

POST HIGH SCHOOL ADULTS' PERCEPTIONS OF THE CONSTRUCTION  
INDUSTRY

By

SHANNON CLOSE

A THESIS PRESENTED TO THE GRADUATE SCHOOL  
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT  
OF THE REQUIREMENTS FOR THE DEGREE OF  
MASTER OF SCIENCE IN BUILDING CONSTRUCTION

UNIVERSITY OF FLORIDA

2011

© 2011 Shannon Close

To my mom, dad, and stepdad

## ACKNOWLEDGMENTS

I thank my parents for staying on me to continue on and finish this thesis. I would also like to thank my committee for helping and working with me with this process.

# TABLE OF CONTENTS

	<u>page</u>
ACKNOWLEDGMENTS.....	4
LIST OF TABLES.....	7
LIST OF FIGURES.....	8
ABSTRACT .....	9
CHAPTER	
1 INTRODUCTION .....	11
Statement of the Problem .....	11
Aim of Study .....	12
Hypotheses.....	12
Overview.....	13
2 LITERATURE REVIEW .....	15
Industry Numbers and Trends .....	15
Worker Shortage.....	16
Industry Image.....	17
Job Opportunities.....	18
3 RESEARCH METHODOLOGY.....	21
Survey Information.....	21
Analysis .....	22
4 ANALYSIS .....	23
Demographics.....	23
Analysis of Response Means.....	24
Statistical Analysis .....	26
Gender .....	26
Age.....	26
Education .....	27
Employment .....	27
High School vs. Post High School .....	27
5 CONCLUSIONS AND LIMITATIONS.....	35
Industry Image.....	35
Population Comparisons.....	35

High School vs. Post High School ..... 36  
Limitations..... 36  
Recommendations for Future Research ..... 37

APPENDIX

A INFORMED CONSENT AND SURVEY ..... 38  
B SURVEY RESULTS AND DESCRIPTIVE STATISTICS..... 40  
C MANN-WHITNEY TEST RESULTS..... 42  
LIST OF REFERENCES ..... 46  
BIOGRAPHICAL SKETCH..... 47

## LIST OF TABLES

<u>Table</u>	<u>page</u>
4-1	Response means of statements 1,9,10, and 15 ..... 32
4-2	Response means of statements 3,5,7,14, and 20 ..... 32
4-4	Response means of statements 6,8,11,13,16,17, and 18 ..... 32
4-5	Mann-Whitney results of significant statements based on gender..... 33
4-6	Mann-Whitney results of significant statements based on age ..... 33
4-7	Mann-Whitney results of significant statements based on education ..... 33
4-8	Mean responses of high school and post high school ..... 34
C-1	Mann-Whitney results of significant statements based on gender..... 42
C-2	Mann-Whitney results of significant statements based on age ..... 43
C-3	Mann-Whitney results of significant statements based on education ..... 44
C-4	Mann-Whitney results of significant statements based on employment ..... 45

## LIST OF FIGURES

<u>Figure</u>	<u>page</u>
4-1 Gender of survey participants.....	29
4-2 Age of survey participants .....	29
4-3 Education level of survey participants .....	30
4-4 Employment status of survey participants .....	30
4-5 Difference in means of statements .....	31

Abstract of Thesis Presented to the Graduate School  
of the University of Florida in Partial Fulfillment of the  
Requirements for the Degree of Master of Science in Building Construction

POST HIGH SCHOOL ADULTS' PERCEPTIONS OF THE CONSTRUCTION  
INDUSTRY

By

Shannon Close

May 2011

Chair: R. Edward Minchin Jr.  
Cochair: Ian Flood  
Major: Building Construction

Despite the recent recession, the construction industry remains a vital part of the nation's economy. As the current generation of workers grows older, the industry is beginning to face a lack of skilled workers. In addition to the growing need for workers, the industry has traditionally had a difficult time attracting younger workers to enlist in its trades due to stereotypes such as low wages and opportunities and the work taking place in a dirty and dangerous environment.

This study aimed to document the attitudes of post high school adults about the construction industry. Understanding the beliefs of this population could help construction companies and trade schools develop recruitment and training programs that attract this population. The study distributed a survey and the respondents' answers were analyzed statistically in order to determine general attitudes, differences in attitudes within the population, and differences between their attitudes and opinions and the attitudes and opinions of high school students.

The results of the study show that many of the traditional stereotypes connected with construction, such as a dirty work environment, still exist. However, post high

school adults are increasingly aware of the opportunities and competitive wages available in construction related jobs. Significant differences in responses were also found within the populations when looking at gender, age, and education level. Lastly, post high school adults were found to have higher opinions of the construction industry than students in high school.

## CHAPTER 1 INTRODUCTION

The construction industry touches every aspect of a person's life, from the home they live in to the roads they drive on and utilities that fuel daily life. The industry provides a large number of jobs to people throughout the country. Most of the time people do not realize the breadth of the industry and its importance to the country's economic health.

Skilled labor and craft professionals are the backbone of the industry. These jobs are vital to every construction project completed and ensure that critical components of our infrastructure are completed safely and successfully. Management positions, such as estimators and on-site managers, also greatly influence the industry. It is their expertise and supervision that guide and bring together the finished product. Recently, however, it has been seen that as many baby boomers begin to retire, a substantial shortage of workers will exist and put a strain on the industry.

### **Statement of the Problem**

The oncoming shortage of workers in the construction industry has the potential to greatly harm all industries. The potential for this shortage of workers has been noted by the industry in the 1980s (Whyte and Green 2006). However, the recession of 2008 has further worsened the problem. Construction unemployment has been as high as 15.8% (Goldman 2009) since the beginning of the recession. As the economy begins to rebuild, and stimulus ideas focused on increasing new construction and renovation are implemented, it may be difficult to fill the roles that will be needed. As mentioned, the potential slow growth of the industry in this case could also extend to other sectors such as manufacturing as well.

High school students are an ideal demographic to target for new workers, but young adults a few years removed from high school can also be vital to filling the expected gap. Many young adults choose not to attend college or a trade school and would be ideal for entering into the industry as craft professionals. Even many students currently in college do not know of opportunities in the field available with a degree. It is important to begin to determine how the job market may appear to people as the recession slowly begins to decline and industry levels begin to return to normal levels as well as how to attract and retain workers in a rebound period.

In the face of the worker shortage, the industry has had a difficult time in attracting and retaining new workers. Much of this problem is caused by the negative image of the construction industry. Jobs are often considered low paying, dangerous, and associated with low prestige. It will be important to develop recruitment and retention programs that deal with this issue as the need for workers increases.

### **Aim of Study**

The purpose of this study is look at people's opinions of the construction industry. The study will also focus on people's knowledge of the industry, particularly as they are about to enter the work force. Based on people's knowledge and perception of the industry, potential training or recruitment programs can be developed that focus on enticing people to enter the industry.

### **Hypotheses**

This study aims to look at two main hypotheses and a general observation. The first is that the image of the construction industry is still viewed negatively by post-high school adults. The second hypothesis is that there are significant differences in the attitudes of males and females toward the construction industry as well as differences in

age groups, education levels, and employment status. This will be tested by comparing the responses of survey participants. The last focus of the research was to observe and measure the differences in the perceptions of the construction industry of post high school adults and high school students. It is believed that post high school adults will have a more favorable opinion of the industry. This was discussed as an observation because of the lack of raw high school response data needed to make a statistical comparison.

### **Overview**

This study aims to analyze the perceptions young adults have about the construction industry. Understanding these perceptions can help develop recruitment, training, and retention programs to help the industry attract and maintain new workers. The study surveyed post-high school adults in order to examine their opinions and compared them to the opinions of high school students as well as to each other once the respondents were categorized. Understanding the differences can help develop programs focused on people who are currently searching for or switching to a new potential career field. The beliefs people have can also help determine the potential extent of the shortage of construction workers as the economy recovers, and knowledge of these beliefs can help predict and mitigate those shortages.

Chapter 2 is a literature review of information researched in order to develop an understanding of the potential problem and hypotheses. This information also helped develop the survey and analysis. Chapter 3 details the methodology used to complete the study including design, execution, and analysis of the survey as well as limitations in its scope. The results of the survey and a statistical analysis make up Chapter 4.

Chapter 5 is a summary of the findings. It discusses potential uses for the information found as well as suggestions for replication or extended research.

## CHAPTER 2 LITERATURE REVIEW

### **Industry Numbers and Trends**

The construction industry is an integral part of the US economy. The industry accounted for about 4.8% of the national \$14 trillion Gross Domestic Product (GDP) in 2007 according to the Department of Commerce Bureau of Economic Analysis. However, construction also helps fuel other industries such as manufacturing, finance and insurance, and transportation. The US Census Bureau reported that the industry provided 7.2 million jobs ranging from day laborers to skilled labor and construction management and had about 730,000 employers in 2007. The largest group of these workers, 1.76 million, is laborers followed by metalworkers, carpenters, supervisors, electricians, painters, and plumbers (Caulfield 2008).

Unfortunately, because the industry is such a strong presence in the economy, it is also vulnerable to market trends. The recent recession, which began in 2007 and officially ended in the US at the end of 2009, had a large impact on construction within the US as well as the world. Between the first quarters of 2008 and 2009, Engineering News Record (ENR) reported that total construction declined by 10.9% with housing being the major sector affected with a 32% decline followed by commercial construction with a 23% decline. The 2008-2018 Occupational Outlook Handbook released by the Bureau of Labor Statistics (BLS) reported that the number of paid workers fell by 532,000 workers between 2007 and 2008 and continued to drop throughout 2009 (BLS 2010).

As the recession begins to recede in 2011, construction is projected to slowly begin to grow back to its pre-recession levels. Government involvement such as the

American Recovery and Reinvestment Act of 2009 has pushed development in the infrastructure, but other sectors could see slower growth due to the lack of government assistance. According to the Associated Builders and Contractors (ABC), construction could see growth from 4-6% in the next few years (Rock Products 2009). Low material costs could help spur investment in long-term projects, but a weakening dollar and the effects of the recession on other industries may keep growth slow.

### **Worker Shortage**

The future lack of workers first became apparent in the construction industry in the 1980s (Whyte and Greene 2006). There are several factors that have contributed to, and further worsen, this problem, which exists even in this time of recession.

According to White and Green, one of the large problems contributing to the worker shortage is the aging population. It was estimated that over half of the U.S. population is now over the age of 50 and the youth population has a lower growth rate than the elderly (Whyte and Greene 2006). Up to 73% of workers in the construction industry within craft trades plan to leave the industry after the age of 46 (Rowings et al. 1996). This older population increase will lead to retirees outnumbering workers entering the workforce. Competition from other industries will also increase this problem, as the entire country will be searching for workers in a smaller worker population. In 2006, it was predicted that the industry would need to bring in and retain up to 275,000 workers a year over 10 years in order to keep up with growth projections at the time (Whyte and Greene 2006).

The recession may have lowered the demand for workers temporarily, but this situation may present a problem in the future as the economy recovers. Whyte and Greene (2006) explain the normal problems of the industry in recessions:

The industry has historically survived the ups and downs of the national economy, but over the last 25 years, the industry's ability to retain workers during the recessions and its ability to rehire them afterward has declined. During the recent economic downturn that affected the industrial market, many skilled craft workers left the industry. As the industrial market continues its recovery, our inability to bring back the lost workers will increase the craft shortages.

With the severity of the recent recession and its impact on the construction industry, particularly in the residential sector, workers may be afraid not only of returning to the construction industry, but of developing a career in a skilled craft trade or management position when opportunities are available. The strong government investment in infrastructure projects exiting the recession may also create an increased need for workers, which cannot be filled for these reasons.

Whyte and Greene also discuss the problem of trends in the educational system contributing to the shortage of workers. They discuss the results of a study called *Workforce 2020: Work and Workers in the 21st Century* and explain how high school students are not going to where jobs exist. According to the study, 28% of students will complete a four-year degree to compete in a job market where only 20% of the jobs require one. The large impact on the construction industry comes from the 32% of students that will receive additional schooling but not a four-year degree (associates' degree or advanced job training) while the job market is such that 65% of jobs require this level of education (Whyte and Greene 2006)

### **Industry Image**

Working in the construction industry is often seen as an inferior job choice. As more students begin to enroll and complete college, this stigma may hurt efforts to recruit young people into the industry. In a 2002 list of job rankings, bricklayer, carpenter, and ironworker were ranked in the bottom ten of the 250 vocations listed

(Kantz 2000). Many people believe construction work often involves dirty, dangerous, and labor intensive work. A 2006 survey of Alachua County high school students showed that the majority believed the industry is dangerous and involves physical labor. The survey also showed that 50% of the students with a friend or family member in the industry would choose not to pursue a construction career, and almost 80% without such a connection would not work in the industry (Diavolistis 2006).

College students have been shown to view the construction industry as a risky and physically demanding place. In a poll ranking job characteristics of various professions, a group of 100 college students ranked physical and perceptual motor as the skills most important to a “construction worker”. “Construction worker” fell in a category described as “high risk” along with other professions such as “fire fighter” and “heavy machine operator”. On the other hand, “cognitive” was the highest ranked characteristic of a “construction foreman”, which was included with a wide range of jobs that were characterized as requiring extensive training or schooling (Panek et al. 2006).

A common misconception of the construction industry is that the jobs are low paying. The Bureau of Labor Statistics (BLS) average salaries for 2009 reported construction jobs having an average hourly wage of \$22.66 compared to the national average of all jobs of \$18.63. Since then, the construction average has risen since to \$23.22 and the national average to \$19.07 for 2010. In addition to high wages, the opportunities for business ownership are better than in other industries as shown by the 1.8 million self-employed construction workers (BLS 2010).

### **Job Opportunities**

Despite the fact that the recession has lowered the quantity of construction jobs, the job opportunities that exist in construction today are extremely promising. The 2008-

2018 jobs outlook found in Occupational Outlook Quarterly released by the BLS examines the trends of jobs for over 300 occupations and determines the growth potential over a 10-year period (Occupational Outlook Quarterly 2010).

Almost all of the construction related fields in the 2008-2010 projections are predicted to grow at an average growth rate of 7-13% or above. Only roofers and sheet metal workers are expected to grow slower than average. Reasons given for the lack of growth in these fields were the tendency of roofing responsibilities to be handled by other construction trades, with the lack of growth in manufacturing facilities holding back the growth of sheet metal workers (Occupational Outlook Quarterly 2010).

Some of the highest projected growth rates belong to plumbers, insulators, hazardous waste removal workers, inspectors, and boilermakers with growth rates between 15-17%. Heating and air conditioning installers and mechanics had a job growth rate of 28%, one of the highest in the report. One of the largest reasons for these trades' growth was due to the increased attention to green building and protecting the environment in large projects. Renovation and repair work also was listed as a large force in job growth as building owners try to make their existing projects safer and friendlier to the environment (Occupational Outlook Quarterly 2010).

In addition to the typical skilled trades, construction managers and cost estimators also were listed as having "faster than average" and "much faster than average" growth with 17 and 25% growth rates respectively. Like the trade crafts, these occupations had high growth rates due to existing building and infrastructure repair and renovation as well as an overall increase in building projects (Occupational Outlook Quarterly 2010).

In the jobs outlook list, construction managers had the third highest median salary out of the jobs with the highest number of job openings and requiring a bachelor's degree. Carpenters, construction managers, construction laborers and painters placed 3<sup>rd</sup>, 5<sup>th</sup>, 8<sup>th</sup>, and 11<sup>th</sup> in occupations with the projected highest number of self-employed (Occupational Outlook Quarterly 2010).

## CHAPTER 3 RESEARCH METHODOLOGY

After completion of the literature review, a survey was developed based on a previous survey in order to have similar responses for comparison. The survey was originally planned to be conducted at the University of Florida and the Alachua County FloridaWorks (the local employment office), but due to difficulty in obtaining permission, was only distributed to consenting participants at the University of Florida. The results of the survey were statistically analyzed and are explained in Chapter 4.

### **Survey Information**

The survey as administered contained two sections. The first section gathered demographic information about the participant. The information on gender, age, race, education, and employment status allowed for the development of statistical differences between groups. The second section was a list of 20 statements which the participant judged using a 7 point Likert Scale labeled as follows: 1-Strongly Disagree, 2- Disagree, 3- Tend to Disagree, 4-Average, 5- Tend to Agree, 6- Agree, 7-Strongly Agree. In order to have similar data for an adult-to-high school comparison, the statements were taken from a previous study on the attitudes of high school students. Some statements were not used because they were developed to examine the motivations of students or relations to the construction industry, which were beyond the scope of this study.

Once the survey was written, it was necessary to get approval for administering the study from the University of Florida Institutional Review Board (IRB). The consent letter and survey were submitted to the IRB and conditionally accepted a week later as protocol #2010-U-772. The requested change of adding the notice of anonymity and

removal of participant signature line were made and the package was mailed back with an approval stamp.

The survey was conducted over three days at the University of Florida. People passing by two locations were given the information sheet and asked to take the survey. At both locations, surveys were administered to those willing to participate during the hours of 10 am to 2 pm.

### **Analysis**

The results of the survey were analyzed statistically to observe results and trends. Demographic and survey responses were entered into Microsoft Excel™ and basic descriptive statistics were calculated. Next, populations were statistically analyzed using the Mann-Whitney Rank Sum Test in order to determine significant differences between populations. Gender was looked at as male vs. female, age as “18-23” vs. “24 and above”, education as college completion vs. non-completion, and employment as employed vs. unemployed. The survey and the informed consent page given to participants are shown in Appendix A. The results of the survey were analyzed to determine significant differences between the populations and compared to responses given in the survey taken by high school students as done by a previous study (Diavolitsis 2006). The results are presented in Chapter 4.

## CHAPTER 4 ANALYSIS

The survey was given to willing participants on the University of Florida Campus and asked basic demographic information as well as their opinions on a variety of statements about the construction industry. The survey results were then analyzed arithmetically and statistically. The demographic questions were separated in order to better understand the population. The mean, mode, and variance were calculated in order to determine the overall opinions of the participants. Next, the data were analyzed using a chi-squared test to examine any differences within the demographic groups. The last analysis was a comparison of the mean responses with the responses in a previous study of high school students.

### **Demographics**

The demographics collected in the survey were analyzed to gain a large perspective of the survey participants. The demographics were also used to examine differences between demographic groups. The total number of survey participants was 52. All participants chose to fully answer the demographic information.

The first demographic recorded was the gender of the participant. Of the 52 responses, 36 (69%) were male while 16 (31%) were female. Comparing these two populations was done to see any differences in the perceptions of males and females when considering construction as a career. The populations are presented at the end of the Chapter in Figure 4-1.

The age of the participant was asked, as well as how many years post high school they were. The longer someone has been out of high school, the more experience in the workforce they should have and therefore, theoretically, the more knowledge they'd

have about any industry. For analysis, the ages were broken down into five ranges: 18-20, 21-23, 24-26, 26-28, and above 28. The number of participants for each group was 18 (34%), 12 (23%), 5 (10%), 4 (8%), and 13 (25%) respectively. Because of the disparity in number of participants in each range, two groups were used for comparison tests: “18-23” and “above 24”. The results are shown in Figure 4-2.

Participants were also asked to indicate their race. This information could be useful in seeing what groups of people are knowledgeable about the industry and which could be targeted for recruitment programs. The racial demographics of the survey takers was 41 Caucasian (78%), 2 African American (4%), 4 Hispanic (8%), 4 Asian (8%), and 1 Other (2%). Because of the low numbers of races other than Caucasian, this demographic was not used to analyze differences of perception and opinion.

The amount of education was also looked at in order to examine trends within different education levels. Of the survey population, 1 (2%) had some high school education, 2 (4%) had completed high school, 29 (56%) had some college education, and 20 (38%) had completed college. The results are shown in Figure 4-3.

The last demographic examined was employment. The survey participants were comprised of 41 (79%) employed people and 11 (21%) unemployed. The results are shown in Figure 4-4.

### **Analysis of Response Means**

The main survey body consisted of a list of 20 statements and asked the participant to choose a number 1-7 which reflected how they felt about the statement. A 1 meant the participant strongly disagreed with the statement, a 7 indicated they strongly agreed. The means of the survey statements were analyzed in order to gain an idea of the perceptions of the construction industry held by adults. The results of the

survey indicate that adults after high school still tend to have negative opinions of the construction industry; however, they are knowledgeable about the opportunities and potential of a career in construction. The full list of statistics calculated from the survey is listed in Appendix B.

Several statements from the survey show that the adults tend to believe the traditional stereotypes that construction is a difficult, dirty, and dangerous line of work. Survey statements 1,9,10 and 15 with means of 4.8, 4.5, 4.6, and 4.4 respectively also support the ideas that construction always occurs outdoors, is dirty, and is inherently dangerous. Table 4-1 shows the survey questions with their corresponding mean.

The results of the survey also show that adults are increasingly aware of the opportunities and potential that exists in a construction career. As shown in Table 4-2, statements 3, 5, 7, 14, and 20, the participants understood that construction had college-level career opportunities and that pay was respectable compared to many other careers. The statement means of 5.9, 4.9, 5.3, 5.4 and 5.2 support this idea.

The results from statements 2, 4,12, and 19 and their means of 3.0, 4.5, 3.6, and 4.3 show that the surveyed population understand the potential openings in construction ranging from more women in the workplace to the potential for self-employment and the need for craft professionals as described in Table 4-3.

Statements 8, 11, and 17 and their means of 3.8, 3.0, and 5.8 all show an increasing knowledge adults possess about the construction industry. Some of these are typical traits of construction such as relocating, being seasonal, and the use of technology. Other statements reflect the reluctance of entering the industry despite the knowledge of other favorable facts. Table 4-4 shows these remaining means.

## **Statistical Analysis**

The population was next analyzed using the Mann-Whitney Rank Sum Test to determine significant differences between groups. The groups analyzed were as listed earlier. The statements were classified as statistically significant if the p-value was less than .05. The full results of the individual analyses are shown in Appendix C.

### **Gender**

Four statements showed significant differences in the attitudes and perceptions of male and female respondents. In three of these four statements (numbers 1, 4, and 10) women answered more favorably to the construction industry than men. The statement to which females answered less favorably than males was in thinking the occupation was dangerous. These results may indicate that women may be open to careers in construction as potential options more than they did in the past when the career field had been more male dominant. Table 4-5 shows these results.

### **Age**

Five statements were found to have significant differences when comparing the results of the population by people aged 18-23 and above 24 and the older group answered them all more favorably. Statements 5, 14, and 20 concern opportunities in the field. Statements 2 and 9 deal with opportunities for women and the belief that construction is a dirty job. These results show that more education may be needed for younger people outside of high school in order for them to understand the opportunities available and to also help shed the negative reputation that the industry may still hold. Table 4-6 shows these results.

## **Education**

The responses to three statements were found to have significant differences when analyzing the population as people who had completed college and those who had not. Statement 9 deals with construction being a dirty job. College graduates answered higher on this statement. The other statements, 5 and 7, are about the necessary training and education needed for a job in construction and opportunities available. The graduate population was more inclined to believe this. Table 4-7 shows these results

## **Employment**

The answers to none of the statements were found to have significant differences when looking at employed and unemployed participants.

### **High School vs. Post High School**

The last analysis looked at the responses of high school students to post high school students to the survey. Because the individual response data was not available, the means were compared between the two groups. The data is shown in Table 4-8.

Post high school students had mean responses more favorable to the construction industry than did the high school students for all twenty statements. The more favorable answers indicate that construction is a more attractive opportunity for the post high school respondents than it was for high school students.

Figure 4-5 graphs the difference in means between post high school and high school adults. As shown, the largest differences were found in statements 3, 16, 17, and 20. The large apparent differences in statements 3 and 20, which are both statements dealing with education and potential earnings, indicate that after high school, the construction industry opportunities may become more evident than in high school. More

job training and recruitment programs would be much more effective at targeting these people if the targeted people knew that there are career opportunities requiring college degrees available in construction and that the industry pays well. Statements 16 and 17 are concerned with training on the jobsite and the use of technology in construction. These statements indicate that the idea of construction as being dangerous and crude may be waning.

The smallest difference in means was in statement 19, which is “Craft professionals are in high demand”. The low apparent difference in this statement may indicate that the general population is still unaware the of craft worker shortage in the industry. Education and publicity of this problem, particularly after the recession effects slow down, may be key for construction to recover and grow in the future.

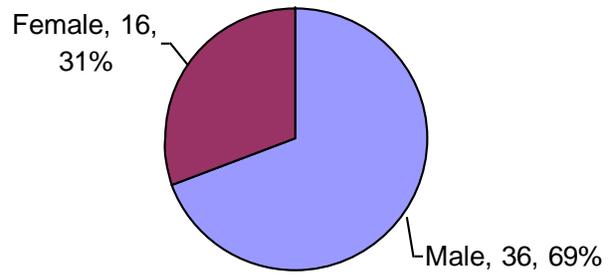


Figure 4-1. Gender of survey participants

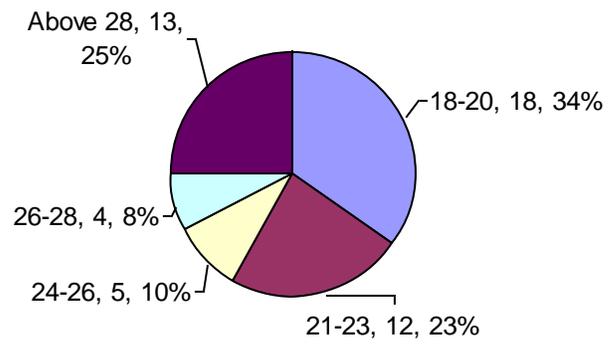


Figure 4-2. Age of survey participants

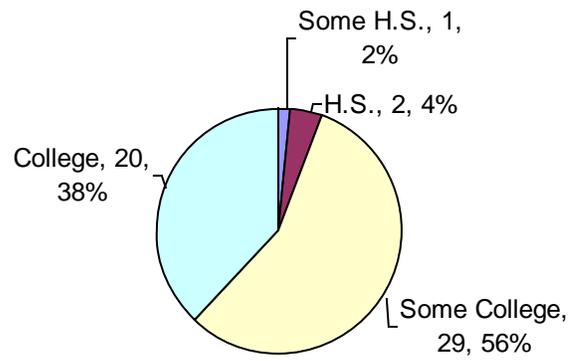


Figure 4-3. Education level of survey participants

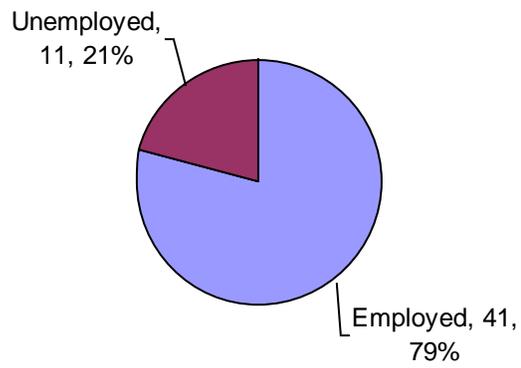


Figure 4-4. Employment status of survey participants

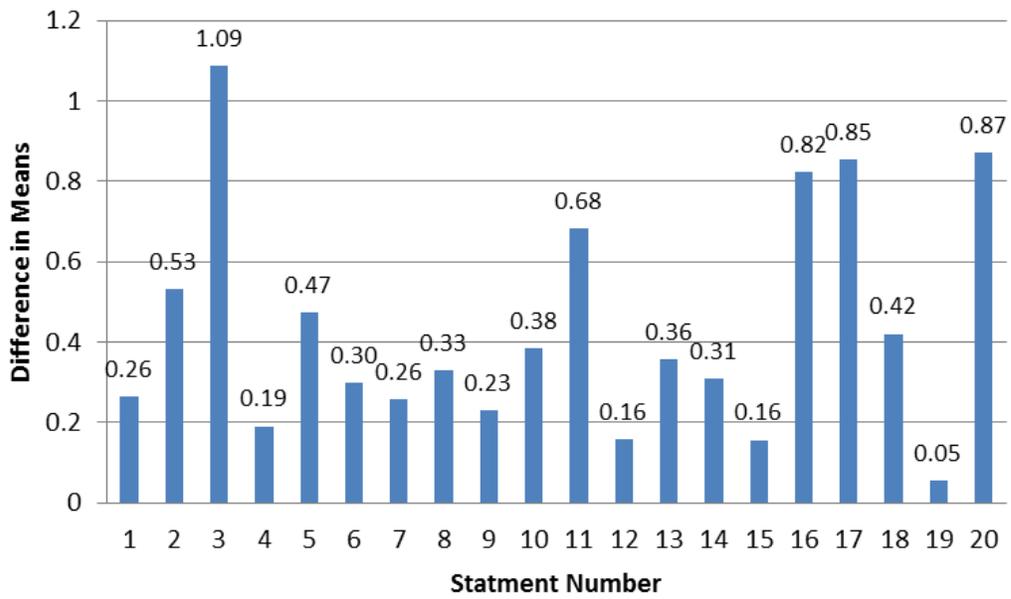


Figure 4-5. Difference in means of statements

Table 4-1. Response means of statements 1,9,10, and 15

Statement	Mean
Construction related jobs occur outdoors.	4.8
Construction is a dirty job.	4.5
Working for a construction industry means you will work outside.	4.6
Construction is a dangerous occupation.	4.4

Table 4-2. Response means of statements 3,5,7,14, and 20

Statement	Mean
There are career paths into the construction industry that require a college degree.	5.9
The construction industry offers exciting and challenging career opportunities.	4.9
The construction industry requires training and education to acquire essential job skills.	5.3
You can earn a decent living working in the construction industry.	5.4
A craft professional can earn as much as a person with a college degree.	5.2

Table 4-3. Response means of statements 2,4,12, and 19

Statement	Mean
Construction is not a suitable career for women.	3.0
If you want to own a business, the construction industry is a good career choice.	4.5
Working in the construction industry is perceived as an inferior job.	3.6
Craft professionals are in high demand.	4.3

Table 4-4. Response means of statements 6,8,11,13,16,17, and 18

Statement	Mean
I would choose to work in the construction industry if a job was available.	3.4
Working for a construction company requires relocating/moving from job to job.	3.8
Construction is a seasonal job.	3.0
As long as I am happy with my job, I am not as concerned with my income.	4.1
Training can reduce the risk of accidents on the jobsite.	6.4
The use of information technology is important in construction.	5.8
The construction industry employs the most people in the US.	4.3

Table 4-5. Mann-Whitney results of significant statements based on gender

Statement	Mann-Whitney U Statistic	T	P
1.	215.0	972.5	<.001
4.	530.5	1661.5	.005
10.	264.5	400.5	.026
15.	215.0	753.0	.003

Table 4-6. Mann-Whitney results of significant statements based on age

Statement	Mann-Whitney U Statistic	T	P
2.	221.0	474.0	.040
5.	225.0	668.0	.047
9.	180.0	433.0	.004
14.	217.5	695.5	.029
20.	171.0	742.0	.003

Table 4-7. Mann-Whitney results of significant statements based on education

Statement	Mann-Whitney U Statistic	T	P
5.	216.0	634.0	.046
7.	216.5	633.5	.044
9.	195.5	405.5	.017

Table 4-8. Mean responses of high school and post high school

Statement	Post High School Mean	High School Mean
1.	4.83	4.56
2.	3.02	2.49
3.	5.92	4.84
4.	4.50	4.31
5.	4.94	4.47
6.	3.44	3.15
7.	5.33	5.07
8.	3.83	4.16
9.	4.48	4.71
10.	4.60	4.21
11.	3.04	3.72
12.	3.58	3.73
13.	4.12	3.76
14.	5.44	5.13
15.	4.44	4.60
16.	6.37	5.54
17.	5.85	4.99
18.	3.69	4.11
19.	4.35	4.40
20.	5.15	4.28

## CHAPTER 5 CONCLUSIONS AND LIMITATIONS

### **Industry Image**

The first hypothesis was that adults look at the construction industry negatively after high school. The survey has shown that the industry is viewed more favorably than originally anticipated. An important result was that the sampled population showed an understanding of the opportunities available as shown by statements 3, 4, 5, 14, and 20. As people begin to see construction as a well-paying and respectable career, more people may be willing to take jobs as both management and craft professionals. However, a glance at the means showed that the traditional belief that construction is a dirty and dangerous job still exists as shown by the unfavorable means of statements 9 and 15.

### **Population Comparisons**

The hypothesis that significant differences exist between groups was true in three of the strata, though not to an extent originally believed. It was originally believed that differences would exist in many of the statement responses because of the cultural and knowledge differences in the groups created.

When looking at the population split up by gender, a significant difference was found in statements 1,4,10, and 15. Table 4-5 shows the results of the tests for these statements. When looking at the population as people aged 18-23 versus above 24, statements 2,5,9,14, and 20 had significant differences. Table 4-6 shows the results of these statements. Significant differences were found in statements 5,7, and 9 in education level and these results are shown in Table 4-7. No significant differences

were found when comparing the responses of employed participants and non-employed participants.

### **High School vs. Post High School**

The idea that post-high school participants would have a more favorable view of the construction industry was confirmed due to the higher means. Besides seeing construction as an outdoors job, the post-high school population had more favorable responses to all the statements dealing with traditional construction stereotypes. The post-high school population also had higher rankings for the opportunities in construction, particularly in regard to education and earnings as shown in statements 3 and 20.

### **Limitations**

The population of this survey contained only residents of, or visitors to, Gainesville, Florida. This population may not be representative of all post high school adults or even all adults in Gainesville. Different parts of the country or even the state may have different industry opinions. Another limitation was the location of the administered surveys. The majority of participants may not yet have strong feelings on their career choice or may be looking at one specific avenue, which narrows their openness to the construction industry. Young adults surveyed five years after high school may have more specific ideas of their future career choices. The recent recession could also have an effect on the responses. People about to enter the work force or recently laid off may have pessimistic views of the economy as a whole, particularly construction and its large role and effect on the economy.

### **Recommendations for Future Research**

Future research on the subject of industry image could further help target correct groups (such as young, unemployed college students) for training and education opportunities into the industry rather than developing large encompassing programs which may not appeal to a younger generation. Narrowing the focus to individual groups could help gather information in order to make recruitment efforts more effective within these groups.

Increasing the size and breadth of the survey population may also yield more useful results for the industry as a whole. Because the surveyed population in this study was found in one area, the responses may be centered on the overall area's beliefs and ideas.

## APPENDIX A INFORMED CONSENT AND SURVEY

---

### Attitudes of Adults on the Construction Industry

Dear Participant:

I am a graduate student conducting a masters thesis at the University of Florida, Rinker School of Building Construction. I am looking at adults' attitudes about the construction industry in order to compare them to the attitudes of high school age kids. I am asking you to take this short, less than 10 minute survey in order to obtain data. You must be over the age of 18. I am the only person that will see and use the survey you complete.

No names will be collected so your responses will be anonymous. There are no anticipated risks, compensation or other direct benefits to you as a participant in this survey. You do not have to complete any question you do not want to and may stop the survey at any time.

If you have any questions about this research protocol, please contact me at (352) 256-1388 or my faculty supervisor, Dr. Robert Minchin, at minch@ufl.edu. Questions or concerns about your rights as a research participant rights may be directed to the IRB02 office, University of Florida, Box 112250, Gainesville, FL 32611; (352) 392-0433.

Shannon Close

---

Approved by  
University of Florida  
Institutional Review Board 02  
Protocol # 2010-U-0772  
For Use Through 08-30-2011

<b>Demographics</b> (Please place a check by the appropriate choice)	
<b>Sex</b>	<input type="checkbox"/> M <input type="checkbox"/> F
<b>Age</b>	<input type="checkbox"/> 18-20 <input type="checkbox"/> 21-23 <input type="checkbox"/> 24-26 <input type="checkbox"/> 26-28 <input type="checkbox"/> 28+
<b>Race</b>	<input type="checkbox"/> Caucasian <input type="checkbox"/> Hispanic <input type="checkbox"/> African American <input type="checkbox"/> Asian <input type="checkbox"/> Other
<b>Education</b>	<input type="checkbox"/> Some high school <input type="checkbox"/> Some college <input type="checkbox"/> Completed High School <input type="checkbox"/> Completed college
<b>Employed</b>	<input type="checkbox"/> Y <input type="checkbox"/> N

Please circle the number which best reflects your perception. 1=Strongly Disagree 2=Tend to Disagree 3=Disagree 4=Average 5=Agree 6=Tend to Agree 7=Strongly Agree	
1. Construction related jobs occur outdoors.	1 2 3 4 5 6 7
2. Construction is not a suitable career for women.	1 2 3 4 5 6 7
3. There are career paths into the construction industry that require a college degree.	1 2 3 4 5 6 7
4. If you want to own a business, the construction industry is a good career choice.	1 2 3 4 5 6 7
5. The construction industry offers exciting and challenging career opportunities.	1 2 3 4 5 6 7
6. I would choose to work in the construction industry if a job was available.	1 2 3 4 5 6 7
7. Construction work requires training and education to acquire essential job skills.	1 2 3 4 5 6 7
8. Working for a construction company requires relocating/moving from job to job.	1 2 3 4 5 6 7
9. Construction is a dirty job.	1 2 3 4 5 6 7
10. Working for a construction company means you will work outside.	1 2 3 4 5 6 7
11. Construction is a seasonal job.	1 2 3 4 5 6 7
12. Working in the construction industry is perceived as an inferior job.	1 2 3 4 5 6 7
13. As long as I am happy with my job, I am not as concerned with my income.	1 2 3 4 5 6 7
14. You can earn a decent living working in the construction industry.	1 2 3 4 5 6 7
15. Construction is a dangerous occupation.	1 2 3 4 5 6 7
16. Training can reduce the risk of accidents on the jobsite.	1 2 3 4 5 6 7
17. The use of information technology is important in construction.	1 2 3 4 5 6 7
18. The construction industry employs the most people in the US.	1 2 3 4 5 6 7
19. Craft professionals are in high demand.	1 2 3 4 5 6 7
20. A craft professional can earn as much as a person with a college degree.	1 2 3 4 5 6 7

APPENDIX B  
SURVEY RESULTS AND DESCRIPTIVE STATISTICS



APPENDIX C  
MANN-WHITNEY TEST RESULTS

Table C-1. Mann-Whitney results of significant statements based on gender

Statement	Mann-Whitney U Statistic	T	P
1.	215.0	972.5	<.001
2.	433.0	1247.0	.076
3.	699.5	1492.5	.214
4.	530.5	1661.5	.005
5.	628.5	1562.5	.058
6.	826.0	1354.0	.959
7.	649.0	1543.0	.088
8.	523.0	1157.0	.509
9.	284.0	428.0	.943
10.	264.5	400.5	.026
11.	348.5	587.5	.434
12.	319.0	455.0	.157
13.	358.5	609.5	.401
14.	400.5	536.5	.822
15.	215.0	753.0	.003
16.	304.5	663.5	.084
17.	345.0	623.0	.294
18.	331.5	467.5	.197
19.	338.0	474.0	.252
20.	388.0	524.0	.770

Table C-2. Mann-Whitney results of significant statements based on age

Statement	Mann-Whitney U Statistic	T	P
1.	314.0	567.0	.768
2.	221.0	474.0	.040
3.	281.5	631.5	.343
4.	288.5	624.5	.433
5.	225.0	688.0	.047
6.	292.0	621.0	.481
7.	280.0	633.0	.341
8.	322.0	575.0	.887
9.	180.0	433.0	.004
10.	273.0	526.0	.286
11.	241.0	628.0	.180
12.	282.0	535.0	.370
13.	255.5	657.5	.163
14.	217.5	695.5	.029
15.	287.0	540.0	.415
16.	280.0	633.0	.302
17.	252.0	661.0	.132
18.	268.0	521.0	.220
19.	247.0	666.0	.113
20.	171.0	742.0	.003

Table C-3. Mann-Whitney results of significant statements based on education

Statement	Mann-Whitney U Statistic	T	P
1.	279.5	489.5	.440
2.	265.5	475.5	.300
3.	240.5	609.5	.113
4.	280.0	570.0	.443
5.	216.0	634.0	.046
6.	279.0	571.0	.439
7.	216.5	633.5	.044
8.	279.5	570.5	.440
9.	195.5	405.5	.017
10.	317.5	532.5	.969
11.	223.0	587.0	.118
12.	305.5	544.5	.789
13.	249.0	601.0	.177
14.	238.0	612.0	.106
15.	281.0	491.0	.454
16.	292.0	558.0	.561
17.	237.5	612.5	.106
18.	314.0	524.0	.911
19.	234.5	606.5	.139
20.	225.5	624.5	.070

Table C-4. Mann-Whitney results of significant statements based on employment

Statement	Mann-Whitney U Statistic	T	P
1.	224.5	292.5	.991
2.	224.0	290.0	.982
3.	172.0	345.0	.205
4.	180.0	337.0	.298
5.	162.0	355.0	.147
6.	193.0	324.0	.467
7.	186.0	331.0	.365
8.	212.0	305.0	.765
9.	174.0	343.0	.241
10.	209.5	307.5	.723
11.	176.0	242.0	.359
12.	160.0	357.0	.138
13.	217.0	283.0	.855
14.	222.5	294.5	.953
15.	224.5	290.5	.991
16.	203.5	313.5	.588
17.	224.0	293.0	.981
18.	187.0	330.0	.360
19.	192.5	258.5	.451
20.	159.0	225.0	.129

## LIST OF REFERENCES

- Berman, J. (2005). "Industry Output and Employment Projections to 2014." *Monthly Labor Review*. Bureau of Labor Statistics U.S. Department of Labor.
- Bureau of Labor Statistics. (2010). "The 2008-2018 job outlook in brief." *Occupational Outlook Quarterly*. (54)1
- Bureau of Labor Statistics. U.S. Department of Labor. <<http://www.bls.gov/>> (Apr. 27, 2010).
- Caulfield, J. (2008). "Construction Industry Employed 11 Million People in 2007." Construction Industry Employed 11 Million People in 2007, according to U.S. Census's American Community Survey (ACS) - Construction Trends, Housing Trends, Demographics, Construction, Workforce - Builder Magazine: *Builder*. <<http://www.builderonline.com/>>. (Jun. 6, 2010).
- Diavolistis, A. (2006). "ABSENCE OF CRAFT PROFESSIONALS: ALACHUA COUNTY HIGH SCHOOL STUDENTS' PERCEPTIONS OF THE CONSTRUCTION INDUSTRY. M.S. thesis. University of Florida. Gainesville, FL.
- Goldman, D. (2009). "Worst year for jobs since '45." CNNMoney. <<http://money.cnn.com/>> (Jun. 6, 2010).
- Johnson, Dirk. "Facing Shortage, Builders and Labor Court Workers." New York Times. 13 Mar 1999. ProQuest. U.F. Lib., Gainesville. (25 Apr. 2010).<<http://www.proquest.com/>>.
- Kantz, L. (2000). *Jobs Rated Almanac: the best and worst jobs - 250 in all – ranked by more than a dozen vital factors, including salary, stress, benefits, and more*, St. Martins Griffin, New York.
- Panek, P., Staats, S., Hiles, A . (2006). "College Students' Perceptions of Job Demands, Recommended Retirement Age, and Age of Optimal Performance in Selected Occupations." *International Journal of Aging and Human Development*. (62)2, 87-115.
- Rowings, J., Federle, M., Birkland, S. (1996). "Characteristics of the Craft Workforce." *Journal of Construction Engineering and Management*., 122(1), 83-90.
- Whyte, D., Greene, S. "The Skilled Workforce Crisis." *National Center for Construction Education and Research*. <<http://www.nccer.org/>> (Apr. 12, 2010).

## BIOGRAPHICAL SKETCH

Shannon Close received his Bachelor of Arts degree in Economics and a minor in Spanish from the University of Florida in Gainesville, Florida in May 2002. After graduating, he then enrolled in M.E. Rinker School of Building Construction at the University of Florida to pursue a Master of Science in Building Construction.

After he graduated, he pursued a job as a project manager within the state of Florida.