question 2 by determining that there is a significant difference in the gender-related pay equity data among the five major industries. It is now known that gender-related pay equity is not an industry issue by a state-by-state issue. Researchers and practitioners now have a proper dataset to begin to address gender-related pay equity. In addition, future researchers can use the framework of this study to provide additional insight.

This study's findings are bounded by the previous chapters of this study's research design and framework. In the remainder of Chapter 5, the researcher summarizes the findings of this study. A complete summary of conclusions and results is presented. The researcher also presents the implications associated with the results of this study. The chapter ends with recommendations for practice and future research.

Reflection on the Dissertation Process

Reflection is essential in all aspects of life. At the end of this dissertation process, many changes have accrued in the learner's critical thinking and assessment of gender-

related pay equity. The learner's critical thinking is what was most affected throughout the dissertation process. For a proper assessment of research to be conductive, critical thinking and learning at a deeper level are required. Critical thinking was not the only benefit, and it is essential to note that scholarly writing required improvement. The improvement of critical thinking and writing increased by the pure repetition of the actions. Writing a dissertation requires much sacrifice, but in the end, personal and professional growth is noticeable.

Implications

In this section, the researcher will discuss the current implications, future implications, strengths, and weaknesses of this study. Additionally, the researcher will present an examination of the theoretical framework that was previously presented in Chapter 2. This section consists of the following subsections: theoretical, practical, and future implications.

Theoretical Implications

The interpretation of the theoretical framework presented in Chapter 2 is the same after completing data collection and analysis. Archival data retrieved from the American Community Survey provided the valid and creditable data set to answer both research questions. The data suggested that gender-related pay equity is affected by the individual state in which a woman lives and the industry. Significant strength was that equity theory was the theoretical foundation that developed the research question and hypothesis.

Equity theory, developed by Adams in the 1960s, seeks to explain the fairness of distribution of resources to both relational partners. According to Adams, equity is measured by comparing the ratio of contributions, commonly referred to as cost, and

benefits widely attributed to rewards. Adams was a workplace and behavioral psychologist who focused his efforts so employees would seek to maintain equity in their positions. This study answered the questions of gender-related pay equity. Are there any statistically significant differences in gender-related pay equity across the 51 states (including D.C.)and five major industries of the United States public sector? Equity theory measures equity within the workplace based on the input to the outcome, the ratio of input an employee puts into their job, and the total result of their employer's reward (Adams, 1965). Equity theory directly correlates gender-related pay equity because the concept of both variables is interchangeable, which is the foundation of the research questions of the current study.

The findings ' credibility is trusted because data were collected from the United States Census Bureau and the American Committee Survey. Science, organizations, and governments trust the United States Census Bureau data; the researcher did not collect data and relied on The American Community Survey. The American Community Survey is authorized by 13 U.S.C. § 141, and 13 U.S.C. § 193, and the United States Federal Court has deemed the American Community Survey form constitutional. The American Community Survey was a significant strength of this study.

Practical Implications

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 (DeWolf, 2017). 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 (Status of Women, 2020). Another negative effect of gender wage inequality is that gender-related pay equity contributes to increased rates of anxiety and depression among women (Platt et al., 2016). 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 (American Psychiatric Association, 2020). Researchers have shown that income inequality increases the risk of obesity and heart attack (Pabayo et al., 2018).

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.

Future Implications

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. The framework has been provided for future researchers to assess 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.

Strengths and Weaknesses of the Study

This non-experimental comparative quantitative study included both strengths and weaknesses that require additional discussion. A significant strength of the study was the original dataset of 2,130,210 data points, requiring the use of a quantitative method. A quantitative method's strength is the need to analyze through numerical comparison and statistical inferences (i.e., ANOVA). All 50 states and the District of Colombia (Washington D.C.) were represented within this large dataset. Previous researchers indicated a gap in assessing the relationship between gender-related pay equity that required a larger, nationwide dataset (Blau & Kahn, 2017; Cortés & Pan, 2019; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018).

Equity theory was another strength of this study. Equity theory was chosen to address the problem statement. Prior to this study, it was not known to what extent states and industries in the public sector of the U.S. economy differed in terms of gender-related pay equity. Throughout this study, there was strong alignment between the problem

statement, purpose statement, research questions, hypotheses, methodology, design, data collection, instruments, and analyses. This study may provide future investigators with the guidance and framework to further enhance the assessment of gender-related pay equity. A holistic dataset can be utilized to stop an issue that negatively affects 74.6 million women workers in the United States.

This study's significant strength is that industry data points best represented the total population; every industry was represented equally through all states. Utilizing industry data points will also provide the blueprint for future research. Random sampling was considered but not chosen due to its lack of consideration of all industries and employees within each sector equally. Random sampling would only represent a fraction of a percentage of the total sample size unequally. As stated before, interested readers will find value in assessing industry data points over random sampling. This study's desired outcome was to provide value and address the previous research gap, but the findings may provide value as the starting point for future research.

This study's limitations included the fact that the data were taken from the 2017 United States Census (U.S. Census Bureau, 2017). Science, organizations, and governments trust the United States Census Bureau data; the data were not collected personally by the researcher. The American Community Survey is authorized by 13 U.S.C. § 141 and 13 U.S.C. § 193, and the United States Federal Court has deemed the American Community Survey form constitutional. The American Community Survey initially requested 3,495,955 surveys across the United States, of which only 2,130,210 were fully completed and able to be utilized. Future researchers would benefit from using datasets with a higher response rate than 60.93%.

Another limitation is individual states' result totals are not equal. For example, among the 2,130,210 data points, California represented 201,604 results, and Wyoming represented 4,110 results. It is important to note that California represents 12.01% (39,865,590 people), and Wyoming represents 0.17% (577,737 people) of the United States' total population. Future researchers could strive to ensure an equal percentage of state results totals to population percentage. A final limitation of this study was that this study's focus was restricted to pay inequality by geographic location. No other demographic factor was considered, such as minority status or race/ethnicity. Future researchers will benefit from evaluating additional variables within individual states.

In summary, the strengths signification outweighs the weaknesses. This quantitative nonexperimental comparative research study provided a holistic dataset on the topic of gender-related pay equity. The mental, physical, social, and economic future of 74.6 million women workers can benefit from this study. Future researchers can use the study's framework and findings to continue to solve the issue of gender-related pay equity.

Recommendations

This study presented significant results and analysis on gender-related pay equity at the state and industry levels. The results determined through a one-way ANOVA demonstrated a statistically significant difference that answered Research Question 1. Individual states and the District of Columbia do have a statistically significant difference in gender-related pay equity. A one-way ANOVA test results demonstrated a significant difference in gender-related pay equity at the industry level, thereby answering Research Question 2. Future research and practices will benefit from the guidance and framework

of this study. This study has identified new gaps for future recommendations and research that will be described in the following section.

Recommendations for Future Research

Limitations have been suggested, and I request the need for future research. This study utilized a large sample to assess the holistic impact of gender-related pay equity. Future researchers can use this study and expand on the research and assess the gaps performed. Future researchers will benefit from the framework of this study.

The first recommendation for future research is to assess gender-related pay equity at the state and industry level and the correlation to social issues. Examples of social issues are education, poverty, racism, and social structure. Does the high school graduation rate correlate to gender-related pay equity? Does the percentage of state poverty levels correlate to gender-related pay equity? This study provided the framework to explore gender-related pay equity at the state and industry level and the correlation between other social issues.

The second recommendation for future research is to assess gender-related pay equity at the state level and determine its correlation to economic issues. Examples of economic issues include credit card debt, welfare, and poverty. Does welfare correlate to gender-related pay equity? Does the percentage of state poverty levels correlate to gender-related pay equity? This study provided a framework to examine gender-related pay equity at the state and industry level and correlate the same to economic issues.

The third recommendation for future research is a higher response rate than 60.93%. This study utilized the American Psychological Association Committee response rate. The ACS initially requested 3,495,955 surveys across the United States, of which

only 2,130,210 were fully completed and able to be used. Future researchers would benefit from a higher percentage other than 60.93% of the original 3,495,955 requests.

The fourth recommendation for future research is a consistent or equal dataset by state. The study recognizes that individual states' result totals are not being equal. Finally, this study utilized the American Community Survey. It is important to note that the American Community Survey is recognized by society and government but is an established survey. Future research will benefit from the ability to add questions asked. To gain additional knowledge, the additional item would add benefit to the topic of gender-related pay equity.

This study provided valuable data and analysis of gender-related pay equity. Many next steps can be taken to assess the variables that cause gender-related pay equity. Future researchers will benefit from the framework that this study has provided. The governments and organizations participating in discrimination can be identified, leading to the promotion of social justice and an increase in women's mental and physical health. The findings can positively affect the discipline of industrial-organizational psychology.

Recommendations for Future Practice

This study's problem space and the gap in previous research centered around gender-related pay equity. The results of this study determined there is a significant difference in gender-related pay equity at the state level. There is an opportunity presented that future practices on gender-related pay equity can continue and evolve. The individual that will benefit most from this study is the 74.6 million American women workers. The adverse effects of pay inequality lead to obesity, heart attacks, depression, social and financial inequity (Platt et al., 2016; Schulze, 2018). If women were paid

equally, an additional 512.6 billion dollars would be entering the United States economy (Schulze, 2018). Future practices can benefit 74.6 million women and boost the United States economy positively. An additional benefit to interested readers is studying and understanding that depending on what state a woman lives in, her pay equity is affected. This is what leads to future practices. Future practices can be implemented in a professional (work) and educational setting.

The first recommendation for future practices is transparency for all organizations and companies of their gender-related pay equity issue. There is a need for organizations and companies to correct the gender-related pay equity issue. The United States and many state governments have implemented laws and acts to reduce the gender-related pay equity issue, but the issue still exists (Lobel, 2020). It is fair to say that if organizations and companies' gender-related pay equity issues were transparent and public, it would affect their recruitment and retention.

The second recommendation for future practice is the need for education from kindergarten through high school. If women were more aware that organizations and companies do not provide equal pay, they could be better informed upon entering the workforce. If an individual is not educated on a subject, then that individual cannot be prepared or informed of their rights. Young students are educated and informed of their rights through the constitution and laws. There is a need for future practice reform to address this social issue that negatively affects 74.6 million Americans.

The problem of gender-related pay equity is an issue that should be corrected and improved through future practice. Social injustice is a major topic in modern society. During the 2020 Presidential election, social injustice and the need for equality were

discussed frequently. If future practices are focused on education and organization improvements, gender-related pay equity issues may be corrected.

Holistic Reflection on the Problem Space

The conclusion of this study ends with a holistic reflection of the issue of gender-related pay equity. The researcher drew many conclusions from research, analysis, and results of gender-related pay equity data. The researcher concluded that gender-related pay equity is something that women accept as normal, and governments implement laws and acts. Still, no action has been taken when violations are made, and society needs to be educated on the issue. Gender-related pay equity is an issue upon which the researcher has reflected during the study's completion and after its conclusion.

This study has contributed to the issue of gender-related pay equity and the science of industrial-organizational psychology. Industrial-organizational psychology can be defined as occupational psychology or work and organizational psychology. Gender-related pay equity is a topic that affects half of the entire American workforce. The research reflects that this type of study should have been performed years—if not decades—ago. The researcher determined that individual states are contributing to gender-related pay equity, and not enough is done to stop the inequality.

In the end, reflecting on the problem of gender-related pay equity is concerning. It is known that women are paid less than men for the same work, but if this information is given at a national level, state and local governments are not questioned. The framework is now provided for future research and practices to correct the issue of gender-related pay equity. The findings of this study provide a framework and platform to address the problem of gender-related pay equity in the future.

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Appendix A.

Ten Strategic Points

Broad Topic Area	Ph.D. Philosophy in General Psychology Gender-related pay equity by state and industry.
Lit Review	**Background/Gap** • The gender-related pay equity issue in previous research is the relationship between industry and state-level pay data. Previous research analyzed incomplete data that did not consist of national data broken down by state and which requires a larger, more diverse sample size (Blau & Kahn, 2017; Cortés & Pan, 2019; Dennis, 2016; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018). • The federal government only provides pay equity data at a national level. State-by-state-specific reporting is needed. Historically women make 20% less than men for equal work, and the gap has become stagnate over the past five years. Laws have been passed to "bridge the gap" of pay equity, but efforts did not achieve the goal of equality (Blau & Kahn, 2017; Dennis, 2016; Phillips, 2018; Rosado, 2018). The goal of pay equality has not been achieved because of the lack of industry and state-level awareness. **Theoretical Foundation** • Equity theory (Adams, 1965) **Themes** • **Laws and acts:** Government regulation of the gender-related pay equity issue over the last 50 years. Laws and acts have been implemented, the Equal Pay Act of 1963, Title VII of Civil Rights Act of 1964, and Litty Ledbetter Fair Pay Act of 2009 (Blau & Kahn, 2017; Engstrom, 2018; Rosado, 2018; White, 2019). • **New government changes**: Government insight has changed; new government regulation and reporting laws of gender-related pay equity issue are being adjusted with new ideas, vision, and the definition of gender (Burn, 2018; Dennis, 2016; Kastrinsky, 2015; Engstrom, 2018; Rosado,2018). New laws are needed for every change of men and female gender (LGBT) (Burn, 2018).

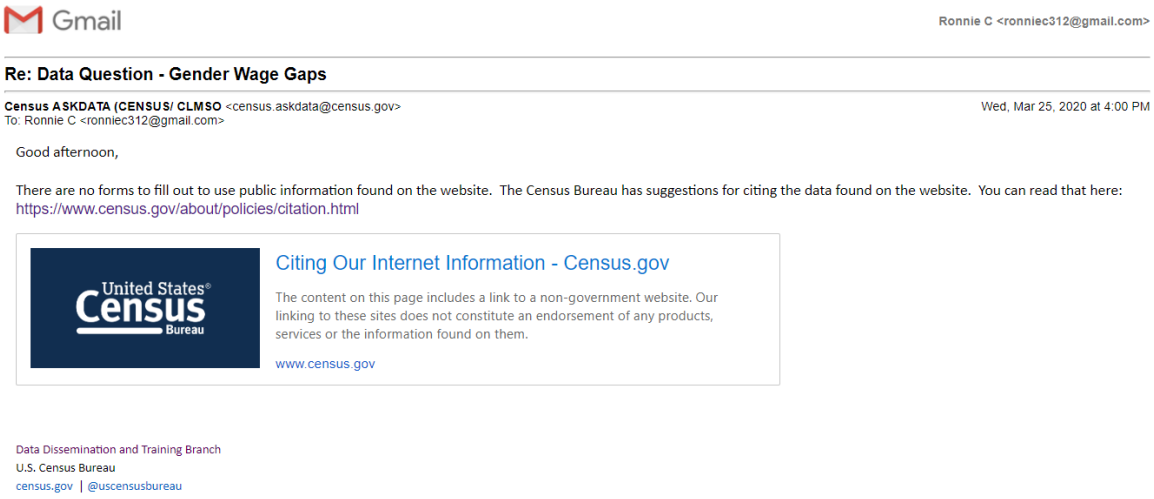
	• **Society awareness:** Society changes and raising awareness that pays equality has on companies and society (Burn, 2018; Cortés & Pan, 2019; Dennis, 2016; Rosado,2018) • **Human Resources:** Human resources have a major influence, responsibility, management, assessing, and effect on pay equity (Burn, 2018; Dennis, 2016; Rosado, 2018; Smith & Montag-Smit, 2019; Swain, 2019). **Summary** A study of state and federal data that will add to the assessment of gender-related pay equity data of industry and state data is required. The effects of pay equity are felt at all levels, society, human resources, employment, and government. Society and government choose to ignore the fact that women are not paid equally, and the evidence suggests the need for specific national data broken down at the state and industry level (Blau & Kahn, 2017; Cortés & Pan, 2019; Dennis, 2016; Goldin, 2017; Obloj & Zenger, 2020; Rosado, 2018).
Problem Statement	It is not known if and to what extent gender differences in pay currently exist at the state and industry levels in the United States public sector.
Research Questions	R_1: Are there any statistically significant differences in gender-related pay equity across the 51 states (including D.C.) in the United States public sector? R_2: 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??
Sample	Population total is 2.1 million total men, and women from the entire United States gathered from federal and government databases. • Location: United States – 50 states, the District of Columbia, and five major industries. • Population: United States employees • Target Population: 1,834 data points, 51 states/ the District of Columbia, and the 36 subindustries within each state
Define Variables/Hypotheses (quantitative)	$H1_0$: There is no statistically significant difference between in gender-related pay equity across the 51 states (including D.C.) in the United States public sector. H1a: There is a statistically significant difference between in gender-related pay equity across the 51 states (including D.C.) in the United States public sector.

	$H2_0$: There is no statistically significant difference between in gender-related pay equity across the five major industries in each state of the United States public sector. H2a: There is a statistically significant difference between in gender-related pay equity across the five major industries in each state of the United States public sector.
Methodology & Design	The study will utilize a quantitative research method and non-experimental comparative research design of public and federal data on gender-related pay equity data.
Purpose Statement	The purpose of the quantitative, non-experimental, comparative study is 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 United States Census Bureau with the 2017 American Community Survey.
Data Collection Approach	The variables of pay data will be collected through the approval of national and federal databases of pay data (Department of Labor). The variables will be gender-related pay equity data, state, and industry.
Data Analysis Approach	This quantitative non-experimental comparative study utilizing a two one-way ANOVA test to summarizes the difference between gender-related pay equity and state and industry data. IBM SPSS statistics software will be the testing for univariate outliers, organization, and summarizing results from national pay data of gender with a sample size of 1,834 total men and women from the entire United States public sector.

Appendix B.

Site Authorization

Site authorization is not required. The American Community Survey is a public website providing archival public data.



Gmail

Ronnie C <ronniec312@gmail.com>

Re: Data Question - Gender Wage Gaps

Census ASKDATA (CENSUS/ CLMSO <census.askdata@census.gov>
To: Ronnie C <ronniec312@gmail.com>

Wed, Mar 25, 2020 at 4:00 PM

Good afternoon,

There are no forms to fill out to use public information found on the website. The Census Bureau has suggestions for citing the data found on the website. You can read that here: https://www.census.gov/about/policies/citation.html

United States® Census Bureau

Citing Our Internet Information - Census.gov

The content on this page includes a link to a non-government website. Our linking to these sites does not constitute an endorsement of any products, services or the information found on them.

www.census.gov

Data Dissemination and Training Branch
U.S. Census Bureau
census.gov | @uscensusbureau

Appendix C.

IRB Approval Letter

GRAND CANYON UNIVERSITY™

3300 West Camelback Road, Phoenix Arizona 85017 602.639.7500 Toll Free 800.800.9776 www.gcu.edu

DATE: February 23, 2021

TO: Ron Sowadski
FROM: Grand Canyon University Institutional Review Board

STUDY TITLE: Pay equity; understanding the gender pay gap by state and region.
IRB REFERENCE #: IRB-2021-3262
SUBMISSION TYPE: Initial Review Submission Packet

ACTION: DETERMINATION OF NOT HUMAN SUBJECTS RESEARCH
DECISION DATE: February 23, 2021

Thank you for submitting your study materials. Grand Canyon University Institutional Review Board has determined that this study does not meet the definition of human subject research according to federal regulations. Therefore, IRB review and oversight are not required.

If you determine that any changes will need to occur in the procedures or data set as described in this application, please submit a new research application.
We will put a copy of this correspondence on file in our office.

If you have any questions, please contact the IRB office at irb@gcu.edu or 602-639-7804.
Please include your study title and reference number in all correspondence with this office.

Cynthia Bambridge

Appendix D.

Informed Consent

Informed consent is not required. The American Community Survey is a public website providing archival public data.

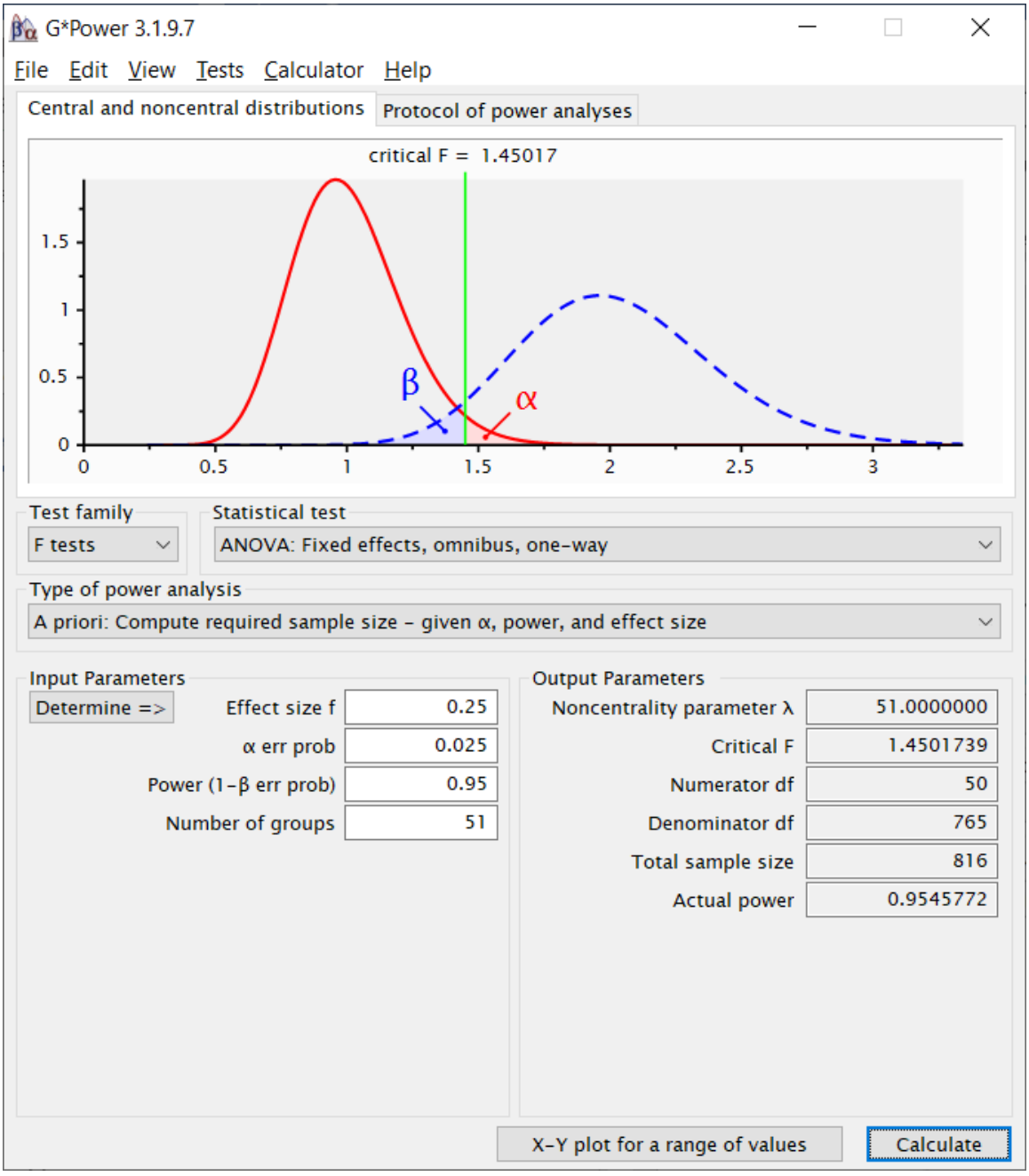
Appendix E.

Copy of Instrument(s) and Permissions Letters to Use the Instrument(s)

No instrument was utilized in this study and therefore did not need permission.

Appendix F.

G*Power Output for the Sample Size Estimate



Appendix G.

Feasibility and Benefits Checklist

Gatekeepers: Who are the possible gatekeepers? (i.e., If you are in a school district, have you checked with the principal and the superintendent's office or their designee to see what the process is for research? Or, if you are at a company, talked with the management, etc.? If you are planning on collecting data from a college, what is the process? It is preferred that you obtain Institutional Review Board (IRB) approval from that institution prior to applying for GCU's IRB approval).	Sample data is public archival data. The issue of gatekeepers is not present in this study.
Gatekeeper Contact: Who do you need to keep in contact with as you form your research project to ensure that the benefits outweigh the risk and you can conduct your research? How will you initiate and maintain contact with them?	Sample data is public archival data. The issue of gatekeepers is not present in this study.
Outside IRB: If you are planning on recruiting participants or getting data from a college (or other institutions with an IRB), have you talked to their IRB determine the process and what participants/data they will allow you access? Please note, IRB approval typically takes some time.	Sample data is public archival data. No recruitment of participants is required.
Study Benefits: What is the benefit of your research? Who do you need to keep in contact with as you form your research project to ensure that the benefits outweigh the risks? *Remember that research should have a benefit; what benefit does your research have to others beside yourself?*	The adverse effects of pay inequality lead to obesity, heart attacks, depression, social and financial inequity. 74.6 million women workers in the civilian labor force are positively affected.
Research Activity: Is your research part of *normal every day activities*? This is significant because this must be outlined in your site authorization. A preliminary site authorization letter could simply be an email from a school/college/organization that indicates they understand what you want to do and how that benefits the school/college/organization. In some cases this will determine the classification of the study (this is especially important for educational research studies). ***Please see below for information regarding preliminary site authorization	Sample data is public archival data. Site authorization is not required for this study.

Recruitment: Please describe your proposed recruitment strategy. How do you plan to involve your participants in the process? What would your flyer/email say?	Sample data is public archival data. Recruitment is not required.
Data Collection What are you asking of participants? Are you asking them personal information (like demographic information such as age, income, relationship status)? Is that personal information necessary? How much time are you asking of participants (for example, if you are asking them to be interviewed, be in a focus group, fill out a questionnaire, fill out a journal/survey, collect artifacts, etc.)? How much time will they have to spend to be in your study? Does each part of your data collection help answer your research question? Participants must be told how long it will take to participants to participate in each activity. Are you concerned that the activities will take too long and participants might not finish/drop out? Can you collect your data in a reasonable amount of time, considering the stakeholders and possible challenges of gaining access to participants?	Sample data is public archival data. The issue of participate, time and energy are not present in this study. Collection of data can be performed in a reasonable amount of time
Child Assent. Studies with children often fall under the regulations for a full board review (full board reviews take significantly longer in IRB). Each child must fill out a child's assent AFTER there is parental consent. (It can be very difficult to get parental consent, especially if this is something sent home to parents).	No children will be included in this study.
Informed Consent Participants must be told how long it will take to participants to participate in each activity. Are you concerned that the activities will take too long and participants might not finish/drop out?	Sample data is public archival data. Informed consent is not required for this study.
Site Authorization Do you have a site authorization letter? How difficult will this be to get from the school/ school district/college/organization? Use the GCU template to ensure the correct information is included.	Sample data is public archival data. Authorization is not required, confirmation was made.
Can you collect your data in a reasonable amount of time, considering the stakeholders and possible challenges of gaining access to participants?	Sample data can be downloaded easily.
Organizational Benefits: Have you talked to your principal/supervisor/district/college/boss/ organization about your research? If so, have you asked them what you can do to help the district/organization/school?	Gender-related pay equity is an important topic for all human resources, and this study will change all organizations.
What is the overall benefit of your research to participants?	74.6 million women workers in the civilian labor force are positively affected.

What are the risks of your research? Please note that there are usually some risks (like revealing participant identity) in all research.	States and industries can be found for participating in gender-related pay equity.
Now that you have contemplated the above questions, how long do you imagine it will take you prior to accessing your participants/data? AND, how much are you asking of your participants?	Sample data is public archival data. Do not anticipate any participation issues.
Based on the information that you have learned, is your study feasible? Why or why not? If not, how can you modify your ideas to make your study manageable?	The study is feasible because sample data are public archival data.

Appendix H.

State-by-State Pay Equity Laws

State	Law/Citation	Covered Employees	Provisions
Alabama	None	None	None
Alaska **Arizona**	**Employment Discrimination Act** **Equal Wages** Ariz. Rev. Stat. Ann. § 23-340, 341	Private companies and public employers Private companies and public employers	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for work of comparable character or work of the same type in the same location. Requires employers to pay wage rates equal to the rates paid to the opposite sex. Employees must work in the same establishment and have the same work classification. They must also have the same skill, effort, responsibility, and working conditions. Provides employer liability for damages.
Arkansas	**Wage Discrimination** Ark. Code Ann. § 11-4-601, et. seq.	Private companies and public employers.	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for work of comparable character or work of the same type in the same location. Provides employer liability for damages.
California	**Equal Pay Act** Cal. Labor Code § 1197.5	Private companies and public employers	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) Retaliation against an employee who files a complaint is illegal. It's also unlawful for an employer to prohibit employees from talking about their or their co-workers' wages. It provides a cause of action to sue for damages. Employers are prohibited from asking for an applicants' salary history and are required to supply pay scales upon an applicant's request. San Francisco has a city ordinance that further prohibits employers from disclosing a current or former employee's salary information without their consent.
Colorado	**Wage Equality Regardless of Sex** Colo. Rev. Stat. Ann. § 8-5-101, et. seq.	Private companies and public employers	Employers can't discriminate in the payment of wages based solely on the sex of the employee. Provides employer liability for damages.
Connecticut	**Discrimination in compensation based on sex** Conn. Gen. Stat. Ann. §31-75, et. seq.	Private companies and public employers	Employers can't discriminate in the payment of wages based solely on the sex of the employee. Employers can't ask about an applicant's pay history unless it was voluntarily offered. Provides employer liability for damages.
Delaware	**Differential rate of pay based on gender prohibited** 19 Del. Code Ann. § 1107(a), 1113	Private companies and public employers	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) Employers are prohibited from screening an applicant based on past compensation and can't ask about salary history. They can confirm the salary after an offer has been extended. It provides a cause of action to sue for damages.

State	Law/Citation	Covered Employees	Provisions
District of Columbia	**No equal pay law** **Employment discrimination law** D.C. Code Ann. § 2-1402, et. seq.		Washington, D.C. doesn't have a specific equal pay law. They have a blanket employment discrimination law that prohibits wage discrimination based on protected class status.
Florida	**Wage discrimination based on sex prohibited** Fla. Stat. Ann. § 448.07	Private companies with 2+ employees	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) It provides a cause of action to sue for damages.
Georgia	**Sex Discrimination in Employment** Ga. Code Ann. § 34-5-3, et. seq.	Private companies with 10+ employees Public employers	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) It provides a cause of action to sue for damages. City agencies in Atlanta can't ask for salary history on employment applications, in interviews, or employment screenings.
Hawaii	**Equal pay; sex discrimination** Haw. Rev. Stat. § 378-2.3, -5 **Wage discrimination prohibited** Haw. Rev. Stat. § 387-4	Private companies and public employers	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) It provides a cause of action to sue for damages. Employers can't ask about an applicant's pay history unless it was voluntarily offered. Employers can't discriminate in the payment of wages between people of different race, religion, or sex.
Idaho	**Discriminatory Wage Rates Based on Sex** Idaho Code § 44-1701, et. seq.	Private companies and public employers	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) It provides a cause of action to sue for damages.
Illinois	**Equal Wage Act** 820 Ill. Comp. Stat. 110/1 et. seq. **Equal Pay Act of 2003** 820 Ill. Comp. Stat. 112/1 et. seq. **Wages of Women and Minors Act** 820 Ill. Comp. Stat. 125/0.01 et. seq. **Ill. Executive Order 2019-02**	Private companies with 6+ employees Private companies with 4+ employees Private companies with 4+ employees Public employers	Creates a penalty for wage discrimination. Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) It provides a cause of action to sue for damages. Prohibits employing women and minors at an oppressive wage. It provides a cause of action to sue for damages.

State	Law/Citation	Covered Employees	Provisions
	Executive Order No. 2018-1 Reaffirmation of commitment to pay inequity equality	Public employers	State offices can't ask for salary history on employment applications, in interviews, or employment screenings. The city of Chicago departments may not ask for applicants' salary histories.
Indiana	**Minimum Wags: Rates; Discrimination** Ind. Code Ann. §22-2-2-4(d), et. seq.	Private companies with 2+ employees	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) It provides a cause of action to sue for damages.
Iowa	**Compensation based on comparable worth** Iowa Code Ann. § 70A.18 **Wage discrimination in employment** Iowa Code Ann. § 216.6A	Private companies and public employers	The policy of wage non-discrimination between the sexes. Employers can't pay lower wages to any employee who is employed within the same establishment for equal work because of age, race, creed, color, sex, sexual orientation, gender identity, national origin, religion, or disability. It provides a cause of action to sue for damages.
Kansas	**Discrimination in payment of wages** Kan. Stat. Ann. 44-1205, et. seq.	Private companies and public employers	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) Provides employer liability for damages.
Kentucky	**Wage Discrimination Because of Sex** Ky. Rev. Stat. § 337.420, et. seq. **Ordinance No. 066, Series 2018**	Private companies with 2+ employees Public employers	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) Provides employer liability for damages. Louisville/Jefferson County Metro agencies are prohibited from asking about an applicant's salary history.
Louisiana	**Louisiana Equal Pay for Women Act** La. Rev. Stat. Ann. § 23:661, et. seq. **Employment discrimination law** La. Rev. Stat. Ann. § 23:301, et. seq.	Public employers	Prohibits wage discrimination based on sex in state employment. Provides for employer liability for damages. Louisiana has an anti-discrimination law that includes the prohibition of wage discrimination based on sex. New Orleans city agencies are prohibited from asking about an applicant's salary history.
Maine	**Equal Pay** Me. Rev. Stat. Ann. Tit. 26 § 628 Sec. 1. 5 MRSA §4577	Private companies and public employers	Employers can't discriminate in the payment of wages between sexes or employ a woman at pay rate less than what a man gets for substantially similar work (skills, effort, responsibility, and similar working conditions.) Employers can't ask about a prospective employee's pay history until after a job offer has been negotiated.
Maryland	**Equal Pay for Equal Work**	Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.)

State	Law/Citation	Covered Employees	Provisions
	Md. Labor and Employment Code Ann. § 3-301, et. seq.		They're also prohibited from providing less favorable employment opportunities based on sex or gender identity. It provides a cause of action to sue for damages.
Massachusetts	**Equal Pay Act** Ann. Laws of Mass. Gen. Laws ch. 149, § 105A	Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.) Retaliation against an employee who files a complaint is illegal. It's also unlawful for an employer to prohibit employees from talking about their or their co-workers' wages. Employers are prohibited from asking for applicants' salary history. Provides for employer liability for damages.
Michigan	**Unfair Discrimination, Restraint of Trade and Trusts Law** Mich. Comp. Laws Ann. § 750.556 **Workforce Opportunity Wage Act** Mich. Comp. Laws Ann. § 408.423	Private companies and public employers	Any employer that discriminates in the payment of wages between similarly employed men and women can be found guilty of a misdemeanor. Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.) It provides a cause of action to sue for damages. Employers are prohibited from asking for applicants' salary history.
Minnesota	**Equal Pay for Equal Work** Minn. Stat. Ann. § 181.66, et. seq.	Private companies	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.) It provides a cause of action to sue for damages.
Mississippi	None	None	None
Missouri	**Female Employees** Mo. Ann. Stat. § 290.410, et. seq. **Resolution 180519**	Private companies and public employers Public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.) Provides for employer liability for damages. Kansas City offices can't ask applicants to pay history until they have been hired.
Montana	**Equal pay for women for equivalent service** Mont. Code Ann. 39-3-104	Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.)
Nebraska	**Sex Discrimination** Neb. Rev. Stat. Ann. § 48-1221, et. seq.	Private companies with 15+ employees Public Employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.)
Nevada	**Discrimination on the basis of sex prohibited** Nev. Rev. Stat. § 608.017	Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.)
New Hampshire	**Discrimination in the Workplace: Equal Pay** N.H. Rev. Stat. Ann. § 275:37	Private companies and public employers	Employers or potential employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.) Provides employer liability for damages.
New Jersey	**Discrimination in Wages**	Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.)

State	Law/Citation	Covered Employees	Provisions
	N.J. Stat. Ann. § 34:11-56.1, et. seq. **Executive Order 1, 2018**	 Public employers	It provides a cause of action to sue for damages. New Jersey agencies and offices can't ask applicants for salary history or investigate the previous salary of an applicant.
New Mexico	**Fair Pay for Women** N.M. Stat. Ann. § 28-23-1, et. seq.	Private companies with 4+ employees	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.) Provides employer liability for damages.
New York	**The differential in the rate of pay because of sex prohibited** N.Y. Labor Law §194, 198 **Executive Order 161** **Local Law 2017/067** **Local Law No. P for 2016** **Local Law No. 25 -2018** **Local Law No. 10624-2018** **No equal pay law** **Employment discrimination law** N.C. Gen. Stat. § 143-422.1 **Executive Order No. 93**	Private companies Public employers Private companies Private companies Private companies Private companies Public Employers	Private employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions.) Provides employer liability for damages. State agencies and departments (except the Port Authority of New York and New Jersey) can't ask applicants for salary history until after a job offer is extended. If an applicant's previous salary is already known, that information can't be used to determine an applicant's salary unless required by law or collective bargaining agreement. Employers in New York City can't ask applicants for salary history until after a job offer is extended. If an applicant's previous salary is already known, that information can't be used to determine the applicant's salary. Employers in Albany County can't ask applicants for salary history until after a job offer is extended. Employers in Suffolk County can't ask applicants for salary history or investigate the previous salary of an applicant. Employers in Westchester County can't ask applicants for salary history. They're only allowed under certain circumstances to confirm prior pay and rely on that information in setting salaries. **North Carolina has a general employment discrimination law.** **State agencies can't ask applicants for salary history. If an applicant's previous salary is already known, that information can't be used to determine the applicant's salary.**
North Carolina	**Equal Pay for Men and Women** N.D. Century Code, 34-06.1-01, et. seq.	Private companies and public employers Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions). It provides for the cause of action to sue for damages.
	Wage discrimination	Private companies and public employers Private companies with 15+ employees	Employers can't discriminate in the payment of wages based on race, color, religion, sex, age, national origin, or ancestry for substantially similar work (skills, effort, responsibility, and similar working conditions).

State	Law/Citation	Covered Employees	Provisions
		and Public employers	
North Dakota	Ohio Rev. Code § 4111.17	Private companies and public employers	Provides employer liability for damages.
Ohio	40 Okla. Stat. Ann. § 198.1, et. seq.	Private companies and public employers	Effective March 2020 (est.), employers located within the city of Cincinnati, excluding state and local governments (with the exception of the City of Cincinnati), are prohibited from asking for an applicants' salary history and are required to supply pay scales upon an applicant's request.
	Discriminatory Wages	Private companies	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
		Private companies	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
		Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
Oklahoma	**Discriminatory wage rates based on sex**	Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
Oregon	Or. Rev. Stat. § 652.220, et. seq.	Private companies and public employers and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions). It provides the right of action to sue for damages.
	Or. Rev. Stat. § 652.220, et. seq		Employers can't ask applicants for salary history or use the previous salary of an applicant to set pay.
Pennsylvania	**Equal Pay Law**	Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
	Pa. Stat. Ann. tit. 43 § 336.1, et. seq.		It provides a cause of action to sue for damages.
	Executive Order: 2018-18-03	Public employers	State agencies can't ask applicants for salary history. All job postings must clearly disclose the pay scale.
	Pittsburgh Code of Ordinances, Title One: Administrative, Article XI: Personnel, Chapter 181: General Provisions, Section 181.13	Public employers	Departments of the City of Pittsburgh can't ask applicants for salary history. If an applicant's previous salary is already known, that information can't be used to determine the applicant's salary.
	Wage Discrimination Based on Sex	Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
	R.I. Gen. Laws Ann. 1956, § 28-6-18, et. seq.	Private companies and public employers	It provides a cause of action to sue for damages.

State	Law/Citation	Covered Employees	Provisions
	No equal pay law	Private companies and public employers	South Carolina has a general employment discrimination law that includes a prohibition of wage discrimination based on protected class status.
	Employment discrimination law S.C. Code § 1-13-30.	Private companies and public employers	South Carolina has a general employment discrimination law that includes a prohibition of wage discrimination based on protected class status. Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
Rhode Island	**Equal Pay for Equal Work**	Private companies and public employers	South Carolina has a general employment discrimination law that includes a prohibition of wage discrimination based on protected class status. Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions). Provides employer liability for damages.
	S.D. Codified Laws § 60-12-15, et. seq.	Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
South Carolina	**Sex Discrimination**	Private companies and public employers	South Carolina has a general employment discrimination law that includes a prohibition of wage discrimination based on protected class status. Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions). Provides employer liability for damages.
	Tenn. Code Ann. § 50-2-201, et. seq.		Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions). Provides employer liability for damages.
South Dakota	**Equal Work, Equal Pay**	Private companies and public employers	Prohibits wage discrimination based on sex in public employment only. Texas also has a general employment discrimination law prohibiting discrimination based on protected class status.
	Tex. Lab. Code § 659.001, et. seq.		
Tennessee	**Employment discrimination law**	Private companies and public employers and public employers Private companies	
	Tex. Lab. Code § 21.001, et. seq.	Public employers	
Texas	**No equal pay law**	Private companies and public employers	Utah has a general employment discrimination law prohibiting wage discrimination based on race, color, sex, retaliation, pregnancy, age, religion, national origin, disability, sexual orientation, or gender identity.
	Employment discrimination law	Private companies and	Utah has a general employment discrimination law prohibiting wage discrimination based on race, color, sex, retaliation, pregnancy, age, religion, national origin, disability, sexual orientation, or gender identity.

State	Law/Citation	Covered Employees	Provisions
		public employers	Vermont has a section within its general employment discrimination act that prohibits wage discrimination based on sex.
	Utah Code Ann. § 34a-5-101, et. seq.	Private companies Private companies and public employers Private companies	Utah has a general employment discrimination law prohibiting wage discrimination based on race, color, sex, retaliation, pregnancy, age, religion, national origin, disability, sexual orientation, or gender identity. Vermont has a section within its general employment discrimination act that prohibits wage discrimination based on sex. It provides a cause of action to sue for damages.
	Fair Employment Practices Act		Utah has a general employment discrimination law prohibiting wage discrimination based on race, color, sex, retaliation, pregnancy, age, religion, national origin, disability, sexual orientation, or gender identity. Vermont has a section within its general employment discrimination act that prohibits wage discrimination based on sex. It provides a cause of action to sue for damages. Employers can't ask applicants for salary history until after a job offer is extended
Utah	Vt. Stat. Ann. tit. 21 § 495(a)(7), 495(b) **H. 294**	Private companies and public employers Private companies Private companies and public employers	Utah has a general employment discrimination law prohibiting wage discrimination based on race, color, sex, retaliation, pregnancy, age, religion, national origin, disability, sexual orientation, or gender identity. Vermont has a section within its general employment discrimination act that prohibits wage discrimination based on sex. It provides a cause of action to sue for damages. Employers can't ask applicants for salary history until after a job offer is extended Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
	Equal pay irrespective of sex		
Vermont	Va. Code Ann. § 40.1-28.6	Private companies and public employers	It provides a cause of action to sue for damages.
	Wage discrimination due to sex	Private companies and public employers	Any employer that discriminates in the payment of wages between similarly employed men and women can be found guilty of a misdemeanor.
	Wash. Rev. Code Ann. § 49.12.175	Private companies and public employers	It provides a cause of action to sue for damages.
Virginia	**Equal Pay for Equal Work** W. Va. Code, § 21-5B-1, et. seq.	Private companies and public employers	Prohibits wage discrimination for private employers. It provides a cause of action to sue for damages.
Washington	**Equal Pay for Equal Work** W. Va. Code, § 21-5E-1, et. seq.	Private companies and public employers	Prohibits wage discrimination for public employers. Provides employer liability for damages.
	No equal pay law		Wisconsin has a general employment discrimination law prohibiting wage discrimination based on sex.
West Virginia	**Employment discrimination law**	Private companies and public employers	Wisconsin has a general employment discrimination law prohibiting wage discrimination based on sex. Employers can't discriminate in the payment of wages based on sex or gender identity for

State	Law/Citation	Covered Employees	Provisions
	Wis. Stat. Ann. §111.31, et. seq.		substantially similar work (skills, effort, responsibility, and similar working conditions).
		Private companies and public employers	Wisconsin has a general employment discrimination law prohibiting wage discrimination based on sex. Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions). Provides employer liability for damages.
	Equal Pay	Private companies and public employers	Wisconsin has a general employment discrimination law prohibiting wage discrimination based on sex. Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions). Provides employer liability for damages.
Wisconsin	Wyo. Stat.1977 § 27-4-301, et. seq.	Private companies and public employers	Wisconsin has a general employment discrimination law prohibiting wage discrimination based on sex. Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions). Provides employer liability for damages.
Wyoming		Private companies and public employers	Employers can't discriminate in the payment of wages based on sex or gender identity for substantially similar work (skills, effort, responsibility, and similar working conditions).
			Provides employer liability for damages.

Appendix I.

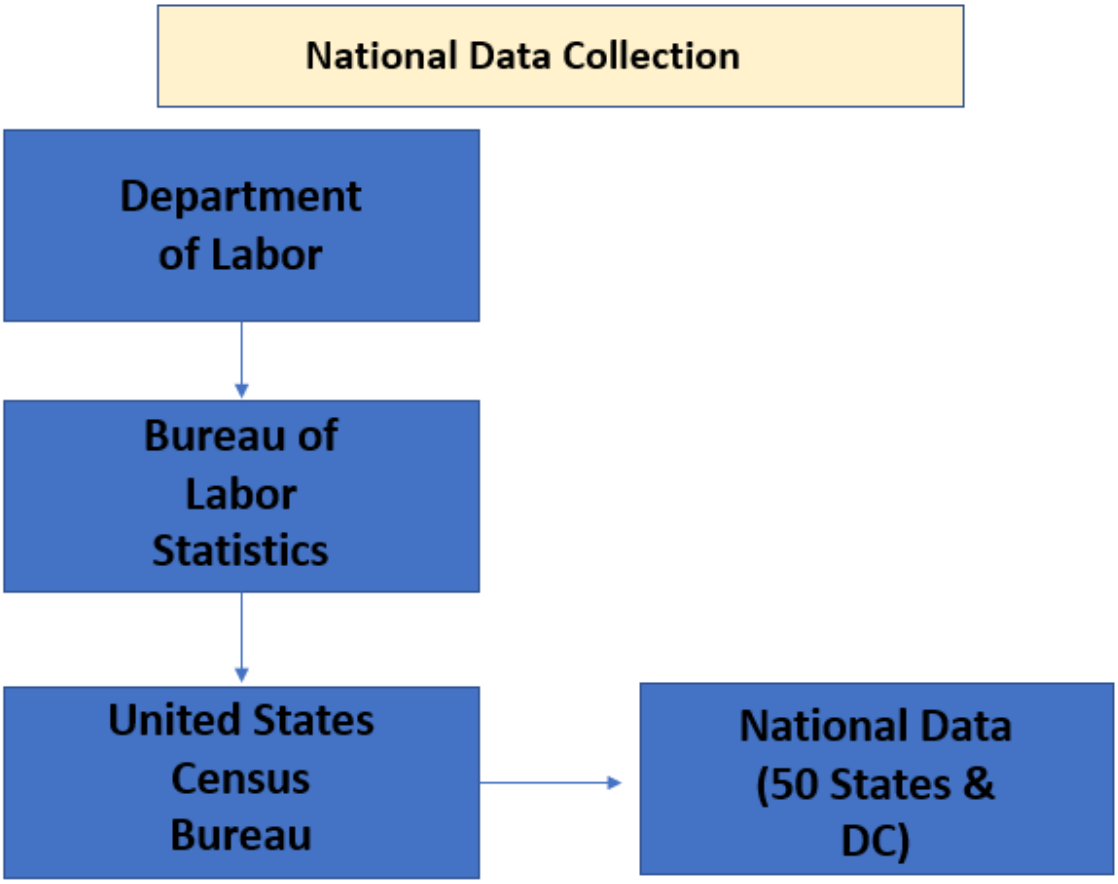
United States Census, American Community Survey, 2017 Totals

State/D.C.	Initial Surveyed *M (SD)*	Final *M (SD)*
United States (Total)	3,526,808	2,145,639
Alabama	63,219	34,797
Alaska	12,343	9,106
Arizona	70,535	42,194
Arkansas	37,906	20,469
California	328,123	201,604
Colorado	57,091	36,077
Connecticut	33,151	21,306
Delaware	11,415	6,829
District of Columbia	7,379	4,362
Florida	195,920	114,111
Georgia	93,714	52,402
Hawaii	15,614	9,339
Idaho	18,049	10,848
Illinois	142,847	90,120
Indiana	70,914	44,835
Iowa	47,592	31,648
Kansas	39,542	24,457
Kentucky	51,731	31,585
Louisiana	53,576	28,072
Maine	28,823	15,423
Maryland	57,730	36,181
Massachusetts	62,006	39,607
Michigan	149,817	94,849
Minnesota	95,050	63,620
Mississippi	32,983	16,972
Missouri	76,902	46,356
Montana	18,277	10,367
Nebraska	29,571	18,964
Nevada	29,810	17,450
New Hampshire	17,264	10,350
New Jersey	84,937	51,577
New Mexico	25,752	15,265
New York	217,441	126,670
North Carolina	108,158	64,918
North Dakota	14,595	8,752
Ohio	130,637	83,700
Oklahoma	58,324	42,829
Oregon	39,640	25,058
Pennsylvania	170,187	108,450
Rhode Island	10,100	6,022
South Carolina	53,643	30,872
South Dakota	14,229	8,935
Tennessee	67,471	41,031
Texas	252,422	136,667
Utah	27,892	17,955
Vermont	14,961	8,113
Virginia	78,866	50,643

State/D.C.	Initial Surveyed *M (SD)*	Final *M (SD)*
Washington	69,889	45,240
West Virginia	25,266	13,712
Wisconsin	105,854	70,820
Wyoming	7,650	4,110
Puerto Rico	30,853	15,429

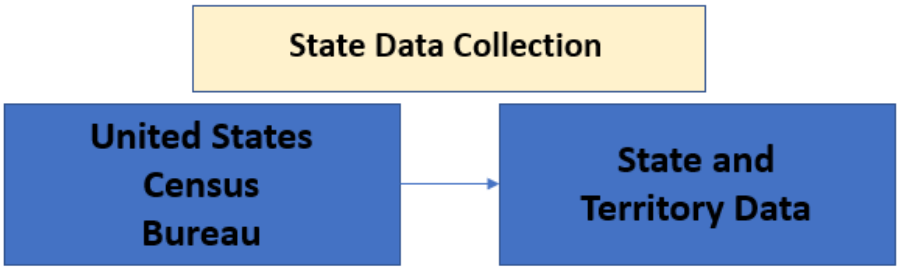
Appendix J.

National Data Collection



Appendix K.

State Data Collection



Appendix L.

Subindustries

Number	Industry Categories
1	Civilian employed population 16 years and over with earnings
2	Management, business, science, and arts occupations
3	Management, business, and financial occupations
4	Management occupations
5	Business and financial operations occupations
6	Computer, engineering, and science occupations
7	Computer and mathematical occupations
8	Architecture and engineering occupations
9	Life, physical, and social science occupations
10	Education, legal, community service, arts, and media occupations
11	Community and social services occupations
12	Legal occupations
13	Education, training, and library occupations
14	Arts, design, entertainment, sports, and media occupations
15	Healthcare practitioner and technical occupations
16	Health diagnosing and treating practitioners and other technical occupations
17	Health technologists and technicians
18	Service occupations
19	Healthcare support occupations
20	Protective service occupations
21	Fire fighting and prevention, and other protective service workers, including supervisors
22	Law enforcement workers, including supervisors
23	Food preparation and serving related occupations
24	Building and grounds cleaning and maintenance occupations
25	Personal care and service occupations
26	Sales and office occupations
27	Sales and related occupations
28	Office and administrative support occupations
29	Natural resources, construction, and maintenance occupations
30	Farming, fishing, and forestry occupations
31	Construction and extraction occupations
32	Installation, maintenance, and repair occupations
33	Production, transportation, and material moving occupations
34	Production occupations
35	Transportation occupations
36	Material moving occupations

Appendix M.

Industries

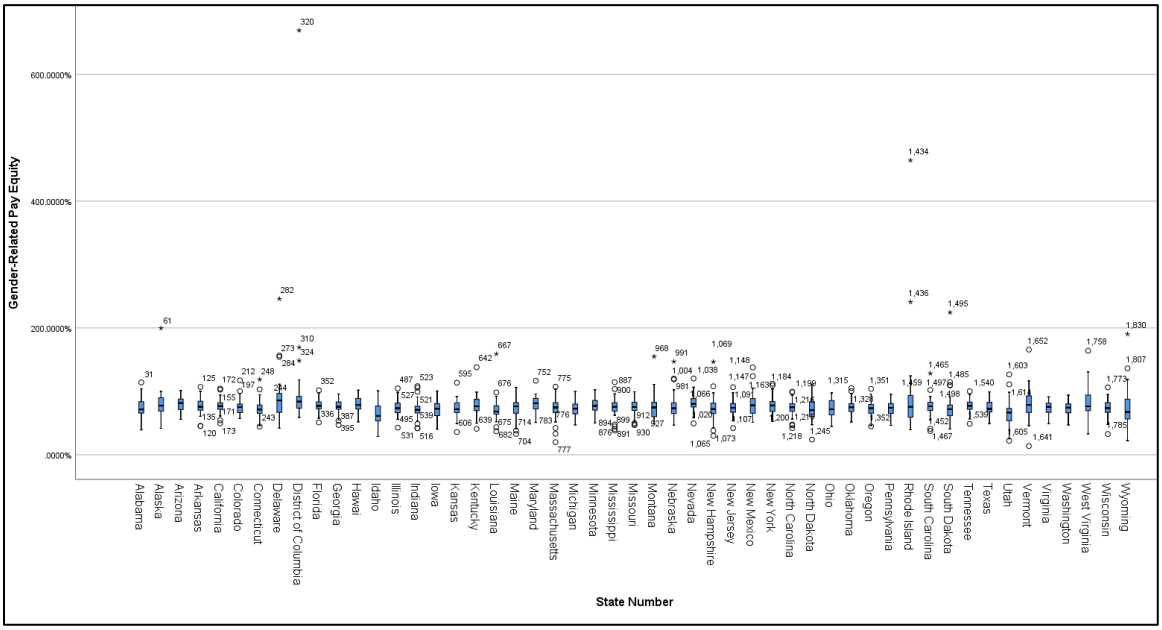
Number	Main Industry
1	Management, business, science, and arts occupations
2	Service occupations
3	Sales and office occupations
4	Natural resources, construction, and maintenance occupations
5	Production occupations

Appendix N.

Boxplot of Initial Dataset for Gender-Related Pay Equity Data by State

Figure N4.

Boxplot of Initial Dataset for Gender-Related Pay Equity Data by State

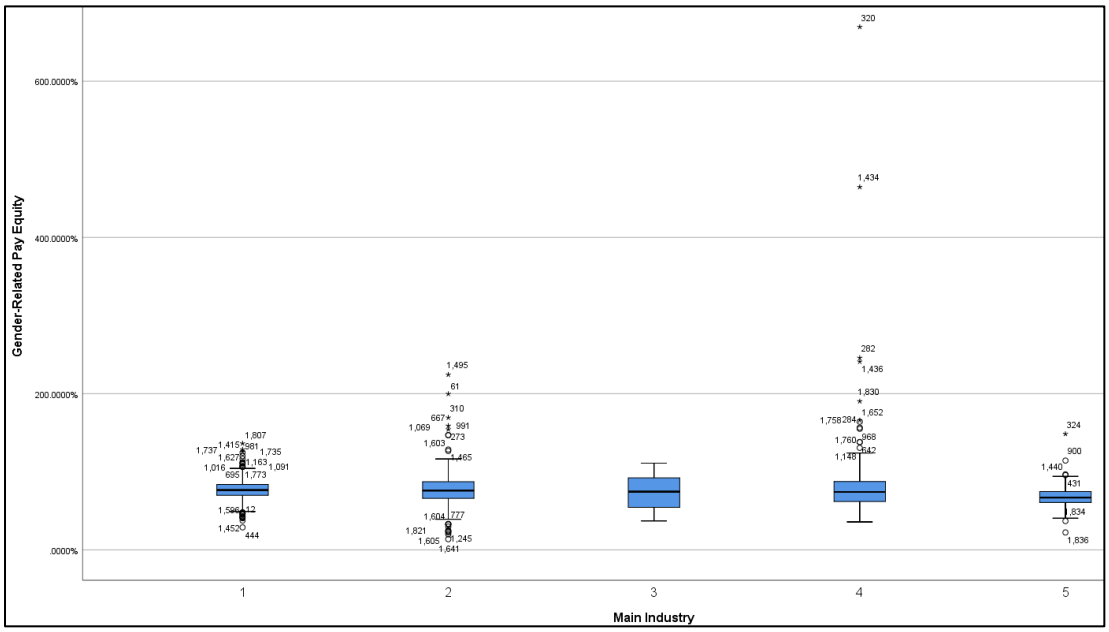


Appendix O.

Boxplot of Initial Dataset for Gender-Related Pay Equity Data by Main Industries

Figure O5.

Boxplot of Initial Dataset of Gender-Related Pay Equity Data by Main Industry

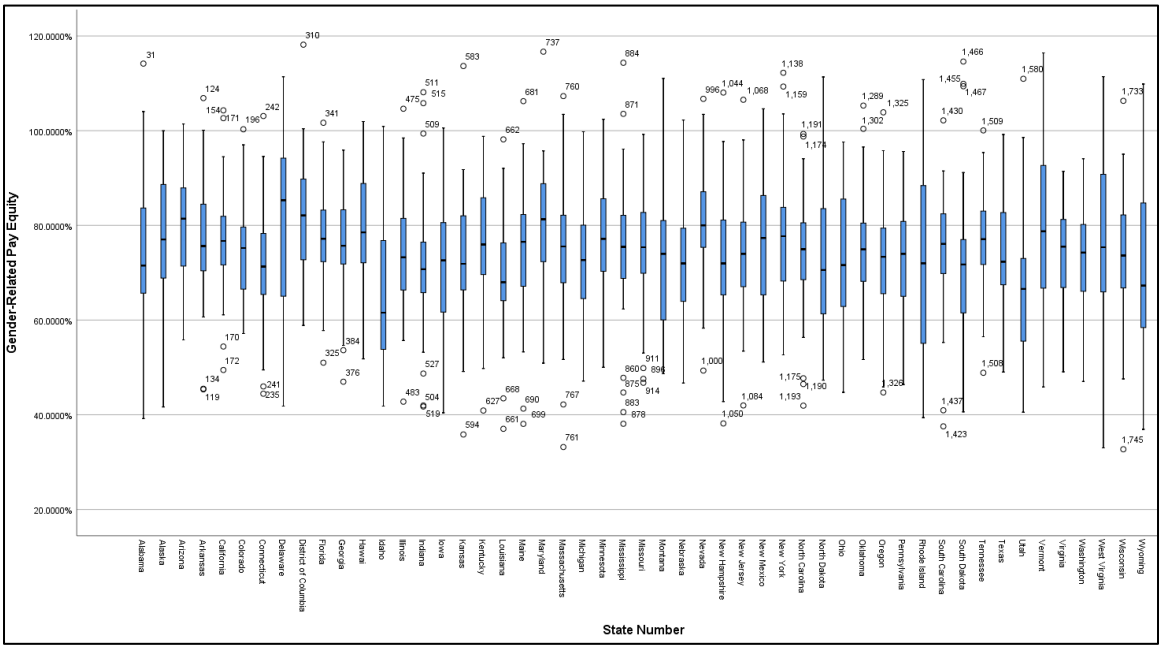


Appendix P.

Boxplot of Final Dataset of Gender-Related Pay Equity Data by State After Removal of Extreme Outlier

Figure P6.

Boxplot of Final Dataset of Gender-Related Pay Equity Data by State After Removal of Extreme Outlier

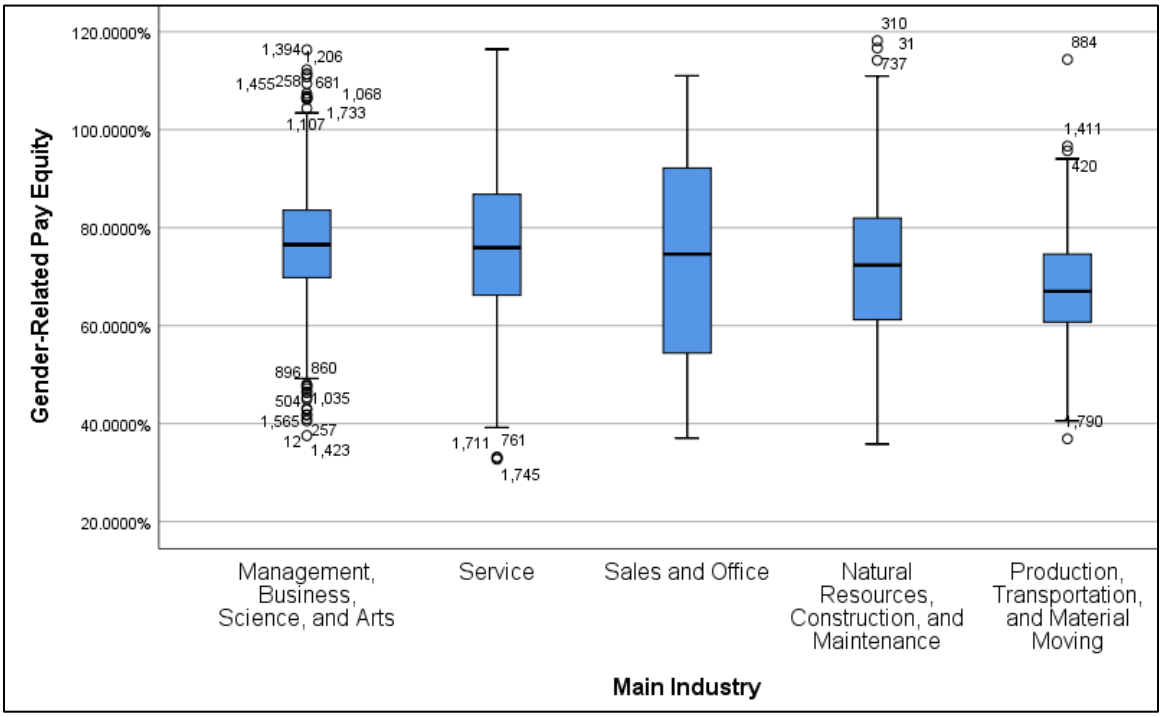


Appendix Q.

Boxplot of Final Dataset of Gender-Related Pay Equity Data by State After Removal of Extreme Outlier

Figure Q7.

Boxplot of Final Dataset of Gender-Related Pay Equity Data by Main Industry After Removal of Extreme Outlier



Appendix R.

Results of the Shapiro-Wilk Test of Normality of Gender-Related Pay Equity by State

Table R16.

Results of the Shapiro-Wilk Test of Normality of Gender-Related Pay Equity by State

States	*SW*	*df*	*p*
Alabama	.970	35	.526
Alaska	0.94	34	.081
Arizona	0.97	35	.514
Arkansas	0.97	35	.406
California	0.97	35	.422
Colorado	0.94	34	.072
Connecticut	0.98	34	.710
Delaware	0.94	32	.071
District of Columbia	0.97	30	.574
Florida	0.98	35	.658
Georgia	0.97	35	.343
Hawaii	0.97	35	.361
Idaho	0.90	34	.004*
Illinois	0.99	35	.963
Indiana	0.93	35	.030*
Iowa	0.98	35	.745
Kansas	0.96	35	.190
Kentucky	0.96	34	.322
Louisiana	0.98	34	.813
Maine	0.97	34	.457
Maryland	0.96	35	.217
Massachusetts	0.97	34	.366
Michigan	0.99	35	.928
Minnesota	0.99	35	.959
Mississippi	0.95	35	.108
Missouri	0.95	35	.123
Montana	0.96	34	.294
Nebraska	0.99	32	.945
Nevada	0.98	34	.771
New Hampshire	0.97	33	.526
New Jersey	0.99	35	.934
New Mexico	0.97	33	.351
New York	0.96	35	.166
North Carolina	0.97	35	.327
North Dakota	0.94	34	.051
Ohio	0.97	35	.468
Oklahoma	0.97	35	.429
Oregon	0.98	35	.795

States	*SW*	*df*	*p*
Pennsylvania	0.96	35	.306
Rhode Island	0.97	32	.516
South Carolina	0.94	34	.082
South Dakota	0.95	34	.098
Tennessee	0.98	35	.685
Texas	0.97	35	.547
Utah	0.93	32	.050*
Vermont	0.98	33	.680
Virginia	0.97	35	.364
Washington	0.98	35	.759
West Virginia	0.98	31	.815
Wisconsin	0.97	35	.524
Wyoming	0.97	30	.569

*Non-Normal

Appendix S.

Descriptive Statistics for Gender-related Pay Equity by State

Table S17.

Descriptive Statistics for Gender-related Pay Equity by State

State	*N*	*M (%)*	*SD (%)*	Min (%)	Max (%)	*z*-Skewness	*z*-Kurtosis
Alabama	36	73.04	15.85	39.19	114.17	0.20	0.75
Alaska	35	76.73	15.09	41.65	99.98	-0.65	-0.13
Arizona	36	80.67	11.75	55.81	101.43	-0.17	-0.55
Arkansas	36	76.09	12.89	45.37	106.88	-0.10	1.01
California	36	77.49	11.35	49.46	104.29	0.11	1.08
Colorado	35	75.21	11.06	57.15	100.30	0.60	0.05
Connecticut	35	71.58	13.31	44.45	103.10	0.12	0.30
Delaware	33	78.58	19.09	41.83	111.39	-0.47	-0.83
District of Columbia	31	81.69	13.31	58.88	118.16	0.35	0.58
Florida	36	77.27	9.92	51.00	101.67	-0.15	1.25
Georgia	36	75.55	11.25	46.98	95.90	-0.44	0.44
Hawaii	36	78.52	13.08	51.79	101.94	-0.28	-0.53
Idaho	35	66.91	16.55	41.82	100.91	0.75	-0.67
Illinois	36	74.25	12.98	42.77	104.64	0.14	0.30
Indiana	36	71.80	14.33	41.73	108.12	0.44	1.45
Iowa	36	72.55	14.96	40.41	100.60	0.05	-0.43
Kansas	36	71.96	14.87	35.83	113.65	0.07	1.18
Kentucky	35	76.06	14.26	40.89	98.79	-0.43	-0.07
Louisiana	35	69.53	12.66	37.03	98.17	-0.23	0.78
Maine	35	74.93	14.64	38.07	106.24	-0.53	0.73
Maryland	36	79.15	14.17	50.90	116.68	-0.06	0.31
Massachusetts	35	75.23	15.69	33.19	107.29	-0.28	1.04
Michigan	36	73.29	12.70	47.11	99.77	0.15	-0.37
Minnesota	36	77.09	12.01	50.03	102.42	-0.10	-0.29
Mississippi	36	74.84	15.80	38.10	114.34	-0.24	1.19
Missouri	36	75.23	13.45	46.75	99.24	-0.45	0.04
Montana	35	72.50	15.09	48.65	111.03	0.35	-0.09
Nebraska	33	71.98	12.83	46.70	102.26	0.19	0.24
Nevada	35	81.18	11.95	49.33	106.72	-0.19	0.78
New Hampshire	34	72.90	14.50	38.16	108.05	-0.10	0.81

State	*N*	*M (%)*	*SD (%)*	Min (%)	Max (%)	*z*-Skewness	*z*-Kurtosis
New Jersey	36	74.81	12.83	41.97	106.52	0.11	0.82
New Mexico	34	77.82	14.81	51.12	104.62	0.19	-0.75
New York	36	77.60	13.85	52.65	112.24	0.56	0.57
North Carolina	36	74.27	13.74	41.92	99.30	-0.41	0.21
North Dakota	35	73.94	18.23	47.31	111.35	0.59	-0.61
Ohio	36	73.66	13.93	44.75	97.61	-0.08	-0.77
Oklahoma	36	75.48	11.77	51.65	105.30	0.56	0.52
Oregon	36	72.35	13.12	44.71	103.87	-0.01	0.44
Pennsylvania	36	72.60	12.27	46.39	95.62	-0.39	0.14
Rhode Island	33	72.35	18.59	39.38	110.78	0.08	-0.77
South Carolina	35	74.54	13.15	37.55	102.17	-0.85	1.72
South Dakota	35	71.78	17.46	40.61	114.60	0.58	0.73
Tennessee	36	76.43	11.25	48.87	100.06	-0.41	0.22
Texas	36	74.36	11.09	49.02	99.18	0.31	0.19
Utah	33	67.53	15.35	40.55	110.96	0.87	1.18
Vermont	34	79.55	17.82	45.88	116.42	0.24	-0.14
Virginia	36	74.23	10.13	49.07	91.40	-0.48	-0.17
Washington	36	73.20	11.14	47.04	94.08	-0.09	-0.07
West Virginia	32	76.82	17.67	33.01	111.40	-0.32	0.03
Wisconsin	36	73.20	14.64	32.71	106.30	-0.48	0.90
Wyoming	31	70.80	18.93	36.92	109.84	0.33	-0.50
Total	1791	74.73	14.25	32.71	118.16	-0.02	0.13