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An Investigation of Employment and Wage Distribution in the Construction Industry by Race/Ethnicity and Gender

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AN INVESTIGATION OF EMPLOYMENT AND WAGE DISTRIBUTION IN THE CONSTRUCTION INDUSTRY BY RACE/ETHNICITY AND GENDER

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ABSTRACT

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One of the largest job providers in the U.S, is the construction industry, an industry that suffers from critical problems pertaining to a labor shortage. Yet the industry also struggles with insufficient interest and inconsistent participation from underrepresented demographic groups. To address the issue of workforce income inequality and bias, the industry must better understand the current situation regarding inequality; it needs to pinpoint some basic problems. To do so, analysts must scrutinize the following aspects: 1) the current differences within the construction workforce by race/ethnicity and gender with regards to the total employment and 2) the current disparity within the construction workforce by race/ethnicity and gender with regards to wage distribution. To help address this need, this study analyzes current differences within the construction workforce by race/ethnicity and gender. The study confirms that the gaps in employment and wage distribution for minorities still exist and that over the years the trend has remained steady. Furthermore, the study also identifies occupations within the construction industry where discernable gaps can be observed in terms of employment and wage for

race/ethnicity and gender. The products from this research will contribute to the body of workforce knowledge in the construction and broaden participation in engineering. By achieving these objectives, this work should help decision makers reduce income disparity where it is necessary and lead to improved interest and sustained participation in the construction across underrepresented demographic groups. The primary beneficiaries of this research will be African American, Hispanic, and women in the construction industry.

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Binit Kumar Shrestha

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CHAPTER 1: INTRODUCTION

1.1. Background

One of the largest contributors to the job market, the construction industry plays an important part in generating standard jobs with good pay for the average population. As per the Bureau of Labor Statistics (BLS), the Construction and Extraction sector employs 6.5 million people, a number that by 2024 is forecast to have risen to 7.2 million. Architectural, Engineering and Related Services constitutes a further 1.4 million in the workforce, predicted to increase to 1.5 million by 2024 (Bureau of Labor Statistics U.S. Department of Labor [BLS] 2015). According to data collected by BLS from Construction Chart Book (The Center for Construction Research and Training 2013), from 2010 to 2020 construction employment is expected to increase by 33%; this is twice the rate of increase for all other industries. Employees who work regularly in the construction industry average 44-hour work weeks and earn $45,528 a year. In addition, employees who work regularly in the Architectural, Engineering and Related Services work 44.1 hours in a week, earning $80,229 on average (U.S. Census Bureau 2014). Moreover, according to (Taylor & Goodrum 2016), the workforce in the construction industry is more content than the workforce of other industries.

Indeed, the construction industry contributes significantly to the employment scene. It should thus advocate for equality between the genders and among the different races in terms of employment, promotion, and wages. The industry, however, is plagued by fundamental structural issues. According to data gathered from the U.S. Census Bureau (2014), male construction workers earn on average $46,136. This is 16% higher than their female counterparts ($39,719). Even worse is the situation in the Architectural, Engineering and Related Services, where men earn on average $82,299—40% more than women who average $57,369. White construction

workers averaged $9187 more (nearly 24%) than their African American counterparts (nearly 24%). White workers in the Architectural, Engineering, and Related Services averaged $12,133 more (nearly 22%) than the African American workers.

Amongst the five most usual or common jobs in the construction industry (construction managers, first-line supervisors of construction trades & extraction workers, electricians, and construction laborers, and carpenters) a wage disparity between White and African American workers were perceived in four of them, the exception being carpenters. Wage difference of positive 33%, positive 26%, positive 14%, and positive 8% was observed for construction managers, firstline supervisors of construction trades & extraction workers, and electricians respectively. Moreover, in the Architectural, Engineering and Related Services, observers found a racial wage discrepancy between White and African American workers—positive 55% for architects, positive 18% for miscellaneous managers, and positive 9% for civil engineers.

The workforce in the construction industry is afflicted with many problems, the solutions to which are intricate. One problem is that too few are attracted to the construction industry, and thus minorities are underrepresented. Most of the available literature that focuses on the problem of labor cliff, however, fails to address the issue of poorly sustained participation of underrepresented demographic groups in the construction industry. The researcher believes that the contemporary state of the industry needs to be recognized. There is a fundamental problem with this field and it needs to be identified. If it continues to go undetected, the construction industry will not be able to fill the gap in the literature and solve this structural issue. In the following sections, the different aspects of the need and purpose of this study are explained.

1.2. Problem Statement

A critical issue in the construction industry is underrepresented demographic groups not joining the field relative to the distribution of general labor workforce/population. The literature has only pinpointed the issue of a labor shortage but rather ignored the poorly sustained participation and the trend of wage disparity. In fact, the researcher has recognized this to be a critical issue. To resolve it, however, the industry must better understand the current situation and historical trend of both the population employed and the wage gap in the industry based on race/ethnicity and gender. Furthermore, the researcher believes that the industry should be able to identify the current situation and historical trend for different occupation types within the industry and identify whether there are significant differences in the population employed and the wages within the specific jobs. Identifying specific jobs will further help in improving participation of minorities. In line with this, the researcher has developed the following four hypotheses, which will be covered below.

The following problem statement is put forward: *The construction industry has tried to improve the participation and the prevalent wage gap of underrepresented demographic groups in the past. However, the industry is having difficulties in increasing the participation of minorities and narrowing the wage gap in minorities.*

1.3. Need and Purpose

This study focuses on the lack of participation of the minorities and the apparent disparity in income of the underrepresented demographic groups. Based on the above-stated problem statement, the following "Need and Purpose" are proposed:

Need:

To better understand the:

I. Current situation and historical trend of workers employed and wage disparity in the construction industry

II. The differences and gaps that persist within different construction types

Purpose:

I. To investigate the employment distribution and the wage gaps in the construction industry based on race/ethnicity and gender.

II. To help practitioners and academics in the construction industry better understand the current outstanding inequality issues in terms of employment and wages.

1.4. Research Scope and Objectives

The following research objectives are proposed:

a) To identify trends of workers employed in construction industry that pertain to race/ethnicity and gender.

b) To identify the occupation types in the construction industry that exhibit inequality in terms of the population employed.

c) To identify the trend of wage gaps in the construction industry based on race/ethnicity and gender.

d) To identify occupation types in the construction industry that have wage gaps within the same occupation.

1.5. Research Hypotheses

Throughout this paper, certain research hypotheses will be tested. Data analysis, carried out in Chapter 4, will be based on the following hypotheses:

Table 1. Research Hypotheses

No.	Research Hypotheses
I.	Over the past few decades, there has been significant change in employment distribution by race/ethnicity or gender.
II.	In terms of occupation type, there are significant differences in employment distribution by race/ethnicity or gender.
III.	Over the past few decades, there have been significant changes in wage gaps by race/ethnicity or gender.
IV.	There are significant differences in wage gaps by race/ethnicity or gender by occupation type.

1.6. Limitations

This study contains the following limitations:

- **Focuses on race/ethnicity and gender:** This paper is focused on White, African Americans, Hispanics, and Asians. Other races have not been considered individually. Furthermore, in the analysis of Occupational Level Analysis for race/ethnicity, data for Hispanics were not available in the data source. Therefore, in this paper only Whites and Blacks are compared.
- **Sample Years:** Regarding Industrial Level Analysis, sample years range from 2005 to 2014 for race/ethnicity and from 2007 to 2015 for wage distribution analysis. For Occupational Level Analysis, this work analyzes the latest data available (2015) in the data source (Data USA).
- **Construction and Extraction Industry considered for Median Weekly Earnings by race/ethnicity:** Only the Median Weekly Earnings for the Construction and Extraction

Industry were available by race/ethnicity; those for the construction industry were not available. However, for other analyses, Construction Industry was solely considered.

- **The difference in a number of occupations considered:** For Occupational Level Analysis, data for race/ethnicity considered 324 occupations while data for gender considered only 192 occupations. This is because of the limitation of the source (Data USA), as the source has considered the different number of occupations for race/ethnicity and gender.
- **Focuses on U.S. Construction Industry only:** The study focuses only on the construction industry of the United States and not of the entire world. This is because the construction industry of the United States is facing a problem of labor inequalities which is unique and needs to be addressed.

1.8. Structure of Thesis

Firstly, the Introduction introduces the topic and outlines the need to conduct analysis on it. This chapter also defines the purpose of the study as well as highlights the research objectives. The chapter also states the research hypotheses and goes over the limitations of the study. Second, the Literature Review surveys the relevant literature and summarizes the findings. The chapter focuses on the literature related to the issue of the labor cliff, the state of the workforce in general as well as the construction industry, and existing issues of inequities with regards to race/ethnicity and gender. In this chapter, the literature is analytically explored and explained. Third, the Research Methodology section explains the research methods used to conduct this study. It explains the sources and techniques used for data collection, characteristics of data collected, and detailed research methods on how the analysis was performed. Fourth, the Findings provide the results of the analyses conducted. It details the results while providing any relevant graphs and figures related to the analyses. This chapter includes the quantitative as well

as qualitative results of the study. Finally, the Conclusions and Recommendations state the conclusions of the study along with the relevant discussions pertinent to the results as well as provides recommendations for future research.

CHAPTER 2: LITERATURE REVIEW

Sources of Literature

For this work, an extensive literature review has been conducted of various peer-reviewed journals and publications such as the American Society of Civil Engineers' (ASCE's) *Journal of Construction Engineering and Management*, the *Journal of Management in Engineering*, *Engineering Education*, *STEM education*, *Project Management Journal*, *International Journal of Project Management*, *International Journal of Engineering Education*, and *Education in the Built Environment*. To conduct a thorough literature review search, the author used certain keywords (noted in the abstract): construction workforce, ethnicity, gender, inequalities, bias, underrepresented minorities, women, wage, demographics, salary, and still others. To search for relevant data and literature alike, the author used Google Scholar, Scopus, IPUMS, BLS, Data USA, Data-Planet, and the UNLV databases. Finally, the author organized the literature into 7 groups: 1) Brief Introduction to Labor Cliff in the Construction Industry 2) Segregation and Inequality Issues in terms of Employment (General); 3) Reasons for Employment Disparity; 4) Segregation and Inequality Issues in terms of Wage Distribution (General); 5) Reasons/Factors for Wage Gap; 6) Inequality and Discrimination Issues in the Construction Industry; 7) Importance of an Ethnically Diverse Workforce; and 8) Efforts to Reduce Racial and Gender-based Disparity/Gaps. The chapter concludes with a summary of the literature review.

2.1. Brief introduction to Labor Cliff in the Construction Industry

Over the past three decades, observers of the construction industry have witnessed a shortage of labor, the lone anomaly being the Great Recession of 2008. Experts forecast that this problem is only going to worsen (Karimi et al. 2016; The Business Roundtable 1983; Sawyer & Rubin 2007; Construction Labor Research Council [CLRC] 2005; Whyte & Greene 2012).

Unlike other industries in the United States, the mean age of the construction industry workforce experienced a fourfold increase. This aging trend is expected to persist (Taylor & Goodrum 2016). Fiori (2003) suggested the number of people born between 1990-1995 will be insufficient to exceed the number of construction workers aged 48 years (average age of construction workers) who are expected to retire between 2010-2015. Furthermore, American society shows a tendency to stigmatize young Americans as failures if they do not pursue higher education. Moreover, fewer American youths are inclined to do laborious work (Fiori 2003).

One of the prime reasons why fewer youths are entering the construction industry is because only 11-14 percent of them think that construction salaries can rise above $75,000. Such earnings—mostly constant for different genders, race, urban/rural groups—are perceived as meager (McManus 2017). A majority of people in the U.S. (43%) have stated in a survey that they would never work in the construction trade, irrespective of the money offered. Rose Quint, Assistant VP for the National Association of Home Builders, suggested that this fact is one proof of why immigrant workers are not stealing jobs from Americans who actually want those jobs (McManus 2017). The Business Roundtable Study (1996) revealed that 60% of its participants had encountered labor shortages. Further elaborating, 75% of the participants said that the shortage had worsened in the preceding five years (Business Roundtable (BRT) 1997). Sawyer and Rubin (2007) also cited the Construction Users Roundtable survey (2001) where 82% of the responses from the initial survey proclaimed shortages, which rose later to 86%. Furthermore, according to a survey conducted by National Association of Home Builders (the results of which were published in *Trades & Contractors*), 63 out of 100 participants of the leading 200 companies among home builders said that their greatest present concern was labor (McManus 2017).

Therefore, the construction industry is facing and is forecast to continue to face the very serious issue of a labor shortage. This shortage is due in part to a lack of participation of youths in the industry. As Fiori (2003) and McManus (2017) put it, it could be because of their lack of interest, or perhaps because of the lack of appeal of the industry. This shortage has been confirmed by other surveys, and previous forecasts have indeed come true, as suggested by BLS study in 1996.

2.2. Segregation and Inequality Issues in terms of Employment (General)

As an aggregate, the workforce of the United States continually experiences the issue of segregation and inequality. Thirty-seven percent of the American workforce is composed of ethnic minorities (Hull 2017). The problem of segregation can be evaluated from two American economic categories: 1) different industries in the labor market and 2) self-employment. Regarding the first category, prospective employers tend to favor White and immigrant applicants over Blacks (Moss & Tilly 1996; Waldinger & Lichter 2003; Neckerman & Kirschenman 1991). This suggests that the American economy has a history of being reluctant to employ blacks. Regarding the second category, Whites have a higher likelihood than other racial groups of acquiring resources, such as loans, in order to start and run their own businesses (Bates 1997; Butler 2012; Waldinger et al. 1990). It is suggested that American economy has a history of favoring cheap labor, in this case, minorities and women (Lippard 2006). It makes sense as a corollary when Catalyst (2004) proclaimed that America's future workforce will be composed of more colored women. When (Cocchiara et al. 2006) evaluated the Latin women and African American women in their paper, they suggested that this segregation was the lowest in case of Black males and Black females. From 1992 to 2004, there was an increase of 73% for Latin women and of 24% for Black women. It was estimated that Latin women would comprise 6.2%

of the U.S. workforce by 1992, which would indicate an escalation of 128%. In the same time period, Black women were expected to increase by 46% (Catalyst 2004). By 2012, 64% out of total Black women and 59% out of total Latin women were expected to constitute the workforce (Cocchiara et al. 2006). Furthermore, Tienda and colleagues (1992) observed in a study (regarding Latin women in New York) that more and more women started participating in the labor force during the mid-1980s. In contrast, the share (of 1% only) of Hispanic and Puerto Rican women did not change while that of Hispanic men did; their participation was nearly 20% in the 1990s (Kochhar 2004).

The number of women in the workforce is less than that of the men (Catalyst 2004). 60% of American women and 74% of American men were in the workforce as of 2006, which for women is an increase of 21 percentage points from 1964. By 2006, the share of women in the workforce had increased to 46% (Catalyst 2004). According to Mathur (2016), data collected from Bureau of Labor Statistics (BLS) for the sample year shows that during the early stages (16-24 years old), the participation rate for both men and women were almost the same, with men ahead of women by only 3 percent points. In the later stages (25-54 years), which is the principal working years for both, women lagged behind men by 14 percentage points, with women at 74% and men at 88%. As the age increases, so does the wage gap, reaching 16% points (men-90%, women- 74% in the labor force).

Wootton (1997) suggested that the difference between men and women diminished continually from the years 1985 to 1995 for different occupations. However, the paper also suggested that at the same time a concentration in one gender also increased for some occupations (Wootton 1997). Furthermore, even though the participation of women in the workforce is increasing, women do not boast a higher share in higher managerial positions in the

workforce. From 1975 to 2005, managerial occupations held by women increased by 2.9% point from 35% to 37.9%, far less than that of men (Bureau of Labor Statistics [BLS] 2005; Wootton 1997). Mathur (2016) has also considered, in her analysis, the types of jobs women are employed in. According to BLS data, out of the total part-time workers, 66% of them are women. As of 2014, only 3.7% of men were involuntary part-time workers whereas the percentage of involuntary part-time workers for women was 4.5%. Furthermore, her evaluations revealed 19% women, aged 25-54, were working part-time jobs, which is twice that of men (Mathur 2016).

It is important for companies to put together a diverse and all-inclusive workforce because research has revealed that this enhances the performance of the business by improving innovation, teamwork, and reaction to varying customer necessities (Hull 2017). According to *The Economist* (2015), other project performances will also be impacted, for instance, cost, safety, schedule and so on (Taylor & Goodrum 2016). McKinsey & Company conducted a research on gender diversity and ethnic diversity in companies and the results showed 15 percent higher odds for gender-diverse companies to garner financial returns higher than the industry median and 35 percent higher odds for ethnically diverse companies (Hull 2017).

It may be observed that most of the studies have focused on Latina and Black women and their situation in the workforce. Studies have also tried to show the situation of underrepresented women in the workforce as well. Gender equality for various occupations, it may also be observed, is improving, while at the same time some occupations have become more concentrated for a particular gender. Finally, the importance of having a diverse workforce has been stressed and pointed out that this helps improve project performances.

2.3. Reasons for Employment Disparity

In the United States, scholars hotly debate the reasons for disparity by race. Some hold that inequality between Whites and other underrepresented minorities exists because of characteristic drawbacks, like lack of stimulus. For instance, being poor and dependent on welfare could be one of the reasons that Blacks are less stimulated, and therefore lag behind their White counterparts (D'souza 1995). An outmoded way of thinking was that Whites were more cognitively advanced and more highly educated, leading them to better-paying jobs (Farkas & Vicknair 1996; Herrnstein & Murray 2010). Finally, some scholars (Wilson 1978; Wilson 1987; Wilson 1996) have argued that rather than employers being racists the problem is that Blacks and Latinos are actually underqualified because of the absence of education and skills required.

Throughout history, people of color have been isolated, and as a result, they are deficient in particular practical and job-readiness skills. A significant challenge for colored people in the workforce has been their lacking "soft skills" – alternatively defined as the ability to communicate and perform tasks properly in a work environment (Annie E. Casey Foundation 2001). It is highly probable for racial discrimination to become a factor for employers while interviewing potential employees since they stress and value soft skills in workers. Employers usually give the impression of fairness but are really using this discrimination as a pretext (Moss & Tilly 1996). Also prevalent is appearance-based discrimination (Zimmerman n.d.). *The Wall Street Journal* highlighted a lawsuit based on race and color brought on by plaintiff EEOC against Bass Pro Shops, who time and again declined to hire clerks and managers who were not white. The article offered an example of a perfectly capable candidate who was refused the job on the pretext that he did not suit the "company profile" (Zimmerman n.d.). One of the reasons

for this, as Shih (2002) proposed, could be because the employers harbor a uniformly accepted notion that blacks are lazy, impolite, and possibly immoral.

2.4. Segregation and Inequality Issues in terms of Wage Distribution (General)

Why America is plagued with inequality by race is thus a widely debated topic (Lippard 2006). According to Russell Sage Foundation's multicity study, Blacks earned 6.5% of what Whites earned in 1996-1997, which exhibits a prominent gap in respective earnings (Annie E. Casey Foundation 2001). It was observed that non-Hispanic white women earned more than minority women did. It was further observed that Latin and Black women started at an inferior salary at each education position as compared to non-Hispanic White women. In 2002, Black women with high school degrees earned $2,564 less than non-Hispanic white women and Latin women earned $5,617 less than non-Hispanic White women did. Furthermore, earnings of Black women with respect to Black men were in the region of 70% to 87%. When compared to White men, who are the leading earners in the construction industry, it was noted that Latin women and Black women earned a modest amount, in the territory of 47% to 61% that of White men (Cocchiara et al. 2006). What has proved especially detrimental to African American women are race and sex factors combined (Lewis et al. 2013). According to another study by National Women's Law Center (NWLC), women of Hispanic origins earn 54% of a white, non-Hispanic male's earning and Black women earn 63% of White, non-Hispanic male's earnings. This correlates to Hispanic women being at a million-dollar deficit in a career spanning 40 years (as per the wage gap considered in this study) and black women under the same circumstances losing in excess of $840,000 over the same period. However, NWLC reported that Asian women workers have been the most successful in closing the wage gap, for they make only 85% of the White, non-Hispanic male workers income (Vasel 2017).

In recent years, one of the more popular and rigorously researched issues has been wage inequity based on gender (Rubery et al. 2005). Circling the gender pay gap are two schools of thought: 1) sample groups do not recognize a gender pay gap (Lange 2008; Blackaby et al. 2005) and 2) a gender pay gap exists and is real (Khoreva 2011). The first point suggests that, despite the supporting statistics, the sample surveyed failed to see a gender wage gap (Lange 2008; Jamali et al. 2008; Jackson & Grabski 1988). The second school of thought, however, references a Special Eurobarometer (2009) study, where half the people in Europe believed that the gender wage gap was an important issue in need of being addressed (Khoreva 2011). Glynn (2014) suggested that the notion that a wage gap existed and was significant was under dispute since different sources of data are open to different conclusions. The politically volatile issue is complicated by the fact that how the analysis is conducted (whether median weekly wage is used or annual median wage) yields different results (Glynn 2014).

Notwithstanding the data provided by Cucchiara et al. (2006) regarding women's expected increase in the workforce population, Latina and Black women are very much confronted by wage inequity. In fact, in 2012 women working full time earn over one-third less (70%) of men's earnings. This gap narrowed to 77% in 2014—an increase of 7 percent. One of the defining factors for wage differentials between men and women is that they work in different occupations, which is responsible for 49.3% of the wage gap (Blau & Kahn 2007). Less than half of the women working (44.4%) constitute just 20 professions (Boushey 2009). The 1980s showed promising improvement in reducing the wage gap, but in the 1990s it began to dwindle; this slow progress has continued through 2015 (Women's Bureau n.d.).

As of 2012, the top three occupations for women were as follows: secretaries and administrative assistants, nurses (registered), and elementary and middle school teachers. The

first group made up a 4/100 share of women workers; nurses also made up a 4/100 share of women workers; the teachers made up a 3/100 share of women workers. In 2010, the highest paid women workers were physicians and surgeons, followed by pharmacists and chief executives (United States Department of Labor 2010). In Ariane Hegewisch's opinion, the higher paying the job, the larger the wage gap. She goes on to cite a report from Institute for Women's Policy Research (IWPR) which showed Personal Financial Advisors as the job that had the largest wage gap when gender was considered, as per the data from the previous year. However, she has also cited jobs from the IWPR report where women made more money than men—to name a few, teacher's assistants, counselors, and operators of sewing machines (Vasel 2017).

Therefore, the literature suggests that when it comes to wages, Hispanics and Blacks are at a disadvantage. White men, on the other hand, are the highest earners and have been so for a long time. Furthermore, even though a faction of people refuse to accept that a gender wage gap exists, stats show that women are still earning less than men. In addition, wage gaps have been observed amongst men and women within the same occupation. A few researchers have discussed the reasons for such gaps.

2.5. Reasons/Factors for Wage Gap

Common to all professions are wage gaps. The most widely accepted reasoning for their existence concerns education and experience. Scholars have, of course, offered other rationales. According to American Association of University Women (Levine 2016), the reason gender pay gap exists is that across the economy, women are categorized in the industry and consequently jobs, which pay differently. Jacobs and Steinberg (1990) put forward the notion that the wage gap is justified since men are more often affiliated with jobs that are dangerous and unappealing. Hence men are paid more in order to validate the wage gap. Essentially, rather than

discrimination being the cause for wage dissimilarities, it is the social construct that drives different genders towards different types of occupations. The aforementioned types of occupations bring with them certain risks that require certain compensation. In an article for Center for American Progress, Sarah Jane Glynn wrote that women invested fewer hours than men, which would further help explain the wage gap. Glynn claimed that men working full time invest 35 minutes more than the women working full time. According to Glynn, women gravitate towards spending this extra time with their family and children. This is perhaps one reason why there exists an increasing differential in pay. Grey-Bowen et al. (2010) identified "positive-negative factors." These factors act positively as opportunities but also act negatively as liabilities to reducing the compensation gap. These factors show two trends—1) women with higher education levels lose more income and 2) the wage differential increases with age, which means wage gap is more for older women (Grey-Bowen et al. 2010). Martin observed that the wage gap is more in case of the elderly workers because of the already existing sizable wage gap that was in place when they began their careers. This reduces the probable future earnings (Vasel 2017). Similarly, according to Lips (2008) "positive-negative factors" also exist in case of occupations, in that the same occupation has gender wage gaps within them. However, contrary to Grey-Brown et.al, the wage gap has narrowed according to the 2014 data, where women earned 78.6% of a man's income. Ariane Hegewisch, program director at the Institute for Women's Policy Research (IWPR), believes that the rate of headway made in narrowing the wage gap has lessened compared to the compelling progression of the 1980s and 1990s (Vasel 2017).

It has been observed over the years that the income of white men is significantly more than that of white women, black men, or black women. Some explain this by referring to the

skills related to the work, which is correlated with education and age. Where wages are concerned, however, accommodation of such variables have still favored white men (Corcoran & Duncan 1979). Cain (1976) suggested that it is important to consider "human capital investments at pre-labor-market stage" and put forward the notion that Blacks have been dealt a bad hand with regards to health and schooling before joining the labor market (Cain 1976).

2.6. Inequality and Discrimination Issues in the Construction Industry

Although the construction industry is facing a shortage of labor, the overly unconcerned middle-aged white men who are at the head of most construction firms are not concerned with the problem of marginalized representation of minorities and women (Forbes 2001). Women represent only 9 percent of the total construction workforce (Hull 2017). The situation of women employment has improved since the 1970s with women being employed more (nearly half of the labor force in the U.S), holding significant positions and higher wages. Nonetheless, they are still the victims of unequal pay for the same job (Bureau of Labor Statistics [BLS] 2015). Therefore, one of the important issues facing the construction industry is the fact that women are compensated less than men for the same job and the same responsibilities. This issue has been called the "gender compensation gap." Johnson and Solon (1986) cited 1960s civil rights legislation that prohibits men and women from being paid differently for the same work and that makes it illegal to differentiate men and women while hiring, assigning job tasks, and promotion. However, even though the legislation exists, men and women are still paid differently (Grey-Bowen et al. 2010).

The economic aspect of the construction industry has been a notable barrier to minorities and people of non-white racial origins acquiring and securing livelihood through jobs and taking part in the industry workforce. Shrestha and colleagues (2016) noted that even though the

number of minorities participating in the construction industry has increased, the number of Disadvantaged Business Enterprises (DBE)—a prominent contributor to the industry—has not. DBEs frequently confront problems of "not meeting loan requirements, posting collateral, getting sufficient bank credit, obtaining construction contractor hiring a skilled workforce." On the other hand, non-DBEs have seldom faced such issues (Chang 1989). Furthermore, firms belonging to African American minorities and employing staff having the same education, ages, and financial backgrounds were parties to receiving smaller loans when compared to firms owned by non-white minorities (Bates 1989). Yet more frustrating and disheartening has been the inclination of employers to refuse jobs to racially different people (Annie E. Casey Foundation 2001). Surprisingly, African Americans are also being victimized by Latinos, since Latinos are now more welcome in the upper tier by the whites. Even so, broadly speaking Whites seem to have good relationships with neither Blacks or Latinos (Lippard 2006).

According to a conference on Women in construction, for women to get promoted calls for three crucial elements—performance, image, and exposure. Of these factors, 60% was attributed to exposure, 30% was attributed to the image, and only 10% was attributed to performance. The speakers of the conference also observed that mostly the pay gap is initially encountered at the early stages like entry-level positions. However, the wage gap is seen to inflate as the position goes increasing, for example in management positions. In this regard, the conference cited a wage differential reaching up to $52,000 for owners (Groundbreaking Women in Construction [GWIC] 2017). One important step taken towards diversity and inclusion is the JV collaboration between Women Business Enterprises (WBE) and Minority Business Enterprises (MBE). Also, construction projects awarded by the Federal Government requires a definite quota MBE and/or WBE to be involved in the project. Considering diversity and

inclusion factors in the process of hiring best employees might aid in the effort of narrowing the gender or ethnic gap. Also significantly helpful are such strategies as "mentoring groups, diversity and inclusion training, professional development seminars and employee resource groups (ERGs)" (Hull 2017). Taylor and Goodrum (2016) further explored the existent wage gap between the construction industry and other industries, and therefore advocated increasing wage of the construction laborers.

2.7. Importance of Ethnically Diverse Workforce

In order to establish and expand the foothold in the world market and, as a corollary, deliver standard merit-worthy projects on time and within budget, "workforce diversity and involvement" plays an important role to foster creativity and innovation. This is important because today's construction projects are evolving and getting more complex. A diversified workforce allows for superior comprehension of diverse cultures, which further allows for efficient communication and fulfillment of client expectations. Another important factor to project and business performance enhancement is inclusion. A study performed by Deloitte reported that productivity of employees improved if the feeling of being included was nurtured in the workplace. As a consequence, the companies are 80 percent more probable of evolving into "high-functioning organizations" (Hull 2017).

2.8. Efforts to Reduce Racial and Gender-based Disparity/Gaps

The hurdles that impede women from employment opportunities have been lowered by numerous endeavors (Annie E. Casey Foundation 2001). Congress has passed several acts such as Equal Pay Act in 1963 and Lilly Ledbetter Fair Pay Act. Various efforts have been made to suitably coach and prepare minorities and women who have been mostly sidelined. Conferences like Groundbreaking Women in Construction discuss issues on such gaps and try to come up

with solutions that can help women in the workforce. At the conference Ground-Breaking Women in Construction, attendees discussed issues such as opposition and opportunities for women in a changing environment. Other issues were also tackled such as gender pay gap, ways that would be best for women to leverage their individual strengths in order to aid their professions and realize subsequent roles (Groundbreaking Women in Construction [GWIC] 2017).

Diversity and inclusion have been established as significant factors that will facilitate the construction industry advancing and expanding. The Associated Builders and Contractors, Inc. (ABC) and the Associated General Contractors of America (AGC)—two of the largest trade institutions in the U.S.—are important proponents of this cause. ABC hosted the Diversity and Inclusion Summit in 2015, where principals and stakeholders of the construction industry met and discussed how to create a diverse and inclusive workforce. The Diversity and Inclusion Council was established by AGC to advocate for the enactment of initiatives for diversity and inclusion (Hull 2017).

2.9. Summary of Literature Review

In conclusion, the literature review highlights the fact that segregation (in terms of employment and wage) is a pertinent issue in the workforce. It is expected that participation of women is increasing, and the participation of Black women and Latina women is forecasted to increase in the workforce in general. Furthermore, even though there is a debate on the existence of gender wage gap, statistics to date have suggested that a gender wage gap exists. Moreover, wage disparity is also prominent amongst Whites, Blacks, and Hispanics. Several relevant reasons for this disparity has been highlighted in the existing literature. Similarly, the literature has focused on the labor shortage in the construction industry. The share of women in the

construction is far less; moreover, people of color find it difficult to secure jobs and sustain businesses in the construction industry. The construction industry and the workforce overall have recognized the importance of having a diverse workforce and its subsequent advantages. There have been certain initiatives that have tried to champion the cause of closing said gaps. However, the existing literature does not focus on the trend and history of the differences and existing disparity. The researcher did not find relevant literature pertaining to the trend of gaps changes (if there have been any). This study has tried to plug the gap in the literature relating to the trend/history and the current situation the workforce in terms of employment and wage in the construction industry.

CHAPTER 3: RESEARCH METHODOLOGY

The research was carried out according to the steps illustrated in Figure 1. The steps of the research are described in the following sections.

3.1. Identification of Problem and Literature Review

The first step was to identify the problem. To identify the gap in the literature, the researcher performed a literature review. The literature review identified two important needs: 1) the need to better understand the current situation and historical trend of workers employed and wage disparity in the construction industry and 2) the need to better understand the differences and gaps that persist within different occupation types. The literature review produced the following issues, which are grouped into different sections for convenience: 1) Brief Introduction to Labor Cliff in the Construction Industry 2) Segregation and Inequality Issues in terms of Employment (General); 3) Reasons for Employment Disparity; 4) Segregation and Inequality Issues in terms of Wage Distribution (General); 5) Reasons/Factors for Wage Gap; 6) Inequality and Discrimination Issues in the Construction Industry; 7) Importance of an Ethnically Diverse Workforce; and 8) Efforts to Reduce Racial and Gender-based Disparity/Gaps.

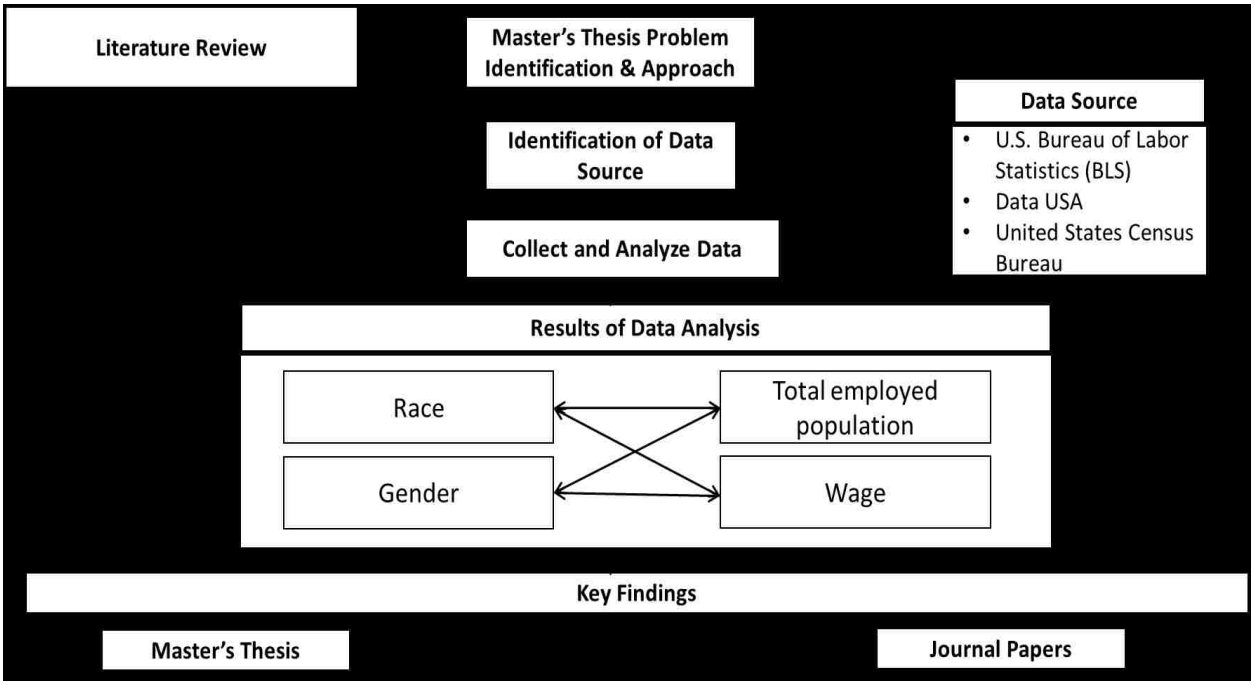


Figure 1. Research methodology

3.2. Identification of Data and Data Source

After a literature review, the researchers identified the type of data that was required to be collected for the research. They were as follows:

I. Number of workers employed in the construction industry based on race/ethnicity and gender,

II. Wage distribution in the construction industry for different race/ethnicity and gender,

III. Wage distribution of different occupation types in the construction industry by race/ethnicity and gender,

IV. The total population of the U.S. by race/ethnicity and gender.

After identifying the type of data that was required for the research, it was important for the researcher to identify reliable data sources from which to gather data. The data sources in which the researcher found the required data are as follows:

I. U.S. Bureau of Labor Statistics (BLS)

II. Data USA

III. U.S. Census Bureau

3.3. Collection and Analysis of Data

3.3.1. Sources of Individual Data Type

After identification of data to be collected and their sources, the first step was to collect data. The following table (Table 2) is the organization of data according to the source from which they were collected:

Table 2. Data Source

No.	Data Type/Category	Source of Data
1.	Data for employment and wage distribution in the construction industry by race/ethnicity	U.S. Bureau of Labor Statistics (BLS)
2.	Data for employment and wage distribution in the construction industry by gender	U.S. Bureau of Labor Statistics (BLS)
3.	Data for employment and wage for different occupation types in the construction industry by race/ethnicity	Data USA
4.	Data for employment and wage for different occupation types in the construction industry by gender	Data USA
5.	The total population of the U.S.	U.S. Census Bureau

3.3.2. Characteristics of Sample

As mentioned in the section 3.2 Identification of data and data source, the following types of data were collected from U.S. Bureau of Labor Statistics (BLS), Data USA, and U.S. Census Bureau, which are further explained below.

- **Data for employment in the construction industry by race/ethnicity:** For the purpose of this research, the researcher collected the total number of employed workers by race/ethnicity in the construction industry for the sample years 2007 to 2015. The researcher considered four major races for data collection, namely: a) Whites, b) African Americans (also referred to in this paper as Blacks), c) Hispanics, and d) Asians.
- **Data for wage distribution in the construction industry by race/ethnicity:** For the purpose of this research, the researcher collected the Median Weekly earnings for different races employed in the construction industry for the sample years 2007 to 2015. The researcher considered four major races for data collection, namely: a) Whites, b) African Americans (or Blacks), c) Hispanics, and d) Asians.
- **Data for employment in the construction industry by gender:** For the purpose of this research, the researcher collected the total number of employed population in the construction industry for the sample years 2007 to 2015. The researcher considered two genders for data collection—Male (Men) and Female (Women).
- **Data for wage distribution in the construction industry by gender:** For the purpose of this research, the researcher collected the Median Weekly earnings for different genders employed in the construction industry for the sample years 2006 to 2014. The two genders considered were again Male and Female.

- **Data for employment and wage distribution in different occupation types within the construction industry by race/ethnicity in 2015:** For the purpose of this research, the researcher collected data for different occupation types (including the number of workers employed and the average wage in the occupation) within the construction industry for various races. The sample year for this data was 2015, which was the latest available data in Data USA. The races considered were a) Whites, b) African Americans (or Blacks), and c) Asians.
- **Data for employment and wage distribution in different occupations within the construction industry by gender in 2015:** For the purpose of this research, the researcher collected data for different occupation types (including the number of workers employed and the average wage in the occupation) in the construction industry for genders. The sample year for this data was 2015, which was the latest available data in Data USA. The two genders considered were again Male and Female.
- **The total population of the United States:** The researcher also collected, for comparison purposes, data for the total population of the U. S. This data was collected from the U.S. Census Bureau for the sample years 2005 to 2015. The researcher considered two major genders, Male and Female, and three races, a) Whites, b) African Americans (or Blacks), c) Hispanics, and d) Asians.

After collecting the required data from different sources, as mentioned in Section 3.3.1 Sources of Individual Data Type, it is important to understand the characteristics of the data source. The researcher has summarized key data collection methods by data source and described the characteristics of the data sources.

Table 3. Data Collection Method Source

No.	Primary Source of Data	Data Collection Method
1.	U.S. Census Bureau	Current Population Survey (CPS)
2.	American Community Survey (ACS) Public Use Microdata Sample (PUMS)	Continuous Measurement Methods
3.	American Community Survey (ACS) Public Use Microdata Sample (PUMS)	Two phases of sampling – 1st phase: MAF sampling; 2nd phase: sample collection using four modes

a) **U.S. Bureau of Labor Statistics (BLS)**

As mentioned in the table (Table 3), data for employment and wage distribution in the construction industry by race/ethnicity as well as gender were collected from U.S. Bureau of Labor Statistics (BLS). According to BLS,

> the data discusses labor force characteristics of largest race and ethnicity groups in the U.S.—Whites, Blacks, Asians, and Hispanics. It includes a limited amount of data for American Indians and Alaska Natives, Native Hawaiians, and Other Pacific Islanders. Data is collected from a survey conducted by the U.S. Bureau of Labor Statistics (BLS) by the U.S. Census Bureau.

To elaborate, the survey is

> a survey of 60000 households in the sample for this survey. This translates to 110000 individuals each month. In order to select the sample, all the counties and

> independent cities in the country first are grouped into approximately 2000 geographical areas (sampling units). The Census Bureau then designs and selects a sample of about 800 of these geographic areas to represent each state and the District of Columbia. The sample is a State-based design and reflects urban and rural areas, different types of industrial and farming areas, and the major geographic divisions of each state. (BLS 2015; 2016)

b) **Data USA**

The researcher collected data for employment and wage distribution for different occupation types in the construction industry by race/ethnicity as well as gender from Data USA. According to Data USA, the methodology of data collection "uses continuous measurement methods. In this survey, a series of monthly samples produce annual estimates for the same small areas (census tracts and block groups) formerly surveyed via the decennial census long-form sample." Therefore, it is essentially a sample. Furthermore,

> the dataset used by Data USA is provided by American Community Survey (ACS) Public Use Microdata Sample (PUMS). ACS PUMS files show the full range of population and housing unit responses collected on individual ACS questionnaires, for a subsample of ACS housing units and group quarters persons. The ACS includes people living in both housing units and group quarters. (US Census Bureau 2015)

c) **U.S. Census Bureau**

The U.S. Census Bureau uses data collected from American Community Survey (ACS). It uses the Master Address File (MAF), which is the Census Bureau's Official inventory of known housing units, group quarters, and selected nonresidential units in the U.S. and Puerto Rico. ACS draws samples from MAF. First phase sampling done in two stages; the first stage

systematically sorts and assigns addresses that are new to the frame to one of the five sub-frames. The second stage of first phase sampling selects a sample of the addresses from the current year's sub-frame and allocates this sample to the twelve months of the year for data collection. The second phase is a collection of samples using four modes of data collection—Internet, mail, telephone, and personal visit. (American Community Survey [ACS] 2014a, b)

3.4. List of Occupation Types

To investigate and better understand the current situation of the industry as well as the existing gaps in the construction industry based on race/ethnicity and gender, the researcher collected employment and wage distribution data for various occupation in the construction industry. It is worth noting that, for gender data, Data USA has considered 192 different occupations in the construction industry; for race/ethnicity data, Data USA has considered 324 different job types. Hence, although the main source of data is the same (Data USA), the data for race/ethnicity is different from that for gender, in that race/ethnicity data did not have gender information and gender data did not have race/ethnicity information. The list of all occupation types considered in the research for both types is listed in Appendix I (race/ethnicity) and Appendix II (gender). Appendix III consists of the list of occupations which the researcher has selected for the purpose of this analysis. These occupations specifically pertain to construction trades.

3.5. Detailed Data Analysis Phases

After collection of data, the researcher conducted detailed data analysis. Data analysis was conducted in two phases—first the Industry Level Analysis and second the Occupational Level Analysis. The following figure (Figure 2) illustrates the steps and procedure of how the analysis was conducted.

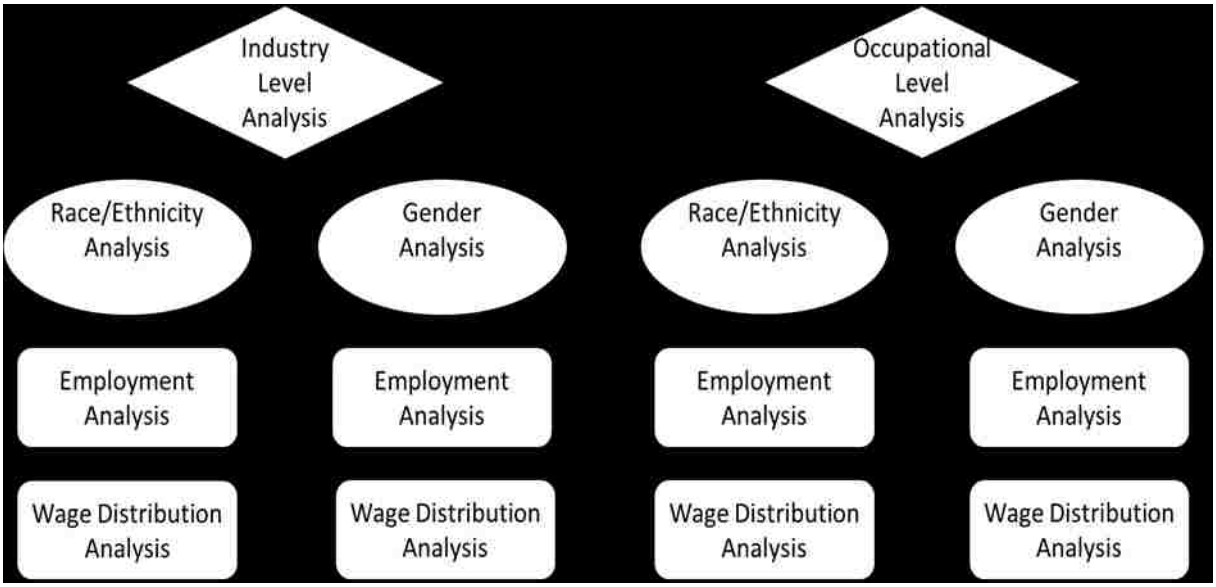


Figure 2. Detailed data analysis phases

3.5.1. Industry Level Analysis - Race/Ethnicity Analysis

Employment Analysis

- **Analysis of employment by race/ethnicity in the construction industry (1st phase):** This is the first phase of analysis for employment by race/ethnicity. It probes the situation of race/ethnicity distribution in the construction industry. In order to analyze the situation over the years 2007 to 2015, the number of men and women employed in the industry was normalized for consistency. Normalization of data was done by converting the data for all four races (Whites, Hispanics, Blacks, and Asians) into percentages. This was done by dividing the number of Whites, Hispanics, Blacks, and Asians respectively by the total number of workers employed in the construction industry. The percentage data obtained was then plotted as stacked columns along with a trend line to show the trend.

  The following formula was used to normalize:

$$\frac{\textit{Number of White workers employed in construction}}{\textit{Total Number of workers employed in construction}} \; x\,100 \qquad \textbf{Equation 1}$$

- **Analysis of employment by race/ethnicity in the construction industry with respect to the total population of the U.S. (2nd phase):** This is the second phase of evaluation for employment by race/ethnicity. The researcher hoped to shed light on the employment distribution based on race/ethnicity in the construction industry by comparing the data with the total population of the U.S. The researcher again normalized the data for the total population by dividing the total White, Hispanic, Black, and Asian population (respectively) in the U.S. by the country's total population for respective sample years. The normalized data for total population and the normalized data obtained from phase 1 (Equation 1) was then plotted as stacked columns with trend lines.

  The following formula was used to normalize:

$$\frac{\textit{Total White population in the U.S.}}{\textit{Total population of the U.S.}} \; x \; 100 \qquad \textbf{Equation 2}$$

Wage Analysis

- **Analysis of wage distribution by race/ethnicity in the construction and extraction industry:** In order to analyze the situation and trend of wage gaps in the construction industry by race/ethnicity, the researcher normalized the Median Weekly earnings of men and women (Construction and Extraction Industry). This was done by dividing the Median Weekly earnings of men and women (respectively) by the Total Median Weekly earnings so as to portray actual percentage difference. This would give a more accurate reading of apparent gaps. After doing this, the researcher plotted the obtained data as graphs with trend lines in order to investigate the trends.

  The following formula was used to normalize:

$$\frac{\textit{Median Weekly Earnings for Whites in Construction \& Extraction}}{\textit{Total Median Weekly Earnings of Construciton \& Extraction Industry}} \; x \; 100 \qquad \textbf{Equation 3}$$

3.5.2. Industry Level Analysis - Gender Analysis

Employment Analysis

- **Analysis of employment by gender in the construction industry (1st phase):** This is the first phase of employment analysis. It probes the situation of employment distribution by gender in the construction industry. To analyze the situation over the years 2005 to 2014, the number of workers (men and women) employed in the industry was normalized for consistency. Normalization of data was done by converting the data for both genders into percentages by dividing the number of men and women (respectively) by the total number of workers employed in the construction industry. The percentage data obtained were plotted as stacked columns along with a trend line to show the trend.

  The following formula was used to normalize:

$$\frac{\textit{Number of Male workers employed in construction}}{\textit{Total Number of workers employed in construction}} \; x\; 100 \qquad \textbf{Equation 4}$$

- **Analysis of employment by gender in the construction industry with respect to the total population of the U.S. (2nd phase):** This is the second phase of evaluation for employment analysis by gender. The researcher intends to further elucidate the employment distribution based on gender in the construction industry by comparing the data with the total population of the U.S. In order to perform this analysis, the researcher again normalized the data for total population by dividing the total population of men and women (respectively) in the U.S. by the country's total population for the respective sample years. The normalized data for the total population and the normalized data obtained from phase 1 was then plotted as stacked columns with trend lines.

  The following formula was used to normalize:

$$\frac{\textit{Total Male population in the U.S.}}{\textit{Total population of the U.S.}} \; x\; 100 \qquad \textbf{Equation 5}$$

Wage Analysis

- **Analysis of wages distribution by gender in the construction industry:** In order to analyze the situation and trend of wage gaps in the construction industry by gender, the researcher normalized the Median Weekly earnings of men and women with the Total Median Weekly earnings of the construction industry. This was done by dividing the Median Weekly earnings of men and women (respectively) by the Total Median earnings. This portrayed the actual percentage difference, which would give more accurate readings of the apparent gaps. After doing this, the researcher plotted the obtained data as graphs with trend lines in order to investigate the trends.

  The following formula was used to normalize:

$$\frac{\textit{Median Weekly Earnings for Males in Construction}}{\textit{Total Median Weekly Earnings of Construciton}} \; x \; 100 \qquad \textbf{Equation 6}$$

3.5.3. Occupational Level Analysis - Race/Ethnicity Analysis

Employment Analysis

- **Analysis of employment by race/ethnicity within different construction occupations:** In order to investigate the employment distribution in different construction occupations for Blacks and Whites, the researcher calculated how many more Whites were employed than Blacks and divided the difference by the number of Black workers employed. The resulting percentage gives the value by which Whites outnumber Blacks in the employment ranks. For the purpose of this analysis, the researcher selected certain trades (out of 324 construction occupations from the data source) that are relevant to the construction industry. After obtaining all percentages for the listed occupations, the researcher weeded out the top-10 occupations with the highest percentages. A graph of these top-10 occupations was then

created to show the occupation types where Blacks lag behind the most in terms of employment.

The following formula was used:

$$\frac{\textbf{\textit{Number of employed White workers} - \textbf{\textit{Number of employed Black workers}}}{\textbf{\textit{Number of employed Black workers}}} \boldsymbol{x\ 100} \quad \textbf{Equation 7}$$

Wage Analysis

- **Analysis of Wage gaps by race/ethnicity within different construction occupations:** In order to investigate the wage gaps in different construction occupations for Blacks with respect to Whites, the researcher calculated the difference in the average wages between Blacks and Whites and divided the difference by the wages of Blacks for the respective occupations. Such a calculation yielded the percentage by which Whites earn more/less than Blacks. For the purpose of this analysis, the researcher selected certain trades (out of 324 construction occupations from the data source) that are relevant to the construction industry. After obtaining all percentages for all the listed occupations, the researcher selected the top-10 occupations where the percentages were the highest. The researcher then graphed them to investigate the occupation types where Blacks lag behind the most in terms of average wages earned.

  The following formula was used:

$$\frac{\textbf{\textit{Average Wage of employed Whites} - \textbf{\textit{Average Wage of employed Blacks}}}}{\textbf{\textit{Average Wage of employed Blacks}}} \boldsymbol{x\ 100} \quad \textbf{Equation 8}$$

- **Box plot for average wages by race/ethnicity within construction occupations:** The researcher further plotted a box-plot for average wages (324 construction occupations) in order to analyze the situation of Asians, Blacks, and Whites income in the construction industry. This was done by using Statistical Package for Social Sciences (SPSS) Statistics

Software. In this case, even though the number of data (324) was large, there were not severe outliers that would distort the box plot. Therefore, it was unnecessary to remove outliers.

3.5.4. Occupational Level Analysis - Gender Analysis

Employment Analysis

- **Analysis of employment by gender within different construction occupations:** In order to investigate the employment distribution in different construction occupations by gender, the difference in the number of men employed versus women was calculated, the difference was then divided by the number of women workers. The resulting value gave the percentage by which men outnumber women. For the purpose of this analysis, the researcher selected certain trades (out of 192 construction occupations from the data source) that are relevant to the construction industry. The researcher then weeded out the top-10 occupations where the percentages were the highest. The researcher then produced a graph of these top-10 occupations to investigate the occupations types were the women are lagging.

  The following formula was used:

$$\frac{\textbf{\textit{Number of employed Male} } - \textbf{\textit{Number of employed Female}}}{\textbf{\textit{Number of employed Female}}} \; \boldsymbol{x}\; \mathbf{100} \qquad \textbf{Equation 9}$$

Wage Analysis

- **Analysis of wage by gender in the construction industry by different occupations in the construction industry:** To investigate the gaps by gender in average wage in different construction occupations, the researcher calculated the difference in the average wages between men and women and divided the difference by the wages of women (respectively) for the respective occupations. The resulting value represented the percentage by which men earn more/less than the women. For the purpose of this analysis, the researcher selected certain trades (out of 192 construction occupations from the data source) that are relevant to

the construction industry. The researcher selected the top-10 occupations where the percentages were the highest and graphed them to investigate the occupation types where the women lag behind men.

The following formula was used:

$$\frac{\textit{Average Wage of employed Male} - \textit{Average Wage of employed Female}}{\textit{Average Wage of employed Female}} \; x\,100 \qquad \textbf{Equation 10}$$

- **Box plot for average wages by race/ethnicity within construction occupations:** The researcher further plotted a box-plot for average wages (192 construction occupations). This box-plot was used to analyze the incomes of men and women in the construction industry. The analysis was carried out using Statistical Package for Social Sciences (SPSS) Statistics Software. In this case, the amount of data (192) was large, yet there were not severe outliers that would distort the box plot. It was thus unnecessary to remove outliers from the data sets.

CHAPTER 4: FINDINGS

Analysis performed by the researcher is explained in detail in this chapter. Both Industry Level Analysis and Occupational Level Analysis are elaborated with figures and graphs in the following sections. The list of analyses the researcher conducted are as follows:

1) Industry Level Analysis – Race/Ethnicity Analysis
2) Industry Level Analysis – Gender Analysis
3) Occupational Level Analysis – Race/Ethnicity Analysis
4) Occupational Level Analysis – Gender Analysis

4.1. Industry Level Analysis - Race/Ethnicity Analysis

Employment Analysis

- **Analysis of employment by race/ethnicity in the construction industry (1st phase):**

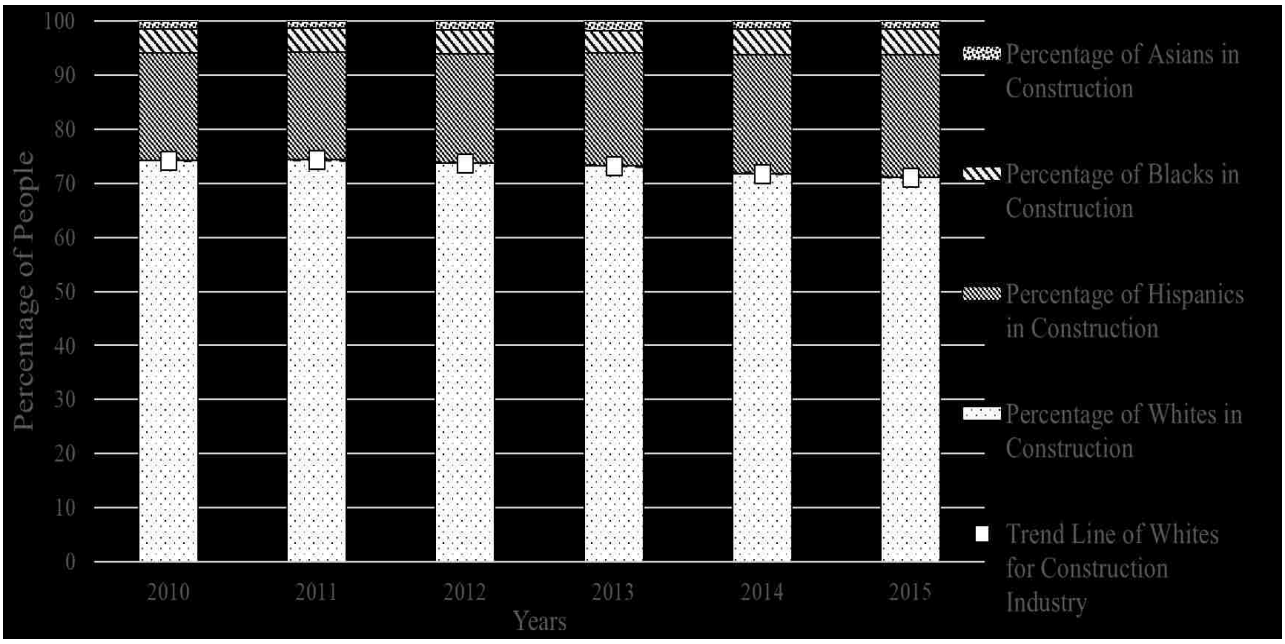


Figure 3. Percentage of employment by race/ethnicity in the U.S. Construction Industry

Figure 3 shows the respective percentages of employment by race in the U.S. construction industry. The percentage of workers in the construction industry that are White is

74.19% in 2010 and 71.08% in 2015. The graph shows that there is an increase of 3.11% point in the trend line, which represents the percentage of Whites employed in the U.S. construction industry. This means that during the sample years the portion of Whites working in the U.S. construction industry has decreased by 3.11%. In contrast, the percentage of Blacks and Hispanics have increased by 0.3% point and 2.8% point. Remaining constant over the sample years (at 1.39%) has been the percentage of Asians. It is observed that the largest share of employment in the industry belongs to Whites, followed by Hispanics, Blacks, and finally Asians. Finally, it can be observed that the slope for the Whites changed little (3.11%) in the sample years.

- **Analysis of employment by race/ethnicity in the U.S. construction industry with respect to the total population of the U.S. (2nd phase):**

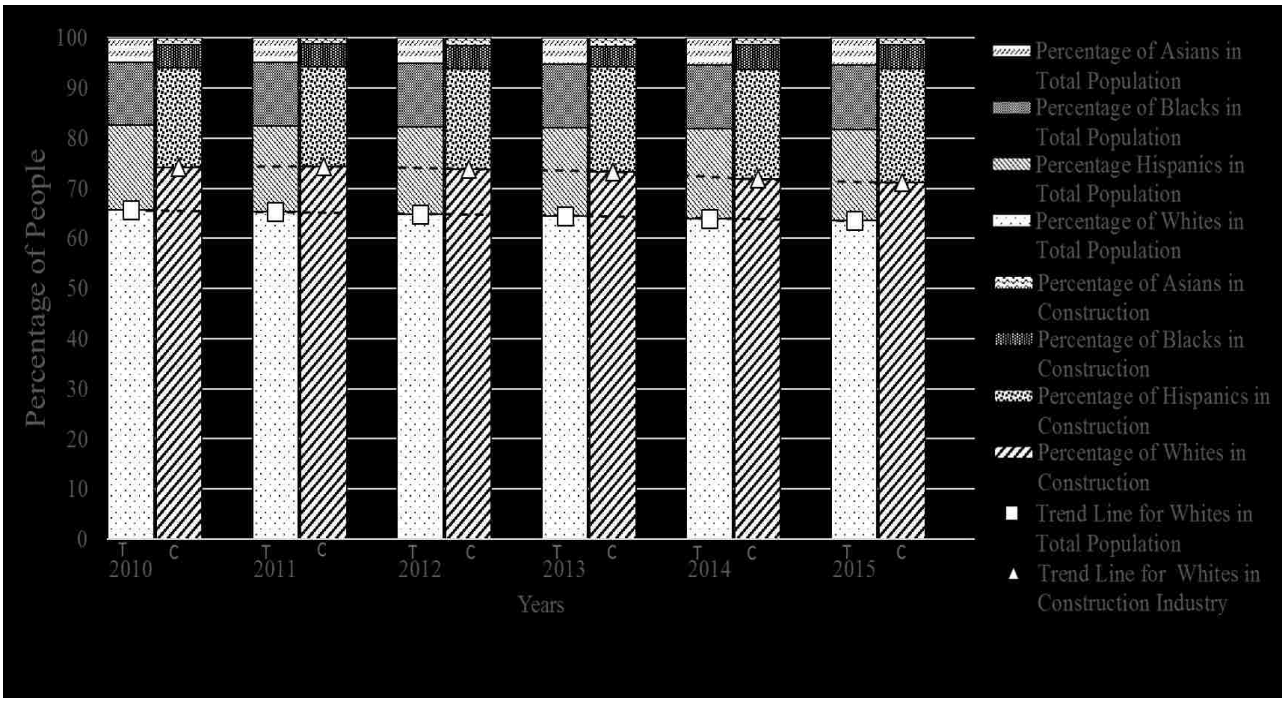


Figure 4. Percentage comparison between total population and employment by race/ethnicity in the U.S. Construction Industry

Figure 4 compares the total population of the U.S. and the employed workers in the U.S. construction industry by race/ethnicity. The percent distribution of the U.S. construction industry in Figure 4 is the same as in Figure 3. The percent of Whites in the total population of the U.S. was 65.61% in 2010 and has steadily decreased to 63.58% in 2015 (a decrease of 2.03%). As highlighted in Figure 4, the percentage of White employment in the U.S. construction industry was 74.19% in 2010 and also has decreased steadily to 71.08% in 2015. The gap between the percentage of Whites among the total population of the U.S. and the U.S. construction industry was 8.58% in 2010 and 7.5% in 2015. Therefore, the gap has been decreasing over the years.

As for total population, the percentage of Whites in the total population was 65.61% in 2010 and 63.58% in 2015. Figure 4 shows that over the sample years the percentage of Whites decreased by 2.03%, also represented by a trend line. The percentages of Hispanics and Asians, in contrast, have increased by 2.09% and 0.64%. The percentage of Blacks in the total population increased by 0.3%. In 2015, the percentage of White workers employed in the U.S. construction industry was higher than the percentage of Whites in the total population by 7.5%. The two trend lines show the change in the percentage of the share of different races in the total population compared to the share of employment of different races in the U.S. construction industry. It may be observed that the largest the portion of the U.S. population is made up of Whites, followed by Hispanics, Blacks, and finally Asians. Finally, it can be observed that the slope for the Whites in the U.S. construction industry and in the total population have both decreased by 3.11% and 2.03% respectively. Therefore, the gap between the slopes representing the employment distribution of the Whites in the U.S. construction industry and the Whites in the total population has decreased by 1.08%.

Wage Analysis

- **Analysis of wages distribution by race/ethnicity in the construction and extraction industry:**

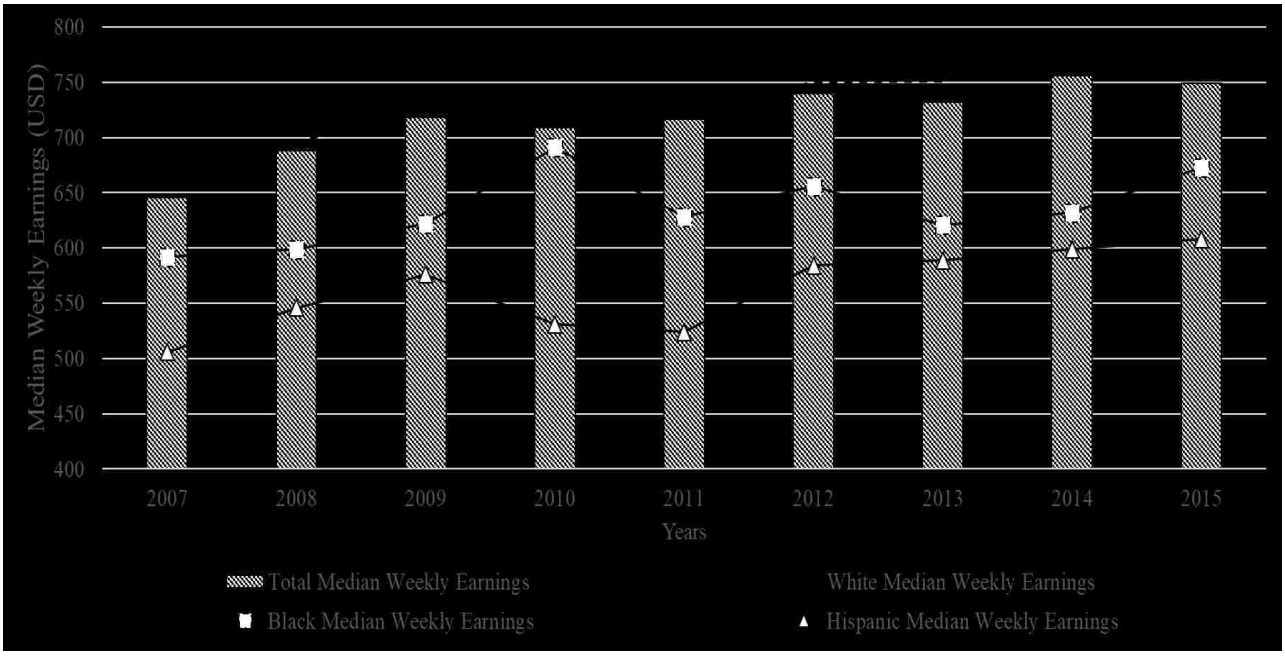


Figure 5. Wage distribution by race/ethnicity in the Construction and Extraction Industry

Figure 5 illustrates the total median weekly earnings as well as the median weekly earnings of different races in the U.S. construction and extraction industry, i.e., Whites, Blacks, and Hispanics. The total median earnings of the industry are seen to increase during the sample years reaching as high as $756 in 2014 before settling down on $749 in 2015. The median weekly earnings of Whites is also seen to increase from $654 to $758. It may be seen from Figure 5 that Whites earn above the total median earnings of the U.S. construction industry. The median weekly earnings of Blacks and Hispanics can also be observed to have increased during the sample years by $81 and $102 respectively. The highest percentage increase in income belonged to Hispanics at 20.16%. Yet Hispanics still have the lowest median weekly earnings, followed by Blacks. Therefore, the graph shows that the gap between the slopes for median

weekly wages of Whites and Blacks has increased by $23 and the gap between the slopes for median weekly wages for Whites and Hispanics has increased by $2.

4.2. Industry Level Analysis - Gender Analysis

Employment Analysis

- **Analysis of employment by gender in the construction industry (1st phase):**

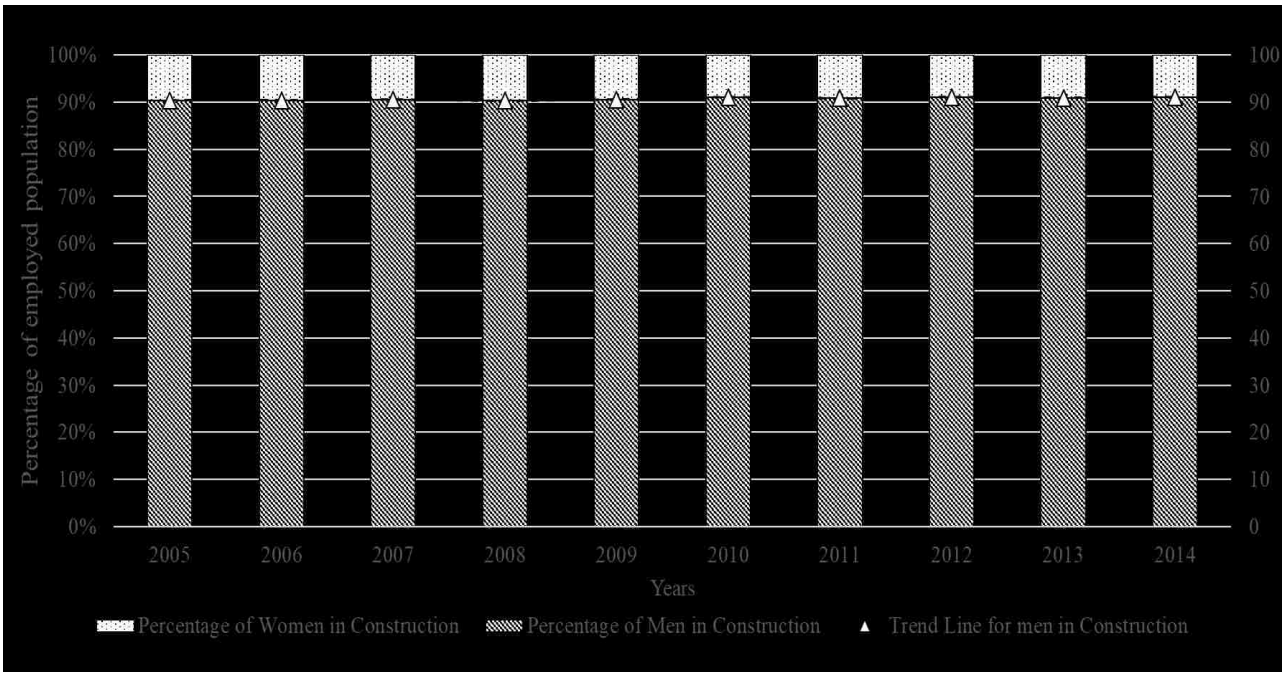


Figure 6. Percentage of employment by gender in the Construction Industry

Figure 6 shows the percentage of employment in the U.S. construction industry for men and women (from bottom to top). The percentage of men in the U.S. construction industry was 90.36% in 2005 and 91.11% in 2014. The graph shows that there is an increase of 0.75% in the trend line, which represents the percentage of men employed in the U.S. construction industry. The percentage of men has increased during the sample years by 0.75% point as suggested by the slope in the figure. Therefore, the portion of women in the U.S. construction industry has decreased by 0.75%.

- **Analysis of employment by gender in the construction industry with respect to the total population of the U.S. (2nd phase):**

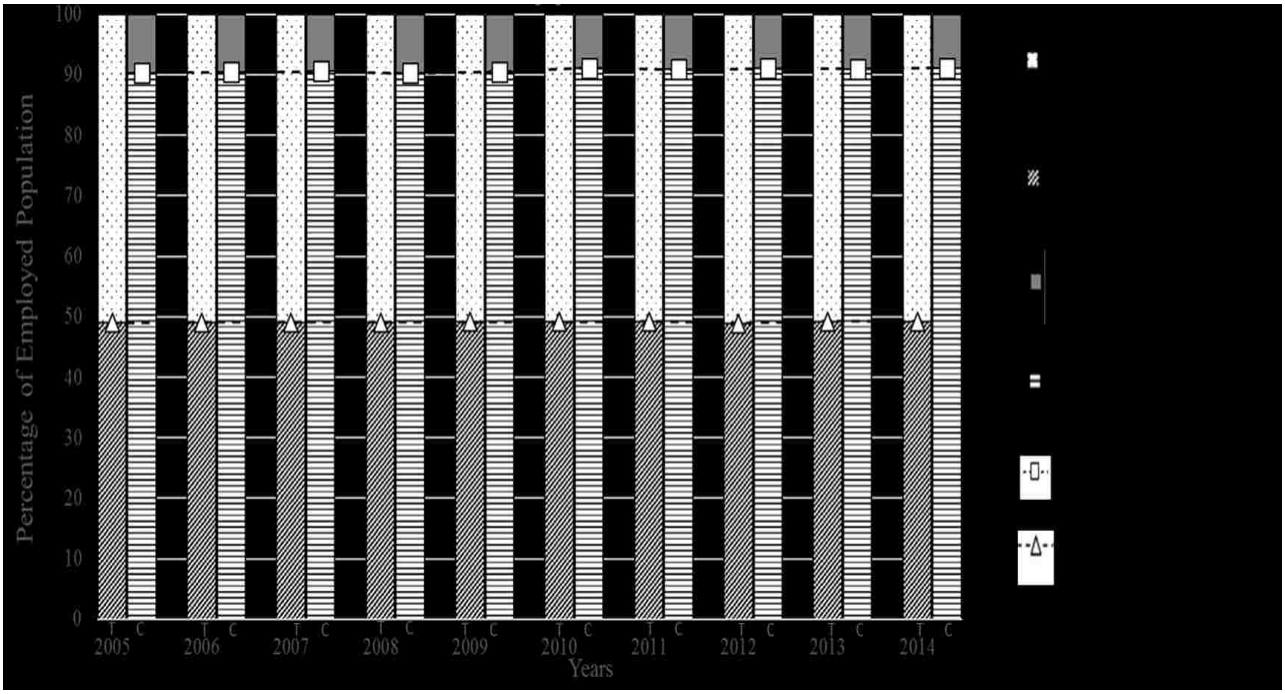


Figure 7. Percentage comparison between total population and employment by gender in the Construction Industry

Figure 7 compares the total population of the U.S. and their corresponding employment populations in the U.S. construction industry by gender (men and women). The graph for the construction industry is the same as in Figure 6. The percent distribution of the U.S. construction industry in Figure 7 is the same as in Figure 6. The percent of men in the total population of the U.S. was 49.03% in 2005 and has steadily increased to 49.2% in 2014 (increased by 0.17%). As it was highlighted in Figure 6, the percentage of men employed in the U.S. construction industry was 90.36% in 2005 and has also increased steadily to 91.11% in 2014. The gap between the percentage of men among the total population of the U.S. and the U.S. construction industry was 41.33% in 2005 and 41.91% in 2015. Therefore, the gap has been increasing over the years.

Concerning total population, the graph shows that the percentage of men has increased by 0.17%, also represented by a trend line. Therefore, the percentage of women has decreased by 0.17% point. The two trend lines show the change in the percentages of the share of different genders in the total population as compared to the share of employment of different genders in the U.S. construction industry. It may be observed that women make up a slightly larger share of the U.S. population. Finally, it can be observed that the slope for the women in the U.S. construction industry and in the total population have both decreased by 0.17% point and 0.75% point respectively for the sample years considered. Therefore, the graph illustrates an increase in the gap between the two slopes by 0.58%.

Wage Analysis

- **Analysis of wage distribution by gender in the construction industry:**

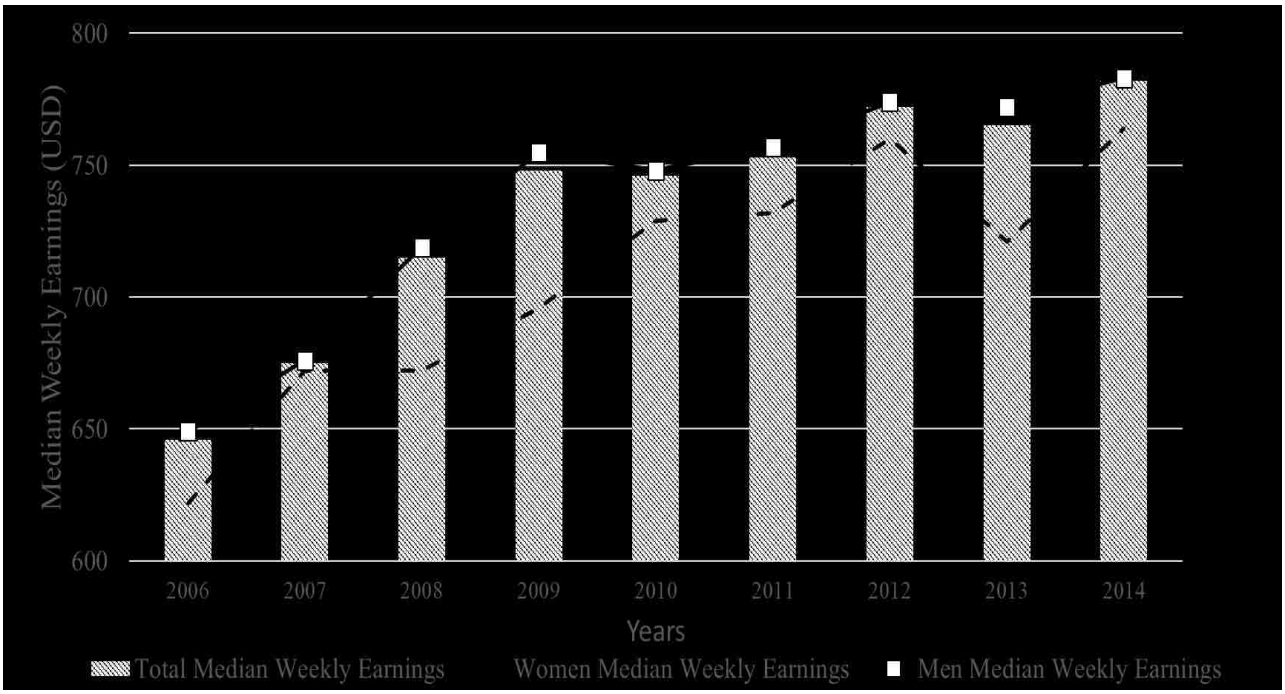


Figure 8. Wage distribution by gender in the Construction Industry

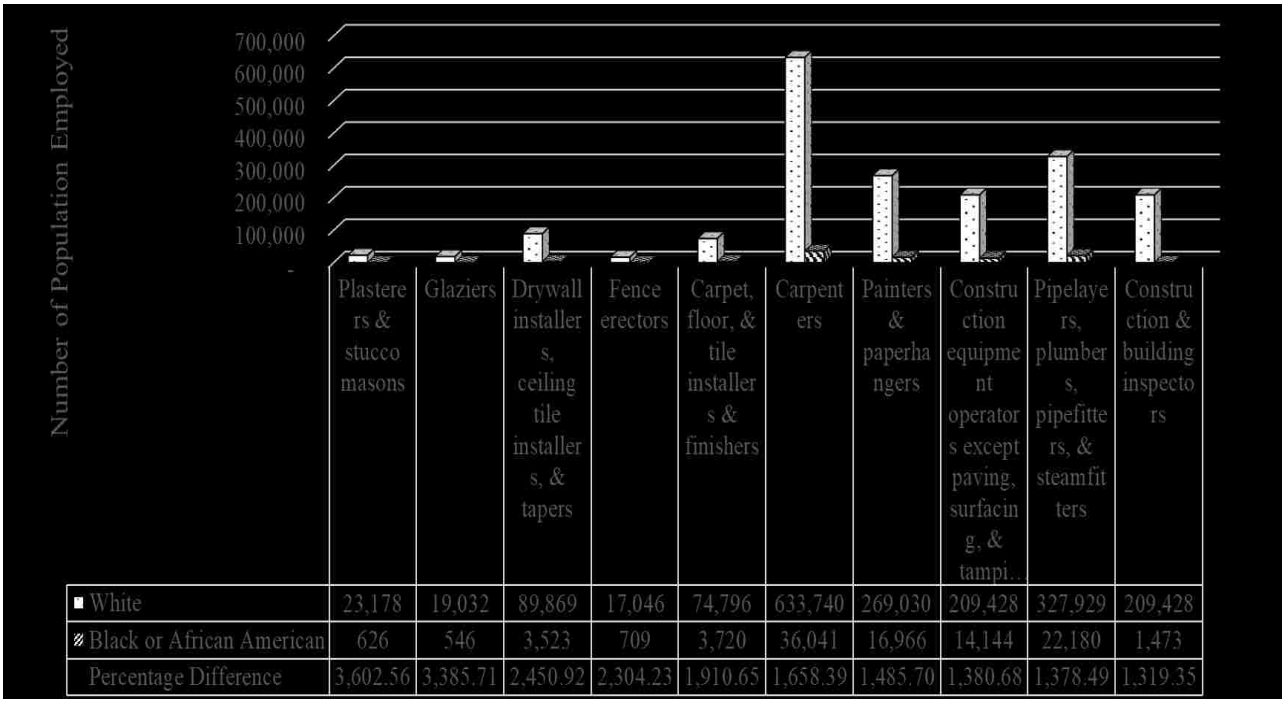
Figure 8 illustrates the total median weekly earnings as well as the median weekly earnings of men and women in the U.S. construction industry. The total median earnings of the

industry can be seen to have increased during the sample years, reaching as high as $782 in 2014. The median weekly earnings of the men can also be seen to have increased from $649 to $783. In all the sample years considered, men earned above the total median earnings of the industry. The median weekly earnings of the women increased by $142. The increase in the income of women is 22.83% while that of men is also almost the same at 20.65%. Therefore, women still have lower median weekly earnings than men. Finally, it can be observed that the wage gap, represented by the slope lines in the figures, has decreased by $8.

4.3. Occupational Level Analysis - Race/Ethnicity Analysis

Employment Analysis

- **Analysis of employment by race/ethnicity within different construction occupations:**



	Plasterers & stucco masons	Glaziers	Drywall installers, ceiling tile installers, & tapers	Fence erectors	Carpet, floor, & tile installers & finishers	Carpenters	Painters & paperhangers	Construction equipment operators except paving, surfacing, & tampi.	Pipelayers, plumbers, pipefitters, & steamfitters	Construction & building inspectors
White	23,178	19,032	89,869	17,046	74,796	633,740	269,030	209,428	327,929	209,428
Black or African American	626	546	3,523	709	3,720	36,041	16,966	14,144	22,180	1,473
Percentage Difference	3,602.56	3,385.71	2,450.92	2,304.23	1,910.65	1,658.39	1,485.70	1,380.68	1,378.49	1,319.35

Figure 9. Top-10 occupations by race/ethnicity for employment difference within different construction occupations

Figure 9 shows that Plasterers & Stucco masons construction trade in the U.S. construction industry has the highest percentage difference in employment numbers between

Whites and Blacks. Similarly, Construction & Building inspectors lie on another spectrum of the graph, with the least percentage difference in the top-10 jobs list. The top-10 jobs in 2015 that had the highest difference in percentages in terms of employment in the U.S. construction industry are as follows: 1) Plasterers & Stucco masons (3,602.56%); 2) Glaziers (3,385.71%); 3) Drywall installers, ceiling tile installers, and tapers (2,450.92%); 4) Fence erectors (2,304.23%); 5) Carpet floor, & tile installers & finishers (1,910.65%); 6) Carpenters (1,658.39%); 7) Painters & paperhangers (1,485.70%); 8) Construction equipment operators except paving, surfacing, & tamping equipment (1,380.68%); 9) Pipelayers, plumbers, pipefitters, & steamfitters (1,378.49%); and 10) Construction & Building inspectors (1,319.35%). The entire sheet of results of employment distribution analysis with all the occupations is included in Appendix IV, where the analysis for the construction trades considered in this analyses have been highlighted.

Wage Analysis

- **Analysis of Wage disparity by race/ethnicity within different construction occupations:**

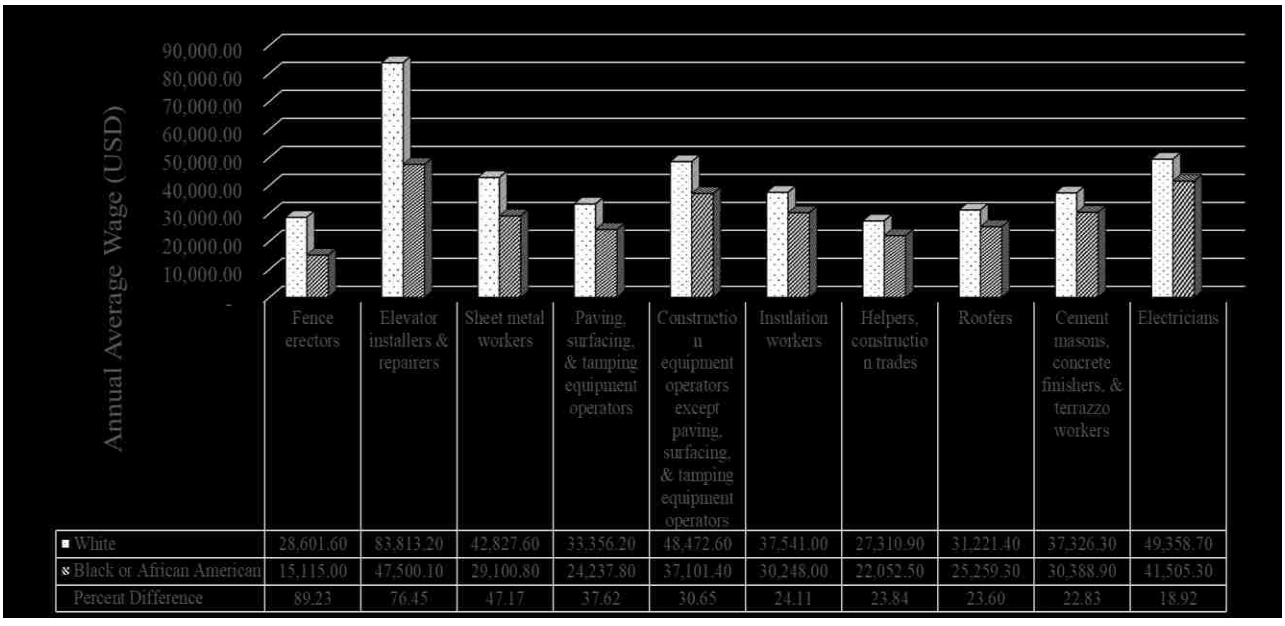


Figure 10. Top-10 occupations by race/ethnicity for wage difference within different construction occupations

According to Figure 10, the highest gaps in average wage are found among Fence erectors. On the bottom of the top-10 list are Electricians. The top-10 jobs exhibiting the highest differences in percentages in terms of employment in the U.S. construction industry in 2015 are as follows: 1) Fence erectors (89.23%); 2) Elevator installers & repairers (76.45%); 3) Sheet metal workers (47.17%); 4) Paving, surfacing, & tamping equipment operators (37.62%); 5) Construction equipment operators except paving, surfacing, & tamping equipment operators (30.65%); 6) Insulation workers (24.11%); 7) Helpers, construction trades (23.84%); 8 Roofers (23.60%); 9) Cement masons, concrete finishers, & terrazzo workers (22.83%); and 10) Electricians (18.92%). All the results of wage distribution analysis with all the occupations are included in Appendix V, where the analysis for the construction trades considered in this analyses have been highlighted.

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- **Box plot for average wages by race/ethnicity within construction occupations:**

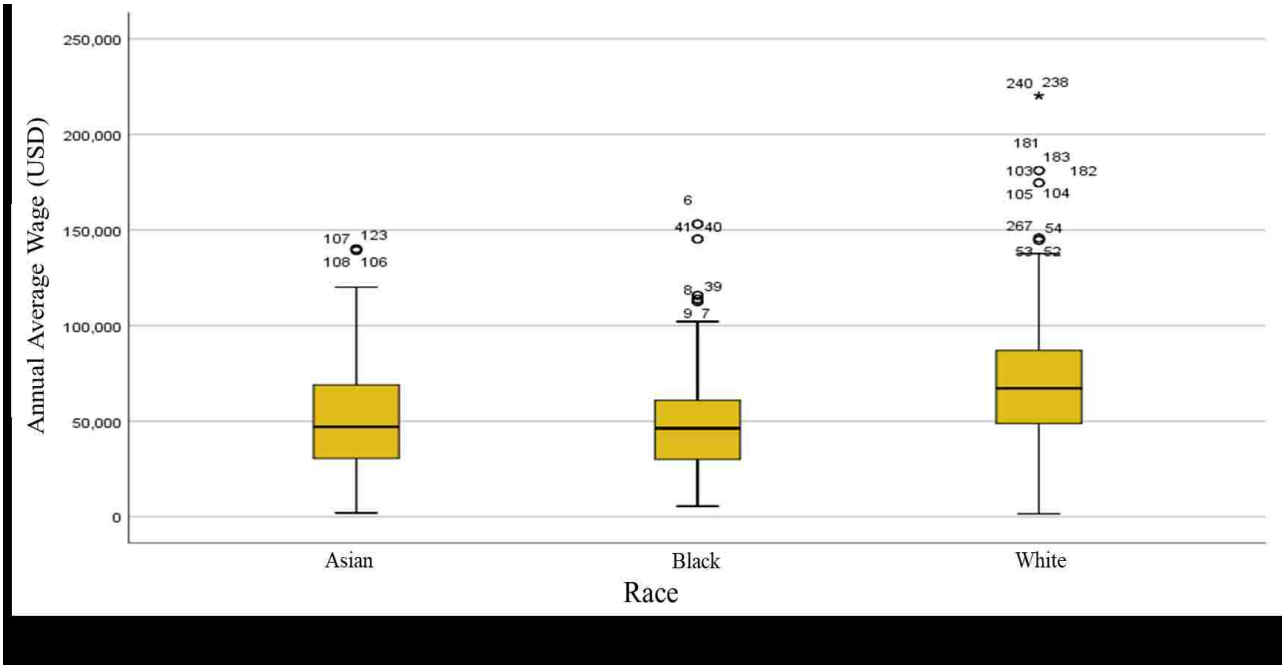


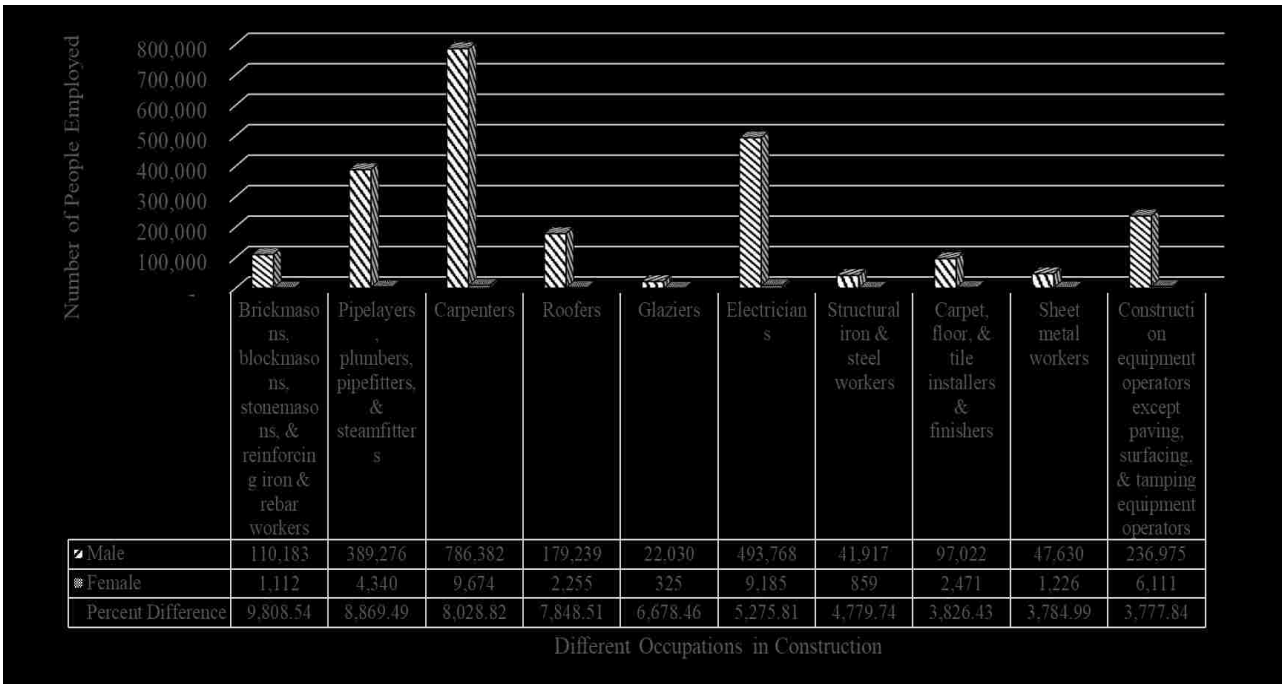
Figure 11. Box-Plot by race/ethnicity for average wages within construction occupations

The box-plot (Figure 11) shows the median of average wages for different races (Asians, Blacks, Whites). Median of average wages for Asians is $47,059.40 and that for Blacks is $41,511.70. The median of average wages for Whites, as per the graph, is higher than that of that of Asians and Blacks. Furthermore, it can be observed form the box plot top whisker that Whites have the maximum average wage, followed by Asians and then Blacks. According to the box plot, the wages are more evenly distributed on both sides of the median for Whites. This is not the case, though, for Asians and Blacks, since the lower whiskers are smaller than the upper ones.

4.4. Occupational Level Analysis - Gender Analysis

Employment Analysis

- **Analysis of employment by gender within different construction occupations:**



	Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers	Pipelayers, plumbers, pipefitters, & steamfitters	Carpenters	Roofers	Glaziers	Electricians	Structural iron & steel workers	Carpet, floor, & tile installers & finishers	Sheet metal workers	Construction equipment operators except paving, surfacing, & tamping equipment operators
Male	110,183	389,276	786,382	179,239	22,030	493,768	41,917	97,022	47,630	236,975
Female	1,112	4,340	9,674	2,255	325	9,185	859	2,471	1,226	6,111
Percent Difference	9,808.54	8,869.49	8,028.82	7,848.51	6,678.46	5,275.81	4,779.74	3,826.43	3,784.99	3,777.84

Figure 12. Top-10 occupations by gender for employment difference within different construction occupations

Figure 12 shows the top-10 U.S. construction occupations for employment by gender. It can be seen that the occupations with the highest difference in percentage in employment (9808.54%) are Brickmasons, blockmasons, stonemasons, and reinforcing iron & rebar workers. Similarly, on the other end of the top-10 list is Construction equipment operators except paving, surfacing, & tamping equipment operators, with a percentage difference of 3,777.84%. The top-10 list of jobs with the highest differences in percentages in terms of employment in the construction industry in 2015 is as follows: 1) Brickmasons, blockmasons, stonemasons, and reinforcing iron & rebar workers (9,808.54%); 2) Pipelayers, plumbers, pipefitters, & steamfitters (8,869.49%); 3) Carpenters (8,028.82%) 4) Roofers (7,848.51%); 5) Glaziers (6,678.46%); 6) Electricians (5,275.81%); 7) Structural iron & steel workers (4,779.74%); 8) Carpet, floor, & tile installers & finishers (3,826.43%); 9) Sheet metal workers (3,784.99%); and 10) Construction equipment operators except paving, surfacing, & tamping equipment operators (3,777.84%). The entire sheet of results of employment distribution analysis with all the occupations is included in Appendix VI, where the analyses for the construction trades considered in this analysis have been highlighted.

Wage Analysis

- **Analysis of wage by gender in the construction industry by different occupations in the construction industry:**

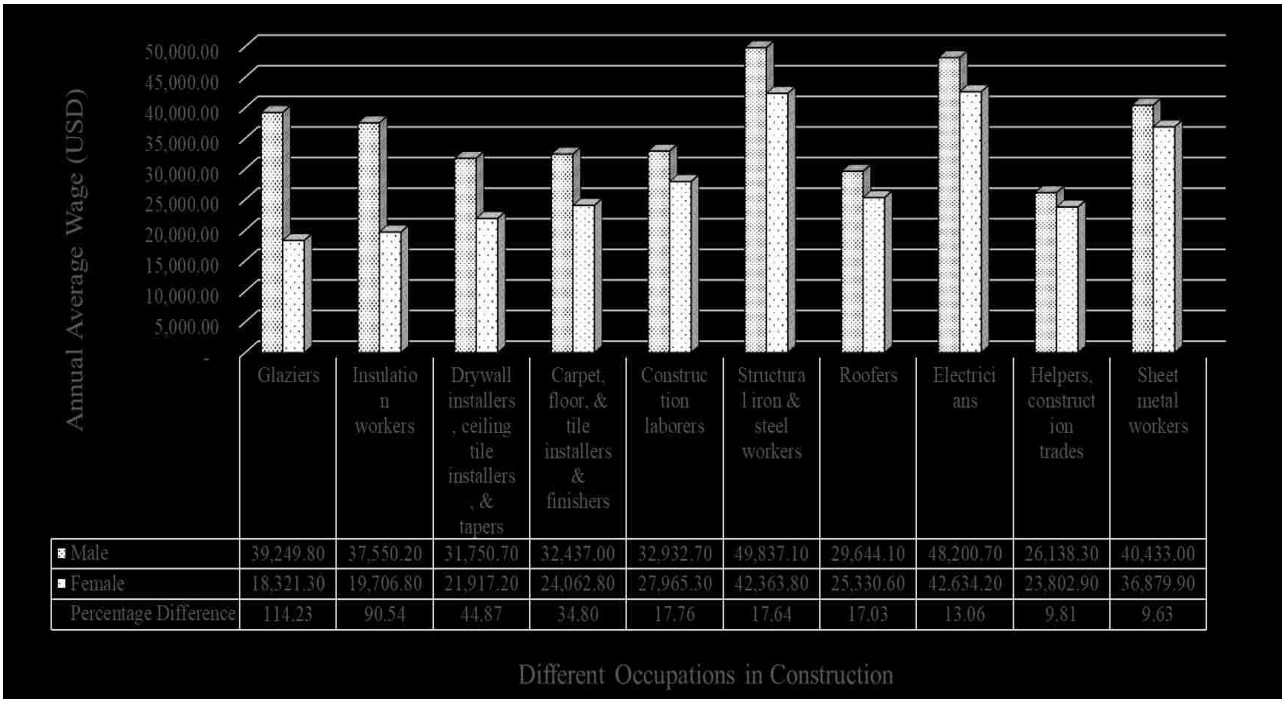


Figure 13. Top-10 occupations by gender for wage difference within different construction occupations

Figure 13 shows the top-10 U.S. construction occupations for wage differential by gender. It can be seen that the occupation with the highest differences in percentage in employment, at 114.23%, is Glaziers. At the other end of the spectrum are Sheet metal workers (at 9.63%). The top-10 list of jobs with highest differences in percentages in terms of wage in the construction industry in 2015 is as follows: 1) Glaziers (114.23%); 2) Insulation workers (90.54%); 3) Drywall installers, ceiling tile installers, & tapers (44.87%); 4) Carpet, floor, & tile installers, & finishers (34.80%); 5) Construction laborers (17.76%); 6) Structural iron & steel workers (17.64%); 7) Roofers (17.03%); 8) Electricians (13.06%); 9) Helpers, construction trades (9.81%); and 10) Sheet metal workers (9.63%). The entire sheet of results of employment distribution analysis with all the occupations is included in Appendix VII, where the analyses for the construction trades considered in this analysis have been highlighted.

- **Box plot for average wages by race/ethnicity within construction occupations:**

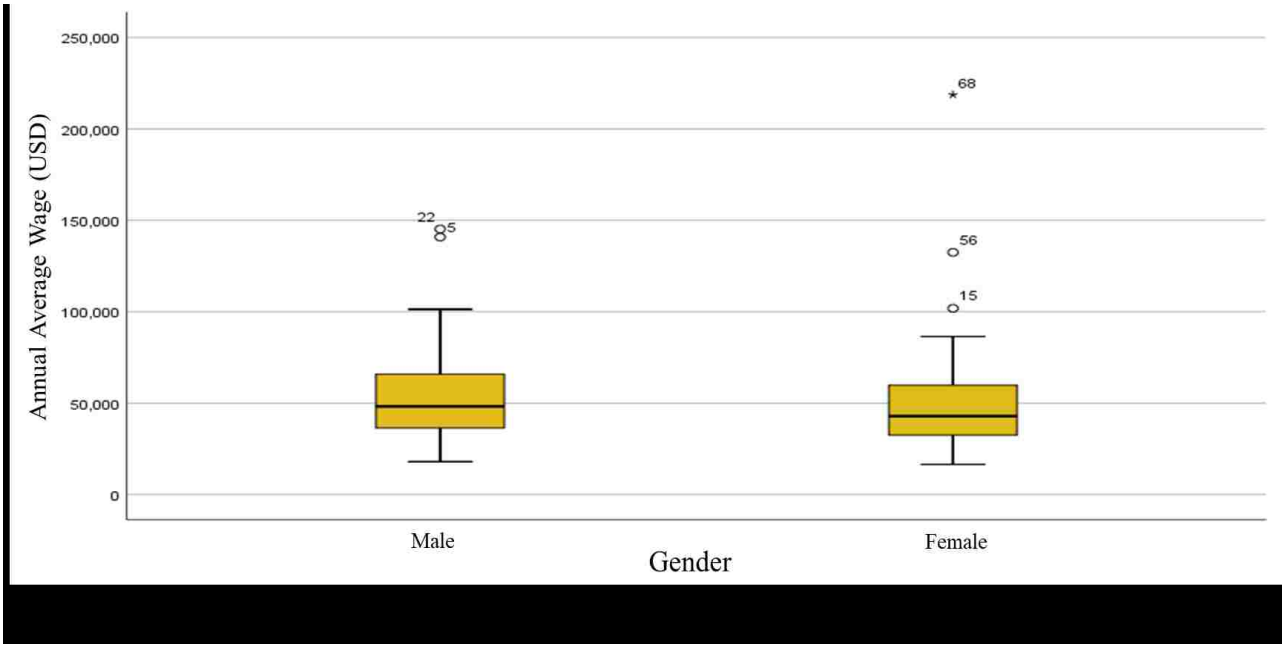


Figure 14. Box- Plot for by gender for average wages within construction occupations

Figure 15 shows the median of average wages for different genders (male and female). The median of average wages for female is $42,810.80 and that for male is $49,837.10. The median of average wages for men is higher than that of women. The minimum average wage for men is $17,967.10 and for women $16,457.70. Therefore, the box plot shows that the minimum wage is less for women. Furthermore, it can be observed from the box plot top whisker that men earn a higher average wage than do women. However, including the outliers as well, the maximum average earnings of men is $270,117 and of women $218,686. According to the box plot, the wages are more evenly distributed on both sides of the median for men. However, this is not the case for women, as the median divides the Interquartile range for women into two unequal halves.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

The research objectives of this study have been achieved through data analysis. Data was collected from various reputable sources and separate analyses were conducted based on race/ethnicity and gender. The analyses were conducted in two phases, or levels—the Industrial and Occupational levels. The results are summarized below. The tasks accomplished are as follows:

- The researcher analyzed the trend of employment in the construction industry based on race/ethnicity and gender.
- The researcher examined different occupation types in the construction industry with a difference in terms of employment.
- The researcher analyzed the trend of wage gaps in construction industry based on race/ethnicity and gender.
- The researcher examined occupation types in the construction industry with wage gaps between same occupations.

5.2. Summary of What was Learned

First, for the trend of employment in the construction industry based on race/ethnicity and gender, the researcher notes that over the five years (2010-2015), the percentage of Whites employed in the construction industry, decreasing by 3.11%. The slope of employment has more or less remained the same. This further implies that the percentage of Blacks and Hispanics has also remained the same. Furthermore, the gap between total U.S. population and workers employed (by race/ethnicity) in construction has not narrowed over the years. Indeed, the slope of the line representing Whites has decreased by only 1.83% and thus has remained the same

over the period of 2010-2015. This confirms that no discernable change can be observed in the employment share of minorities as well.

Concerning gender, the researcher concludes that from 2005 to 2014, there was no discernable change in the portion of women employed in the construction industry (an increase of 0.75% only). Furthermore, there has been no discernable change (0.57%) in the gap between the slopes representing the total population of the U.S. and workers employed (by gender) in construction. An increasing trend in the gap can be observed.

Second, the researcher examined different occupation types in the construction industry with differences in terms of employment. In 2015, the percentage difference by race/ethnicity was very large in employment within different construction occupations. The percentage differences ranged from 3,602.56% to 1,319.49% in the top-10 jobs with differences in employment.

Regarding gender, in 2015 the percentage difference by gender was also very large in employment within different construction occupations. The percentage difference ranges from 9,808.54% to 3,777.84% in the top-10 jobs with differences in employment. Therefore, it can be confirmed that the trend of men having a larger share of employment in the construction industry is still the same as of sample data from 2015.

Third, in the analysis of the trend of wage gaps in construction industry based on race/ethnicity and gender, the gap between the trend lines for median weekly earnings between Whites and Blacks has increased by $23—from $62 in 2007 to $85 in 2015. The corresponding gap between Whites and Hispanics did not change between 2007 and 2015. However, the researcher notes that Hispanics still earn the least in construction and extraction industry. Therefore, it can be confirmed that the Whites still earn more, and even though there has been an

increase in the percentage earnings for Blacks and Hispanics, they are still behind in terms of the wage distribution. Therefore, the wage gap has worsened for Whites and Blacks, while the wage gap for Whites and Hispanics has remained the same.

Regarding gender, from 2006 to 2014 the gap between the trend line for median weekly earnings between men and women decreased from $27 to $19 respectively (a decrease of $8). However, the slope over the years for the trend line seems to be the same. This confirms that the gap has not closed discernably, even though there has been an increase in the income of men and women over the years.

Finally, in the examination of different occupation types in the construction industry with wage gaps between same occupations, the researcher observed that the percentage difference in 2015 in wage within different construction occupations (by race/ethnicity) ranged from 89.23% to 18.92%. The median of the average wage for Whites is higher than that for Blacks and Asians. The median of average wages for Blacks and Asians are similar ($46,939.80 and $41,508.50 respectively). Therefore, this confirms that the wages earned by Whites are still higher than that of Blacks, as per data in 2015.

Concerning gender, the percentage difference in 2015 in wage was also large within different construction occupations (by gender). The differences in percentages ranged from 114.23% to 9.63% in the top-10 jobs with disparities. The median of the average wage for male and female are $49,837.10 and $42,810.80. The gap, which is $7,026.30,. Therefore, it confirms that the wage differential in terms of average wage has also not changed over time.

5.3. Contributions

In this section, the researcher intends to highlight the contributions that this particular study topic makes to the construction industry. In order to make the contributions clear, the researcher has divided them into the following two sections:

- *Contributions to Practice*

- The study will help researchers and practitioners better understand the current employment distributions and wage gaps in the construction industry based on race/ethnicity and gender.
- The study will help bring attention to leaders, educators, and workers in the construction who make decisions to recognize and understand the situation and push them to take action to solve the issues.

- *Contributions to the Body of Knowledge*

- The study confirmed the trend of employment of minorities in the construction industry, demonstrated that the gap exists, and illustrated that the trend has not changed over the years.
- The study identified the top-10 occupations in the construction industry with discernable gaps in terms of employment and wage.

5.4. Recommendations for Future Research

The researcher examined the current situation and historical trend of workers employed and wage disparity in the construction industry and the differences and gaps that persist within different occupation types in this study. The researcher believes that the following studies are needed to better understand the situation and improve participation of minorities.

- **Extend sample years:** The researcher has conducted analysis in this study for limited sample years. To reiterate, employment analysis for race/ethnicity was conducted for the years from 2010 to 2015; wage distribution for race/ethnicity was conducted for the years from 2007 to

2015; employment analysis for gender was conducted for the years from 2005 to 2014; wage distribution for gender was conducted for the years from 2006-2014; and finally all occupational analysis was conducted for the latest available year—2015. The researcher recommends that conducting analysis for years dating back earlier will provide a much clearer picture of how the trends in the construction industry have (or have not) changed. Therefore, extending sample years for analysis is suggested for future research on this topic. The researcher recommends selecting sample years for recession periods in the U.S.

- **Analysis of spatial variation/distribution of inequalities by race/ethnicity and gender:** The researcher conducted analysis based on temporal variations by race/ethnicity and gender. The researcher recommends conducting an analysis of the same two variables (race/ethnicity and gender) for spatial distribution on the metro level. This will help determine how inequalities have varied spatially in various cities/places in the U.S. and how the labor market has responded to inequities if they did exist. Therefore, analyzing spatial distribution based on race/ethnicity and gender is suggested for future research on this topic.
- **Analysis of structural inequalities and biases within educational systems:** The researcher also recommends conducting a study on high school students (a survey) to gather information on their perceptions/interests/images/understandings of the construction industry. This study will further help analyze the situation of the industry, and perhaps why there exist inequalities and labor shortages in the industry. The researcher suggests that this study will shed light on why minorities exhibit a lack of interest in the construction industry.

APPENDIX I. List of Construction Occupations for Race/Ethnicity Analysis

No.	Construction Occupations
1	Human resources managers
2	Business operations specialists, all other
3	Janitors & building cleaners
4	Bookkeeping, accounting, & auditing clerks
5	Firstline supervisors of construction trades & extraction workers
6	Carpenters
7	Construction laborers
8	Construction equipment operators except paving, surfacing, & tamping equipment operators
9	Electricians
10	Insulation workers
11	Painters & paperhangers
12	Pipelayers, plumbers, pipefitters, & steamfitters
13	Highway maintenance workers
14	Heavy vehicle & mobile equipment service technicians & mechanics
15	Maintenance workers, machinery
16	Driver/sales workers & truck drivers
17	General & operations managers
18	Chief executives & legislators
19	Marketing & sales managers
20	Transportation, storage, & distribution managers
21	Construction managers
22	Miscellaneous managers
23	Cost estimators
24	Market research analysts & marketing specialists
25	Accountants & auditors
26	Web developers
27	Other Computer Occupations
28	Civil engineers
29	Surveying & mapping technicians
30	Other teachers & instructors
31	Teacher assistants
32	Security guards & gaming surveillance officers
33	Crossing guards
34	Maids & housekeeping cleaners
35	Grounds maintenance workers
36	Sales representatives, services, all other
37	Firstline supervisors of office & administrative support workers
38	Customer service representatives
39	Dispatchers

No.	Construction Occupations
40	Stock clerks & order fillers
41	Secretaries & administrative assistants
42	Office clerks, general
43	Miscellaneous office & administrative support workers, including desktop publishers
44	Carpet, floor, & tile installers & finishers
45	Cement masons, concrete finishers, & terrazzo workers
46	Paving, surfacing, & tamping equipment operators
47	Drywall installers, ceiling tile installers, & tapers
48	Plasterers & stucco masons
49	Roofers
50	Sheet metal workers
51	Structural iron & steel workers
52	Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers
53	Helpers, construction trades
54	Construction & building inspectors
55	Fence erectors
56	Miscellaneous construction workers, including solar photovoltaic installers, septic tank servicers & sewer pipe cleaners
57	Radio & telecommunications equipment installers & repairers
58	Bus & truck mechanics & diesel engine specialists
59	Heating, air conditioning, & refrigeration mechanics & installers
60	Millwrights
61	Industrial & refractory machinery mechanics
62	Electrical powerline installers & repairers
63	Telecommunications line installers & repairers
64	Maintenance & repair workers, general
65	Miscellaneous installation, maintenance, & repair workers, including wind turbine service technicians
66	Welding, soldering, & brazing workers
67	Cabinetmakers & bench carpenters
68	Crushing, grinding, polishing, mixing, & blending workers
69	Inspectors, testers, sorters, samplers, & weighers
70	Helpersproduction workers
71	Crane & tower operators
72	Industrial truck & tractor operators
73	Cleaners of vehicles & equipment
74	Laborers & freight, stock, & material movers, hand
75	Conveyor operators & tenders, & hoist & winch operators
76	Computer & information systems managers
77	Financial managers

No.	Construction Occupations
78	Industrial production managers
79	Purchasing managers
80	Training & development managers
81	Architectural & engineering managers
82	Purchasing agents, except wholesale, retail, & farm products
83	Human resources workers
84	Logisticians
85	Management analysts
86	Financial analysts
87	Computer systems analysts
88	Computer programmers
89	Software developers, applications & systems software
90	Database administrators
91	Network & computer systems administrators
92	Computer network architects
93	Computer support specialists
94	Architects, except naval
95	Surveyors, cartographers, & photogrammetrists
96	Chemical engineers
97	Electrical & electronics engineers
98	Environmental engineers
99	Mechanical engineers
100	Miscellaneous engineers, including nuclear engineers
101	Drafters
102	Engineering technicians, except drafters
103	Lawyers, & judges, magistrates, & other judicial workers
104	Designers
105	Photographers
106	Broadcast & sound engineering technicians & radio operators, & media & communication equipment workers, all other
107	Fire inspectors
108	Chefs & head cooks
109	Firstline supervisors of retail sales workers
110	Firstline supervisors of nonretail sales workers
111	Billing & posting clerks
112	Payroll & timekeeping clerks
113	Other financial clerks
114	Credit authorizers, checkers, & clerks
115	File clerks
116	Receptionists & information clerks

No.	Construction Occupations
117	Couriers & messengers
118	Production, planning, & expediting clerks
119	Data entry keyers
120	Word processors & typists
121	Glaziers
122	Elevator installers & repairers
123	Earth drillers, except oil & gas
124	Mining machine operators
125	Electric motor, power tool, & related repairers
126	Electronic home entertainment equipment installers & repairers
127	Control & valve installers & repairers
128	Locksmiths & safe repairers
129	Firstline supervisors of production & operating workers
130	Miscellaneous assemblers & fabricators
131	Computer control programmers & operators
132	Stationary engineers & boiler operators
133	Miscellaneous production workers, including semiconductor processors
134	Taxi drivers & chauffeurs
135	Sailors & marine oilers, & ship engineers
136	Dredge, excavating, & loading machine operators
137	Public relations & fundraising managers
138	Administrative services managers
139	Property, real estate, & community association managers
140	Compliance officers
141	Training & development specialists
142	Budget analysts
143	Aerospace engineers
144	Industrial engineers, including health & safety
145	Biological scientists
146	Social & human service assistants
147	Miscellaneous community & social service specialists, including health educators & community health workers
148	Paralegals & legal assistants
149	Other healthcare practitioners & technical Occupations
150	Police officers
151	Miscellaneous law enforcement workers
152	Combined food preparation & serving workers, including fast food
153	Firstline supervisors of landscaping, lawn service, & groundskeeping workers
154	Cashiers
155	Parts salespersons

No.	Construction Occupations
156	Sales representatives, wholesale & manufacturing
157	Models, demonstrators, & product promoters
158	Real estate brokers & sales agents
159	Doortodoor sales workers, news & street vendors, & related workers
160	Telephone operators
161	Bill & account collectors
162	Procurement clerks
163	Human resources assistants, except payroll & timekeeping
164	Correspondence clerks & order clerks
165	Meter readers, utilities
166	Shipping, receiving, & traffic clerks
167	Mail clerks & mail machine operators, except postal service
168	Office machine operators, except computer
169	Firstline supervisors of farming, fishing, & forestry workers
170	Miscellaneous agricultural workers, including animal breeders
171	Logging workers
172	Boilermakers
173	Miscellaneous extraction workers, including roof bolters & helpers
174	Security & fire alarm systems installers
175	Automotive glass installers & repairers
176	Automotive service technicians & mechanics
177	Home appliance repairers
178	Helpersinstallation, maintenance, & repair workers
179	Aircraft structure, surfaces, rigging, & systems assemblers
180	Electrical, electronics, & electromechanical assemblers
181	Printing press operators
182	Miscellaneous textile, apparel, & furnishings workers except upholsterers
183	Sawing machine setters, operators, & tenders, wood
184	Miscellaneous woodworkers, including model makers & patternmakers
185	Miscellaneous plant & system operators
186	Painting workers
187	Supervisors of transportation & material moving workers
188	Aircraft pilots & flight engineers
189	Air traffic controllers & airfield operations specialists
190	Motor vehicle operators, all other
191	Railroad conductors & yardmasters
192	Parking lot attendants
193	Transportation inspectors
194	Miscellaneous transportation workers, including bridge & lock tenders & traffic technicians

No.	Construction Occupations
195	Refuse & recyclable material collectors
196	Pumping station operators
197	Licensed practical & licensed vocational nurses
198	Artists & related workers
199	Food preparation workers
200	Firstline supervisors of housekeeping & janitorial workers
201	Childcare workers
202	Other Sales Workers
203	Hazardous materials removal workers
204	Firstline supervisors of mechanics, installers, & repairers
205	Packers & packagers, hand
206	Miscellaneous material moving workers, including mine shuttle car operators, & tank car, truck, & ship loaders
207	Social & community service managers
208	Miscellaneous life, physical, & social science technicians, including social science research assistants
209	Computer, automated teller, & office machine repairers
210	Structural metal fabricators & fitters
211	Machine tool cutting setters, operators, & tenders, metal & plastic
212	Machinists
213	Sewing machine operators
214	Water & wastewater treatment plant & system operators
215	Cutting workers
216	Molders, shapers, & casters, except metal & plastic
217	Automotive & watercraft service attendants-
218	Advertising & promotions managers
219	Compensation & benefits managers
220	Farmers, ranchers, & other agricultural managers
221	Education administrators
222	Food service managers
223	Lodging managers
224	Agents & business managers of artists, performers, & athletes
225	Claims adjusters, appraisers, examiners, & investigators
226	Meeting, convention, & event planners
227	Compensation, benefits, & job analysis specialists
228	Appraisers & assessors of real estate
229	Credit analysts
230	Personal financial advisors
231	Insurance underwriters
232	Credit counselors & loan officers
233	Tax examiners & collectors, & revenue agents

No.	Construction Occupations
234	Other financial specialists
235	Computer & information research scientists
236	Information security analysts
237	Operations research analysts
238	Computer hardware engineers
239	Marine engineers & naval architects
240	Materials engineers
241	Petroleum, mining & geological engineers, including mining safety engineers
242	Conservation scientists & foresters
243	Chemists & materials scientists
244	Environmental scientists & geoscientists
245	Other Physical Scientists
246	Economists
247	Urban & regional planners
248	Miscellaneous social scientists, including survey researchers & sociologists
249	Chemical technicians
250	Counselors
251	Social workers
252	Miscellaneous legal support workers
253	Postsecondary teachers
254	Elementary & middle school teachers
255	Librarians
256	Other education, training, & library workers
257	Producers & directors
258	Athletes, coaches, umpires, & related workers
259	News analysts, reporters & correspondents
260	Public relations specialists
261	Technical writers
262	Writers & authors
263	Miscellaneous media & communication workers
264	Registered nurses
265	Diagnostic related technologists & technicians
266	Emergency medical technicians & paramedics
267	Miscellaneous health technologists & technicians
268	Nursing, psychiatric, & home health aides
269	Bailiffs, correctional officers, & jailers
270	Lifeguards & other recreational, & all other protective service workers
271	Cooks
272	Bartenders
273	Waiters & waitresses

No.	Construction Occupations
274	Dishwashers
275	Miscellaneous personal appearance workers
276	Baggage porters, bellhops, & concierges
277	Personal care aides
278	Personal care & service workers, all other
279	Counter & rental clerks
280	Retail salespersons
281	Advertising sales agents
282	Sales engineers
283	Telemarketers
284	Brokerage clerks
285	Court, municipal, & license clerks
286	Loan interviewers & clerks
287	Reservation & transportation ticket agents & travel clerks
288	Information & record clerks, all other
289	Weighers, measurers, checkers, & samplers, recordkeeping
290	Computer operators
291	Insurance claims & policy processing clerks
292	Graders & sorters, agricultural products
293	Forest & conservation workers
294	Railtrack laying & maintenance equipment operators
295	Explosives workers, ordnance handling experts, & blasters
296	Derrick, rotary drill, & service unit operators, & roustabouts, oil, gas, & mining
297	Avionics technicians
298	Electrical & electronics repairers, transportation equipment, & industrial & utility
299	Aircraft mechanics & service technicians
300	Automotive body & related repairers
301	Small engine mechanics
302	Miscellaneous vehicle & mobile equipment mechanics, installers, & repairers
303	Precision instrument & equipment repairers
304	Riggers
305	Engine & other machine assemblers
306	Model makers, patternmakers, & molding machine setters, metal & plastic
307	Tool & die makers
308	Miscellaneous metal workers & plastic workers, including multiple machine tool setters
309	Prepress technicians & workers
310	Print binding & finishing workers
311	Pressers, textile, garment, & related materials
312	Tailors, dressmakers, & sewers

No.	Construction Occupations
313	Furniture finishers
314	Woodworking machine setters, operators, & tenders, except sawing
315	Power plant operators, distributors, & dispatchers
316	Chemical processing machine setters, operators, & tenders
317	Extruding, forming, pressing, & compacting machine setters, operators, & tenders
318	Furnace, kiln, oven, drier, & kettle operators & tenders
319	Medical, dental, & ophthalmic laboratory technicians
320	Adhesive bonding machine operators & tenders
321	Etchers & engravers
322	Bus drivers
323	Locomotive engineers & operators
324	Ship & boat captains & operators

APPENDIX II. List of Construction Occupations for Gender Analysis

No.	Construction Occupations
1	General & operations managers
2	Chief executives & legislators
3	Marketing & sales managers
4	Administrative services managers
5	Computer & information systems managers
6	Financial managers
7	Industrial production managers
8	Purchasing managers
9	Transportation, storage, & distribution managers
10	Human resources managers
11	Training & development managers
12	Construction managers
13	Architectural & engineering managers
14	Property, real estate, & community association managers
15	Miscellaneous managers
16	Purchasing agents, except wholesale, retail, & farm products
17	Compliance officers
18	Cost estimators
19	Human resources workers
20	Logisticians
21	Management analysts
22	Training & development specialists
23	Market research analysts & marketing specialists
24	Business operations specialists, all other
25	Accountants & auditors
26	Appraisers & assessors of real estate
27	Budget analysts
28	Financial analysts
29	Personal financial advisors
30	Computer systems analysts
31	Computer programmers
32	Web developers
33	Software developers, applications & systems software
34	Database administrators
35	Network & computer systems administrators
36	Computer network architects
37	Computer support specialists
38	Other Computer Occupations
39	Architects, except naval
40	Surveyors, cartographers, & photogrammetrists

No.	Construction Occupations
41	Civil engineers
42	Electrical & electronics engineers
43	Environmental engineers
44	Industrial engineers, including health & safety
45	Mechanical engineers
46	Miscellaneous engineers, including nuclear engineers
47	Drafters
48	Engineering technicians, except drafters
49	Surveying & mapping technicians
50	Biological scientists
51	Environmental scientists & geoscientists
52	Chemical technicians
53	Miscellaneous life, physical, & social science technicians, including social science research assistants
54	Miscellaneous community & social service specialists, including health educators & community health workers
55	Lawyers, & judges, magistrates, & other judicial workers
56	Paralegals & legal assistants
57	Other teachers & instructors
58	Designers
59	Broadcast & sound engineering technicians & radio operators, & media & communication equipment workers, all other
60	Other healthcare practitioners & technical Occupations
61	Fire inspectors
62	Security guards & gaming surveillance officers
63	Crossing guards
64	Lifeguards & other recreational, & all other protective service workers
65	Firstline supervisors of housekeeping & janitorial workers
66	Firstline supervisors of landscaping, lawn service, & groundskeeping workers
67	Maids & housekeeping cleaners
68	Janitors & building cleaners
69	Grounds maintenance workers
70	Firstline supervisors of retail sales workers
71	Firstline supervisors of nonretail sales workers
72	Retail salespersons
73	Sales representatives, services, all other
74	Sales representatives, wholesale & manufacturing
75	Real estate brokers & sales agents
76	Other Sales Workers
77	Firstline supervisors of office & administrative support workers
78	Billing & posting clerks

No.	Construction Occupations
79	Bookkeeping, accounting, & auditing clerks
80	Payroll & timekeeping clerks
81	Procurement clerks
82	Other financial clerks
83	Customer service representatives
84	File clerks
85	Receptionists & information clerks
86	Correspondence clerks & order clerks
87	Couriers & messengers
88	Dispatchers
89	Production, planning, & expediting clerks
90	Shipping, receiving, & traffic clerks
91	Stock clerks & order fillers
92	Weighers, measurers, checkers, & samplers, recordkeeping
93	Secretaries & administrative assistants
94	Computer operators
95	Data entry keyers
96	Word processors & typists
97	Office clerks, general
98	Miscellaneous office & administrative support workers, including desktop publishers
99	Miscellaneous agricultural workers, including animal breeders
100	Logging workers
101	Firstline supervisors of construction trades & extraction workers
102	Boilermakers
103	Carpenters
104	Carpet, floor, & tile installers & finishers
105	Cement masons, concrete finishers, & terrazzo workers
106	Construction laborers
107	Paving, surfacing, & tamping equipment operators
108	Construction equipment operators except paving, surfacing, & tamping equipment operators
109	Drywall installers, ceiling tile installers, & tapers
110	Electricians
111	Glaziers
112	Insulation workers
113	Painters & paperhangers
114	Pipelayers, plumbers, pipefitters, & steamfitters
115	Plasterers & stucco masons
116	Roofers
117	Sheet metal workers

No.	Construction Occupations
118	Structural iron & steel workers
119	Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers
120	Helpers, construction trades
121	Construction & building inspectors
122	Elevator installers & repairers
123	Fence erectors
124	Hazardous materials removal workers
125	Highway maintenance workers
126	Railtrack laying & maintenance equipment operators
127	Earth drillers, except oil & gas
128	Explosives workers, ordnance handling experts, & blasters
129	Mining machine operators
130	Miscellaneous extraction workers, including roof bolters & helpers
131	Derrick, rotary drill, & service unit operators, & roustabouts, oil, gas, & mining
132	Miscellaneous construction workers, including solar photovoltaic installers, septic tank servicers & sewer pipe cleaners
133	Firstline supervisors of mechanics, installers, & repairers
134	Computer, automated teller, & office machine repairers
135	Radio & telecommunications equipment installers & repairers
136	Electric motor, power tool, & related repairers
137	Electronic home entertainment equipment installers & repairers
138	Security & fire alarm systems installers
139	Automotive service technicians & mechanics
140	Bus & truck mechanics & diesel engine specialists
141	Heavy vehicle & mobile equipment service technicians & mechanics
142	Control & valve installers & repairers
143	Heating, air conditioning, & refrigeration mechanics & installers
144	Home appliance repairers
145	Maintenance workers, machinery
146	Millwrights
147	Industrial & refractory machinery mechanics
148	Electrical powerline installers & repairers
149	Telecommunications line installers & repairers
150	Precision instrument & equipment repairers
151	Maintenance & repair workers, general
152	Helpersinstallation, maintenance, & repair workers
153	Miscellaneous installation, maintenance, & repair workers, including wind turbine service technicians
154	Firstline supervisors of production & operating workers
155	Electrical, electronics, & electromechanical assemblers
156	Structural metal fabricators & fitters

No.	Construction Occupations
157	Miscellaneous assemblers & fabricators
158	Computer control programmers & operators
159	Machine tool cutting setters, operators, & tenders, metal & plastic
160	Machinists
161	Welding, soldering, & brazing workers
162	Cabinetmakers & bench carpenters
163	Sawing machine setters, operators, & tenders, wood
164	Miscellaneous woodworkers, including model makers & patternmakers
165	Stationary engineers & boiler operators
166	Water & wastewater treatment plant & system operators
167	Miscellaneous plant & system operators
168	Crushing, grinding, polishing, mixing, & blending workers
169	Cutting workers
170	Inspectors, testers, sorters, samplers, & weighers
171	Painting workers
172	Molders, shapers, & casters, except metal & plastic
173	Helpersproduction workers
174	Miscellaneous production workers, including semiconductor processors
175	Supervisors of transportation & material moving workers
176	Driver/sales workers & truck drivers
177	Taxi drivers & chauffeurs
178	Motor vehicle operators, all other
179	Railroad conductors & yardmasters
180	Ship & boat captains & operators
181	Sailors & marine oilers, & ship engineers
182	Automotive & watercraft service attendants-
183	Miscellaneous transportation workers, including bridge & lock tenders & traffic technicians
184	Crane & tower operators
185	Dredge, excavating, & loading machine operators
186	Industrial truck & tractor operators
187	Cleaners of vehicles & equipment
188	Laborers & freight, stock, & material movers, hand
189	Pumping station operators
190	Refuse & recyclable material collectors
191	Conveyor operators & tenders, & hoist & winch operators
192	Miscellaneous material moving workers, including mine shuttle car operators, & tank car, truck, & ship loaders

APPENDIX III. List of Selected Construction Trades for Analysis

No.	Construction Occupations (Trade)
1	Boilermakers
2	Carpenters
3	Carpet, floor, & tile installers & finishers
4	Cement masons, concrete finishers, & terrazzo workers
5	Construction laborers
6	Paving, surfacing, & tamping equipment operators
7	Construction equipment operators except paving, surfacing, & tamping equipment operators
8	Drywall installers, ceiling tile installers, & tapers
9	Electricians
10	Glaziers
11	Insulation workers
12	Painters & paperhangers
13	Pipelayers, plumbers, pipefitters, & steamfitters
14	Plasterers & stucco masons
15	Roofers
16	Sheet metal workers
17	Structural iron & steel workers
18	Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers
19	Helpers, construction trades
20	Construction & building inspectors
21	Elevator installers & repairers
22	Fence erectors

APPENDIX IV. List of Construction Occupations - Employment Analysis for Top 10 Occupations by Race/Ethnicity

Note: The construction trades used for analysis is highlighted in orange

Construction Occupations	Race	Number of people	Percentage difference
Accountants & auditors	Black or African American	3398	1417.54
Accountants & auditors	White	51566	
Adhesive bonding machine operators & tenders	White	511	NA
Administrative services managers	Black or African American	534	222.846
Administrative services managers	White	1724	
Advertising & promotions managers	White	129	NA
Advertising sales agents	White	128	NA
Aerospace engineers	Black or African American	104	NA
Agents & business managers of artists, performers, & athletes	White	128	NA
Air traffic controllers & airfield operations specialists	Black or African American	132	371.212
Air traffic controllers & airfield operations specialists	White	622	
Aircraft mechanics & service technicians	White	431	NA
Aircraft pilots & flight engineers	Black or African American	73	19.1781
Aircraft pilots & flight engineers	White	87	
Aircraft structure, surfaces, rigging, & systems assemblers	Black or African American	43	NA
Appraisers & assessors of real estate	White	706	NA
Architects, except naval	Black or African American	344	970.349
Architects, except naval	White	3682	
Architectural & engineering managers	Black or African American	365	526.575
Architectural & engineering managers	White	2287	
Artists & related workers	White	544	NA
Athletes, coaches, umpires, & related workers	White	69	NA

Construction Occupations	Race	Number of people	Percentage difference
Automotive & watercraft service attendants-	White	328	NA
Automotive body & related repairers	White	317	NA
Automotive glass installers & repairers	Black or African American	170	-3.5294
Automotive glass installers & repairers	White	164	
Automotive service technicians & mechanics	Black or African American	649	402.311
Automotive service technicians & mechanics	White	3260	
Avionics technicians	White	122	NA
Baggage porters, bellhops, & concierges	White	290	NA
Bailiffs, correctional officers, & jailers	White	61	NA
Bartenders	White	43	NA
Bill & account collectors	Black or African American	657	-80.213
Bill & account collectors	White	130	
Billing & posting clerks	Black or African American	271	2989.3
Billing & posting clerks	White	8372	
Biological scientists	Black or African American	113	1100
Biological scientists	White	1356	
Boilermakers	Black or African American	615	775.122
Boilermakers	White	5382	
Bookkeeping, accounting, & auditing clerks	Black or African American	3212	1814.88
Bookkeeping, accounting, & auditing clerks	White	61506	
Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers	Black or African American	10051	747.14
Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers	White	85146	
Broadcast & sound engineering technicians &	White	2648	NA

Construction Occupations	Race	Number of people	Percentage difference
radio operators, & media & communication equipment workers, all other			
Brokerage clerks	White	58	NA
Budget analysts	Black or African American	273	392.674
Budget analysts	White	1345	
Bus & truck mechanics & diesel engine specialists	Black or African American	737	1723.2
Bus & truck mechanics & diesel engine specialists	White	13437	
Bus drivers	White	147	NA
Business operations specialists, all other	Black or African American	111	2554.05
Business operations specialists, all other	White	2946	
Cabinetmakers & bench carpenters	White	424	NA
Carpenters	Black or African American	36041	1658.39
Carpenters	White	633740	
Carpet, floor, & tile installers & finishers	Black or African American	3720	1910.65
Carpet, floor, & tile installers & finishers	White	74796	
Cashiers	Black or African American	195	297.949
Cashiers	White	776	
Cement masons, concrete finishers, & terrazzo workers	Black or African American	5022	662.843
Cement masons, concrete finishers, & terrazzo workers	White	38310	
Chemical engineers	White	356	NA
Chemical processing machine setters, operators, & tenders	White	153	NA
Chemical technicians	White	562	NA
Chemists & materials scientists	White	70	NA
Chief executives & legislators	Black or African American	1090	7202.2

Construction Occupations	Race	Number of people	Percentage difference
Chief executives & legislators	White	79594	
Childcare workers	White	264	NA
Civil engineers	Black or African American	3599	1361.57
Civil engineers	White	52602	
Claims adjusters, appraisers, examiners, & investigators	White	479	NA
Cleaners of vehicles & equipment	White	2096	NA
Combined food preparation & serving workers, including fast food	Black or African American	250	NA
Compensation & benefits managers	White	287	NA
Compensation, benefits, & job analysis specialists	White	303	NA
Compliance officers	Black or African American	613	208.32
Compliance officers	White	1890	
Computer & information research scientists	White	58	NA
Computer & information systems managers	Black or African American	109	3575.23
Computer & information systems managers	White	4006	
Computer control programmers & operators	White	553	NA
Computer hardware engineers	White	108	NA
Computer network architects	White	746	NA
Computer operators	White	632	NA
Computer programmers	Black or African American	59	4786.44
Computer programmers	White	2883	
Computer support specialists	Black or African American	435	740.46
Computer support specialists	White	3656	
Computer systems analysts	Black or African American	822	-21.655
Computer systems analysts	White	644	

Construction Occupations	Race	Number of people	Percentage difference
Computer, automated teller, & office machine repairers	White	1610	NA
Conservation scientists & foresters	White	75	NA
Construction & building inspectors	Black or African American	1473	1319.35
Construction & building inspectors	White	20907	
Construction equipment operators except paving, surfacing, & tamping equipment operators	Black or African American	14144	1380.68
Construction equipment operators except paving, surfacing, & tamping equipment operators	White	209428	
Construction laborers	Black or African American	93602	976.537
Construction laborers	White	1007660	
Construction managers	Black or African American	16279	2499.87
Construction managers	White	423233	
Control & valve installers & repairers	Black or African American	203	191.626
Control & valve installers & repairers	White	592	
Conveyor operators & tenders, & hoist & winch operators	Black or African American	789	386.058
Conveyor operators & tenders, & hoist & winch operators	White	3835	
Cooks	White	117	NA
Correspondence clerks & order clerks	Black or African American	52	1534.62
Correspondence clerks & order clerks	White	850	
Cost estimators	Black or African American	643	10065.6
Cost estimators	White	65365	
Counselors	White	268	NA
Counter & rental clerks	White	156	NA

Construction Occupations	Race	Number of people	Percentage difference
Couriers & messengers	White	667	NA
Court, municipal, & license clerks	White	102	NA
Crane & tower operators	Black or African American	1547	1199.87
Crane & tower operators	White	20109	
Credit analysts	White	21	NA
Credit authorizers, checkers, & clerks	White	137	NA
Credit counselors & loan officers	White	79	NA
Crossing guards	Black or African American	1363	503.155
Crossing guards	White	8221	
Crushing, grinding, polishing, mixing, & blending workers	Black or African American	225	754.667
Crushing, grinding, polishing, mixing, & blending workers	White	1923	
Customer service representatives	Black or African American	1013	1735.04
Customer service representatives	White	18589	
Cutting workers	White	3007	NA
Data entry keyers	Black or African American	533	612.383
Data entry keyers	White	3797	
Database administrators	White	1001	NA
Derrick, rotary drill, & service unit operators, & roustabouts, oil, gas, & mining	White	411	NA
Designers	Black or African American	347	4687.61
Designers	White	16613	
Diagnostic related technologists & technicians	White	312	NA
Dishwashers	White	164	NA
Dispatchers	Black or African American	474	1670.25

Construction Occupations	Race	Number of people	Percentage difference
Dispatchers	White	8391	
Doortodoor sales workers, news & street vendors, & related workers	Black or African American	154	-3.8961
Doortodoor sales workers, news & street vendors, & related workers	White	148	
Drafters	Black or African American	175	5973.14
Drafters	White	10628	
Dredge, excavating, & loading machine operators	Black or African American	2153	545.982
Dredge, excavating, & loading machine operators	White	13908	
Driver/sales workers & truck drivers	Black or African American	22129	574.667
Driver/sales workers & truck drivers	White	149297	
Drywall installers, ceiling tile installers, & tapers	Black or African American	3523	2450.92
Drywall installers, ceiling tile installers, & tapers	White	89869	
Earth drillers, except oil & gas	Black or African American	537	2706.89
Earth drillers, except oil & gas	White	15073	
Economists	White	127	NA
Education administrators	White	14	NA
Electric motor, power tool, & related repairers	Black or African American	98	1472.45
Electric motor, power tool, & related repairers	White	1541	
Electrical & electronics engineers	Black or African American	180	1680
Electrical & electronics engineers	White	3204	
Electrical & electronics repairers, transportation equipment, & industrial & utility	White	257	NA
Electrical powerline installers & repairers	Black or African American	980	1420.92

Construction Occupations	Race	Number of people	Percentage difference
Electrical powerline installers & repairers	White	14905	
Electrical, electronics, & electromechanical assemblers	Black or African American	236	236.441
Electrical, electronics, & electromechanical assemblers	White	794	
Electricians	Black or African American	34216	1144
Electricians	White	425648	
Electronic home entertainment equipment installers & repairers	Black or African American	1075	512.279
Electronic home entertainment equipment installers & repairers	White	6582	
Elementary & middle school teachers	White	222	NA
Elevator installers & repairers	Black or African American	1645	860.486
Elevator installers & repairers	White	15800	
Emergency medical technicians & paramedics	White	90	NA
Engine & other machine assemblers	White	36	NA
Engineering technicians, except drafters	Black or African American	777	1163.96
Engineering technicians, except drafters	White	9821	
Environmental engineers	Black or African American	250	130
Environmental engineers	White	575	
Environmental scientists & geoscientists	White	1176	NA
Etchers & engravers	White	194	NA
Explosives workers, ordnance handling experts, & blasters	White	791	NA
Extruding, forming, pressing, & compacting machine setters, operators, & tenders	White	323	NA
Farmers, ranchers, & other	White	149	NA

Construction Occupations	Race	Number of people	Percentage difference
agricultural managers			
Fence erectors	Black or African American	709	2304.23
Fence erectors	White	17046	
File clerks	Black or African American	1185	374.346
File clerks	White	5621	
Financial analysts	Black or African American	109	676.147
Financial analysts	White	846	
Financial managers	Black or African American	923	1669.77
Financial managers	White	16335	
Fire inspectors	White	1044	NA
Firstline supervisors of construction trades & extraction workers	Black or African American	24468	1926.75
Firstline supervisors of construction trades & extraction workers	White	495904	
Firstline supervisors of farming, fishing, & forestry workers	Black or African American	202	129.208
Firstline supervisors of housekeeping & janitorial workers	White	463	
Firstline supervisors of landscaping, lawn service, & groundskeeping workers	Black or African American	8	8862.5
Firstline supervisors of landscaping, lawn service, & groundskeeping workers	White	717	
Firstline supervisors of mechanics, installers, & repairers	White	7128	NA
Firstline supervisors of nonretail sales workers	Black or African American	238	1638.24
Firstline supervisors of nonretail sales workers	White	4137	
Firstline supervisors of office & administrative support workers	Black or African American	2325	NA

Construction Occupations	Race	Number of people	Percentage difference
Firstline supervisors of office & administrative support workers	White	34484	NA
Firstline supervisors of production & operating workers	White	3967	NA
Firstline supervisors of retail sales workers	White	4317	NA
Food preparation workers	White	466	NA
Food service managers	White	73	NA
Forest & conservation workers	White	88	NA
Furnace, kiln, oven, drier, & kettle operators & tenders	White	82	NA
Furniture finishers	White	680	NA
General & operations managers	Black or African American	516	6361.24
General & operations managers	White	33340	
Glaziers	Black or African American	546	3385.71
Glaziers	White	19032	
Graders & sorters, agricultural products	White	12	NA
Grounds maintenance workers	Black or African American	671	2017.59
Grounds maintenance workers	White	14209	
Hazardous materials removal workers	White	2159	NA
Heating, air conditioning, & refrigeration mechanics & installers	Black or African American	15716	1278
Heating, air conditioning, & refrigeration mechanics & installers	White	216566	
Heavy vehicle & mobile equipment service technicians & mechanics	Black or African American	2744	1738.37
Heavy vehicle & mobile equipment service technicians & mechanics	White	50445	

Construction Occupations	Race	Number of people	Percentage difference
Helpers, construction trades	Black or African American	3309	701.118
Helpers, construction trades	White	26509	
Helpersinstallation, maintenance, & repair workers	Black or African American	314	686.624
Helpersinstallation, maintenance, & repair workers	White	2470	
Helpersproduction workers	Black or African American	152	1975.66
Helpersproduction workers	White	3155	
Highway maintenance workers	Black or African American	9099	801.286
Highway maintenance workers	White	82008	
Home appliance repairers	Black or African American	218	549.541
Home appliance repairers	White	1416	
Human resources assistants, except payroll & timekeeping	Black or African American	163	80.3681
Human resources assistants, except payroll & timekeeping	White	294	
Human resources managers	Black or African American	946	973.784
Human resources managers	White	10158	
Human resources workers	Black or African American	1772	495.429
Human resources workers	White	10551	
Industrial & refractory machinery mechanics	Black or African American	398	694.472
Industrial & refractory machinery mechanics	White	3162	
Industrial engineers, including health & safety	Black or African American	474	341.139
Industrial engineers, including health & safety	White	2091	
Industrial production managers	Black or African American	1023	679.179
Industrial production managers	White	7971	
Industrial truck & tractor	Black or African	2000	388.85

Construction Occupations	Race	Number of people	Percentage difference
operators	American		
Industrial truck & tractor operators	White	9777	
Information & record clerks, all other	White	310	NA
Information security analysts	White	372	NA
Inspectors, testers, sorters, samplers, & weighers	Black or African American	1688	575.592
Inspectors, testers, sorters, samplers, & weighers	White	11404	
Insulation workers	Black or African American	2437	993.722
Insulation workers	White	26654	
Insurance claims & policy processing clerks	White	188	NA
Insurance underwriters	White	103	NA
Janitors & building cleaners	Black or African American	1632	635.539
Janitors & building cleaners	White	12004	
Laborers & freight, stock, & material movers, hand	Black or African American	4121	341.373
Laborers & freight, stock, & material movers, hand	White	18189	
Lawyers, & judges, magistrates, & other judicial workers	Black or African American	332	921.687
Lawyers, & judges, magistrates, & other judicial workers	White	3392	
Librarians	White	46	NA
Lifeguards & other recreational, & all other protective service workers	White	553	NA
Loan interviewers & clerks	White	147	NA
Locomotive engineers & operators	White	34	NA
Lodging managers	White	208	NA
Logging workers	Black or African American	59	1689.83
Logging workers	White	1056	
Logisticians	Black or African	178	367.416

Construction Occupations	Race	Number of people	Percentage difference
	American		
Logisticians	White	832	
Machine tool cutting setters, operators, & tenders, metal & plastic	White	1819	NA
Machinists	White	1252	NA
Maids & housekeeping cleaners	Black or African American	284	716.549
Maids & housekeeping cleaners	White	2319	
Mail clerks & mail machine operators, except postal service	Black or African American	329	-77.812
Mail clerks & mail machine operators, except postal service	White	73	
Maintenance & repair workers, general	Black or African American	423	1536.41
Maintenance & repair workers, general	White	6922	
Maintenance workers, machinery	White	434	NA
Management analysts	Black or African American	89	3874.16
Management analysts	White	3537	
Marine engineers & naval architects	White	56	NA
Market research analysts & marketing specialists	White	1580	NA
Marketing & sales managers	Black or African American	333	5772.37
Marketing & sales managers	White	19555	
Materials engineers	White	142	NA
Mechanical engineers	Black or African American	254	1228.35
Mechanical engineers	White	3374	
Medical, dental, & ophthalmic laboratory technicians	White	113	NA
Meeting, convention, & event planners	White	656	NA

Construction Occupations	Race	Number of people	Percentage difference
Meter readers, utilities	Black or African American	137	-5.8394
Meter readers, utilities	White	129	
Millwrights	Black or African American	175	5442.86
Millwrights	White	9700	
Mining machine operators	Black or African American	132	93.9394
Mining machine operators	White	256	
Miscellaneous agricultural workers, including animal breeders	Black or African American	95	1157.89
Miscellaneous agricultural workers, including animal breeders	White	1195	
Miscellaneous assemblers & fabricators	Black or African American	1304	309.202
Miscellaneous assemblers & fabricators	White	5336	
Miscellaneous community & social service specialists, including health educators & community health workers	Black or African American	459	13.2898
Miscellaneous community & social service specialists, including health educators & community health workers	White	520	
Miscellaneous construction workers, including solar photovoltaic installers, septic tank servicers & sewer pipe cleaners	Black or African American	2291	1035.05
Miscellaneous construction workers, including solar photovoltaic installers, septic tank servicers & sewer pipe cleaners	White	26004	
Miscellaneous engineers, including nuclear engineers	White	1825	NA
Miscellaneous extraction workers, including roof bolters & helpers	Black or African American	89	1724.72

Construction Occupations	Race	Number of people	Percentage difference
Miscellaneous extraction workers, including roof bolters & helpers	White	1624	
Miscellaneous health technologists & technicians	White	357	NA
Miscellaneous installation, maintenance, & repair workers, including wind turbine service technicians	Black or African American	1183	1582.42
Miscellaneous installation, maintenance, & repair workers, including wind turbine service technicians	White	19903	
Miscellaneous law enforcement workers	Black or African American	107	NA
Miscellaneous legal support workers	White	443	NA
Miscellaneous life, physical, & social science technicians, including social science research assistants	White	1044	NA
Miscellaneous managers	Black or African American	11330	2510.51
Miscellaneous managers	White	295771	
Miscellaneous material moving workers, including mine shuttle car operators, & tank car, truck, & ship loaders	White	393	NA
Miscellaneous media & communication workers	White	301	NA
Miscellaneous metal workers & plastic workers, including multiple machine tool setters	White	75	NA
Miscellaneous office & administrative support workers, including desktop publishers	Black or African American	1124	748.31
Miscellaneous office & administrative support workers, including desktop publishers	White	9535	

Construction Occupations	Race	Number of people	Percentage difference
Miscellaneous personal appearance workers	White	466	NA
Miscellaneous plant & system operators	Black or African American	51	2866.67
Miscellaneous plant & system operators	White	1513	
Miscellaneous production workers, including semiconductor processors	Black or African American	655	1122.6
Miscellaneous production workers, including semiconductor processors	White	8008	
Miscellaneous social scientists, including survey researchers & sociologists	White	132	NA
Miscellaneous textile, apparel, & furnishings workers except upholsterers	Black or African American	270	NA
Miscellaneous transportation workers, including bridge & lock tenders & traffic technicians	Black or African American	735	212.381
Miscellaneous transportation workers, including bridge & lock tenders & traffic technicians	White	2296	
Miscellaneous vehicle & mobile equipment mechanics, installers, & repairers	White	343	NA
Miscellaneous woodworkers, including model makers & patternmakers	Black or African American	106	683.962
Miscellaneous woodworkers, including model makers & patternmakers	White	831	
Model makers, patternmakers, & molding machine setters, metal & plastic	White	205	NA
Models, demonstrators, & product promoters	Black or African American	217	160.829
Models, demonstrators, & product promoters	White	566	

Construction Occupations	Race	Number of people	Percentage difference
Molders, shapers, & casters, except metal & plastic	White	1062	NA
Motor vehicle operators, all other	Black or African American	60	1178.33
Motor vehicle operators, all other	White	767	
Network & computer systems administrators	Black or African American	112	1771.43
Network & computer systems administrators	White	2096	
News analysts, reporters & correspondents	White	197	NA
Nursing, psychiatric, & home health aides	White	280	NA
Office clerks, general	Black or African American	2518	1697.06
Office clerks, general	White	45250	
Office machine operators, except computer	Black or African American	65	NA
Operations research analysts	White	274	NA
Other Computer Occupations	Black or African American	818	339.731
Other Computer Occupations	White	3597	
Other education, training, & library workers	White	352	NA
Other financial clerks	White	743	NA
Other financial specialists	White	71	NA
Other healthcare practitioners & technical Occupations	Black or African American	498	658.835
Other healthcare practitioners & technical Occupations	White	3779	
Other Physical Scientists	White	106	NA
Other Sales Workers	White	1480	NA
Other teachers & instructors	White	1208	NA
Packers & packagers, hand	White	270	NA
Painters & paperhangers	Black or African American	16966	1485.7
Painters & paperhangers	White	269030	
Painting workers	Black or African American	94	4189.36
Painting workers	White	4032	

Construction Occupations	Race	Number of people	Percentage difference
Paralegals & legal assistants	Black or African American	91	1554.95
Paralegals & legal assistants	White	1506	
Parking lot attendants	Black or African American	111	NA
Parts salespersons	Black or African American	230	23.913
Parts salespersons	White	285	
Paving, surfacing, & tamping equipment operators	Black or African American	1467	517.11
Paving, surfacing, & tamping equipment operators	White	9053	
Payroll & timekeeping clerks	Black or African American	481	2036.8
Payroll & timekeeping clerks	White	10278	
Personal care & service workers, all other	White	335	NA
Personal care aides	White	15	NA
Personal financial advisors	White	623	NA
Petroleum, mining & geological engineers, including mining safety engineers	White	107	NA
Photographers	White	365	NA
Pipelayers, plumbers, pipefitters, & steamfitters	Black or African American	22180	1378.49
Pipelayers, plumbers, pipefitters, & steamfitters	White	327929	
Plasterers & stucco masons	Black or African American	626	3602.56
Plasterers & stucco masons	White	23178	
Police officers	Black or African American	110	-59.091
Police officers	White	45	
Postsecondary teachers	White	33	NA
Power plant operators, distributors, & dispatchers	White	141	NA
Precision instrument & equipment repairers	White	641	NA
Prepress technicians & workers	White	420	NA

Construction Occupations	Race	Number of people	Percentage difference
Pressers, textile, garment, & related materials	White	105	NA
Print binding & finishing workers	White	149	NA
Printing press operators	Black or African American	85	-5.8824
Printing press operators	White	80	
Procurement clerks	Black or African American	114	1189.47
Procurement clerks	White	1470	
Producers & directors	White	67	NA
Production, planning, & expediting clerks	Black or African American	769	837.061
Production, planning, & expediting clerks	White	7206	
Property, real estate, & community association managers	Black or African American	134	NA
Property, real estate, & community association managers	White	3086	NA
Public relations & fundraising managers	Black or African American	81	18.5185
Public relations & fundraising managers	White	96	
Public relations specialists	White	462	NA
Pumping station operators	White	1296	NA
Purchasing agents, except wholesale, retail, & farm products	Black or African American	590	1239.32
Purchasing agents, except wholesale, retail, & farm products	White	7902	
Purchasing managers	Black or African American	278	3069.06
Purchasing managers	White	8810	
Radio & telecommunications equipment installers & repairers	Black or African American	811	624.784
Radio & telecommunications equipment installers & repairers	White	5878	

Construction Occupations	Race	Number of people	Percentage difference
Railroad conductors & yardmasters	Black or African American	70	1714.29
Railroad conductors & yardmasters	White	1270	
Railtrack laying & maintenance equipment operators	White	1457	NA
Real estate brokers & sales agents	Black or African American	99	2874.75
Real estate brokers & sales agents	White	2945	
Receptionists & information clerks	Black or African American	1269	1106.7
Receptionists & information clerks	White	15313	
Refuse & recyclable material collectors	Black or African American	95	812.632
Refuse & recyclable material collectors	White	867	
Registered nurses	White	65	NA
Reservation & transportation ticket agents & travel clerks	White	278	NA
Retail salespersons	White	1081	NA
Riggers	White	505	NA
Roofers	Black or African American	11069	1082.65
Roofers	White	130907	
Sailors & marine oilers, & ship engineers	Black or African American	315	94.6032
Sailors & marine oilers, & ship engineers	White	613	
Sales engineers	White	430	NA
Sales representatives, services, all other	Black or African American	2491	2910.8
Sales representatives, services, all other	White	74999	
Sales representatives, wholesale & manufacturing	Black or African American	492	422.967
Sales representatives, wholesale & manufacturing	White	2573	
Sawing machine setters, operators, & tenders, wood	Black or African American	238	42.8571

Construction Occupations	Race	Number of people	Percentage difference
Sawing machine setters, operators, & tenders, wood	White	340	
Secretaries & administrative assistants	Black or African American	5587	2853.45
Secretaries & administrative assistants	White	165009	
Security & fire alarm systems installers	Black or African American	389	806.17
Security & fire alarm systems installers	White	3525	
Security guards & gaming surveillance officers	Black or African American	748	312.834
Security guards & gaming surveillance officers	White	3088	
Sewing machine operators	White	526	NA
Sheet metal workers	Black or African American	2909	1265.49
Sheet metal workers	White	39722	
Ship & boat captains & operators	White	428	NA
Shipping, receiving, & traffic clerks	Black or African American	418	515.072
Shipping, receiving, & traffic clerks	White	2571	
Small engine mechanics	White	677	NA
Social & community service managers	White	248	NA
Social & human service assistants	Black or African American	254	35.8268
Social & human service assistants	White	345	
Social workers	White	234	NA
Software developers, applications & systems software	White	3455	NA
Stationary engineers & boiler operators	White	2529	NA
Stock clerks & order fillers	Black or African American	1306	210.949
Stock clerks & order fillers	White	4061	
Structural iron & steel workers	Black or African American	2649	1202.11

Construction Occupations	Race	Number of people	Percentage difference
Structural iron & steel workers	White	34493	
Structural metal fabricators & fitters	White	1654	NA
Supervisors of transportation & material moving workers	Black or African American	46	2632.61
Supervisors of transportation & material moving workers	White	1257	
Surveying & mapping technicians	Black or African American	225	3178.22
Surveying & mapping technicians	White	7376	
Surveyors, cartographers, & photogrammetrists	Black or African American	421	312.589
Surveyors, cartographers, & photogrammetrists	White	1737	
Tailors, dressmakers, & sewers	White	22	NA
Tax examiners & collectors, & revenue agents	White	53	NA
Taxi drivers & chauffeurs	White	159	NA
Technical writers	White	175	NA
Telecommunications line installers & repairers	Black or African American	2409	516.687
Telecommunications line installers & repairers	White	14856	
Telemarketers	White	604	NA
Telephone operators	Black or African American	61	103.279
Telephone operators	White	124	
Tool & die makers	White	73	NA
Training & development managers	White	1048	NA
Training & development specialists	Black or African American	164	612.195
Training & development specialists	White	1168	
Transportation inspectors	Black or African American	116	NA
Transportation, storage, & distribution managers	Black or African American	1387	537.563

Construction Occupations	Race	Number of people	Percentage difference
Transportation, storage, & distribution managers	White	8843	
Urban & regional planners	White	115	NA
Waiters & waitresses	White	77	NA
Water & wastewater treatment plant & system operators	White	985	NA
Web developers	White	1593	NA
Weighers, measurers, checkers, & samplers, recordkeeping	White	1944	NA
Welding, soldering, & brazing workers	Black or African American	5594	1208.74
Welding, soldering, & brazing workers	White	73211	
Woodworking machine setters, operators, & tenders, except sawing	White	87	NA
Word processors & typists	Black or African American	559	1221.47
Word processors & typists	White	7387	
Writers & authors	White	297	NA

APPENDIX V. List of Construction Occupations - Wage Analysis for top 10 Occupations by Race/Ethnicity

Note: The construction trades used for analysis is highlighted in orange

Construction Occupations	Race	Average wage	Percentage for white vs black
Accountants & auditors	Asian	72172.6	NA
	White	61709.1	5.91728
	Black or African American	58261.6	
Adhesive bonding machine operators & tenders	White	54436.6	NA
Administrative services managers	White	51015.9	NA
	Black or African American	41552.5	22.7746
Advertising & promotions managers	White	67084.7	
Advertising sales agents	White	24124.2	NA
Aerospace engineers	Black or African American	70858.7	NA
Agents & business managers of artists, performers, & athletes	White	4806.07	NA
Air traffic controllers & airfield operations specialists	White	73961.5	NA
	Black or African American	65082.2	13.6432
Aircraft mechanics & service technicians	White	55466.8	
Aircraft pilots & flight engineers	White	100126	900
	Black or African American	10012.6	
Aircraft structure, surfaces, rigging, & systems assemblers	Black or African American	40050.6	NA
Appraisers & assessors of real estate	White	38409.7	NA
Architects, except naval	Asian	103793	NA
	White	74943.4	52.1795

Construction Occupations	Race	Average wage	Percentage for white vs black
	Black or African American	49246.7	
Architectural & engineering managers	Asian	82331.2	NA
	White	144636	27.0888
	Black or African American	113807	
Artists & related workers	White	27280.8	NA
Athletes, coaches, umpires, & related workers	White	27034.1	NA
Automotive & watercraft service attendants-	White	83269.8	NA
Automotive body & related repairers	White	81541.4	NA
Automotive glass installers & repairers	White	20025.3	5.26335
	Black or African American	19024	
Automotive service technicians & mechanics	White	43111.9	24.2003
	Black or African American	34711.6	
Avionics technicians	White	56070.8	NA
Baggage porters, bellhops, & concierges	White	37823.6	NA
Bailiffs, correctional officers, & jailers	White	50063.2	NA
Bartenders	White	35975.6	NA
Bill & account collectors	White	118550	57.9799
	Black or African American	49814.8	
Billing & posting clerks	Asian	47059.4	NA
	White	35003.7	-22.312

Construction Occupations	Race	Average wage	Percentage for white vs black
	Black or African American	45056.9	
Biological scientists	White	79937.9	-21.729
	Black or African American	102129	
Boilermakers	White	61230.3	-14.851
	Black or African American	71909.5	
Bookkeeping, accounting, & auditing clerks	Asian	45042.7	NA
	White	35777.5	13.8229
	Black or African American	31432.6	
Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers	Asian	38247.5	NA
	White	36672.1	9.86578
	Black or African American	33379	
Broadcast & sound engineering technicians & radio operators, & media & communication equipment workers, all other	Asian	2002.53	NA
	White	65755.7	NA
Brokerage clerks	White	20025.3	NA
Budget analysts	White	59988	-40.959
	Black or African American	101604	
Bus & truck mechanics & diesel engine specialists	Asian	30037.9	NA
	White	44890.6	111.108
	Black or African American	21264.3	

Construction Occupations	Race	Average wage	Percentage for white vs black
Bus drivers	White	42216.6	NA
Business operations specialists, all other	White	52780.7	29.1669
	Black or African American	40862.4	
Cabinetmakers & bench carpenters	White	49479.9	NA
Carpenters	Asian	40541.7	NA
	White	37011.1	2.14777
	Black or African American	36232.9	
Carpet, floor, & tile installers & finishers	Asian	57526.8	NA
	White	33595.1	18.8231
	Black or African American	28273.2	
Cashiers	White	12621.1	-45.195
	Black or African American	23029.1	
Cement masons, concrete finishers, & terrazzo workers	White	37326.3	22.8287
	Black or African American	30388.9	
Chefs & head cooks	Asian	24030.3	NA
Chemical engineers	Asian	120152	NA
	White	181128	NA
Chemical processing machine setters, operators, & tenders	White	36045.5	NA
Chemical technicians	White	24318.6	NA
Chemists & materials scientists	White	120152	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
Chief executives & legislators	Asian	94996.1	NA
	White	137688	-10.074
	Black or African American	153112	
Childcare workers	White	19024	NA
Civil engineers	Asian	77488.3	NA
	White	77338.5	32.9037
	Black or African American	58191.4	
Claims adjusters, appraisers, examiners, & investigators	White	24866.5	NA
Cleaners of vehicles & equipment	White	31937.6	NA
Combined food preparation & serving workers, including fast food	Black or African American	17522.1	NA
Compensation & benefits managers	White	64939.1	NA
Compensation, benefits, & job analysis specialists	White	74020.8	NA
Compliance officers	White	79503.5	61.2313
	Black or African American	49310.2	
Computer & information research scientists	White	98123.9	NA
Computer & information systems managers	Asian	78109.6	NA
	White	82779.6	3.3439
	Black or African American	80101.1	
Computer control programmers & operators	Asian	34643.7	NA
	White	36586.9	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
Computer hardware engineers	White	50730.7	NA
Computer network architects	Asian	90113.8	NA
	White	99354.6	NA
Computer operators	White	47539.4	NA
Computer programmers	Asian	48955.9	NA
	White	75074	-13.817
	Black or African American	87110	
Computer support specialists	Asian	68917	NA
	White	50716.8	-29.265
	Black or African American	71699.7	
Computer systems analysts	Asian	57110.9	NA
	White	67203.5	18.5389
	Black or African American	56693.2	
Computer, automated teller, & office machine repairers	White	30886.8	NA
Conservation scientists & foresters	White	22027.8	NA
Construction & building inspectors	Asian	51325.9	NA
	White	56259.5	5.30241
	Black or African American	53426.6	
Construction equipment operators except paving, surfacing, & tamping equipment operators	Asian	34979.9	NA
	White	48472.6	30.649
	Black or African	37101.4	

Construction Occupations	Race	Average wage	Percentage for white vs black
	American		
Construction laborers	Asian	33125.8	NA
	White	34059.4	7.64937
	Black or African American	31639.2	
Construction managers	Asian	76258.5	NA
	White	78944.5	29.6038
	Black or African American	60912.2	
Control & valve installers & repairers	Asian	37737.4	NA
	White	38089	745.353
	Black or African American	4505.69	
Conveyor operators & tenders, & hoist & winch operators	Asian	55069.5	NA
	White	44581.1	7.35268
	Black or African American	41527.7	
Cooks	White	5006.32	NA
Correspondence clerks & order clerks	White	41677.3	-35.962
	Black or African American	65082.2	
Cost estimators	Asian	71704.6	NA
	White	69127.8	10.4195
	Black or African American	62604.7	

Construction Occupations	Race	Average wage	Percentage for white vs black
Counselors	White	73712.5	NA
Counter & rental clerks	White	34575.7	NA
Couriers & messengers	Asian	2002.53	NA
	White	26131.6	NA
Court, municipal, & license clerks	White	35044.2	NA
Crane & tower operators	Asian	42053.1	NA
	White	65516.5	57.8266
	Black or African American	41511.7	
Credit analysts	White	45056.9	NA
Credit authorizers, checkers, & clerks	Asian	75094.8	NA
	White	65082.2	NA
Credit counselors & loan officers	White	51330.6	NA
Crossing guards	White	30402.7	21.5398
	Black or African American	25014.6	
Crushing, grinding, polishing, mixing, & blending workers	White	38208.8	79.7765
	Black or African American	21253.5	
Customer service representatives	Asian	41984.8	NA
	White	38478.8	-5.5934
	Black or African American	40758.6	
Cutting workers	White	23358.4	NA
Data entry keyers	Asian	7008.85	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
	White	30891.3	463.546
	Black or African American	5481.59	
Database administrators	Asian	93084.5	NA
	White	79693	NA
Derrick, rotary drill, & service unit operators, & roustabouts, oil, gas, & mining	White	30154.4	NA
Designers	Asian	51098.1	NA
	White	61464.4	3.05384
	Black or African American	59643	
Diagnostic related technologists & technicians	White	130164	NA
Dishwashers	White	38048	NA
Dispatchers	White	35048.2	16.6799
	Black or African American	30037.9	
Doortodoor sales workers, news & street vendors, & related workers	White	2797.45	-84.215
	Black or African American	17722.4	
Drafters	Asian	38325.9	NA
	White	48798.2	5.73893
	Black or African American	46149.7	
Dredge, excavating, & loading machine operators	Asian	7509.48	NA
	White	37948.7	53.0202

Construction Occupations	Race	Average wage	Percentage for white vs black
	Black or African American	24799.8	
Driver/sales workers & truck drivers	Asian	34968.1	NA
	White	39862.8	9.57219
	Black or African American	36380.4	
Drywall installers, ceiling tile installers, & tapers	Asian	38585.7	NA
	White	32529.8	-5.9408
	Black or African American	34584.4	
Earth drillers, except oil & gas	Asian	12015.2	NA
	White	54533	38.6719
	Black or African American	39325.2	
Economists	White	220278	NA
Education administrators	White	98123.9	NA
Electric motor, power tool, & related repairers	Asian	15019	NA
	White	61752.5	76.2132
	Black or African American	35044.2	
Electrical & electronics engineers	Asian	86401.4	NA
	White	83942.4	-6.7966
	Black or African American	90063.7	
Electrical & electronics repairers, transportation equipment, & industrial & utility	White	82360.8	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
Electrical powerline installers & repairers	Asian	26433.4	NA
	White	51637.9	95.0197
	Black or African American	26478.3	
Electrical, electronics, & electromechanical assemblers	White	40545.1	64.4565
	Black or African American	24654	
Electricians	Asian	46797.9	NA
	White	49358.7	18.9214
	Black or African American	41505.3	
Electronic home entertainment equipment installers & repairers	Asian	63079.6	NA
	White	35543.3	-35.232
	Black or African American	54877.6	
Elementary & middle school teachers	White	125672	NA
Elevator installers & repairers	Asian	61667	NA
	White	83813.2	76.4485
	Black or African American	47500.1	
Emergency medical technicians & paramedics	White	81102.4	NA
Engine & other machine assemblers	White	40050.6	NA
Engineering technicians, except drafters	Asian	32460.1	NA
	White	48222	26.8696
	Black or African	38009.1	

Construction Occupations	Race	Average wage	Percentage for white vs black
	American		
Environmental engineers	Asian	37046.8	NA
	White	80686.2	54.97
	Black or African American	52065.7	
Environmental scientists & geoscientists	White	78219.5	NA
Etchers & engravers	White	33815.9	NA
Explosives workers, ordnance handling experts, & blasters	White	45739.7	NA
Extruding, forming, pressing, & compacting machine setters, operators, & tenders	White	29411.4	NA
Farmers, ranchers, & other agricultural managers	White	34641	NA
Fence erectors	Asian	27178.5	NA
	White	28601.6	89.2266
	Black or African American	15115	
File clerks	Asian	22513.3	NA
	White	21058.2	6.34058
	Black or African American	19802.6	
Financial analysts	Asian	65082.2	NA
	White	67057.5	-33.027
	Black or African American	100126	
Financial managers	Asian	52565.5	NA
	White	76890.2	13.1908

Construction Occupations	Race	Average wage	Percentage for white vs black
	Black or African American	67929.7	
Fire inspectors	Asian	20025.3	NA
	White	48491.3	NA
Firstline supervisors of construction trades & extraction workers	Asian	54935.7	NA
	White	63402	30.4198
	Black or African American	48613.8	
Firstline supervisors of farming, fishing, & forestry workers	Black or African American	95120.1	NA
Firstline supervisors of housekeeping & janitorial workers	White	31050	NA
Firstline supervisors of landscaping, lawn service, & groundskeeping workers	White	58708	244.905
	Black or African American	17021.5	
Firstline supervisors of mechanics, installers, & repairers	White	68247.4	NA
Firstline supervisors of nonretail sales workers	Asian	63557.5	NA
	White	56841.9	-11.691
	Black or African American	64367	
Firstline supervisors of office & administrative support workers	Asian	43840.2	NA
	White	45063.1	28.6778
	Black or African American	35020.1	
Firstline supervisors of production & operating workers	Asian	17922.6	NA
	White	54456.6	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
Firstline supervisors of retail sales workers	Asian	15619.7	NA
	White	63416.2	NA
Food preparation workers	White	20025.3	NA
Food service managers	White	132167	NA
Forest & conservation workers	White	55069.5	NA
Furnace, kiln, oven, drier, & kettle operators & tenders	White	43254.6	NA
Furniture finishers	White	30831.4	NA
General & operations managers	Asian	93407.7	NA
	White	96980.7	37.6411
	Black or African American	70459.1	
Glaziers	Asian	28315.1	NA
	White	39050.4	-25.512
	Black or African American	52425.2	
Graders & sorters, agricultural products	White	70088.5	NA
Grounds maintenance workers	White	25216.7	-15.625
	Black or African American	29886.3	
Hazardous materials removal workers	White	41532.2	NA
Heating, air conditioning, & refrigeration mechanics & installers	Asian	41055.5	NA
	White	44460.7	36.7386
	Black or African American	32515.1	
Heavy vehicle & mobile equipment service technicians & mechanics	Asian	46820.2	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
	White	50455.1	43.2956
	Black or African American	35210.5	
Helpers, construction trades	Asian	57926.5	NA
	White	27310.9	23.8449
	Black or African American	22052.5	
Helpers installation, maintenance, & repair workers	White	20826.7	-24.979
	Black or African American	27761.2	
Helpers production workers	White	36357.2	126.946
	Black or African American	16020.2	
Highway maintenance workers	Asian	31885.4	NA
	White	40760.1	28.8095
	Black or African American	31643.7	
Home appliance repairers	White	58410	6.06597
	Black or African American	55069.5	
Human resources assistants, except payroll & timekeeping	White	38791.1	-16.908
	Black or African American	46684.7	
Human resources managers	Asian	64843.8	NA
	White	79860.8	18.1411
	Black or African	67597.8	

Construction Occupations	Race	Average wage	Percentage for white vs black
	American		
Human resources workers	Asian	35695.1	NA
	White	56699	-12.724
	Black or African American	64965	
Industrial & refractory machinery mechanics	White	51070.8	-14.192
	Black or African American	59517.3	
Industrial engineers, including health & safety	White	55635	0.10904
	Black or African American	55574.4	
Industrial production managers	Asian	41352.2	NA
	White	73692.6	4.6076
	Black or African American	70446.7	
Industrial truck & tractor operators	White	33750.4	-17.79
	Black or African American	41053.9	
Information & record clerks, all other	White	67695.1	NA
Information security analysts	White	119255	NA
Inspectors, testers, sorters, samplers, & weighers	Asian	82943.6	NA
	White	55168.2	65.5425
	Black or African American	33325.7	
Insulation workers	Asian	28580.9	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
	White	37541	24.1107
	Black or African American	30248	
Insurance claims & policy processing clerks	White	56528.8	NA
Insurance underwriters	White	55069.5	NA
Janitors & building cleaners	Asian	63099.8	NA
	White	22239.7	-9.4504
	Black or African American	24560.8	
Laborers & freight, stock, & material movers, hand	Asian	19864.4	NA
	White	27325.5	28.1954
	Black or African American	21315.5	
Lawyers, & judges, magistrates, & other judicial workers	Asian	140177	NA
	White	145812	25.9269
	Black or African American	115791	
Librarians	White	56070.8	NA
Lifeguards & other recreational, & all other protective service workers	White	29891.3	NA
Loan interviewers & clerks	White	44580.1	NA
Locksmiths & safe repairers	Asian	55069.5	NA
Locomotive engineers & operators	White	50063.2	NA
Lodging managers	White	48965.7	NA
Logging workers	White	25349.4	5.48932
	Black or African	24030.3	

Construction Occupations	Race	Average wage	Percentage for white vs black
	American		
Logisticians	Asian	68086	NA
	White	56318.7	21.065
	Black or African American	46519.4	
Machine tool cutting setters, operators, & tenders, metal & plastic	White	34461.3	NA
Machinists	White	37839.6	NA
Maids & housekeeping cleaners	White	20515.9	-33.586
	Black or African American	30891.1	
Mail clerks & mail machine operators, except postal service	White	19328.5	NA
Mail clerks & mail machine operators, except postal service	Black or African American	25022.5	NA
Maintenance & repair workers, general	Asian	41963.7	NA
	White	32110.4	80.4655
	Black or African American	17793.1	
Maintenance workers, machinery	White	38717.1	NA
Management analysts	Asian	110139	NA
	White	86972.9	105.607
	Black or African American	42300.6	
Marine engineers & naval architects	White	60075.8	NA
Market research analysts & marketing specialists	Asian	49594.9	NA
	White	174676	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
Marketing & sales managers	Asian	100126	NA
	White	90249.4	-19.836
	Black or African American	112581	
Materials engineers	White	90113.8	NA
Mechanical engineers	Asian	139335	NA
	White	112655	104.021
	Black or African American	55217.3	
Medical, dental, & ophthalmic laboratory technicians	White	34822.7	NA
Meeting, convention, & event planners	White	33015	NA
Meter readers, utilities	White	36674.2	144.185
	Black or African American	15019	
Millwrights	White	57637.3	-11.166
	Black or African American	64881.9	
Mining machine operators	Asian	90113.8	NA
	White	48337.6	-19.539
	Black or African American	60075.8	
Miscellaneous agricultural workers, including animal breeders	White	27213.4	-41.925
	Black or African American	46859.2	
Miscellaneous assemblers & fabricators	Asian	30037.9	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
	White	37417.4	1.16092
	Black or African American	36988	
Miscellaneous community & social service specialists, including health educators & community health workers	White	70525.6	6.60951
	Black or African American	66153.2	
Miscellaneous construction workers, including solar photovoltaic installers, septic tank servicers & sewer pipe cleaners	Asian	52927.5	NA
	White	37395	45.8725
	Black or African American	25635.4	
Miscellaneous engineers, including nuclear engineers	Asian	53710.9	NA
	White	88633	NA
Miscellaneous extraction workers, including roof bolters & helpers	White	101827	103.397
	Black or African American	50063.2	
Miscellaneous health technologists & technicians	White	80101.1	NA
Miscellaneous installation, maintenance, & repair workers, including wind turbine service technicians	White	39975.1	-33.288
	Black or African American	59921.8	
Miscellaneous law enforcement workers	Black or African American	70088.5	NA
Miscellaneous legal support workers	White	62763.2	NA
Miscellaneous life, physical, & social science technicians, including social science research assistants	White	46741	NA
Miscellaneous managers	Asian	81759.6	NA
	White	87198.3	41.2782

Construction Occupations	Race	Average wage	Percentage for white vs black
	Black or African American	61721	
Miscellaneous material moving workers, including mine shuttle car operators, & tank car, truck, & ship loaders	White	54883.5	NA
Miscellaneous media & communication workers	White	12981.5	NA
Miscellaneous metal workers & plastic workers, including multiple machine tool setters	White	50063.2	NA
Miscellaneous office & administrative support workers, including desktop publishers	Asian	30380.3	NA
	White	46153.7	151.345
	Black or African American	18362.7	
Miscellaneous personal appearance workers	White	2903.67	NA
Miscellaneous plant & system operators	White	50032.4	-12.335
	Black or African American	57072	
Miscellaneous production workers, including semiconductor processors	Asian	80101.1	NA
	White	45446	62.4743
	Black or African American	27971.2	
Miscellaneous social scientists, including survey researchers & sociologists	White	16020.2	NA
Miscellaneous textile, apparel, & furnishings workers except upholsterers	Black or African American	23930.2	NA
Miscellaneous transportation workers, including bridge & lock tenders & traffic technicians	White	52219.4	-9.2758
	Black or African American	57558.4	

Construction Occupations	Race	Average wage	Percentage for white vs black
Miscellaneous vehicle & mobile equipment mechanics, installers, & repairers	White	56149.6	NA
Miscellaneous woodworkers, including model makers & patternmakers	White	28735.9	NA
Miscellaneous woodworkers, including model makers & patternmakers	Black or African American	6007.58	NA
Model makers, patternmakers, & molding machine setters, metal & plastic	White	35244.5	NA
Models, demonstrators, & product promoters	White	52891.2	164.122
	Black or African American	20025.3	
Molders, shapers, & casters, except metal & plastic	White	27517.8	NA
Motor vehicle operators, all other	White	34465.9	-31.155
	Black or African American	50063.2	
Network & computer systems administrators	Asian	63079.6	NA
	White	69932.8	-24.082
	Black or African American	92116.3	
News analysts, reporters & correspondents	White	31639.9	NA
Nursing, psychiatric, & home health aides	White	45199.9	NA
Office clerks, general	Asian	24411	NA
	White	32187.8	2.4316
	Black or African American	31423.7	
Office machine operators, except computer	Black or African	52065.7	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
	American		
Operations research analysts	White	98573	NA
Other Computer Occupations	Asian	94016.7	NA
	White	75739.6	36.1065
	Black or African American	55647.3	
Other education, training, & library workers	White	49707.6	NA
Other financial clerks	Asian	29036.7	NA
	White	159855	NA
Other financial specialists	White	27034.1	NA
Other healthcare practitioners & technical Occupations	White	77732.2	NA
Other healthcare practitioners & technical Occupations	Black or African American	22027.8	NA
Other Physical Scientists	White	2503.16	NA
Other Sales Workers	White	52122.8	NA
Other teachers & instructors	White	62394.6	NA
Packers & packagers, hand	White	15992.4	NA
Painters & paperhangers	Asian	33237.7	NA
	White	29623.1	15.8669
	Black or African American	25566.5	
Painting workers	White	39638	-39.095
	Black or African American	65082.2	
Paralegals & legal assistants	White	74370.1	395.173

Construction Occupations	Race	Average wage	Percentage for white vs black
	Black or African American	15019	
Parking lot attendants	Black or African American	477603	NA
Parts salespersons	White	35378	-24.823
	Black or African American	47059.4	
Paving, surfacing, & tamping equipment operators	Asian	22687.5	NA
	White	33356.2	37.6206
	Black or African American	24237.8	
Payroll & timekeeping clerks	Asian	23857.4	NA
	White	40849.5	36.9543
	Black or African American	29827.1	
Personal care & service workers, all other	White	25775.8	NA
Personal care aides	White	11814.9	NA
Personal financial advisors	White	91524.9	NA
Petroleum, mining & geological engineers, including mining safety engineers	White	89112.5	NA
Photographers	Asian	30538.6	NA
	White	39022.4	NA
Pipelayers, plumbers, pipefitters, & steamfitters	Asian	58860.5	NA
	White	46592.3	0.01524
	Black or African American	46585.2	

Construction Occupations	Race	Average wage	Percentage for white vs black
Plasterers & stucco masons	White	29994.7	-7.5707
	Black or African American	32451.5	
Police officers	White	45657.6	52
	Black or African American	30037.9	
Postsecondary teachers	White	18323.1	NA
Power plant operators, distributors, & dispatchers	White	109550	NA
Precision instrument & equipment repairers	White	64786.9	NA
Prepress technicians & workers	White	22576.1	NA
Pressers, textile, garment, & related materials	White	36446	NA
Print binding & finishing workers	White	13795.9	NA
Printing press operators	White	27034.1	7.99989
	Black or African American	25031.6	
Procurement clerks	White	97869.8	87.9737
	Black or African American	52065.7	
Producers & directors	White	130164	NA
Production, planning, & expediting clerks	Asian	29959.3	NA
	White	55020.8	-7.8311
	Black or African American	59695.6	
Property, real estate, & community association managers	White	94979.3	-34.623
	Black or African	145280	

Construction Occupations	Race	Average wage	Percentage for white vs black
	American		
Public relations & fundraising managers	White	114144	14.0004
	Black or African American	100126	
Public relations specialists	White	81210.1	NA
Pumping station operators	White	56827.9	NA
Purchasing agents, except wholesale, retail, & farm products	Asian	54661.7	NA
	White	49245.1	16.3136
	Black or African American	42338.2	
Purchasing managers	Asian	56618.5	NA
	White	68194.3	36.5309
	Black or African American	49947.9	
Radio & telecommunications equipment installers & repairers	Asian	45130.6	NA
	White	40721	6.20552
	Black or African American	38341.7	
Railroad conductors & yardmasters	White	45418.8	-35.198
	Black or African American	70088.5	
Railtrack laying & maintenance equipment operators	White	45949.6	NA
Real estate brokers & sales agents	White	91412.9	NA
Real estate brokers & sales agents	Black or African American	68086	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
Receptionists & information clerks	Asian	30216.9	NA
	White	26906.6	-5.5213
	Black or African American	28479	
Refuse & recyclable material collectors	White	26337.9	-24.844
	Black or African American	35044.2	
Registered nurses	White	48060.7	NA
Reservation & transportation ticket agents & travel clerks	White	70596.3	NA
Retail salespersons	White	39390.5	NA
Riggers	White	58816.8	NA
Roofers	Asian	45002.3	NA
	White	31221.4	23.6036
	Black or African American	25259.3	
Sailors & marine oilers, & ship engineers	Asian	20025.3	NA
	White	54218.5	-39.929
	Black or African American	90256.8	
Sales engineers	White	88199.7	NA
Sales representatives, services, all other	Asian	85469.3	NA
	White	70013.1	51.2257
	Black or African American	46297.1	
Sales representatives, wholesale & manufacturing	White	63209.3	26.259

Construction Occupations	Race	Average wage	Percentage for white vs black
	Black or African American	50063.2	
Sawing machine setters, operators, & tenders, wood	White	45840.2	76.0856
	Black or African American	26032.9	
Secretaries & administrative assistants	Asian	30802.9	NA
	White	33024.2	-22.999
	Black or African American	42888.1	
Security & fire alarm systems installers	White	54543.6	51.9807
	Black or African American	35888.5	
Security guards & gaming surveillance officers	Asian	13216.7	NA
	White	20782.1	3.07661
	Black or African American	20161.8	
Sewing machine operators	White	30852.6	NA
Sheet metal workers	Asian	22442.1	NA
	White	42827.6	47.1698
	Black or African American	29100.8	
Ship & boat captains & operators	White	88625.9	NA
Shipping, receiving, & traffic clerks	White	42831.5	34.4252
	Black or African American	31862.7	
Small engine mechanics	White	49688.3	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
Social & community service managers	White	57471.7	NA
Social & human service assistants	White	38889.7	7.89058
	Black or African American	36045.5	
Social workers	White	39545.6	NA
Software developers, applications & systems software	Asian	97808.3	NA
	White	89463.7	NA
Stationary engineers & boiler operators	Asian	106711	NA
	White	63029.9	NA
Stock clerks & order fillers	Asian	10012.6	NA
	White	32611.5	19.3393
	Black or African American	27326.7	
Structural iron & steel workers	Asian	53448.3	NA
	White	50620.3	10.7648
	Black or African American	45700.7	
Structural metal fabricators & fitters	White	34239.7	NA
Supervisors of transportation & material moving workers	White	85725.6	71.2348
	Black or African American	50063.2	
Surveying & mapping technicians	Asian	80101.1	NA
	White	49436	71.8604
	Black or African American	28765.2	

Construction Occupations	Race	Average wage	Percentage for white vs black
Surveyors, cartographers, & photogrammetrists	Asian	69087.2	NA
	White	86533.5	43.5574
	Black or African American	60278	
Tailors, dressmakers, & sewers	White	40050.6	NA
Tax examiners & collectors, & revenue agents	White	90113.8	NA
Taxi drivers & chauffeurs	Asian	46058.1	NA
	White	19874.1	NA
Technical writers	White	1501.9	NA
Telecommunications line installers & repairers	Asian	80956.2	NA
	White	44624.2	49.3587
	Black or African American	29877.2	
Telemarketers	White	20409.2	NA
Telephone operators	White	13653.5	-72.727
	Black or African American	50063.2	
Tool & die makers	White	30552.3	NA
Training & development managers	Asian	60075.8	NA
	White	93003.9	NA
Training & development specialists	White	83874.7	150.649
	Black or African American	33463	
Transportation inspectors	Black or African American	19024	NA

Construction Occupations	Race	Average wage	Percentage for white vs black
Transportation, storage, & distribution managers	White	48728.9	-4.5022
	Black or African American	51026.2	
Urban & regional planners	White	66564	NA
Waiters & waitresses	White	62078.4	NA
Water & wastewater treatment plant & system operators	White	48498.2	NA
Web developers	Asian	53067	NA
	White	24673.6	NA
Weighers, measurers, checkers, & samplers, recordkeeping	White	44200.1	NA
Welding, soldering, & brazing workers	Asian	48641.6	NA
	White	50459.1	45.3047
	Black or African American	34726.4	
Woodworking machine setters, operators, & tenders, except sawing	White	13090.1	NA
Word processors & typists	Asian	40465.7	NA
	White	37993.7	-12.359
	Black or African American	43351.7	
Writers & authors	White	63177.4	NA

APPENDIX VI. List of Construction Occupations – Employment Analysis for Top 10 Occupations by Gender

Note: The construction trades used for analysis is highlighted in orange

Construction Occupations	Gender	Number of people	Percentage difference
Accountants & auditors	Male	15998	-63.947
Accountants & auditors	Female	44373	
Administrative services managers	Male	1090	-54.602
Administrative services managers	Female	2401	
Appraisers & assessors of real estate	Male	706	NA
Architects, except naval	Male	3516	398.723
Architects, except naval	Female	705	
Architectural & engineering managers	Male	2669	NA
Automotive & watercraft service attendants-	Male	465	NA
Automotive service technicians & mechanics	Male	3426	NA
Billing & posting clerks	Male	494	-94.4
Billing & posting clerks	Female	8822	
Biological scientists	Male	650	-20.635
Biological scientists	Female	819	
Boilermakers	Male	6096	NA
Bookkeeping, accounting, & auditing clerks	Male	5566	-91.42
Bookkeeping, accounting, & auditing clerks	Female	64870	
Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers	Male	110183	9808.54
Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers	Female	1112	
Broadcast & sound engineering technicians & radio operators, & media & communication equipment workers, all other	Male	3135	NA
Budget analysts	Male	1129	77.7953
Budget analysts	Female	635	
Bus & truck mechanics & diesel engine specialists	Male	14481	NA
Business operations specialists, all other	Male	2381	143.705

Construction Occupations	Gender	Number of people	Percentage difference
Business operations specialists, all other	Female	977	
Cabinetmakers & bench carpenters	Male	740	NA
Carpenters	Male	786382	8028.82
Carpenters	Female	9674	
Carpet, floor, & tile installers & finishers	Male	97022	3826.43
Carpet, floor, & tile installers & finishers	Female	2471	
Cement masons, concrete finishers, & terrazzo workers	Male	49980	NA
Chemical technicians	Male	523	NA
Chief executives & legislators	Male	73177	536.82
Chief executives & legislators	Female	11491	
Civil engineers	Male	59110	554.234
Civil engineers	Female	9035	
Cleaners of vehicles & equipment	Male	2652	NA
Compliance officers	Male	1654	76.1448
Compliance officers	Female	939	
Computer & information systems managers	Male	4759	680.164
Computer & information systems managers	Female	610	
Computer control programmers & operators	Male	616	NA
Computer network architects	Male	830	NA
Computer operators	Female	469	NA
Computer programmers	Male	2742	352.475
Computer programmers	Female	606	
Computer support specialists	Male	3243	158.612
Computer support specialists	Female	1254	
Computer systems analysts	Male	1316	86.9318
Computer systems analysts	Female	704	

Construction Occupations	Gender	Number of people	Percentage difference
Computer, automated teller, & office machine repairers	Male	1753	NA
Construction & building inspectors	Male	22746	928.765
Construction & building inspectors	Female	2211	
Construction equipment operators except paving, surfacing, & tamping equipment operators	Male	236975	3777.84
Construction equipment operators except paving, surfacing, & tamping equipment operators	Female	6111	
Construction laborers	Male	1360902	3302.17
Construction laborers	Female	40001	
Construction managers	Male	437498	1096.49
Construction managers	Female	36565	
Control & valve installers & repairers	Male	1053	NA
Conveyor operators & tenders, & hoist & winch operators	Male	4513	NA
Correspondence clerks & order clerks	Male	638	NA
Cost estimators	Male	63818	677.131
Cost estimators	Female	8212	
Couriers & messengers	Male	714	NA
Crane & tower operators	Male	21690	NA
Crossing guards	Male	7463	119.113
Crossing guards	Female	3406	
Crushing, grinding, polishing, mixing, & blending workers	Male	3348	NA
Customer service representatives	Male	7204	-48.762
Customer service representatives	Female	14060	
Cutting workers	Male	2947	NA
Data entry keyers	Male	1031	-72.21
Data entry keyers	Female	3710	

Construction Occupations	Gender	Number of people	Percentage difference
Database administrators	Male	436	-41.633
Database administrators	Female	747	
Derrick, rotary drill, & service unit operators, & roustabouts, oil, gas, & mining	Male	411	NA
Designers	Male	11894	44.4498
Designers	Female	8234	
Dispatchers	Male	2864	-57.526
Dispatchers	Female	6743	
Drafters	Male	10287	533.826
Drafters	Female	1623	
Dredge, excavating, & loading machine operators	Male	18605	NA
Driver/sales workers & truck drivers	Male	183960	3796.63
Driver/sales workers & truck drivers	Female	4721	
Drywall installers, ceiling tile installers, & tapers	Male	120067	2738.46
Drywall installers, ceiling tile installers, & tapers	Female	4230	
Earth drillers, except oil & gas	Male	16222	NA
Electric motor, power tool, & related repairers	Male	1819	NA
Electrical & electronics engineers	Male	4311	NA
Electrical powerline installers & repairers	Male	18703	NA
Electrical, electronics, & electromechanical assemblers	Male	794	NA
Electricians	Male	493768	5275.81
Electricians	Female	9185	
Electronic home entertainment equipment installers & repairers	Male	7620	NA
Elevator installers & repairers	Male	18550	NA
Engineering technicians, except drafters	Male	12103	983.527
Engineering technicians, except drafters	Female	1117	

Construction Occupations	Gender	Number of people	Percentage difference
Environmental engineers	Male	799	NA
Environmental scientists & geoscientists	Male	735	NA
Explosives workers, ordnance handling experts, & blasters	Male	791	NA
Fence erectors	Male	21202	NA
File clerks	Male	1837	-66.466
File clerks	Female	5478	
Financial analysts	Male	905	NA
Financial managers	Male	5387	-58.546
Financial managers	Female	12995	
Fire inspectors	Male	720	NA
Firstline supervisors of construction trades & extraction workers	Male	557383	2837.77
Firstline supervisors of construction trades & extraction workers	Female	18973	
Firstline supervisors of housekeeping & janitorial workers	Male	455	NA
Firstline supervisors of landscaping, lawn service, & groundskeeping workers	Male	857	NA
Firstline supervisors of mechanics, installers, & repairers	Male	7425	NA
Firstline supervisors of nonretail sales workers	Male	3773	352.941
Firstline supervisors of nonretail sales workers	Female	833	
Firstline supervisors of office & administrative support workers	Male	9035	-70.654
Firstline supervisors of office & administrative support workers	Female	30788	
Firstline supervisors of production & operating workers	Male	4313	NA
Firstline supervisors of retail sales workers	Male	3671	361.761
Firstline supervisors of retail sales workers	Female	795	
General & operations managers	Male	32040	824.409
General & operations managers	Female	3466	
Glaziers	Male	22030	6678.46

Construction Occupations	Gender	Number of people	Percentage difference
Glaziers	Female	325	
Grounds maintenance workers	Male	16357	2143.76
Grounds maintenance workers	Female	729	
Hazardous materials removal workers	Male	3390	346.64
Hazardous materials removal workers	Female	759	
Heating, air conditioning, & refrigeration mechanics & installers	Male	257237	16969.5
Heating, air conditioning, & refrigeration mechanics & installers	Female	1507	
Heavy vehicle & mobile equipment service technicians & mechanics	Male	55992	NA
Helpers, construction trades	Male	33818	1807.39
Helpers, construction trades	Female	1773	
Helpers installation, maintenance, & repair workers	Male	2931	NA
Helpers production workers	Male	4205	NA
Highway maintenance workers	Male	95229	3578.22
Highway maintenance workers	Female	2589	
Home appliance repairers	Male	1709	NA
Human resources managers	Male	7402	45.9385
Human resources managers	Female	5072	
Human resources workers	Male	3356	-68.023
Human resources workers	Female	10495	
Industrial & refractory machinery mechanics	Male	3808	NA
Industrial engineers, including health & safety	Male	2344	NA
Industrial production managers	Male	8209	526.163
Industrial production managers	Female	1311	
Industrial truck & tractor operators	Male	13524	NA
Inspectors, testers, sorters, samplers, & weighers	Male	12293	527.194
Inspectors, testers, sorters, samplers, & weighers	Female	1960	

Construction Occupations	Gender	Number of people	Percentage difference
Insulation workers	Male	33321	2046.97
Insulation workers	Female	1552	
Janitors & building cleaners	Male	13106	172.531
Janitors & building cleaners	Female	4809	
Laborers & freight, stock, & material movers, hand	Male	24595	963.338
Laborers & freight, stock, & material movers, hand	Female	2313	
Lawyers, & judges, magistrates, & other judicial workers	Male	2344	53.2026
Lawyers, & judges, magistrates, & other judicial workers	Female	1530	
Lifeguards & other recreational, & all other protective service workers	Male	470	NA
Logging workers	Male	1201	NA
Logisticians	Male	947	NA
Machine tool cutting setters, operators, & tenders, metal & plastic	Male	2593	NA
Machinists	Male	1394	NA
Maids & housekeeping cleaners	Male	1136	-43.984
Maids & housekeeping cleaners	Female	2028	
Maintenance & repair workers, general	Male	8246	NA
Maintenance workers, machinery	Male	442	NA
Management analysts	Male	2537	106.596
Management analysts	Female	1228	
Market research analysts & marketing specialists	Male	782	-33.729
Market research analysts & marketing specialists	Female	1180	
Marketing & sales managers	Male	13178	59.2123
Marketing & sales managers	Female	8277	
Mechanical engineers	Male	3664	NA
Millwrights	Male	10221	NA
Mining machine operators	Male	600	NA

Construction Occupations	Gender	Number of people	Percentage difference
Miscellaneous agricultural workers, including animal breeders	Male	1611	NA
Miscellaneous assemblers & fabricators	Male	6841	1125.99
Miscellaneous assemblers & fabricators	Female	558	
Miscellaneous community & social service specialists, including health educators & community health workers	Male	979	NA
Miscellaneous construction workers, including solar photovoltaic installers, septic tank servicers & sewer pipe cleaners	Male	32686	3403.32
Miscellaneous construction workers, including solar photovoltaic installers, septic tank servicers & sewer pipe cleaners	Female	933	
Miscellaneous engineers, including nuclear engineers	Male	1788	NA
Miscellaneous extraction workers, including roof bolters & helpers	Male	1780	NA
Miscellaneous installation, maintenance, & repair workers, including wind turbine service technicians	Male	25370	NA
Miscellaneous life, physical, & social science technicians, including social science research assistants	Male	939	NA
Miscellaneous managers	Male	289379	590.082
Miscellaneous managers	Female	41934	
Miscellaneous material moving workers, including mine shuttle car operators, & tank car, truck, & ship loaders	Male	416	NA
Miscellaneous office & administrative support workers, including desktop publishers	Male	3623	-55.294
Miscellaneous office & administrative support workers, including desktop publishers	Female	8104	
Miscellaneous plant & system operators	Male	1828	NA
Miscellaneous production workers, including semiconductor processors	Male	9782	1646.79
Miscellaneous production workers, including semiconductor processors	Female	560	
Miscellaneous transportation workers, including bridge & lock tenders & traffic technicians	Male	2943	NA
Miscellaneous woodworkers, including model makers & patternmakers	Male	937	NA

Construction Occupations	Gender	Number of people	Percentage difference
Molders, shapers, & casters, except metal & plastic	Male	1720	NA
Motor vehicle operators, all other	Male	827	NA
Network & computer systems administrators	Male	1884	NA
Office clerks, general	Male	9552	-78.367
Office clerks, general	Female	44154	
Other Computer Occupations	Male	4400	314.313
Other Computer Occupations	Female	1062	
Other financial clerks	Male	574	111.808
Other financial clerks	Female	271	
Other healthcare practitioners & technical Occupations	Male	4297	NA
Other healthcare practitioners & technical Occupations	Female	958	NA
Other Sales Workers	Male	1202	NA
Other teachers & instructors	Male	1364	NA
Painters & paperhangers	Male	361623	1765.48
Painters & paperhangers	Female	19385	
Painting workers	Male	4697	NA
Paralegals & legal assistants	Female	1456	NA
Paving, surfacing, & tamping equipment operators	Male	12208	NA
Payroll & timekeeping clerks	Male	900	-91.497
Payroll & timekeeping clerks	Female	10585	
Personal financial advisors	Male	479	NA
Pipelayers, plumbers, pipefitters, & steamfitters	Male	389276	8869.49
Pipelayers, plumbers, pipefitters, & steamfitters	Female	4340	
Plasterers & stucco masons	Male	31033	NA
Precision instrument & equipment repairers	Male	641	NA
Procurement clerks	Male	1002	72.1649

Construction Occupations	Gender	Number of people	Percentage difference
Procurement clerks	Female	582	
Production, planning, & expediting clerks	Male	5166	32.9046
Production, planning, & expediting clerks	Female	3887	
Property, real estate, & community association managers	Male	2237	76.9778
Property, real estate, & community association managers	Female	1264	
Pumping station operators	Male	1664	NA
Purchasing agents, except wholesale, retail, & farm products	Male	5241	20.3444
Purchasing agents, except wholesale, retail, & farm products	Female	4355	
Purchasing managers	Male	4811	-2.4138
Purchasing managers	Female	4930	
Radio & telecommunications equipment installers & repairers	Male	7902	NA
Railroad conductors & yardmasters	Male	1340	NA
Railtrack laying & maintenance equipment operators	Male	1457	NA
Real estate brokers & sales agents	Male	1937	56.0838
Real estate brokers & sales agents	Female	1241	
Receptionists & information clerks	Male	1677	-90.179
Receptionists & information clerks	Female	17075	
Refuse & recyclable material collectors	Male	629	NA
Retail salespersons	Male	877	NA
Roofers	Male	179239	7848.51
Roofers	Female	2255	
Sailors & marine oilers, & ship engineers	Male	1211	NA
Sales representatives, services, all other	Male	66139	305.388
Sales representatives, services, all other	Female	16315	
Sales representatives, wholesale & manufacturing	Male	2375	NA
Sawing machine setters, operators, & tenders, wood	Male	705	NA

Construction Occupations	Gender	Number of people	Percentage difference
Secretaries & administrative assistants	Male	9145	-94.75
Secretaries & administrative assistants	Female	174175	
Security & fire alarm systems installers	Male	5545	NA
Security guards & gaming surveillance officers	Male	2205	11.3074
Security guards & gaming surveillance officers	Female	1981	
Sheet metal workers	Male	47630	3784.99
Sheet metal workers	Female	1226	
Ship & boat captains & operators	Male	377	NA
Shipping, receiving, & traffic clerks	Male	3094	NA
Software developers, applications & systems software	Male	2611	55.6947
Software developers, applications & systems software	Female	1677	
Stationary engineers & boiler operators	Male	2765	NA
Stock clerks & order fillers	Male	5130	276.1
Stock clerks & order fillers	Female	1364	
Structural iron & steel workers	Male	41917	4779.74
Structural iron & steel workers	Female	859	
Structural metal fabricators & fitters	Male	1835	NA
Supervisors of transportation & material moving workers	Male	1027	NA
Surveying & mapping technicians	Male	7464	1017.37
Surveying & mapping technicians	Female	668	
Surveyors, cartographers, & photogrammetrists	Male	2194	NA
Taxi drivers & chauffeurs	Male	227	NA
Telecommunications line installers & repairers	Male	18124	NA
Training & development managers	Male	862	NA
Training & development specialists	Male	664	-0.5988
Training & development specialists	Female	668	

Construction Occupations	Gender	Number of people	Percentage difference
Transportation, storage, & distribution managers	Male	10262	1195.71
Transportation, storage, & distribution managers	Female	792	
Water & wastewater treatment plant & system operators	Male	1056	NA
Web developers	Female	1543	NA
Weighers, measurers, checkers, & samplers, recordkeeping	Male	1858	NA
Welding, soldering, & brazing workers	Male	88964	NA
Word processors & typists	Male	1209	-83.25
Word processors & typists	Female	7218	

APPENDIX VII. List of Construction Occupations – Employment Analysis for Top 10 Occupations by Gender

Note: The construction trades used for analysis is highlighted in orange

Construction Occupations	Gender	Average Wage	Percentage difference
Accountants & auditors	Male	84082.9	57.66115272
Accountants & auditors	Female	53331.4	
Administrative services managers	Male	50134.4	-8.770078193
Administrative services managers	Female	54953.9	
Appraisers & assessors of real estate	Male	38409.7	NA
Architects, except naval	Male	79351.2	63.94367943
Architects, except naval	Female	48401.5	
Architectural & engineering managers	Male	140801	NA
Automotive & watercraft service attendants-	Male	60624.5	NA
Automotive service technicians & mechanics	Male	42892.9	NA
Billing & posting clerks	Male	36424.5	4.131288701
Billing & posting clerks	Female	34979.4	
Biological scientists	Male	90582	21.50177058
Biological scientists	Female	74552	
Boilermakers	Male	61604.5	NA
Bookkeeping, accounting, & auditing clerks	Male	44821.9	30.20991901
Bookkeeping, accounting, & auditing clerks	Female	34422.8	
Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers	Male	35526.5	-2.315996129
Brickmasons, blockmasons, stonemasons, & reinforcing iron & rebar workers	Female	36368.8	
Broadcast & sound engineering technicians & radio operators, & media & communication equipment workers, all other	Male	56806.4	NA
Budget analysts	Male	72813.8	34.01740424
Budget analysts	Female	54331.6	
Bus & truck mechanics & diesel engine specialists	Male	43896.1	NA
Business operations specialists, all other	Male	58472.7	36.9752978
Business operations specialists, all other	Female	42688.5	
Cabinetmakers & bench carpenters	Male	41177.7	NA
Carpenters	Male	36287.2	6.071598738
Carpenters	Female	34210.1	
Carpet, floor, & tile installers & finishers	Male	32437	34.80143624
Carpet, floor, & tile installers & finishers	Female	24062.8	
Cement masons, concrete finishers, & terrazzo workers	Male	35695.4	NA
Chemical technicians	Male	25773.6	NA

Construction Occupations	Gender	Average Wage	Percentage difference
Chief executives & legislators	Male	145194	86.33081246
Chief executives & legislators	Female	77922.7	
Civil engineers	Male	76604.8	8.1356382
Civil engineers	Female	70841.4	
Cleaners of vehicles & equipment	Male	32351.1	NA
Compliance officers	Male	84783.6	70.96983654
Compliance officers	Female	49589.8	
Computer & information systems managers	Male	77559.8	-23.81533324
Computer & information systems managers	Female	101805	
Computer control programmers & operators	Male	36388.1	NA
Computer network architects	Male	98419.4	NA
Computer operators	Female	45718.7	NA
Computer programmers	Male	79502.6	105.3858415
Computer programmers	Female	38708.9	
Computer support specialists	Male	54342.9	2.421303399
Computer support specialists	Female	53058.2	
Computer systems analysts	Male	66255.4	67.80443575
Computer systems analysts	Female	39483.7	
Computer, automated teller, & office machine repairers	Male	29674.1	NA
Construction & building inspectors	Male	55698.3	3.909892262
Construction & building inspectors	Female	53602.5	
Construction equipment operators except paving, surfacing, & tamping equipment operators	Male	47313.1	0.363158888
Construction equipment operators except paving, surfacing, & tamping equipment operators	Female	47141.9	
Construction laborers	Male	32932.7	17.76272738
Construction laborers	Female	27965.3	
Construction managers	Male	79454.8	32.98430897
Construction managers	Female	59747.5	
Control & valve installers & repairers	Male	37935.1	NA
Conveyor operators & tenders, & hoist & winch operators	Male	43342.8	NA
Correspondence clerks & order clerks	Male	45306.4	NA
Cost estimators	Male	71300.5	46.42563766
Cost estimators	Female	48694	

Construction Occupations	Gender	Average Wage	Percentage difference
Couriers & messengers	Male	24543.3	NA
Crane & tower operators	Male	63948.9	NA
Crossing guards	Male	31432.1	39.99875288
Crossing guards	Female	22451.7	
Crushing, grinding, polishing, mixing, & blending workers	Male	31300.5	NA
Customer service representatives	Male	42470.2	15.75005519
Customer service representatives	Female	36691.3	
Cutting workers	Male	23405.9	NA
Data entry keyers	Male	33252.9	39.96211882
Data entry keyers	Female	23758.5	
Database administrators	Male	78266.2	-6.590761262
Database administrators	Female	83788.5	
Derrick, rotary drill, & service unit operators, & roustabouts, oil, gas, & mining	Male	30154.4	NA
Designers	Male	61517.5	11.34570518
Designers	Female	55249.1	
Dispatchers	Male	44442.3	50.41527902
Dispatchers	Female	29546.4	
Drafters	Male	50216	46.52450732
Drafters	Female	34271.4	
Dredge, excavating, & loading machine operators	Male	34486.4	NA
Driver/sales workers & truck drivers	Male	39209.4	19.26196972
Driver/sales workers & truck drivers	Female	32876.7	
Drywall installers, ceiling tile installers, & tapers	Male	31750.7	44.8665888
Drywall installers, ceiling tile installers, & tapers	Female	21917.2	
Earth drillers, except oil & gas	Male	54719.4	NA
Electric motor, power tool, & related repairers	Male	55689	NA
Electrical & electronics engineers	Male	85229.1	NA
Electrical powerline installers & repairers	Male	47185.4	NA
Electrical, electronics, & electromechanical assemblers	Male	40545.1	NA
Electricians	Male	48200.7	13.05641949
Electricians	Female	42634.2	
Electronic home entertainment equipment installers & repairers	Male	38606.5	NA

Construction Occupations	Gender	Average Wage	Percentage difference
Elevator installers & repairers	Male	79801.7	NA
Engineering technicians, except drafters	Male	45309.4	-28.40465573
Engineering technicians, except drafters	Female	63285.4	
Environmental engineers	Male	70449.4	NA
Environmental scientists & geoscientists	Male	101283	NA
Explosives workers, ordnance handling experts, & blasters	Male	45739.7	NA
Fence erectors	Male	27959.4	NA
File clerks	Male	17967.1	-16.33831411
File clerks	Female	21475.9	
Financial analysts	Male	63535.5	NA
Financial managers	Male	86418.3	23.17475566
Financial managers	Female	70159.1	
Fire inspectors	Male	51020	NA
Firstline supervisors of construction trades & extraction workers	Male	61946.6	18.26835694
Firstline supervisors of construction trades & extraction workers	Female	52378	
Firstline supervisors of housekeeping & janitorial workers	Male	35000.2	NA
Firstline supervisors of landscaping, lawn service, & groundskeeping workers	Male	50047.4	NA
Firstline supervisors of mechanics, installers, & repairers	Male	70595	NA
Firstline supervisors of nonretail sales workers	Male	60482.9	31.56579279
Firstline supervisors of nonretail sales workers	Female	45971.6	
Firstline supervisors of office & administrative support workers	Male	60952.8	53.81866634
Firstline supervisors of office & administrative support workers	Female	39626.4	
Firstline supervisors of production & operating workers	Male	53913.7	NA
Firstline supervisors of retail sales workers	Male	65879.1	42.36618951
Firstline supervisors of retail sales workers	Female	46274.4	
General & operations managers	Male	98142.2	44.78411217
General & operations managers	Female	67785.2	
Glaziers	Male	39249.8	114.2304312
Glaziers	Female	18321.3	
Grounds maintenance workers	Male	24046.8	-18.6621612

Construction Occupations	Gender	Average Wage	Percentage difference
Grounds maintenance workers	Female	29564.1	
Hazardous materials removal workers	Male	48114.7	6.868596229
Hazardous materials removal workers	Female	45022.3	
Heating, air conditioning, & refrigeration mechanics & installers	Male	42899.9	23.65221652
Heating, air conditioning, & refrigeration mechanics & installers	Female	34694	
Heavy vehicle & mobile equipment service technicians & mechanics	Male	49043.3	NA
Helpers, construction trades	Male	26138.3	9.811409534
Helpers, construction trades	Female	23802.9	
Helpersinstallation, maintenance, & repair workers	Male	20555.2	NA
Helpersproduction workers	Male	31661.5	NA
Highway maintenance workers	Male	40005.1	37.77046922
Highway maintenance workers	Female	29037.5	
Home appliance repairers	Male	57617.6	NA
Human resources managers	Male	80695.5	16.86142243
Human resources managers	Female	69052.3	
Human resources workers	Male	53182.1	-9.141680761
Human resources workers	Female	58533	
Industrial & refractory machinery mechanics	Male	52292.4	NA
Industrial engineers, including health & safety	Male	56003.3	NA
Industrial production managers	Male	73644.9	2.061748516
Industrial production managers	Female	72157.2	
Industrial truck & tractor operators	Male	33366	NA
Inspectors, testers, sorters, samplers, & weighers	Male	54746.7	27.88058154
Inspectors, testers, sorters, samplers, & weighers	Female	42810.8	
Insulation workers	Male	37550.2	90.54438062
Insulation workers	Female	19706.8	
Janitors & building cleaners	Male	24112.6	9.593760511
Janitors & building cleaners	Female	22001.8	
Laborers & freight, stock, & material movers, hand	Male	26807.7	62.88849596
Laborers & freight, stock, & material movers, hand	Female	16457.7	
Lawyers, & judges, magistrates, & other judicial workers	Male	147538	11.40913244
Lawyers, & judges, magistrates, & other judicial	Female	132429	

Construction Occupations	Gender	Average Wage	Percentage difference
workers			
Lifeguards & other recreational, & all other protective service workers	Male	25444.9	NA
Logging workers	Male	24903.4	NA
Logisticians	Male	55559.1	NA
Machine tool cutting setters, operators, & tenders, metal & plastic	Male	35437.3	NA
Machinists	Male	39084.8	NA
Maids & housekeeping cleaners	Male	22471.4	-3.955652245
Maids & housekeeping cleaners	Female	23396.9	
Maintenance & repair workers, general	Male	32170.1	NA
Maintenance workers, machinery	Male	44993.5	NA
Management analysts	Male	93919.7	30.43370178
Management analysts	Female	72005.7	
Market research analysts & marketing specialists	Male	270117	270.8258971
Market research analysts & marketing specialists	Female	72842	
Marketing & sales managers	Male	101536	43.0535831
Marketing & sales managers	Female	70977.6	
Mechanical engineers	Male	108624	NA
Millwrights	Male	57492	NA
Mining machine operators	Male	65680.9	NA
Miscellaneous agricultural workers, including animal breeders	Male	26653.1	NA
Miscellaneous assemblers & fabricators	Male	34506	-42.06601982
Miscellaneous assemblers & fabricators	Female	59560.9	
Miscellaneous community & social service specialists, including health educators & community health workers	Male	68475.6	NA
Miscellaneous construction workers, including solar photovoltaic installers, septic tank servicers & sewer pipe cleaners	Male	35815.3	21.36254278
Miscellaneous construction workers, including solar photovoltaic installers, septic tank servicers & sewer pipe cleaners	Female	29511	
Miscellaneous engineers, including nuclear engineers	Male	83177.8	NA
Miscellaneous extraction workers, including roof bolters & helpers	Male	97290.2	NA

Construction Occupations	Gender	Average Wage	Percentage difference
Miscellaneous installation, maintenance, & repair workers, including wind turbine service technicians	Male	41774.1	NA
Miscellaneous life, physical, & social science technicians, including social science research assistants	Male	59499	NA
Miscellaneous managers	Male	88344.7	42.65873048
Miscellaneous managers	Female	61927.3	
Miscellaneous material moving workers, including mine shuttle car operators, & tank car, truck, & ship loaders	Male	52402.7	NA
Miscellaneous office & administrative support workers, including desktop publishers	Male	60000.2	81.85626129
Miscellaneous office & administrative support workers, including desktop publishers	Female	32993.2	
Miscellaneous plant & system operators	Male	50299	NA
Miscellaneous production workers, including semiconductor processors	Male	42562.3	22.73927964
Miscellaneous production workers, including semiconductor processors	Female	34677	
Miscellaneous transportation workers, including bridge & lock tenders & traffic technicians	Male	54215.4	NA
Miscellaneous woodworkers, including model makers & patternmakers	Male	26164.7	NA
Molders, shapers, & casters, except metal & plastic	Male	23734	NA
Motor vehicle operators, all other	Male	35597.5	NA
Network & computer systems administrators	Male	71863.5	NA
Office clerks, general	Male	41729.1	43.07397972
Office clerks, general	Female	29166.1	
Other Computer Occupations	Male	62622.4	-27.5283389
Other Computer Occupations	Female	86409.5	
Other financial clerks	Male	109830	-49.77730627
Other financial clerks	Female	218686	
Other healthcare practitioners & technical Occupations	Male	75856.8	86.71294074
Other healthcare practitioners & technical Occupations	Female	40627.5	
Other Sales Workers	Male	64065.1	NA
Other teachers & instructors	Male	58136.1	NA
Painters & paperhangers	Male	28688.9	0.628205038

Construction Occupations	Gender	Average Wage	Percentage difference
Painters & paperhangers	Female	28509.8	
Painting workers	Male	40017.4	NA
Paralegals & legal assistants	Female	63863.6	NA
Paving, surfacing, & tamping equipment operators	Male	31233	NA
Payroll & timekeeping clerks	Male	54792.9	41.36965731
Payroll & timekeeping clerks	Female	38758.6	
Personal financial advisors	Male	108203	NA
Pipelayers, plumbers, pipefitters, & steamfitters	Male	45681.1	-3.313056656
Pipelayers, plumbers, pipefitters, & steamfitters	Female	47246.4	
Plasterers & stucco masons	Male	29841.8	NA
Precision instrument & equipment repairers	Male	64786.9	NA
Procurement clerks	Male	123699	178.4201274
Procurement clerks	Female	44428.9	
Production, planning, & expediting clerks	Male	67384.5	76.32905231
Production, planning, & expediting clerks	Female	38215.2	
Property, real estate, & community association managers	Male	118109	144.9667422
Property, real estate, & community association managers	Female	48214.3	
Pumping station operators	Male	59760.5	NA
Purchasing agents, except wholesale, retail, & farm products	Male	45255.9	-14.88532175
Purchasing agents, except wholesale, retail, & farm products	Female	53170.5	
Purchasing managers	Male	79532.9	46.55309661
Purchasing managers	Female	54269	
Radio & telecommunications equipment installers & repairers	Male	40758.5	NA
Railroad conductors & yardmasters	Male	46707.5	NA
Railtrack laying & maintenance equipment operators	Male	45949.6	NA
Real estate brokers & sales agents	Male	100376	44.75957531
Real estate brokers & sales agents	Female	69339.8	
Receptionists & information clerks	Male	35971.9	40.12332694
Receptionists & information clerks	Female	25671.6	
Refuse & recyclable material collectors	Male	33497.1	NA
Retail salespersons	Male	28998.3	NA
Roofers	Male	29644.1	17.028811

Construction Occupations	Gender	Average Wage	Percentage difference
Roofers	Female	25330.6	
Sailors & marine oilers, & ship engineers	Male	64174.3	NA
Sales representatives, services, all other	Male	70022	15.65855109
Sales representatives, services, all other	Female	60542	
Sales representatives, wholesale & manufacturing	Male	69037.9	NA
Sawing machine setters, operators, & tenders, wood	Male	34647.4	NA
Secretaries & administrative assistants	Male	47614.1	46.60100312
Secretaries & administrative assistants	Female	32478.7	
Security & fire alarm systems installers	Male	53418.3	NA
Security guards & gaming surveillance officers	Male	23307.8	3.910729093
Security guards & gaming surveillance officers	Female	22430.6	
Sheet metal workers	Male	40433	9.634245212
Sheet metal workers	Female	36879.9	
Ship & boat captains & operators	Male	99802.4	NA
Shipping, receiving, & traffic clerks	Male	42725.3	NA
Software developers, applications & systems software	Male	96777.1	19.5285164
Software developers, applications & systems software	Female	80965.7	
Stationary engineers & boiler operators	Male	67674.4	NA
Stock clerks & order fillers	Male	34266.8	16.72565377
Stock clerks & order fillers	Female	29356.7	
Structural iron & steel workers	Male	49837.1	17.64076877
Structural iron & steel workers	Female	42363.8	
Structural metal fabricators & fitters	Male	34812.9	NA
Supervisors of transportation & material moving workers	Male	83040.6	NA
Surveying & mapping technicians	Male	51297.3	54.42342543
Surveying & mapping technicians	Female	33218.6	
Surveyors, cartographers, & photogrammetrists	Male	80284.6	NA
Taxi drivers & chauffeurs	Male	23748	NA
Telecommunications line installers & repairers	Male	42459.3	NA
Training & development managers	Male	85182.9	NA
Training & development specialists	Male	88878.8	33.60391197
Training & development specialists	Female	66524.1	
Transportation, storage, & distribution managers	Male	50363.6	-

Construction Occupations	Gender	Average Wage	Percentage difference
Transportation, storage, & distribution managers	Female	60623.9	16.92451327
Water & wastewater treatment plant & system operators	Male	47257	NA
Web developers	Female	24324	NA
Weighers, measurers, checkers, & samplers, recordkeeping	Male	43726.9	NA
Welding, soldering, & brazing workers	Male	49062.5	NA
Word processors & typists	Male	22172.2	-44.93020714
Word processors & typists	Female	40262	

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