

# Study of Construction Industry Workforce: Measuring Employee Satisfaction for Construction Career Insight

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The construction industry's workforce will have a major shortage of skilled labor due to the retirement of baby boomers and the lack of new talent entering the industry to replace these baby boomers. Research indicates a lack of awareness among young adults regarding compensation and job satisfaction in the construction industry as a contributing source for the skilled labor shortage. The purpose of this study is to gain insight from construction employees among various job functions regarding job satisfaction, compensation satisfaction, work hours per week, recommending a career in construction and fulfillment in their line of work and correlation between various factors. To achieve this, the researchers developed and distributed a nine-question survey to project managers, project executives, superintendent, field personnel and office admin employees. The results demonstrated that the respondents are satisfied with their current job functions, neither satisfied nor dissatisfied with compensation, recommend a career in construction, and agree that their work in the construction industry is fulfilling. The study also revealed that total annual income had a positive linear relationship with job satisfaction whereas work hours per week did not have any correlation with the job satisfaction.

**Key Words:** Career, Construction, Satisfaction, Workforce

## Introduction

Construction industry has contributed to 4.49% of the economy in the United States, resulting in \$1.3 trillion towards the national gross domestic product (GDP) (U.S. Census Bureau, 2017). Between 1998-2012, the average GDP was 4.4%, topping out at 5.1% between 2005 and 2006 (U.S. Dept. of Commerce, 2013). Reports indicate a rise in construction spending with predicted growth rates averaging 7.8% through the year 2020 (Becker et al., 2014). Between 2004-2014, 837,800 construction jobs were lost and although the Bureau of Labor Statistics projects 790,400 new construction jobs by 2024 the industry faces a deficit (Bureau of Labor Statistics, 2017; Seresht, 2015).

This shows that the construction industry faces an impending crisis: the demand for construction increases while the amount of qualified skilled workers declines. In an industry where labor costs account for 30% to 50% of the total project cost it is imperative to have adequate influx of high quality workers (Karimi et. al, 2018). Performance of a project is also impacted by the availability of skilled craft labor in the construction industry (Karimi et. al., 2017). In 2015, the Associated General Contractors of America conducted an industry-wide survey in which over 1,300 firms participated and found that 86% of contractors had difficulty finding personnel to fill roles for qualified craft workers and salaried jobs. Among the most difficult hourly craft professional positions to fill are carpenters, sheet metal installers, and concrete workers. The most difficult salaried professional positions to fill include project managers/supervisors, estimating professionals, and engineers (AGC, 2015). Moreover, 82% of builders responded that the single most significant problem in 2017 is increased construction cost and the lack of availability of skilled labor (Chaluvadi, 2017). Taylor et. al (2016) also researched the North American construction companies and found that the skilled labor shortage had an impact on about 52% of the surveyed projects. This shortage is only compounded by a lack of education towards young adults to generate their interest in construction as a career path (Johnson, 2013).

In a recent poll of over 2,000 young adults (ages 18-25), it was found that only 3% had considered construction as their career path (Quint, 2017). One of the most important factors affecting a career choice in young adults is compensation and job satisfaction (Chileshe et al., 2009). According to Quint (2017), 87% of young adults have a misconception that construction positions in the form of trades and managers do not command high compensation. However, the notion that construction positions do not offer a high compensation conflicts with the study of Bureau

of Labor statistics. They reported an average annual salary of \$53,110 for construction equipment operators, \$55,770 for electricians, and \$98,320 for Construction managers and reported average yearly earnings for all construction employees at \$60,195 (Bureau of Labor Statistics, 2017). Nevertheless, with 7.23% of the nation's employment and between 4-7% of the nation's GDP there is a growing urgency within the construction industry to develop an effective and practical solution to attract young talent and retain existing talent into the construction industry. According to National Center for Construction Education and Research (NCCER), 41% of workforce in the construction industry will be retiring within the next couple of decades (Burris, 2017). To address this challenge, this study aims to understand and analyze the current employee's satisfaction in the construction industry in the state of Arizona with their job duties, compensation, work hours per week, meaning in their line of work and if they recommend a career in construction. The objective of this study is to give a better representation of the construction industry in the state of Arizona that can attract young talent and retain existing talent.

## Method

The research methodology included four phases as outlined in Figure 1.



Figure 1. Methodology Process Overview

### *Phase 1: Identification of Study Objectives*

The first phase was to identify the purpose of the study and its relevance to the construction industry. It was identified that gaining insight pertaining to careers in the construction industry from construction employees for the benefit of attracting future talent, retaining new and current construction employees was a key objective. This is in response to the growing shortage of skilled labor and talent in the construction workforce as identified earlier.

### *Phase 2: Contact List Development*

To have respondents that will reflect the variety of entities in the construction industry, general contractors and subcontractors were identified as the prime participants in the study. From the author's pool of resources, a total of 147 participants were contacted to be a part of this study. The response rate of 70% (103 out of 147 total participants) was achieved for this study. The participants consisted of different positions within the construction industry outlined in Table 1 that range from executive positions to the field personnel. However, it should be noted that five of the thirteen job titles had small number of respondents (less than 4).

Table 1  
Study Participants

Title	%	Total
Laborer/helper	1.94	2
Skilled trade (electrician, welder, concrete finisher, etc.)	4.85	5
Superintendent	13.59	14
Project Engineer	16.50	17
Project Manager	19.42	20
Administrative (Coordinator, Administrator, Support)	4.85	5
Construction Manager	1.94	2
Entry level (Intern/Assistant/Junior)	10.68	11
Estimating and Cost	1.94	2
Executive (President, Director, COO, Owner)	12.62	13
Managers (Virtual Construction, HR, Corporate, IT)	3.88	4
Materials Technician, Inspector, Supervisor	2.91	3
Sales and Marketing	4.85	5
<b>Total</b>	<b>100</b>	<b>103</b>

### *Phase 3: Distribution of Survey*

A nine-question electronic survey was distributed to the participants to collect the data and relevant information for the study. However, prior to the mass electronic distribution, ten individuals were selected from the list and surveyed via telephone as a pilot testing of survey to request additional insight and feedback from survey participants. Based on the lessons learned and feedback from pilot testing, the survey was modified and distributed to all the participants to collect the information listed below. The responses on the survey were recorded on a five-point scale with 1 being strongly disagree and 5 being strongly agree for Questions 1 to 5.

1. I am satisfied with my current job.
2. I am satisfied with my compensation (wages/salary/benefits).
3. I recommend a career in construction.
4. The work I do is meaningful.
5. What is your current job title?
6. What was your total income before taxes during the past 12 months?
7. How many hours do you typically work in one week?
8. What is the highest level of education you have completed?
9. How many years of experience do you have in the construction industry?

### *Phase 4: Analysis of Results*

The data collected was analyzed in relation to the objectives of the study to measure among various job functions within the construction industry as follows:

1. job, compensation satisfaction and work hours per week,
2. if survey participants recommend a career in construction,
3. if survey participants find meaning in their work, and
4. the correlation relationship between job satisfaction, compensation and total number of hours worked per week.

## **Results**

The analysis for this study has been broken down into four sections: survey results, correlation between total income and job satisfaction, correlation between number of work hours per week and job satisfaction and correlation between total income and number of work hours per week.

### *Survey Results*

A total of 103 participants responded to this study. A survey was distributed electronically to all the participants. Table 1 display the results of the survey regarding satisfaction of the job, compensation, career recommendation and meaning in their line of work.

Table 2  
Survey results

<b>Survey Question</b>	<b>Agree Or Strongly Agree (Score of 4 and 5)</b>	<b>Neither Agree Nor Disagree (Score of 3)</b>	<b>Disagree Or Strongly Disagree (Score of 1 and 2)</b>
1 – I am satisfied with my current job.	86.41%	7.77%	6.80%
2 – I am satisfied with my compensation (wages/salary, benefits, perks, etc.)	74.76%	14.56%	11.65%
3 – I recommend a career in construction.	86.41%	12.62	0.97%
4 – The work I do is meaningful.	94.17%	3.23%	2.91%

Job satisfaction resulted in an average score of 4.19 out of 5, based on a five-point scale. The categories with the highest values of job satisfaction are Executive (4.90), Administrative (4.80), and Skilled Trade (4.50). The categories of job titles with the lowest values of job satisfaction are Laborer/Helper (3.50), Estimating and Costing (3.50), and Construction Manager (3.50). With respect to job satisfaction, 86.41% of the respondents agree or strongly agree that they are satisfied with their current job.

Satisfaction with compensation resulted in an average score of 3.72 out of 5. The categories with the highest values of satisfaction with compensation are Executive (4.30), Skilled Trade (4.25), and Project Engineer (4.18). The categories with the lowest values of satisfaction with compensation are Laborer/Helper (3.00), Entry Level (3.39), and Construction Manager (3.50). Overall, 74.76% of the respondents answered the question as agree or strongly agree with compensation satisfaction.

For recommending a career in construction the scores resulted in an average score of 4.11 out of 5. The categories with the highest values of recommendation are Executive (4.70), Skilled Trade (4.50), Laborer/helper (4.50), and Administrative (4.40). The categories with the lowest values of construction career recommendation are Materials Technician / Inspector (3.33), Construction Manager (3.50), and Sales and Marketing (3.75). Overall, 86.41% of the respondents answered the question as agree or strongly agree for recommending a career in the construction industry.

Satisfaction with work as being meaningful resulted in an average score of 4.36 out of 5. The categories with the highest 'meaningful' scores are Administrative (5.00), Skilled Trade (4.75), Managers (4.75), and Executive (4.60). The categories with the lowest 'meaningful' scores are Construction Manager (3.50), Superintendent (3.93), and Laborer/helper (4.00). Overall, 94.17% of the respondents answered the question as agree or strongly agree regarding finding their line of work and job function as meaningful.

Table 3 and Table 4 outlines the compensation in the form of total income and number of work hours per week for the participants in the study.

Table 3  
Total income for the respondents

<b>Total Income</b>	<b>%</b>	<b>Count</b>
Less than \$25,000	3.88	4
\$25,000 - \$34,999	6.80	7
\$35,000 - \$49,999	9.71	10
\$50,000 - \$74,999	30.10	31
\$75,000 - \$99,999	17.48	18
\$100,000 - \$149,999	19.42	20
\$150,000 or more	3.88	4
Prefer not to disclose	8.74	9
<b>Total</b>	<b>100</b>	<b>103</b>

The median wage across all industry sectors in United States is \$50,620 (Bureau of Labor Statistics, 2018). 82 out of the 103 (79.6%) respondents reported their salaries as above this median salary. The average salary of all the respondents was \$79,436 which is 36% higher compared to the median salary in all industry sectors.

Table 4  
Average number of work hours per week

<b>Average # Of Hours Per Week</b>	<b>%</b>	<b>Count</b>
Less than 30	3.88	3
31-40	11.65	12
41-50	42.72	44
51-60	33.98	35
Over 60	8.74	9

**Total** **100** **103**

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79 out of 103 (76.6%) respondents reported an average of 41 to 60 hours per week. This is higher than the average work hours across other sectors in the US of 40.3 hours per week. The average of all the respondents was 48.9 hours per week (17.5% higher than the average work hours in other sectors). Sales and Marketing, Project Managers, and Superintendents reported the most hours per week with an average of 52.5 hours per week, with Entry level respondents reported a low of 37.94 hours per week.

Furthermore, the participants were also presented with an opportunity to provide additional feedback at the end of the survey. A total of 7 respondents provided the additional feedback as outlined in Appendix A.

### *Total Income vs Job Satisfaction*

To determine if there was a correlation between the level of job satisfaction and the total income of the respondents a scatter plot was plotted as shown in Figure 2. The scatterplot depicts the relationship between total income and the job satisfaction of the respondents.



Figure 2: Total income vs Job satisfaction

Upon performing ANOVA test, the results were found to be statistically significant with a p-value of 0.0036 at the 95% level. Furthermore, the correlation coefficient value of 0.297 suggests that there is a moderate positive relationship between total income and job satisfaction of the survey respondents.

### *Number of Work Hours per Week vs Job Satisfaction*

To determine if there was a correlation between the level of job satisfaction and the number of hours worked per week by respondents a scatter plot was plotted as shown in Figure 3. The scatterplot depicts the relationship between total income and the job satisfaction of the respondents.



Figure 3: Number of work hours per Week vs Job satisfaction

Upon performing ANOVA test, the results were not statistically significant with a p-value of 0.679 at the 95% level. Furthermore, the correlation coefficient value of 0.04 suggests that there is no positive or negative relationship between number of hours worked per week and the job satisfaction of the survey respondents.

### *Total Income vs Number of Work Hours per Week*

To determine if there was a correlation between the number of hours per week and the total income by respondents a scatter plot was plotted as shown in Figure 4. The scatterplot depicts the relationship between total number of hours per week and the total income of the respondents.

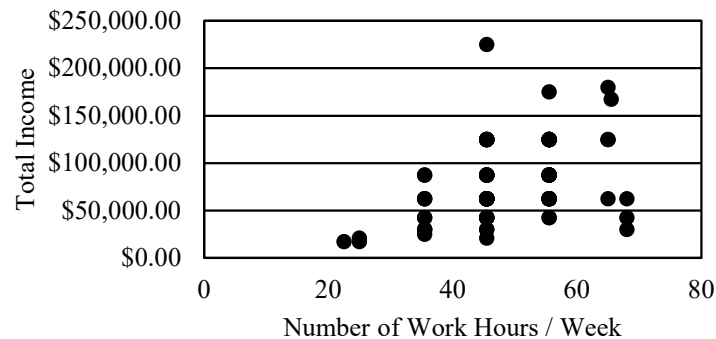


Figure 4: Number of work hours per week vs Total income

Upon performing ANOVA test, the results were statistically significant with a p-value of 0.000053 at the 95% level. Furthermore, the correlation coefficient value of 0.4 suggests that there is a moderate to high relationship between number of hours worked per week and the total income of the survey respondents.

## CONCLUSIONS

The objective of the study was to identify and analyze the satisfaction among the current employees in the construction industry in the state of Arizona that can be used to attract future talent and retain current talent. From the study it was identified that 86.41% of the employees surveyed in the construction industry in Arizona are satisfied with their current job and would recommend a career in the construction industry. With a shortage of workforce in the construction industry it is critical that the future workforce be educated regarding the current employee satisfaction in the field of construction management. In contrast to the misconception of the salary in the construction industry 74.76% of the respondents reported that they are satisfied with their current salary. The average salary of the respondents was \$79,436. Compensation is one of the most important aspects for a young professional to choose a specific career path. Educating the future workforce regarding the enticing compensation in the construction industry can attract future young talent.

Based on the study it is concluded that the construction industry offers a plethora of satisfying and well-paying career paths. The respondents did report an average work week of 48.9 hrs. per work week which is 8.6 hrs. more compared to the average work week of other sectors. However, along with satisfaction with job and compensation, 94.17% of the respondents also reported as finding the work that they perform to be meaningful. The respondents that provided an in-depth feedback about the construction industry is valuable in that the comments validate the results of the study and provides a more in-depth positive outlook on the construction industry as a career.

Out of the three correlation factors it was concluded that total income had a moderate positive relationship with the job satisfaction whereas total number of hours worked per week had neither positive nor negative relationship with the job satisfaction. It was also concluded that total numbers of hours per week had a moderate to strong positive relationship with the total income for the survey respondents.

Since this study was conducted in the state of Arizona, the results and conclusions are specific to that state and not applicable to the entire US construction industry. As future research, the author recommends similar studies for other states in the US with larger population sample and creation of a platform to communicate the results of the studies to young adults to educate them about the career in the construction industry.

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## Appendix A

### Additional Feedback

The respondents were also presented with an opportunity to provide additional feedback at the end of the survey. A total of 7 respondents (outlined in Table 6) provided the additional feedback.

Table 6  
Additional feedback

<b>Respondent #</b>	<b>Job Title</b>	<b>Hours Worked</b>	<b>Salary</b>	<b>Years of Experience</b>
1	Estimator	45.5	\$42,500	4
2	Project Manager	45.5	\$62,500	3
3	Field Coordinator	68	\$62,500	1
4	Estimating Intern	45.5	\$21,000	1.5
5	Project Engineer	68	\$62,500	3.5
6	Project Engineer	55.5	\$62,500	1.5
7	Laborer/helper	68	\$29,999	5

Below are the responses from the additional feedback from each participant.

1. Respondent #1: My job is a good job. You have stressful moments but at the end of the day you can take pride in your work because it is honest and if you do a project you can show your kids and tell them you worked on it.
2. Respondent #2: As a Project Manager I get a lot of freedom and am trusted so there is very little micromanagement. Still, you're not left alone. It is team-based, and I am a member of the team. There is a sense of pride in the work you do and things you accomplish. Companies give you perks, vehicle, phone, computer, paid-time off, and good benefits.
3. Respondent #3: I am satisfied but if I could tell someone new I would tell them to account for the number of hours worked especially since it won't be 40-50 for managers. Family life for me is lacking right now. I knew from the beginning there would be a lot of hours. It balances out because I have a passion for what I got myself into. It doesn't feel like I'm working but to me but to my family it does.
4. Respondent #4: It is a good career. You have many options – estimating, Project Management, field (Superintendent/Field Engineer), Virtual Design. The list goes on.
5. Respondent #5: People see it as just construction, but you are learning skills and business. It may not be the most appealing, but people don't understand. If you put in the work now it's up to you where you take it. If you are ambitious you can take your skills and move up in management and take other opportunities.
6. Respondent #6: It might be a good idea to take construction classes in college to be ready. Look ahead at the career map and into achieving what you can to get ahead in the industry. Get involved in various things which present more opportunities. Once you get in the industry, take everything and run with it. You need to want to learn.
7. Respondent #7: Starting off in labor serves as good experience. You can visualize the work and it will only help you in the future if you pursue a career in management. It also helps you connect with the people in the field as opposed to going straight into the office.