

DRYWALL TRADESMEN'S CAREER AWARENESS IN TEXAS

A Thesis

by

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ABSTRACT

Given an evident labor shortage in the United States and Texas' construction industry, companies are seeking sustainable mechanisms to attract and retain the labor force. Understanding workers' career awareness can assist companies to better focus their hiring and retaining strategies. Career awareness is a complex and evolving topic. This study concentrated on the following career awareness topics: factors influencing a career-decision to join construction and the drywall trade, type of attained training and if training will motivate them to remain in their trade, awareness of career opportunities and skills required to be successful, and workers' expectations for the future.

This descriptive research was conducted with a sample of 230 drywall tradesmen employed by two subcontractors located in Houston and Austin, Texas. A questionnaire was used to guide data collection which occurred; through face-to-face interviews, group interviews, and self-administered questionnaires. "Sense of connection," "belonging," "like it," and "Money" were the most influential factors when entering the drywall trade. "On-the-job training" and "Previous work experience" were the most common training types. Participants mentioned training would motivate them to continue in their trade. Although more training on career opportunities is desired, participants demonstrated awareness of promotion and non-promotion career opportunities. Likewise, the majority of workers do have ambition to progress in the drywall trade. Finally, a statistical test demonstrated that non-U.S. tradesmen and people choosing construction as their first choice career, are more willing to recommend the drywall trade to their children.

DEDICATION

I dedicate this effort first to God, to whom I am very thankful. He has given me so many blessings and it is through him that all my goals and aspirations have been possible. He has also blessed me with a caring and exemplary family, and has provided me with opportunities many people do not have access to. I also dedicate this effort to my parents Consuelo and Gustavo, my grandmother Teresa, my sister Sofia and my boyfriend Carlos. I am very grateful for all your care, support, influence, and impact in my life. I would not be the person I am today if it were not for you, so I will always be thankful for that. Finally, I will like to dedicate this work to my country, Ecuador, and especially to all those hardworking and lighthearted people who were not lucky enough to have the same opportunities that I have had in life.

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NOMENCLATURE

AGC	Associated General Contractors of America
B/CS	Bryan/College Station
CCAD	Construction Career Awareness Day
C3	Construction Career Collaborative
CIAC	Construction Industry Advisory Council
GHP	Greater Houston Partnership
IRB	Institutional Review Board from Texas A&M University
OSHA	Occupational, Safety and Health Administration
PPE	Personal protective equipment
SPSS	Statistical Package for the Social Science
U.S.	United States of America

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1. INTRODUCTION

1.1 Background

The labor shortage in construction is an unsolved, continued, and increasing problem in the United States and several other countries. While the demand for skilled labor in construction is increasing, the available skilled labor is not sufficient or sustainable (Hodges & Crowley, 2013). With an aging population and low attraction of young people to join construction, it is predicted that this problem will be exacerbated with time (Francis & Prosser, 2013). To guarantee a workforce pipeline, mechanisms to attract, and retain skilled workers are necessary.

Career awareness impacts the career decision-making process (Wise, Charner, & Randour, 1976). Furthermore, career awareness influences the knowledge of available career opportunities. Hence, this research will focused on drywall tradesmen's career awareness as a driver to increase the construction labor supply. Consequently, by gaining this understanding, companies can better recruit, retain and reenter the construction workforce.

The objective of this study was to gain an understanding of drywall tradesmen's career awareness. This study focused on determining: the motivations that influenced drywall tradesmen to select construction and their particular trade; attained training and if further technical preparation could motivate them to remain working in their trade; knowledge of available opportunities and career paths; and finally their perceptions of a successful career.

1.2 Problem statement

This study investigated drywall tradesmen's career awareness within the Houston and Austin areas in the state of Texas. The study focused on the factors motivating workers to choose their specific trade, the training they have received, and their perception of a future career in construction.

1.3 Research questions

This study sought to address the following specific research questions:

- 1) What factors influenced construction craft workers to choose a career in construction and in their specific trade?
- 2) What types of training have craft workers received during their career in construction? How can training influence their willingness to remain in their trade?
- 3) What is craft workers' awareness of career opportunities and required skills and qualifications within their trade?
- 4) What are craft workers' career expectations in their trade? Do they anticipate a successful future?

1.4 Significance of the study

Skilled workers are key players in every construction project. Although there is plenty of literature analyzing the causes and possible solutions to the construction labor shortage, there is no literature on construction craft workers' career awareness. Studying

drywall tradesmen's career awareness can significantly contribute to the body of knowledge. gaining an insider's perspective and feedback on what influenced their career choice, what are their training needs and perceptions, and what are their career ambitions could help companies to maximize their successful practices, revise deficient ones, develop new policies, and provide better recruitment, and retention strategies.

1.5 Delimitation of the study

This study was limited to drywall hangers, finishers, etc. of different skill levels working for commercial subcontractors located within Houston and Austin, Texas.

1.6 Assumptions

As mentioned by Leedy, almost all research has at least two assumptions, namely: the investigated phenomenon is predictable (governed by certain laws and not completely random), and cause-and-effect relationships can be interpreted from observing the phenomenon (Leedy, 2013). This research study included certain assumptions about its participants and its methods. First, it was assumed the sample size was representative of the population, thereby enabling the researcher to make coherent conclusions. A second assumption implied participants responded to the questionnaire with honesty and without external pressures such as time constraints, retaliation from their employers, peer pressure, or legal consequences, among others. These assumptions were possible since the researcher-designed questionnaire did not asked for any personally identifying information such as name, address or social security number. A

third assumption was that the designed questionnaire was an effective research tool which was understood by participants and accomplished the intended research purposes. Finally, it was assumed that participants located in different Texan cities and working for different companies share similar characteristics and opinions.

1.7 Definitions

Associate's degree: degree granted by a community or junior college, college or university in the United States after completing a two-year study program.

Career: “The term ‘career’ has been seen as a search for development and/or progression within an occupational area” (Kappia, Dainty, & Price, 2007). “The work positions, identified by job or occupational labels, that an individual holds in a lifetime (Wise, Charner, & Randour, 1976).

Career awareness: the “inventory of knowledge, values, preferences, and self-concepts which an individual draws on in the course of making career-related choices” (Wise et al., 1976). Career awareness is the basis for career decision-making that affect the direction of a person’s career (Wise et al., 1976). For this study, career awareness is referred to as the degree of awareness and knowledge of what must be done to enter and progress in a particular career or field. Career awareness is associated and can influence the individual’s possibility for a long term employment and growth in a particular field.

Drywall installation: involves drywall hanging into walls and ceilings. This is a multi-step process that includes; cutting of sheets of gypsum to adjust to openings, windows, doors and electrical fixtures; fastening of drywall sheets attached to ceiling and walls into wood or metal studs with the help of electrical screw guns or hammers; taping and application of joint compounds to joints; and finally smoothing of joints with sanding procedures (Pan, Chiou, Hsiao, Wassell, & Keane, 2000). Given the physical activity associated with drywall installation, studies have proven that drywall panel installation constitutes a severe threat to the safety and musculoskeletal health of the drywall workers (Sengupta Dasgupta et al., 2014).

Drywall tradesman: a construction employee working for a subcontractor, general contractor, or independently in the installation of drywall panels. There are several skill levels for this trade. For this study, the following positions will be considered as “drywall tradesmen”: laborers, helpers, drywall/metal frame installers, ceiling grid installers, door frame and door hardware installers, lead men, and foremen.

Drywall panels: construction material that consists of two layers of heavy paper sandwiching one layer of gypsum. The typical thickness of a drywall panel in commercial applications is 5/8 inch. The standard size dimensions are 4 ft x 8 ft (70 lbs), and 4 ft x 12 ft (105 lbs) (Yuan, Buchholz, Punnett, & Kriebel, 2007).

Middle-skill jobs: postsecondary education or training not comprising a bachelor's degree. This type of training can include one or several of the following methodologies: associate's degrees, vocational certificates, significant on-the-job training, some college and previous work experience (Holzer & Lerman, 2009).

On-the-job training: task oriented, active, practical and experiential type of learning.

The goal is to learn "how" to do the work (Woods, 2012). As D'Agostino argued, on-the-job training follows a three-step method: 1) apprentice observes the work performed by a trainer, 2) apprentice completes a similar task, 3) the trainer provides coaching and feedback to the apprentice (Woods, 2012).

Previous work experience: considers all work experience attained by an individual (construction and non-construction related).

Some college: considers the participation in post-secondary training in a junior college, college or university in the United States for any duration of time.

Vocational certificate (Apprenticeship): type of training that combines formal classroom instruction with on-the-job work experience. The formal training complements the broad-based set of craft-specific skills that craft workers acquire through practical training. Apprenticeships enable an integrated understanding of a trade, practical competence, and transferable skills (Woods, 2012).

2. LITERATURE REVIEW

2.1 Introduction

This section begins by addressing the labor shortage in the United States and the Texas' construction industry. Likewise, the labor shortage experienced by the drywall trade will also be described since this shortage motivated and justified the development of this study. Following this information, the concept of career awareness will be defined and explained. Furthermore, this session includes topics related to career awareness such as: enrollment, social influencers, construction industry's image, training, career development and related studies in the construction industry. Additionally, current industry effort towards career awareness will also be described. Finally, a summary of a motivational framework to be used for the data analysis will be provided.

2.2 Labor shortage in the United States and Texas

Currently, there is sufficient literature addressing the issue of labor shortage in the United States and in Texas. According to Hodges (2013), labor shortages are generally temporal and regional. Texas and Louisiana are considered as areas with labor shortages or at least greater labor shortage potential because of the increase in the oil and gas production and the petrochemical industries. This study mentions that a five percent wage increase of skilled construction workers in these areas is an evidence of the shortage (Hodges & Crowley, 2013). Likewise, Gasperow's (2005) analysis of the U.S. Bureau of Labor Statistics and U.S. Department of Census data; portrays that the

construction industry will need to add 185,000 workers annually over the next ten years (until 2015) to replace retiring workers, and those leaving the industry. Data and projections from the Bureau of Labor Statistics also show that the demand for middle-skill workers will continue, resulting in an evident need to provide high quality training for middle and top-skilled workers (Holzer & Lerman, 2009). Another issue with labor shortage is an aging population and low attraction of young people to construction (Francis & Prosser, 2013). Hence, the need to understand how to attract young people is a necessity.

The Associated General Contractors of America (AGC) has been addressing the issue of a labor shortage in the United States since 2013, when an initial survey of construction worker shortages was performed. Moreover, in 2014, the AGC conducted a more exhaustive survey of construction firms (“Worker Shortage Survey Analysis”, 2014). The survey was conducted between August through September, and included over one thousand AGC member companies of different types and sizes. The purpose of the survey was to determine the extent of such shortage, measure its impact on the industry, find how firms were handling the labor shortage, and try to understand possible root causes. Results indicated construction worker shortages are becoming more severe, and particularly those of craft workers. With a growing demand for construction, the report documented that it is likely that the construction industry will continue to face significant and growing labor shortages (“2014 Workforce Survey National Results”, 2014a). As AGC’s report mentions, “The solution is to improve the pipeline for recruiting and preparing the next generation of construction workers.” (“Worker Shortage Survey

Analysis”, 2014c). As stated previously, the construction labor shortage is a reality, and improving recruiting and retention efforts can help reduce it.

2.3 Labor shortage of drywall tradesmen in Texas

As described in the previous section, in October 2014, the AGC released the “2014 Workforce Survey Texas Results.” Texas outcomes show that when companies were asked “How would you describe your current workforce challenges;” (35%) answered that “they are having hard time filling all key professional and craft worker positions.” Similarly, (33%) answered that “they are having a hard time filling some craft worker positions but no difficulty filling professional positions.” Furthermore, (23%) mentioned that “they are having a hard time filling some key professional and craft worker positions.” Overall, (91%) of the participants mentioned having some degree of “hard time” filling construction positions (“2014 Workforce Survey Results - Texas Results”, 2014). Additionally, when companies were asked “If you hire, and are having trouble filling key craft worker positions, please indicate the position types you are having trouble filling.” Companies mentioned that they have problems filling: Roofers (100%), Iron workers (81%), Bricklayers (80%), Plumbers (80%), Carpenters (77%), Pipefitters /welders (75%), Electricians (69%), Drywall tradesmen (67%), Cement masons (64%), Laborers (62%), Equipment operators (61%), Painters (50%) (“2014 Workforce Survey Results -Texas Results”, 2014b). This study focused on drywall tradesmen, which (67%) of Texan construction companies mentioned they have trouble filling.

2.4 Career awareness

Given the evident labor shortage in Texas, this study's intent was to understand drywall tradesmen's career awareness as a tool to assist the industry to improve their recruiting and retention strategies. As stated by Wise, Charner and Randour (1976), "career awareness is a complex, dynamic and multifaceted concept." Wise's et al.'s (1976) "conceptual framework for career awareness in career decision-making," includes four major parts that help explain the concept of career awareness and its influence on career decisions. Under this framework, three parts serve as antecedents namely; 1) Awareness: knowledge, values, preferences, self-concepts; 2) Skills: self-assessment skills and decision making skills; 3) Influencers: family, school, mass media, and community groups. Finally, the fourth part of the framework, 4) Making decisions, is the consequence of the interaction of the other three parts (Wise et al., 1976). A summary of Wise, Charner and Randour's (1976) framework is shown in Table 1. The previous factors influence how future workers decide on which career path to follow. Understanding these influences can help recruiters better focus their efforts on how to motivate people to consider construction as a career. The author's research study investigated construction drywall tradesmen's career awareness to provide recruiters with this information. Likewise, this study used this framework as a reference to understand the concept of career awareness, and to analyze drywall tradesmen's career decision processes to join the construction industry.

Table 1: Wise, Charner and Randour’s summary of “A conceptual framework for career awareness in career decision-making”

Parts	Divisions	Definition
1. Awareness	Knowledge	General and specific understanding of aspects of work, self-knowledge
	Values	Commitment to something that is right, good, or worth it
	Preferences	Aspirations, like for something, interest, feelings of attraction. Occupation or activity preference
	Self-concepts	General feeling about self and one's abilities. The sum of the positive and negative feeling of one's self constitute the self-esteem
2. Skills	Self-assessment skills	Ability necessary while deciding career-related alternatives
	Decision making skills	Ability to consider options, for example for the future
3. Influencers	Family	Self defined
	School	Self defined
	Mass media influence	Print and electronic means of communication reaching large groups of people
	Community groups	Formal groups, for example churches, associations, peer groups
4. Making decisions	NA	Career-related decisions influenced by awareness, skills, and influencers

2.5 Construction careers’ enrollment

Career awareness influences enrollment rates, so understanding it can be helpful. In construction, recruiting and retaining new construction laborers is evidently important especially given the increasing hiring competition between construction and other industries that employ craft people (Songer, Chinowsky, & Carrillo, 2006). Although middle-skill jobs represent an opportunity for low-income workers to raise their earnings and potentially lower poverty levels (Holzer & Lerman, 2009), there are low enrollment rates to obtain such skills. The low enrollment rates suggest that when people are faced with a career decision, there is poor information and awareness on the opportunities that the construction industry offers. A research on the factors influencing male and female

students to decide on a career in construction found that salary, working conditions, opportunities for promotion and lifelong learning were the most important factors influencing them to choose a career in construction (Chileshe & Haupt, 2010). In a similar manner, the researcher's study tried to identify the factors influencing the enrollment of drywall tradesmen to join construction and their trade.

2.6 Social influencers on construction career decisions

As mentioned before, social influencers have a significant impact in workers' career awareness. For instance, previous research has analyzed the impact of school and society as social influencers while making career decisions. According to the literature, school and society have not contributed to the enrollment of construction related careers. Although construction's labor market has rising opportunities and available jobs that require intermediate skills, U.S. policy makers and society have concentrated on promoting only higher education for future workers (Woods, 2012). Nevertheless, encouraging higher education can eventually lead to unemployment and correction to the original career path to find available jobs (Woods, 2012). Woods (2012) suggests that policy makers can expand the pathways to higher education by providing transparent career planning strategies. Information on how apprenticeships are an alternative path to higher education and greater earning capacity can help future workers make economy-wise decisions (Woods, 2012). For instance, providing education to students, parents, high school and community college career counselors can improve the apprenticeships' awareness, prestige and enrollment. The author's study asked participants what factors

influenced their career decisions to analyze if any of the previous factors influenced them or not, and to know what can be improved in the construction career-decision process. Specifically, participants were asked if career advising was a factor that influenced their decision to join the industry.

2.7 Construction's industry image

Another social influencer addressed by the literature is the industry's public image. The perception and stereotypes of the construction industry being a "macho, rough, crude career, with little opportunity for personal growth", influenced the youth of the 1990s not to aspire for construction careers (Federle, Rowings Jr, & DeVany, 1993). Likewise, according to Federle et al. 1993, the most common arguments why workers separate from the construction industry are: "undesirable job assignments, unacceptable annual wages, better opportunities in other industries, changes in values and perception, travel limitations due to family obligations, safety concerns, and lack of respect towards the industry" (Federle et al., 1993). In general, the literature has focused on determining what the industry has done wrong. The author's study concentrated on analyzing drywall tradesmen's career motivations to enter and remain in construction. Likewise, understanding laborers motivations to join the industry and their perceptions of a career in construction, could help promote and build a better image for the industry and motivate others to follow a similar career path.

2.8 Influence of training in craft workers' career awareness

Training is another important factor in career awareness. While companies demand highly trained workers, people who are attracted to construction need to know these training requirements and how to achieve them successfully. According to Glover (2005), one of the major debates regarding workforce training in the United States refers to how the construction industry will train sufficient skilled workers to meet the future workforce demands. The performance, quality, and high level of dropouts in current training options is also a main concern. While the unionized sector favors apprenticeships, the open-shop sector believes in shorter-term methods. Glover (2005) found that apprenticeships with union participation have higher enrollments, a greater share of women and ethnic/racial minorities, and a better performance rate due to higher completion levels (Smith, Smith, Glover, & Bilginsoy, 2005). Glover (2005) also mentions that additional efforts are required to find better training alternatives. Woods (2012) similarly indicated that the apprenticeship programs in the U.S. need reforms to grow and become more productive. Overall, it is evident that construction training methodologies require revision.

Continuing with the importance of training in construction, according to the Construction Career Collaborative (C3) statistics review about contractors who successfully trained their employees, "Investing in training significantly enhances performance and project execution." Furthermore, C3 mentioned that "Productivity was up by as much as (24%); Turnover was down by as much as (43%); Job site absenteeism

was down by as much as (59%); OSHA recordable injuries were reduced by as much as (90%); First aid cases were reduced by as much as (90%).”

(<http://www.constructioncareercollaborative.org>). Additionally, the U.S. Department of Labor addressed that “every dollar invested in employee training in the construction industry provides a return of \$54.00.” (<http://www.constructioncareercollaborative.org>) To summarize, training has proven to have a significant positive impact on construction companies.

Overall, the literature has emphasized the importance of training and the need to improve construction training methodologies. The author’s study approached the work force to identify the most common type of training that workers are receiving. Likewise, in an attempt to understand the training that best worked for them, the study requested the participants to mention what training they will recommend to a new hire in their position. Moreover, by understanding workers’ perceptions on training, companies could improve their training efforts and potentially the outcome of such investment.

2.9 Career development

Another important factor related to careers and employee retention is career development and employees’ aspirations. The literature has addressed that financial incentives are not sufficient to motivate workers in the long-term. Providing workers with structured career development programs and progression opportunities are required to satisfy employees (Kappia et al., 2007). Satisfied employees result in motivated workers who will have a higher intention to stay working for the construction industry

(Kappia et al., 2007). Therefore, understanding what motivates workers to enter construction and to stay in the industry can assist companies to understand what workers value. With this understating, companies can better focus their efforts and facilitate employees' career aspirations (Kappia et al., 2007). This approach could improve workers' retention or the likelihood to remain working in their trade. The researcher's study addressed the previous concepts by asking participants what motivated them to choose construction and their trade, and also what will motivate them to remain working in their trade. Also, participants were asked about the opportunities they think their trade offers, and if training will motivate them to continue working for their trade.

2.10 Construction career awareness related studies

Few articles currently address construction craft workers' career awareness and the perceptions of what a successful career means for them. Furthermore, the literature lacks research focused on drywall tradesmen's career awareness. A recent study on a similar topic concentrated on fostering a successful career for young engineers in construction. The study focused on engineers' perceptions of a successful career, their motivations and their feedback when entering the industry. The study's survey showed that engineers feel responsible for their own career success and that networking, mentoring, training and constructive feedback were critical when fostering a successful career (Becker, Hartmann, & Miller, 2014). Although the latter concentrated on professional construction workers, the author's study used a similar approach to understand drywall tradesmen motivations and feedback. This information can assist

companies to understand their workers' level of career awareness and be able to provide a successful and realistic career path for them. In general, if companies understand what are drywall tradesmen's perceptions of a successful career, companies can provide their workers with better career paths that respond to laborers' interests and concerns. Consequently, companies' recruiting and retention strategies can be enhanced.

2.11 Current industry efforts towards career awareness

A number of Texas companies have worked towards creating career awareness and building retention for those interested in pursuing construction. The Greater Houston Partnership (GHP) focuses on creating jobs and positive business environments. GHP includes Austin, Brazoria, Chambers, Fort Bend, Galveston, Harris, Liberty, Montgomery, San Jacinto, Walker, and Waller counties. GHP has a campaign called "UpSkill Houston" to fill middle-skills jobs and to draw attention to the employment opportunities in these areas. Among the 53 occupations that GHP (2014) has classified as critical for Houston's economy, specialty construction offers several opportunities. On November 2014, GHP (2014) held the UpSkill Houston Workforce Development Summit. This conference allowed leaders from the industry, community and educational field to discuss the middle skills workforce challenges and possible solutions. Likewise, JPMorgan Chase (2014) released a report on, "Preparing Houston to Skill Up, Addressing the Skills Mismatch to Meet Employer Demand in High-Growth Industries." Overall, the previous examples demonstrate how companies are beginning to address the labor shortage and its possible solutions.

Similarly, the Construction Career Collaborative (C3) is an alliance comprised of Owners, Contractors and Specialty Subcontractors that are engaging Owners to demand skill and safety training for commercial construction workers. These efforts aim to assist the development and future of a qualified workforce by helping it grow and be maintained. Organizations affiliated to C3 will provide better construction careers for middle class workers by establishing and enforcing standards in skills and safety training. Regarding training, the main goals of C3 are to promote and support craft training standards based on national best practices, ensuring completion of Occupational, Safety and Health Administration (OSHA) training, and overall, generating industry awareness on the benefits of investing in craft worker's training, health and well-being.

Likewise, in California, the AGC (2014) invests in career awareness for secondary students. California's AGC oversees two events across California namely the "Construction Career Awareness Day" (CCAD). This conference gives students exposure to careers in construction, students become aware of the benefits and opportunities the industry offers, they have the insight of craft works through a hands-on experience, and they can network with apprenticeship program coordinators and several construction professionals.

2.12 Framework for analysis of motivational questions

The researcher studied motivational frameworks to help analyze open-ended questions included in this study, particularly the questions regarding the factors influencing workers to choose a career in construction and in their trade. Existent

literature on motivational theories in the construction industry have used several frameworks to analyze data (Navarro, 2009). This study implemented “Maslow’s Hierarchy of needs theory” as a framework; specifically the “Later Version” analyzed by Koltko-Rivera (Koltko-Rivera, 2006). Maslow’s Hierarchy of needs theory was developed in 1954. It suggests that there is a hierarchy that individuals follow to develop themselves. Scaling the hierarchy implies fulfilling prioritized needs. In ascending order, the five needs Maslow initially described were the following: 1) physiological, 2) safety and security, 3) belongingness, 4) esteem, and 5) self-actualization needs (Steers, Mowday, & Shapiro, 2004). Maslow classified the first three needs as “deficiency needs” people had to master to develop a healthy personality. The fourth and fifth needs are related to individual achievement and the development of human potential (Steers et al., 2004). Additionally, on 1969 Maslow stated a sixth motivational category of “self-transcendence” (Koltko-Rivera, 2006). Overall, these theories served as a framework to analyze the data described later in this paper.

2.12 Summary

In general, the literature illustrates how the construction labor shortage is a complex and growing issue in the United States and particularly in Texas. Construction labor shortage requires awareness, involvement, and commitment from the industry and policy makers, especially considering that construction is an important economic driver in the country. Career awareness is important and necessary in any career. In construction, knowledge of the career opportunities and requirements can potentially

increase the attraction and retention numbers. As Jerry Nevlud, president and CEO of AGC Houston mentioned, “We need to show young men and women that the industry is committed to providing not just a job but a career” (Songer et al., 2006). To understand drywall tradesmen’s level of career awareness within their trade, this study addressed the factors that attracted them to construction and their trade, their perspectives towards training, and their intent and motivations to remain working in the construction industry.

3. METHODOLOGY

3.1 Introduction

This study falls under the general category of a descriptive quantitative research. No cause-and-effect relationships were intended to be determined but rather the purpose was to examine the characteristics and associations of the phenomenon (Leedy & Ormrod, 2012). Specifically, two researchers performed the data collection.

The instrumentation for this study was a researcher-designed questionnaire which was administered in three ways: 1) a face-to-face interview, 2) a researcher-guided group interview, and 3) a self-administered questionnaire. Since the participating companies had different accessibility requirements as to when and how to approach their employees, the researchers designed the questionnaire to be applicable for data collection in all three scenarios previously mentioned.

Participants for this study were drywall construction workers from two major drywall specialty contractors who agreed and gave authorization to interview their personnel. Participants were working in projects located in Houston and Austin, Texas. The total number of recorded responses was 230; however not all participants answered all questions so a pairwise deletion process was implemented. The pairwise deletion process enabled researchers to take the most advantage of the available data by recording all answered responses even if participants did not answered the entire questionnaire.

In this section, the researchers will describe the selected sample for the study and the sampling procedure used. Also, the investigators will discuss specifics with the data

collection strategy, data analysis procedure, variables, measurement, instrumentation details, as well as the reliability and validity of data to be collected. Likewise, this study complied with Texas A&M University's Institutional Review Boards' (IRB) requirements and procedures since human subjects were involved.

3.2 Sample

Participants considered for the study were comprised of construction craft workers from 2 different firms. The specialty firms were drywall subcontractors with projects located in Austin and Houston, Texas. These companies are considered 2 of the major drywall specialty contractors within the state of Texas.

At the time of the study, participants worked in the dry wall trade performing drywall installation, including: drywall framing, drywall painting, drywall finishing, acoustic ceilings, drywall carpentry, and related drywall specialties. This was an appropriate sample because this study was specifically focused on the findings within these Texas locations. The participants were involved on diverse types of projects and in different cities. The study included participants from different skill level, age, gender, ethnicity, educational attainment, and years of experience. The sampling procedure was the nonprobability convenience sampling. This procedure gave the investigators a convenient access to the participants allowing for the conservation of time, resources, and effort (Creswell, 2012).

3.3 External validity

External validity refers to the extent in which the study conclusions could be generalized to other contexts. Studies performed in real-life settings may yield results replicable to other real-world contexts (Leedy & Ormrod, 2013). This study was focused on the construction trade of drywall installation in Texas. The selected sample was representative and strengthened the study's external validity since the sample comes from actual companies. The researchers gathered information from drywall workers of two of the major specialty drywall contractors in the state of Texas on a real life setting. In addition, this research had no external funding, so there were limited resources to invest into the process of data collection. Also researchers achieve more reliable results by collecting data from multiple sources, namely 2 large subcontractors in different locations within Texas.

3.4 Measurement

The instrumentation used for this study was a researcher-designed questionnaire containing twenty four (24) questions. The questionnaire was administered using face-to-face interviews, researcher-guided group interviews, and a self-administered questionnaire. The questionnaire can be found in Appendix A. The questionnaire's structure was comprised of five major sections.

3.4.1 Questionnaire Section 1

Included questions regarding participant's general background and demographics. This section was composed of 8 categorical and binary questions

addressing: age; gender; ethnicity; educational level attained; geographic origin; years of experience in the construction industry; and current construction trade.

3.4.2 Questionnaire Section 2

Comprised of questions addressing factors of construction career attraction and motives to join the industry. This section included 5 questions consisting of a multiple choice question and, binary, open ended, and Likert scale questions that addressed the following factors: aspects that attracted participants to work in the construction industry and in their trade; other work experience; construction as a first choice career; and if the participants left and re-entered the construction industry.

3.4.3 Questionnaire Section 3

Covered questions with topics on training consisting of multiple choice and binary questions with the following themes: type of training received; who financed their training; training recommendations; and if training will motivate workers to remain working in their trade.

3.4.4 Questionnaire Section 4

Addressed questions about career awareness and motivation. All motivational, training, and career awareness factors considered in the interviews were extracted from the literature review. This section included seven (7) open-ended, binary, and multiple choice questions with the following subjects being addressed: knowledge on job opportunities; perceptions of a successful future and a long term career in construction; desire to remain working in their trade; skills and qualifications needed; perception over encouraging a construction career to their children.

Regarding section two's questions on the factors that influenced participants' decision to work in the construction industry, the factors stated in the survey were identified from the literature review. These factors were mentioned by previous studies as having a positive influence on career decisions in construction and careers in general. Likewise, participants were asked open-ended questions to determine other factors that could have influenced their decision to join construction. The factors addressed in the questionnaire were: career advising, family influence, salary, industry image, no other working opportunities, career opportunities in construction and available training (Wise et al., 1976).

Once the interview was designed and completed, a pilot study was conducted prior to interviewing participants. The results of the pilot test allowed the researchers to assure that the questionnaire was easy to understand and to mitigate internal validity threats to help achieve the purpose of the study (Leedy & Ormrod, 2012). In fact, the language and format of certain questions from the English and Spanish questionnaire were modified after the pilot study. Interviews can be found in Appendixes A and B respectively.

The questionnaire instrument was designed for two studies addressing the construction labor shortage in the drywall installation trade. The overlap of the studies was done in the methodology section only. The purpose of combining two studies for the questionnaire was to allow the researchers to reach more participants. Also, this strategy allowed researchers to gather enough responses to draw powerful conclusions and yield more accurate results given limited resources. Given the high number of Spanish

speaking employees in this area, the investigators made the interview questionnaire available in English and Spanish. Participants were given the option to answer the questionnaire in their preferred language.

In this section, the three different interview procedures will be described. The face-to-face interview and the researcher-guided group interview were administered at project locations where the participating companies were working. The researchers visited four projects that were approved by the companies to perform the interviews in person. The type and location of the projects included: a commercial high-rise building in Houston, and residential high-rise buildings in Austin, Texas. For the self-administered questionnaire, the companies distributed the questionnaires to their personnel and once they were completed, they sent them by mail to the researchers.

Finally, regarding approval to work with human subjects, the researchers submitted the study to the IRB at Texas A&M University for approval. The IRB approved the study in March 2015. The IRB Approval letter can be found in Appendix C. Furthermore, authorization e-mails approving participation in the study for each company can be found in Appendix D.

3.5 Internal validity

Internal validity refers to how the study's design collects data that the researchers can use to draw accurate conclusions about cause-and effect and other relationships (Leedy & Ormrod, 2013). The study aimed to achieve internal validity by first implementing a pilot study and then by triangulating the data. The initial pilot study was

performed with 5 construction workers in which both the English and Spanish versions of the questionnaires were tested. The pilot study allowed the investigators to ensure that the instrument yielded the desired results and that it was easy to understand. After the pilot study, the questionnaire's format and language was revised to improve internal validity.

3.6 Data collection procedure

Researchers primarily coordinated data collection with a contact person from each company that agreed to participate in the study. The company contacts arranged meetings with company representatives on site. The latter asked the general contractors to give access to the investigators and to conduct the surveys on site. Investigators were required to wear proper construction personal protective equipment (PPE) on all project site visits. The date, time, and location of the appointments were scheduled in advance as the company representatives deemed convenient. The study yielded a total of 230 responses gathered from construction drywall workers. The interviews were performed during the spring 2015 semester. The interviews were appropriately coordinated and scheduled with each project's representative for access approval and to save time and resources.

Overall, data collection procedure comprised five steps:

- 1. Completion of a pilot study and revision of the interview questionnaires*
- 2. Establishment of a database of potential companies and projects to visit*
- 3. Coordination and schedule of appointments with project representatives*

4. *Execution of the face-to-face interviews, researcher-guided group interviews, and self-administered questionnaires*

5. *Data entry*

The first step of data collection was to conduct two pilot studies. The first one was performed with three construction workers employed by specialty drywall subcontractors located in the Bryan and College Station (B/CS) area. A second pilot study was conducted to three workers from one of the participating companies located in Houston. Both the English and Spanish questionnaires were tested. The results of the pilot tests allowed the researchers to assure that the instrument was easy to understand and guarantee that it will help achieve the purpose of the study (Leedy & Ormrod, 2012). The pilot study was conducted using a face-to-face approach. The language and format of some of the questions in the Spanish and English version of the interviews was modified but the content remained unchanged.

The second step of data collection was to create a database of potential companies and projects to visit. Researchers developed a database with ongoing construction projects, construction contractors, and subcontractors located in nearby Texas cities. The first company recruitment approach was a personal visit to local commercial projects in B/CS. The researchers successfully established contact with project managers and superintendents within these local projects and provided them with an information sheet. The study's information sheet that was distributed to companies can be found in Appendix E. Initially, company representatives expressed interest in

participating in the study yet, after following up with e-mails (refer to Appendix F) and telephone calls, all denied to be part of the investigation. The second company recruitment approach was done by contacting other local and statewide specialty contractors in person and by e-mail. This method was unsuccessful because several companies were small sized and had few workers, the firms expressed non-willingness to participate, and there was a zero percent (0%) response rate through e-mail communication. The third approach was to contact the Construction Industry Advisory Council (CIAC) members from the Texas A&M University - Department of Construction Science. Contacting CIAC member companies was a successful strategy. Two specialty drywall contractors agreed to participate in the study. Their contact information was found through the website: www.aggienetwork.com, specifically by accessing the "Find an Aggie" application. This website belongs to The Association of Former Students of Texas A&M University. Furthermore, the online professional network "LinkedIn" also served as another source of contacting company representatives. Yet, few people who were contacted through LinkedIn replied emails and were interested in participating in the study. Yet, in the end they denied participating due to time limitations of their companies.

The third step of data collection was to coordinate and schedule appointments with project representatives. Overall, company representatives were contacted in person, via e-mail, and through telephone calls for approval to perform the interviews with their personnel. A recruiting e-mail was sent to each representative (refer to Appendix G). The investigators visited with the first company that agreed to participate to establish a

communication line, to perform the second pilot study, and to coordinate the logistics of when and how to conduct the interviews on a project site. As mentioned before, the researchers provided company representatives with a clear explanation of the study objectives, a copy of the interviews in English and in Spanish, and an explanation on how the interviews could have been conducted.

Throughout the recruiting process, participation was encouraged but it was completely voluntary. Once the project representatives agreed to participate, a convenient date, time (during workdays), duration (fifteen minutes at most), and location to meet with the participants was scheduled as an appointment. The researchers scheduled as many appointments as necessary and performed as many interviews as possible within a given appointment. The researchers sent project representatives a reminder of the appointment at least one week in advance. No time conflicts arose during the scheduled appointments, therefore there was no need to schedule an alternative time for the interviews (Leedy & Ormrod, 2012).

The fourth step in data collection was the execution of the face-to-face interviews, researcher-guided group interviews, and the self-administered questionnaires. Prior to the interview sessions, project representatives informed their employees of the study. For the interview days, the researchers met with the participants in a convenient location within each project and tried to avoid external distractions. When the researchers arrived at the project sites, the method in which the interviews were coordinated was that a company representative would select a group of either 5, 10, 15, or 20 members. Participants were momentarily separated from their current working

activities and gathered to perform the interviews. The face-to-face interviews were conducted to personnel that needed assistance due to their poor reading and /or writing skills and to those people who expressed difficulty in understanding the questions. There were approximately ten face-to-face interviews administered. The researcher-guided group interviews were administered indoors, and when conditions allowed for it, outdoors. A project site office was established as a meeting area to perform such interviews and when this was not available, the investigators gathered all participating personnel in an outdoor environment surrounding the site office trailers. The researchers explained the study and its objectives to each group prior to responding to the questions. In general, participants took approximately 15 minutes to complete the questionnaire. For the self-administered questionnaires, the companies distributed the questionnaires to their personnel at a convenient time for them. Once the questionnaires were completed, companies sent them by mail to the researchers.

Participation was encouraged but was voluntary. This study did not require a waiver of documentation of consent. The participants were given an information sheet with the study's overall information including study objectives, interview procedure and duration. Researchers also verbally emphasized that the study involved no risk to them, and that no personal identifying information was required. Overall, employees decided to voluntarily participate or not. Those who agreed to participate, proceeded to answer the questionnaire. The researchers guaranteed the confidentiality of the participants' responses. There was no audio recording instrument needed to record the interviews.

The fifth and final step in data collection was data entry. Once questionnaires were completed, the researchers used Survey Monkey to collect data. Survey Monkey is an online, cloud-based surveying software that allowed researchers to manually input all questionnaire responses into a protected account. This tool was used in the process of data entry, storage, analysis and representation. All data entry was made in English. The researchers translated all Spanish responses given that Spanish is their mother tongue and they have English language proficiency. Special attention was given to translating all responses accurately, within context, and avoiding bias and misinterpretation. Illegible handwritten responses, especially on open-ended questions, were not considered as part of the findings to avoid misinterpretation.

After each interviewing session, the investigators thanked the participants and the company representatives for their collaboration and support in the study. Company representatives were asked additional information about the companies that significantly strengthened the study. Each company was asked the following information: number of drywall workers employed, the different specialties in drywall installation available in their companies, the career path for a new drywall hire, the requirements or qualifications for employee advancement, the required and provided training, and information on the recruitment process.

3.7 Data analysis procedures

This research study comprised nominal, multiple choice, open-ended questions, and Likert-scaled responses. Prior to the analysis, data was filtered to avoid irrelevant

information and focus only on responses that were significant to the study. The first data-filtering criteria was to include only drywall tradesmen from all skill level but not their supervisors. Likewise, sensitive information data was filtered to avoid potential consequences to participants.

The data was analyzed using descriptive statistics, which included averages, percentages, graphs, and tables. Survey Monkey was used to analyze this type of data. Section 1 of the questionnaire included eight categorical and binary questions that were analyzed using descriptive statistics. These demographic questions were used to describe the sample population. The questionnaire also included eight open-ended questions. Responses for these questions were analyzed by organizing the data into concepts, coding data and through a content analysis for repetitive words or phrases. Answers received a weight and data was statistically examined and interpreted. Likewise, nonparametric statistical tests were conducted using the “Statistical Package for the Social Science” (SPSS) program to find relationships between the attained data. The researcher also included observations made while collecting the data to complement the data analysis.

The questionnaire also included two nominal scale questions enabling the researchers to determine the mode and percentage values. The interval scale allowed to determine the mean, standard deviation, and product moment correlation (Leedy & Ormrod, 2012). Finally, since not all participants answered the entire questionnaire, pairwise deletion was implemented to use all available responses for each particular

question. Consequently, when calculating the study's descriptive statistics, each question had a different sample size (n).

3.8 Summary

This study used a researcher-designed questionnaire that was administered to drywall construction workers of two different companies located in Houston and Austin, Texas. The main objective of this research was to understand construction craft workers' career awareness. In particular, the study focused on the factors motivating drywall tradesmen to join construction and their trade, their attained training and the influence of training in their decision to remain in their trade, drywall tradesmen's knowledge of career opportunities and required skills, and their career expectations.

4. DATA AND ANALYSIS PROCEDURES

4.1 Introduction

This study aimed to determine the factors motivating drywall tradesmen to choose a career in construction and in their specific trade. Likewise, this study attempted to determine the training drywall tradesmen have received and if training would motivate them to remain in their trade. Furthermore, this research also focused on workers' career awareness based on their understanding of the opportunities and requirements from their trade.

This study sought to answer four research questions:

1. What factors influenced construction craft workers to choose a career in construction and in their specific trade?
2. What types of training have craft workers received during their career in construction? How can training influence their willingness to remain in their trade?
3. What is craft workers' awareness of career opportunities and required skills and qualifications within their trade?
4. What are craft workers' career expectations in their trade? Do they anticipate a successful future?

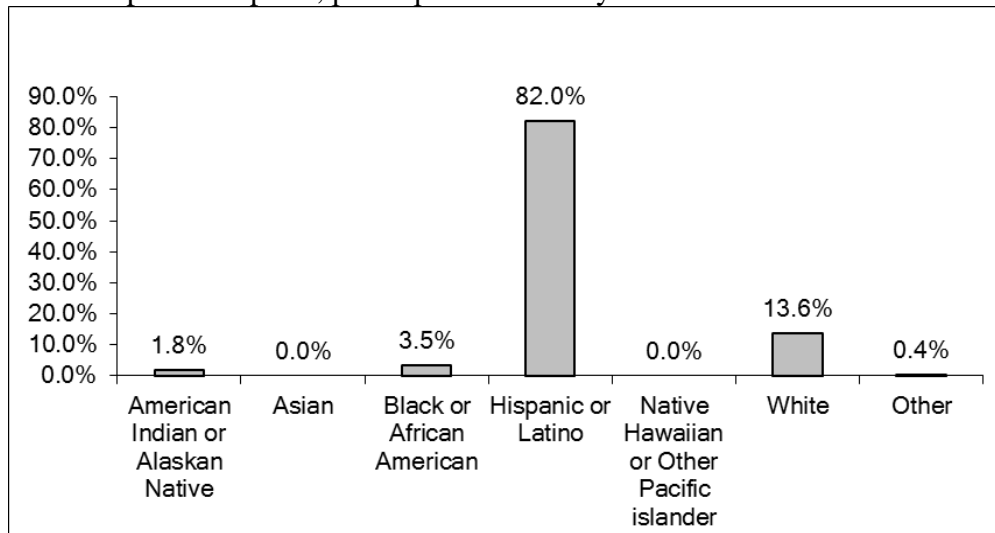
4.2 Sample description

This section will describe the sample based on the demographic questions addressed in the first section of the study's questionnaire. Of the two hundred and thirty (230) total usable responses, one hundred and thirty eight (138) came from company "A" with projects located in Houston, Texas. The other ninety two (92) responses came from company "B" with projects located in Austin, Texas. Regarding the language in which participants answered the questionnaire, contestants were able to choose between English and Spanish questionnaires depending on their preference. From the two hundred and thirty (230) responses, sixty (60 - 26.08%) questionnaires were answered in English and one hundred and seventy (170 - 73.92%) were answered in Spanish. Participant's average age was thirty seven (37.37) years old. With two hundred and twenty five (225 - 97.82%) responses and five (5 - 2.18%) skipped responses, two hundred and twenty (220 / 97.8%) were male participants and five (5 / 2.2%) were female participants.

Additionally, the study comprised participants from diverse ethnicities. The questionnaire allowed respondents to self-identify themselves from six different ethnicities, namely: 1) American Indian or Alaskan Native, 2) Asian, 3) Black or African American, 4) Hispanic or Latino, 5) Native Hawaiian or Other Pacific islander, and 5) White. The option of specifying "other" ethnicity was also available. As seen in Figure 1, with one hundred and eighty seven participants (187 - 82%), the "Hispanic / Latino" identifier was the most representative ethnicity. The second most representative ethnicity was "White" with thirty two persons (32 - 13.6%). Black or African American were the

third most representative ethnicity with eight respondents (8 - 3.5%). American Indian or Alaskan Native was the fourth ethnicity group with four individuals (4 - 1.8%). Finally, one person (1 - 0.4%) self-identified as “other.”

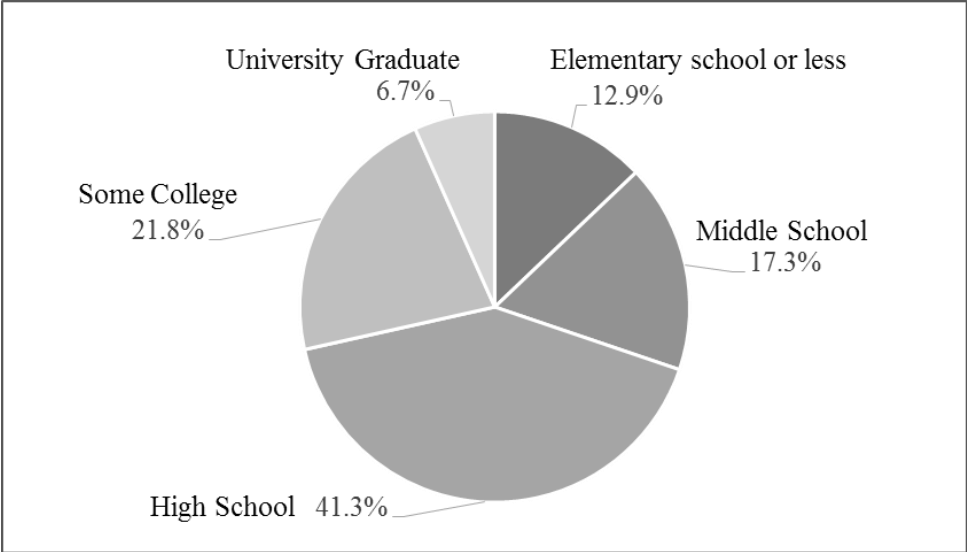
Figure 1: Sample description, participants’ ethnicity



Regarding the participants’ educational level, the study collected two hundred and twenty five responses (225). Participants were asked to identify themselves within five available categories, addressing the maximum educational level they have attained. As shown in Figure 2, the majority of respondents, ninety three (93 - 41.3 %); had finished High School; forty nine participants (49 - 21.8%) had attained “Some College;” thirty nine (39 - 17.3%) had finished Middle School; twenty nine (29 - 12.9%) had finished Elementary School or less; and fifteen (15 - 6.7%) were University Graduates.

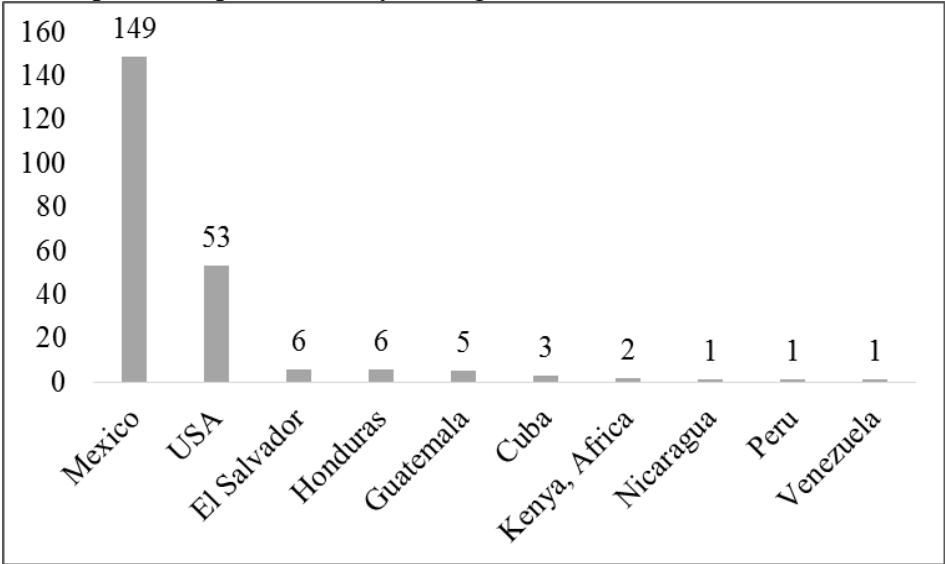
For participants mentioning they were “University Graduates”, 14 (93.33%) were men, 1 (6.67%) was a female, and their average age was 41 years old. Additionally, most participants (12 – 80%) with a university degree were non-U.S. born. In detail, 9 (60%) participants were from Mexico, 3 (20%) were from the U.S., and 1 (6.66%) participant was from Cuba, Honduras and Peru respectively. Likewise, on average, (53.33%) of participants with a university degree had worked in the construction industry for more than 10 years, (26.67%) had worked from 1 to 5 years, and (20%) had worked in the industry for less than a year. Additionally, three participants were born and raised in the U.S. and three participants were born outside the U.S. but were raised in this country until they were 18 years old. Therefore, it can be assumed that six participants received their university degrees in the United States.

Figure 2: Sample description, attained educational level



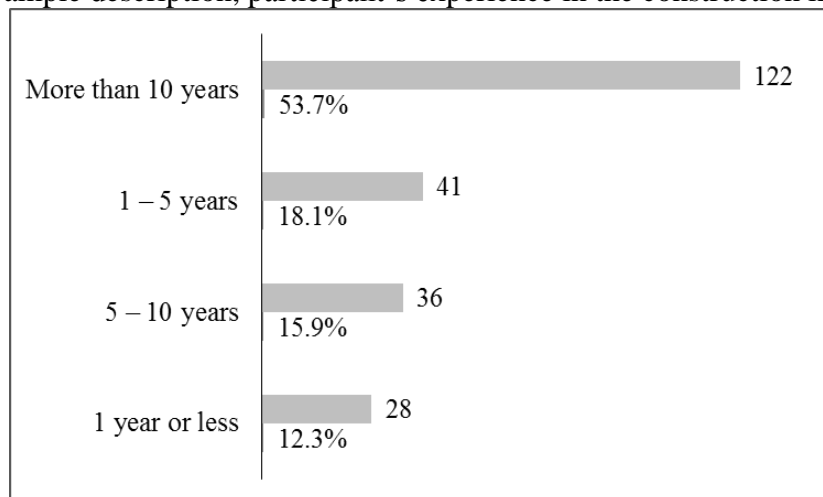
Moreover, participants were also asked about their country of origin. The questionnaire asked to specify the country and city where they were born. Overall, two hundred and twenty seven (227) participants answered this question. As shown in Figure 3, participants originated from different regions and continents such as North, Central and South America, from the Caribbean and also from Africa. A significant majority of the respondents were born in Mexico, specifically one hundred and forty one (141 - 66.5%) participants. With forty eight (48) responses (22.64%), the United States was the second most representative country of origin. El Salvador, Honduras, and Guatemala represented the third most common countries of origin with five (5) participants each (2.36%). Furthermore, Cuba with three (3) respondents and (1.42%), and Kenya with two (2) respondents (0.94%) followed. Finally Nicaragua, Peru and Venezuela all represented (0.47%) with one (1) participant each.

Figure 3: Sample description, country of origin



Referring to participants' experience in construction, the questionnaire asked how long they had worked in the construction industry. As Figure 4 indicates; twenty eight (28 - 12.3%) respondents had worked for one year or less in the construction industry; forty one (41 - 18.1%) had one to five years of construction experience; thirty six (36 - 15.9%) had worked from five to ten years within the industry; and finally one hundred and twenty two (122 - 53.7%) people represented the most experienced individuals; having worked for more than ten years in the construction industry. This results evidence that a large majority (53.7%) of participants have more than 10 years of experience in the industry. This fact, together with an average age of 37 years old, corroborates the literature by addressing that construction workers are aging (Francis & Prosser, 2013).

Figure 4: Sample description, participant's experience in the construction industry



4.3 Data analysis

4.3.1 Research question 1: What factors influenced construction craft workers to choose a career in construction and in their specific trade?

The researcher used open-ended and Likert-scaled questions to determine the factors influencing workers to choose a career in construction and their trade. As stated by Leedy, by collecting multiple sources of data or triangulating information, the data should converge to prove a particular theory (Leedy, 2013). Question nine (9) was open-ended and it asked participants the following: 9a, “What attracted you to work in the construction industry?”, and 9b, “What attracted you to work in your current trade?” Furthermore, question thirteen (13) was Likert-scaled and it asked: “How did the following factors influence your decision to work in the construction industry?” The questionnaire’s order was designed specially to first determine participants’ thoughts and general awareness of why they decided to work in the construction industry, without providing them with any guide or reference.

To classify open-ended responses, different categories and sub-categories were established to determine what motivated or influenced participants to choose construction and their trade. Open-ended responses were first classified into general categories or concepts. As mentioned in the literature review, this study used “Maslow’s Hierarchy of needs theory” and specifically the “Later Version” as a framework (Koltko-Rivera, 2006). The following section will define the seven categories included in the framework. Responses were classified under each category depending on the words and

phrases participants declared. A description of what participants seek under each category is addressed below:

1. *Physiological needs*: responses including words or phrases addressing the desire to obtain the basic necessities of life such as; breathe, food, shelter, clothing, sleep, money, and overall everyday necessities (Koltko-Rivera, 2006).
2. *Safety and security*: responses related to seeking security through order and law. Also health, employment, property, family, and social stability (Koltko-Rivera, 2006).
3. *Belongingness and love*: answers addressing affiliation with a group, friendship, family, intimacy, sense of connection (Koltko-Rivera, 2006).
4. *Esteem*: words or phrases related to recognition by others, achievement, confidence, need to be a unique individual (Koltko-Rivera, 2006).
5. *Self-actualization*: fulfilment of personal potential, morality, creativity, experience purpose and inner potential (Koltko-Rivera, 2006).
6. *Self-transcendence*: seeking to further a cause beyond the self, including service to others, devotion to an ideal or a cause (e.g., transcendent or divine). Experience a communion beyond the boundaries of the self through peak experience (e.g., mystical experiences) (Koltko-Rivera, 2006).
7. *Arbitrary*: responses that mentioned the following topics: participants were attracted to construction by chance; nothing attracted them; they do not know why they chose this industry; construction was the first or only option they found; they were forced to it.

Additionally, categories were divided into sub-categories originating from participants' repetitive words and phrases within each major topic. Sub-categories will be described and summarized below. The researcher first assigned responses to categories and then to sub-category to sort data. Each sub-category received one point for every time a participant mentioned words or phrases related to it. If participants mentioned more than one sub-category in their responses, points were added to all. Once responses were classified, the numerical values for each sub-category and category were added. The latter served to rank the most and least influential "factors" that motivated drywall tradesmen to choose construction and their trade. Overall, there were 215 responses for question 9a [What attracted you to work in the construction industry?] and 207 responses for question 9b [What attracted you to work in your current trade?]. Table 2 summarizes the numerical values for questions 9 a/b for each category and sub-categories. Likewise, it addresses the classifying criteria and main concepts within each subcategory.

The classification evidenced that the most influential factors to choose a career in construction were "Physiological needs" (107), specifically: "Money" (64), "Necessity" (38) and, "Lack of education" (5). The second most influential factors attracting participants to work in construction was "Belongingness and love" (94) needs. This category was divided into: "Sense of connection, belonging, like it" (65), and "Affiliation with a group, family or friends" (29). The "Esteem" (38) category was ranked third with its subcategories being: "Achievement through learning" (34) and "Recognition by others" (4). Furthermore, "Safety and security" (33) followed with its

responses divided under “Job and financial security” (29), and “Health and well-being” (4). The fifth ranked category was “Self-actualization” (17) divided into “Personal growth” (9) and “Purpose, meaning and inner potential” (8). Finally the “Arbitrary” (12) category was ranked sixth and the “Self-transcendence” (1) was ranked seventh. Additionally, ranks for categories and subcategories influencing workers to choose a career in construction can be found in Table 3 and Table 4 correspondingly. All participants’ single responses to these questions (a/b) can be found in Appendix H.

Table 2: Summary of categories and sub-categories results, question 9a and 9b

Need-levels	Categories	9a. <i>n</i>	9b. <i>n</i>	Sub-categories	9a. <i>n</i>	9b. <i>n</i>
6	Self-transcendence	1	3	Service to others, devotion to an ideal or a cause	1	3
5	Self-actualization	17	14	Personal growth	9	11
				Purpose, meaning and inner potential	8	3
4	Esteem	38	31	Achievement through learning	34	31
				Recognition by others	4	0
3	Belongingness and love	94	106	Sense of connection, belonging, like it	65	70
				Affiliation with a group, family, or friends	29	36
2	Safety and Security	33	46	Job and financial security	29	41
				Health and well-being	4	5
1	Physiological needs	107	66	Money	64	50
				Necessity	38	15
				Lack of education	5	1
-	Arbitrary	12	13	Chance, nothing, don't know why, first or only option they found, forced to it	12	13

Regarding the factors attracting workers to choose a career in the drywall trade, “Belongingness and love” (106) needs resulted to be the most influential factors. The

second and third most influential categories were “Physiological needs” (66) and “Safety and security” needs (46) correspondingly. “Esteem” (31) was ranked fourth and “Arbitrary” (13) was ranked fifth. Finally, the least influential factors to choose a career in the drywall trade were “Self-actualization” (14) and “Self-transcendence” (3). Table 5 and Table 6 summarize category and sub-category results from question 9b [What attracted you to work in your current trade?].

Table 3: Rank order of categories influencing workers to choose a career in construction (9a)

Rank	Influencing needs	<i>n</i>
1	Physiological needs	107
2	Belongingness and love	94
3	Esteem	38
4	Safety and Security	33
5	Self-actualization	17
6	Arbitrary	12
7	Self-transcendence	1

Table 4: Rank order of sub- categories influencing workers to choose a career in construction

Rank	Sub-categories / factors	<i>n</i>
1	Sense of connection, belonging, like it	65
2	Money	64
3	Necessity	38
4	Achievement through learning	34
5	Affiliation with a group, family, or friends	29
	Job and financial security	29
6	Chance, nothing, don't know why, first or only option they found, forced to it	12
7	Personal growth	9
8	Purpose, meaning and inner potential	8
9	Lack of education	5
10	Recognition by others	4
	Health and well-being	4
11	Service to others, devotion to an ideal or a cause	1

Table 5: Rank order of categories influencing workers to choose the drywall trade

Rank	Influencing needs	<i>n</i>
1	Belongingness and love	106
2	Physiological needs	66
3	Safety and Security	46
4	Esteem	31
5	Arbitrary	13
6	Self-actualization	14
7	Self-transcendence	3

Table 6: Rank order of sub-categories influencing workers to choose the drywall trade

Rank	Sub-categories / factors	<i>n</i>
1	Sense of connection, belonging, like it	70
2	Money	50
3	Job and financial security	41
4	Affiliation with a group, family, or friends	36
5	Achievement through learning	31
6	Necessity	15
7	Chance, nothing, don't know why, first or only option they found, forced to it	13
8	Personal growth	11
9	Health and well-being	5
10	Service to others, devotion to an ideal or a cause	3
	Purpose, meaning and inner potential	3
11	Lack of education	1
12	Recognition by others	0

Continuing with what factors influenced craft workers to join construction, question thirteen (13) further addressed this topic. The question mentioned: “How did the following factors influence your decision to work in the construction industry?” Participants were provided with seven factors the literature review states can have an influence on workers’ decision, namely; 1. Career advising; 2. Family influence; 3. Salary; 4. Industry image; 5. No other working opportunities; 6. Career Opportunities in construction; and 7. Available training. Participants had to select the level in which these factors influenced them. The response options and their assigned numeric values

were: Highly Negative (1), Slightly Negative (2), No influence (3), Slightly Positive (4), and Highly Positive (5). With these numeric values, the researcher used pairwise deletion and descriptive statistics (mean and standard deviation) to analyze each factor's level of influence. As the mean deviated from 3.0, each factor had a high/positive or low/ negative level of influence on participants' decision to join construction.

In general, results evidenced that all factors had a positive influence on participants' decision to work in the construction industry. As demonstrated in Figure 5 and Figure 6, Salary (M= 4.09; SD= 1.09) and Family influence (M= 4.07; SD=1.07) were the most influential factors. With close values, the second group of most influential factors were; Career Opportunities in construction (M= 3.98; SD=0.98); Available training (M= 3.96; SD=0.96); and Industry's image (M= 3.95; SD=0.95). Finally, Career advising (M= 3.88; SD=0.88) and No other working opportunities (M= 3.3; SD=0.3) were the least influential factors. A ranked summary of the statistical analysis can be found in Table 7. Results for the other influencing factors can be found in Appendix H.

Figure 5: Salary influence in construction career decision

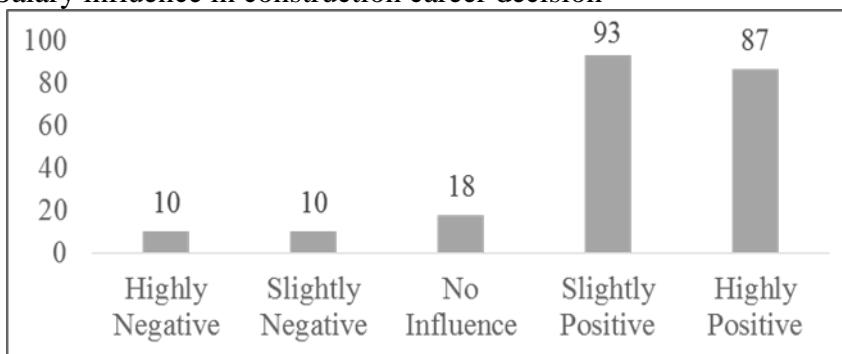


Figure 6: Family influence in construction career decision

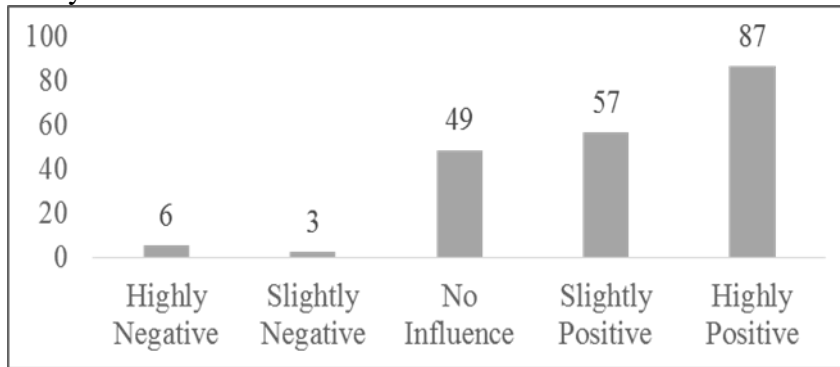


Table 7: Rank order of positive influential factors in selecting construction

Rank	Factor	n	M*	Std. Dev.
1	Salary	218	4.09	1.09
2	Family influence	202	4.07	1.07
3	Career Opportunities in construction	206	3.98	0.98
4	Available training	206	3.96	0.96
5	Industry image	196	3.95	0.95
6	Career advising	203	3.88	0.88
7	No other working opportunities	200	3.3	0.3

* $M > 3$: Positive Influence ; $M=3$: No Influence ; $M < 3$: Negative Influence

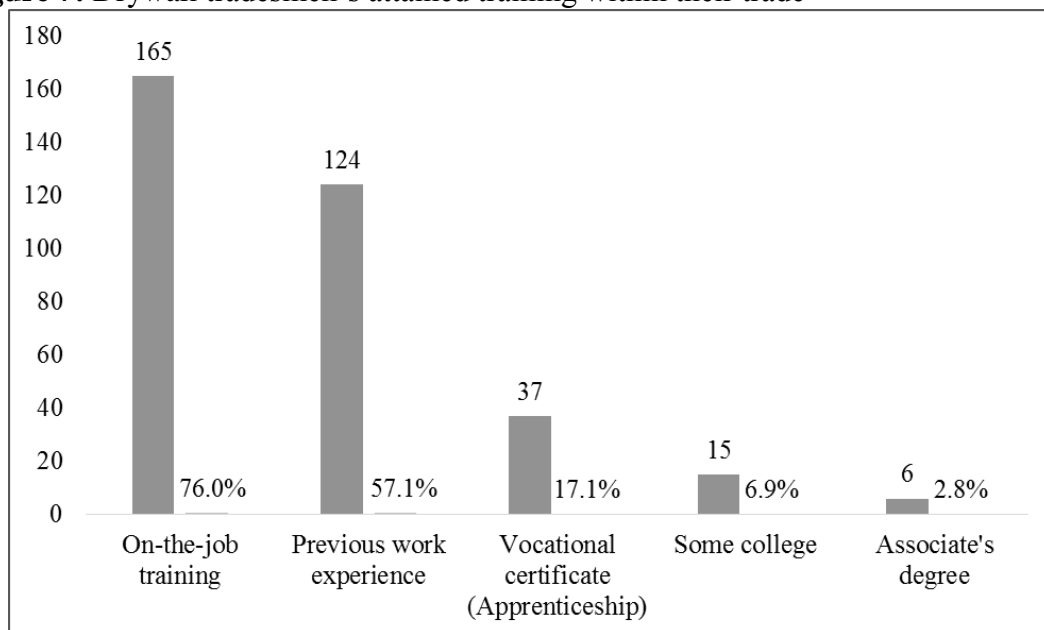
4.3.2 What types of training have craft workers received during their career in construction? How can training influence their willingness to remain in their trade?

To address these inquiries, the researcher used multiple choice and binary questions. The first question was: “What type of training have you received on your current trade?” Participants were able to select all the training they had received from the following options found through the literature review: a) On-the-job training, b) Previous work experience, c) Vocational certificate (Apprenticeship), d) Associate’s degree, e) Some college. They also had the option to specify other training they had

received. A total of two hundred and seventeen (217) participants answered the question and thirteen (13) abstained.

Results of drywall tradesmen’s attained training within their trade is summarized in Figure 7. The most common type of attained training was “On-the-job training” with one hundred and sixty five (165 / 76%) responses. The second most common type of attained training was “Previous work experience” with one hundred and twenty four (124 / 57.1%) respondents. “Vocational certificate or Apprenticeship” was the third ranked type of training with thirty seven (37 / 17.15%) responses. “Some college” received twelve (12 / 6.9%) responses, and finally “Associate’s degree” was the least common type of training drywall tradesmen’s had attained with six (6 / 2.8%) replies.

Figure 7: Drywall tradesmen’s attained training within their trade



Aside from the training options addressed by the literature review, twenty five (25) participants specified “other” training they had received. In descending order; thirteen (13) participants mentioned safety training; ten (10) declared to have received further technical training; four (4) addressed general construction training provided by their companies; two (2) stated receiving supervision/ management training; and one (1) person mentioned not receiving any training. Within the safety training, two (2) participants mentioned OSHA-30 hours training, and one mentioned OSHA-10 hours training. Similarly, responses addressing “technical training” included; instruction in the use of machinery, tools, and forklift; blueprint reading; welding; flagger training; Union training, and The National Center for Construction Education and Research (NNCCER) certification. Results for the additional training workers have received within their trade are shown in Table 8. Additionally, individual responses can be found in Appendix H.

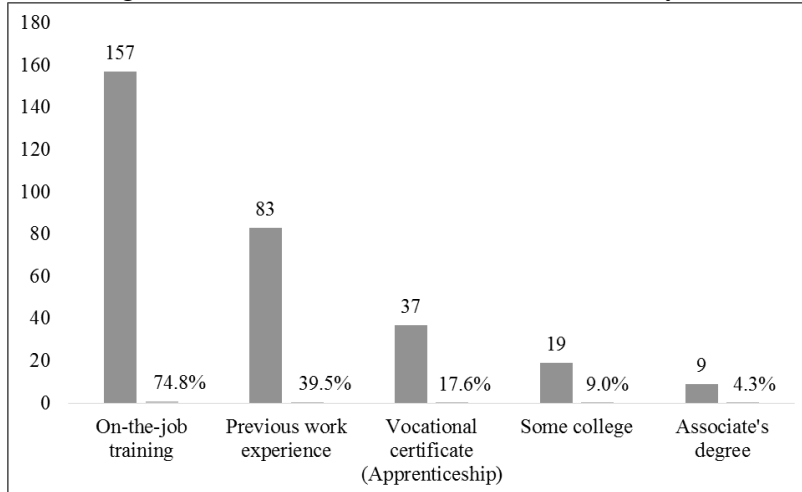
Table 8: Additional attained training within their trade

Rank	Additional training	<i>n</i>
1	Safety	13
2	Further technical training	10
3	Company's general construction training	4
4	Supervision	2
5	No training	1

Furthermore, participants were also asked, “For a new hire interested in your trade, what type of training would you recommend?” The same training options from the previous question were available. A total of two hundred and ten (210) persons answered

this question and ten (10) abstained. A summary of the training drywall tradesmen’s would recommend for a new hire in their trade is shown on Figure 8.

Figure 8: Peer training-recommendation for a new hire in the drywall trade



Overall, the majority of participants (157 / 74.8%) recommended new hires to attain "On-the-job training." The second most suggested training was to have "Previous work experience" (83 / 39.5%). "Vocational certificates or apprenticeships" were the third most recommended training (37 / 17.6%). Some participants (19 / 9%) also suggested "Some college" as the most desirable training to acquire. Finally, approaching an "Associate's degree" was also recommended by respondents (9 / 4.3%).

Yet, when analyzing participants' attained training and the type of training they would recommend for a new hire in their trade, not all participants recommended the same type of training they had received. Table 9 compares participants' attained training and their willingness to recommend the same type of training they received. For

instance, only (76%) of participants receiving “On-the-job training,” recommend it. Likewise, “Previous work experience” was only recommended by (45%) of participants, and “Apprenticeship programs” by (41%). Furthermore, only (7%) of participants receiving “Some college” and (17%) of respondents having an “Associate’s degree” will recommend receiving the same type of training they pursued.

Table 9: Participant's attained training and their willingness to recommend the same type of training to new hires in their trade

Rank	Types of training	Attained training	Recommending attained training	
		(n)	(n)	%
1	On-the-job training	165	125	76%
2	Previous work experience	124	56	45%
3	Apprenticeship	37	15	41%
4	Some college	15	1	7%
5	Associate's degree	6	1	17%

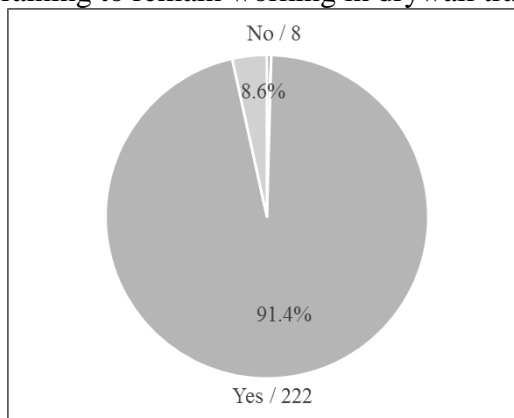
Additionally, eleven (11) participants specified “other” types of training they recommend as exposed in Table 10. Specifically; three (3) people mentioned to work for a company that provides a decent training program; three (3) individuals made a reference to continue studying (high school diploma, study on-line); two (2) people suggested to pursue safety training; two (2) participants mentioned to train and learn from other experienced workers within the trade; one (1) person mentioned learning about tool handling; and one (1) recommended to practice and be interested in the trade. Individual responses to this question can be found in Appendix H.

Table 10: Other suggested training for new hires

Type of training	<i>n</i>
Safety	2
Company-specific training program	1
Tool handling	1
Learn from someone experienced	1
Talk to other workers about the trade	1
High school diploma	1
Practice and be interested	1
Join a company with a good training program	1
Keep studying	1
Study on-line	1

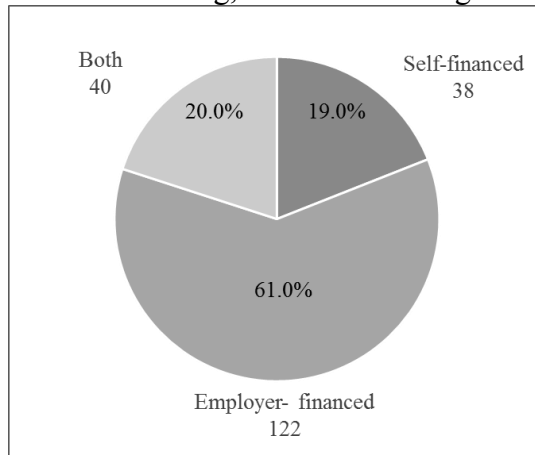
Additionally, to determine if training will motivate drywall tradesmen to remain in their trade, the questionnaire asked them; “Will training motivate you to remain in your trade?” Two hundred and twenty two (222) responses were collected for this question. A significant majority (203 / 91.4%) mentioned that “yes”, training will motivate them to remain working in their trade. However, some people (19 / 8.6%) mentioned that training will not motivate them. Figure 9 summarizes these findings.

Figure 9: Influence of training to remain working in drywall trade



The final question regarding drywall tradesmen’s training asked participants, “Who financed your training?” As displayed in Figure 10, one hundred and twenty two (122 - 62%) persons mentioned that their employer had financed their training, forty (40 - 20%) participants mentioned that both they and their employer have financed their training, and finally, thirty eight (38 - 19%) addressed they personally financed their training.

Figure 10: Drywall tradesmen’s training, source of funding



4.3.3 What is craft workers’ awareness of career opportunities and required skills and qualifications within their trade?

To identify if drywall tradesmen were aware of career opportunities within their trade, participants were asked the following open-ended question: “What kind of job opportunities does your trade offer?” To classify responses, common words and phrases were first categorized in three general categories: 1) participants who manifested a

positive connotation, therefore suggesting they agree their trade offered them with job opportunities; 2) respondents who expressed a neutral or uncertain connotation suggesting they were unsure if their trade offered them any opportunities, and 3) negative connotation, signifying they believed their trade did not offered them any job opportunities or at least they did not know if those opportunities existed.

Furthermore, responses were classified into sub-categories based on common words and themes. The first category (positive connotation), was further divided into the following sub-categories: a) coach / helper, b) mechanic trainee, c) leadman / supervisor, d) foreman, e) superintendent, f) project manager, g) own company / work independently, h) work in a different trade, i) personal growth and learning opportunities, j) employment benefits, work stability, and better salary, k) several / not specified. The second classifying category (neutral connotation), included participants mentioning “maybe some opportunities” were offered by their trade. The third category (negative connotation) included participants who mentioned having “no opportunities.” Overall, one hundred and fifty two (152 - 66.09%) participants provided their opinion and seventy eight (78 - 33.91%) eluded it. A summary of the response classification into categories, subcategories and their outcome is presented in Table 11.

Table 11: Participants’ perceptions on job-opportunities within the drywall trade

Category	Sub-category	<i>n</i>
Positive Connotation (194)	Personal growth and learning opportunities	58
	Foreman	39
	Several opportunities not specified	27
	Employment benefits, work stability, and better salary	24
	Leadman / supervisor	19
	Superintendent	8
	Own company / work independently	6
	Work in a different trade	6
	Coach / helper	3
	Mechanic trainee	3
Project Management	1	
Neutral Connotation (10)	Maybe some opportunities	10
Negative Connotation (7)	No opportunities	7

The researcher analyzed common characteristics between responses with a “negative connotation.” As shown in Table 12, all participants who thought their trade offered them “no” opportunities were male with an average age of 38 years old. Likewise, all came from minority ethnicities, specifically 6 (85.7%) were Hispanic and 1 (14.3%) was an American Indian or Alaskan Native. Similarly, 6 (85.7%) participants were born in Mexico, and 1 (14.3%) was born in the U.S. Regarding the country were they were raised, (71.4%) of participants were raised in Mexico and (28.6%) were raised in the U.S. until they were 18 years old. Although these participants thought their trade had no opportunities, (71.4%) of them mentioned that training will motivate them to remain working in their trade.

Table 12: Common characteristics between participants who think their trade has no opportunities

Characteristic	Outcome	<i>n</i>	%
Gender	Male	7	100.0
Age	Average age	38	NA
Ethnicity	Hispanic or Latino	6	85.7
	American Indian or Alaskan Native	1	14.3
Contry of origin	Mexico	6	85.7
	USA	1	14.3
Country growing up until 18 years old	Mexico	5	71.4
	USA	2	28.6
Influence of training to remain working	Yes	5	71.4
	No	2	28.6
Education	High school	4	57.1
	Some college	2	28.6
	Elementary school or less	1	14.3
Time working in construction	More than 10 years	4	57.1
	1 – 5 years	2	28.6
	1 year or less	1	14.3

Although Table 11 summarizes and categorizes participants’ responses, further analysis was required to determine if drywall tradesmen were aware of the job opportunities and career paths within their trade. The previous classifying conditions served as a baseline to develop the second classifying criteria explained below. For the second approach, responses were classified according to participants’ knowledge, understanding and awareness of career opportunities and career paths in their trade. For instance, participants answering specific job positions within their career path, or concise future plans were classified as “awareness of career-promotion opportunities or career paths”. In detail, this category included participants that answered: a) coach / helper, b) mechanic trainee, c) leadman / supervisor, d) foreman, e) superintendent, f) project

manager, g) own company / work independently, h) work in a different trade.

Participants under this category evidenced they were aware of the career paths and scaling opportunities available in the drywall trade, and they were able to explain such opportunities. In total, eighty five (85) responses were classified under the “awareness of career-promotion opportunities or career paths” category.

The second category was “awareness of non-promotion career opportunities”. Responses and phrases mentioning: a) personal growth and learning opportunities, b) employment benefits, work stability, and better salary, and j) several / not specified, were included under this category. Responses under this category mentioned growth and benefit opportunities, but no specific examples of career scaling. Participants under this category did not have a clear understanding of available career paths or what specific career opportunities their trade offered. In general, one hundred and nine (109) responses were classified within the “awareness of non-promotion career opportunities” category.

Finally, the third established category was “unaware of available opportunities”. People that answered, a) no opportunities, and b) maybe some opportunities, were classified under this category. Participants under this category had responses with a negative or an ambiguous connotation, implying they thought they had no opportunities within their trade, or they could possibly have opportunities but they were not knowledgeable of them in order to specify them. A total of seventeen (17) responses were classified under the “unaware of available opportunities” category. Table 13 summarizes and ranks categories and subcategories. The “awareness of non-promotion career opportunities” category was top ranked with one hundred and nine (109)

responses. The second ranked category was “awareness of career-promotion opportunities or career paths” with eighty five (85) responses. Finally, the “unaware of available opportunities” category was ranked third with seventeen (17) responses.

Table 13: Participant’s awareness of job opportunities in the drywall trade

Rank	Category	Sub-category	<i>n</i>
1	Awareness of non-promotion career opportunities (109)	Personal growth and learning opportunities	58
		Employment benefits, work stability, and better salary	24
		Several opportunities not specified	27
2	Awareness of career-promotion opportunities or career paths (85)	Foreman	39
		Leadman / supervisor	19
		Superintendent	8
		Own company / work independently	6
		Work in a different trade	6
		Coach / helper	3
		Mechanic trainee	3
Project Management	1		
3	Unaware of available opportunities (17)	Maybe some opportunities	10
		No opportunities	7

Continuing with participants’ awareness of the skills and qualifications required by their trade, the researcher asked them: “What skills and qualifications do you think are required to be successful in your trade?” Overall, two hundred (200 – 86.96%) participants answered this question. Again responses were categorized based on repetitive words and phrases. Overall, seventeen (17) categories were identified. Table 14 summarizes and ranks the skills and qualifications participants’ thought were necessary to be successful in their trade. By knowing what workers think is necessary to be successful in their trade, companies can focus on training them on those skills and

hire people having such skills. Furthermore, this could become part of their recruiting process and job descriptions as well.

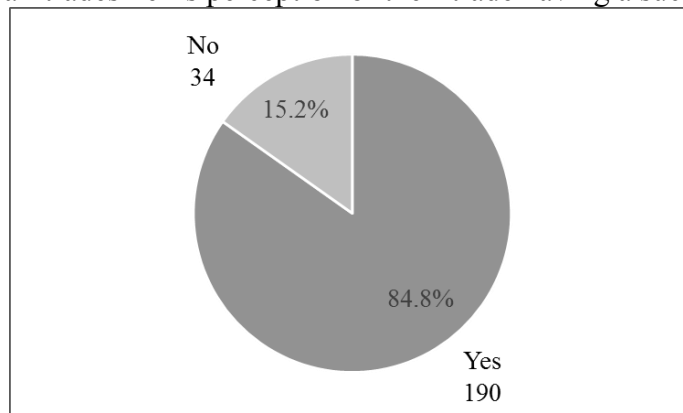
Table 14: Participants' perceptions of necessary skills in the drywall trade

Rank	Required skills and qualifications	<i>n</i>
1	Education: job training, willingness to learn and continue studying, tool management	58
2	Motivation: willingness to work hard, effort, competency at work, like it, vocation	52
3	Attitude: values, respect, honesty, patience, positivity, good morals	39
4	Intelligence: be smart, common sense, problem solving capacities, creativity	31
5	Discipline: consistency, dedication, determination, persistence, quality, endurance, perseverance, self-confidence	29
6	Responsibility	27
7	Physical capacity: health, hand dexterity, talent	18
8	Growth: improvement, will to excel	16
9	Team work: leadership, help others, teach others	13
10	Safety	10
	Experience	9
11	Follow instructions: communication skills and listening	9
	Attention to detail	9
	Punctuality	9
12	Math ability: good with numbers	8
	Be quick, learn quickly	8
13	English language	6

4.3.4 What are craft workers' career expectations in their trade? Do they anticipate a successful future?

The researcher used binary and open-ended questions to determine drywall tradesmen's career expectations in their trade. The first question addressing this topic was: "Do you think your job has a successful future?" Two hundred and twenty four (224 - 97.39%) participants answered this question. The majority of participants though that "yes," their job had a successful future. Still, not all workers thought their job had a successful future since thirty four (34 - 15.2%) answered "no". Figure 11 summarizes these results.

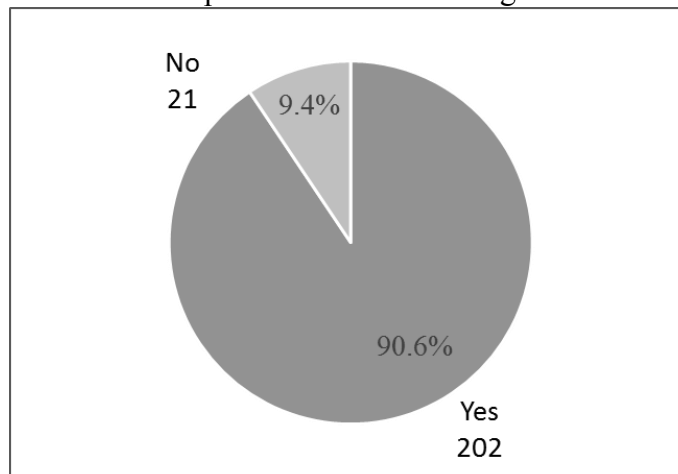
Figure 11: Drywall tradesmen's perception of their trade having a successful future



The second question addressing drywall tradesmen's career expectations to remain working in their trade was: "Do you plan to remain working in your current trade?" Two hundred and twenty three (223 - 95.95%) participants answered the question. The results were that a significant majority of the participants planned to

remain working in their trade since two hundred and two participants (202 - 90.6%) answered “yes”. On the contrary, twenty one (21 - 9.4%) respondents answered “no”. Results are shown in Figure 12.

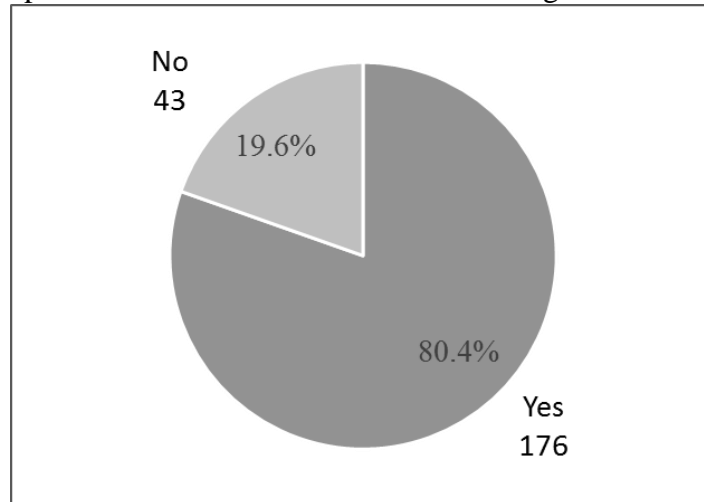
Figure 12: Drywall tradesmen’s plans to remain working in their trade



The third question regarding workers’ future expectations and perceptions towards construction was: “Do you see construction as a long-term career?” A total of two hundred and nineteen (219 - 95.22%) participants answered the question. As shown in Figure 13, one hundred and seventy six (176 – 80.4%) answered “yes” and forty three (43 - 19.6%) answered “no”. The results indicate that the majority (80.4%) of the participants see construction as a long-term career, thus suggesting they see a future and a career in construction. When asked to explain “why”, one hundred and forty five (145 - 64.78%) participants provided further insight. Specifically, one hundred and twenty four (124) participants who answered “yes”, and twenty one (21) who answered “no”,

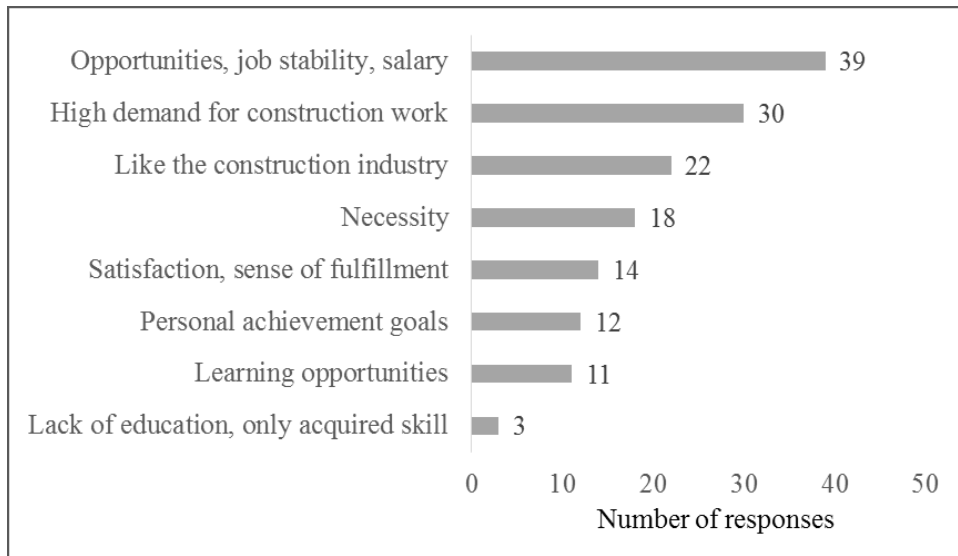
complemented their response with an explanation. To analyze and classify their responses, the researcher identified common themes for participants' explanations.

Figure 13: Participants who envision construction as a long-term career



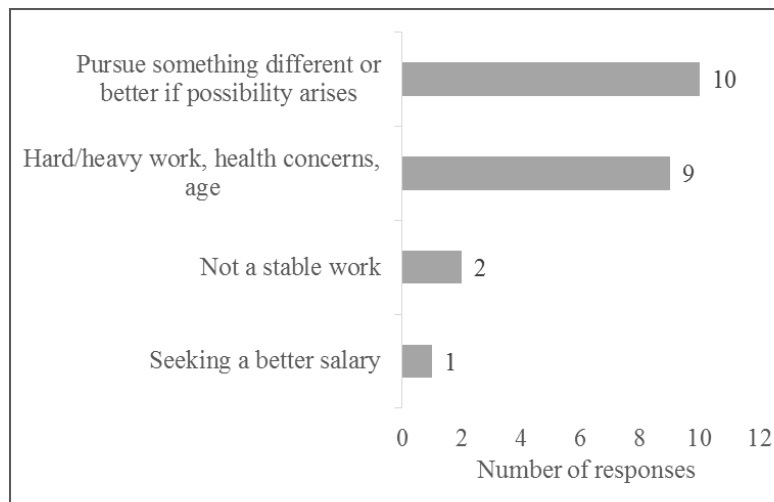
Among the group of participants that mentioned they “do” see construction as a long-term career, eight major themes were identified and ranked in order; 1. “Opportunities, job stability, salary” with (39) responses; 2. “High demand for construction work” with (30) responses; 3. “Like the construction industry” with (22) responses; 4. “Necessity” with (18) responses; 5. “Satisfaction, sense of fulfillment” with (14) answers; 6. “Personal achievement goals” with (12) responses; 7. “Learning opportunities” with (11) related comments; and 8. “Lack of education, only acquired skill” with (3) responses. Figure 14 reflects each classifying factor and the number of responses addressing them.

Figure 14: Factors influencing drywall tradesmen to see construction as a long-term career



Furthermore, from the group of participants who “do not” see construction as a long-term career, twenty two (22) respondents explained their answer. As with the previous question, a similar procedure was implemented to classify responses based on common words and phrases. Overall, four major themes were identified as shown in Figure 15: 1. “Pursue something different or better if possibility arises” with (10) responses; 2. “Hard/heavy work, health concerns, and age” with (9) related statements, 3. “Not a stable work” with (2) responses; and 4. “Seeking a better salary” with (1) answer.

Figure 15: Factors influencing drywall tradesmen not to see construction as a long-term career



To further understand participants' perceptions of their trade's future, and given that the literature states that family has a strong influence on career-decisions, participants were asked the following binary questions; a) "Will you recommend your children to pursue a career in construction?", b) "Will you recommend them to pursue a career in your trade?" Regarding their willingness to recommend their children a career in construction, a total of two hundred and sixteen (216 - 93.92%) participants answered this question. In general, as shown in Figure 16, one hundred and four (104) answered "yes", they would recommend their children a career in construction, and one hundred and twelve (112) answered "no". With 48.1% of positive responses ('yes) and 51.9% negative responses ("no'), the majority of participants would not recommend their children to pursue a career in construction. As for their willingness to recommend their children a career in their trade, two hundred and four (204 - 88.7%) answered this question. As reflected in Figure 17, ninety five (95) participants answered "yes" and one

hundred and nine (109) answered “no”. Like with the previous question, the majority of participants (53.4%) will not recommend their children to pursue a career in their trade and only (46.6%) showed a willingness to recommend it.

Figure 16: Participants’ willingness to recommend their children a career in construction

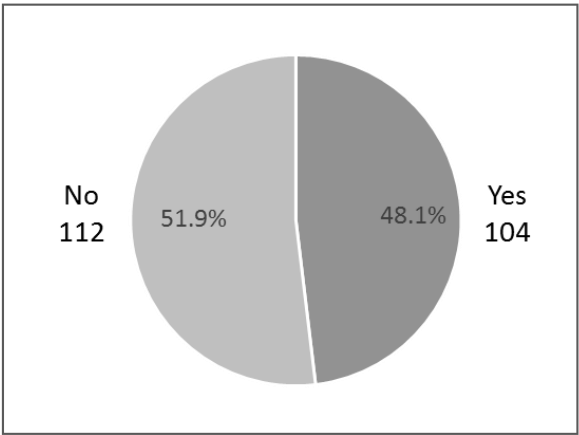
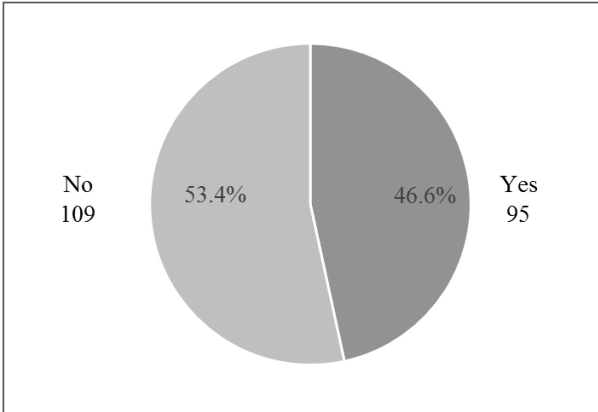


Figure 17: Participants’ willingness to recommend their children a career in their trade



4.3.5 Further nonparametric statistical analysis

Additional nonparametric statistical analysis was performed in SPSS to find relationships between the attained data. A chi-square statistic was used to identify the following four major relationships:

1. Whether U.S. natives and non-U.S. natives differ on whether they will recommend their children to pursue a career in construction.
2. Whether U.S. natives and non-U.S. natives differ on whether they will recommend their children to pursue a career in their trade.
3. Whether people selecting construction as a first choice career and people not selecting construction as a first choice career will be willing to recommend their children to pursue a career in construction.
4. Whether U.S. natives and non-U.S. natives differ on whether training will motivate them to remain working in their trade.

Described below are the results from the chi-square statistic of two of the four relationships that demonstrated to have a statistical significance.

4.3.5.1 U.S. natives and non-U.S. natives' willingness to recommend their children to pursue a career in the drywall trade

Investigating whether U.S. natives and non-U.S. natives differ on whether they will recommend their children to pursue a career in their trade, a chi-square statistic was used. Assumptions were checked and were met. Table 15 shows the Pearson chi-square results and indicates that U.S. natives and non-U.S. natives are significantly different

whether or not they would recommend their children to pursue a career in the drywall trade ($X^2 = 9.659$, $df = 1$, $N = 202$, $p < .002$). Non-U.S. born drywall tradesmen are more likely than expected under the null hypothesis to recommend the drywall trade to their children than U.S. born drywall tradesmen. Phi, which indicates the strength of the association between the two variables, is $-.219$ and thus, the effect size is considered to be small to medium according to Cohen (1988) (Morgan, Leech, Gloeckner, & Barrett, 2007).

Table 15: Chi-square analysis of prevalence of recommending their children a career in the drywall trade

Variable	<i>n</i>	Country of origin		X^2	<i>p</i>
		U.S. native	Non-U.S. native		
Recommending their trade				9.659	< .002
Yes, recommending it	95	14	81		
No, not recommending it	107	36	71		
Totals	202	50	152		

4.3.5.2 People who choose construction as a first choice career and people who did not choose construction as a first choice career, on their willingness to recommend their children to pursue a career in construction

Similarly when investigating whether people who chose construction as a first choice career and people who did not chose construction as a first choice career, on whether they will recommend their children to pursue a career in construction, a chi-square statistic was also implemented. Assumptions were reviewed and they were

complied. Table 16 shows the Pearson chi-square results and indicates that people who chose construction as a first choice career and people who did not chose construction as a first choice career are significantly different whether or not they would recommend their children to pursue a career in construction. Specifically the results were: $X^2 = 4.823$ $df = 1$, $N = 213$, $p < .028$). People who chose construction as a first choice career are more likely than expected under the null hypothesis to recommend their children to join the construction industry than people who did not chose construction as a first choice career. Phi, which indicates the strength of the association between the two variables, is $.150$ and thus, the effect size is considered to be small according to Cohen (1988) (Morgan, Leech, Gloeckner, & Barrett, 2007).

Table 16: Chi-square analysis of prevalence of recommending their children a career in construction

Variable	<i>n</i>	Choice of construction as a career		X^2	<i>p</i>
		First choice	Not first choice		
Recommending construction				4.823	< .028
Yes, recommending it	143	76	67		
No, not recommending it	70	26	44		
Totals	213	102	111		

5. CONCLUSIONS AND RECOMMENDATIONS

This section will summarize the entire document and specifically the findings of the study. Furthermore, this section contains the following subsections: 1) Restatement of the Problem, 2) Limitations, 3) Conclusions, 4) Recommendations for drywall companies, and 5) Recommendations for future research.

5.1 Restatement of the problem

Given the evident labor shortage in Texas and the United States (Hodges & Crowley, 2013), this study's objective was to determine and analyze drywall tradesmen's career awareness in Houston and Austin, Texas. Considering the complexity of the career awareness concept (Wise et al., 1976), this study focused on four main areas; 1) identifying the factors influencing construction drywall tradesmen to choose a career in construction and in their specific trade; 2) identifying the type/s of training/s drywall tradesmen have received and determining if training would influence their decision to remain working in their trade; 3) determining drywall tradesmen's awareness of career opportunities and skills/ qualifications necessary within their trade; and 4) finding drywall tradesmen's career expectations and future plans within their trade.

5.2 Limitations

This study had certain limitations. The study's first limitation was that participants came from two companies only. Although the sample size was statistically representative (230) and the population size between the two companies was proportionate (138 and 92), having responses deriving from more sources could have resulted in more generalizable results. The second limitation was the type of companies who agreed to participate in the study. The two participating companies were well established and organized firms, and do not necessarily represent small sized specialty contractors who could probably have less resources to invest in employees' career awareness.

The third limitation was data collection. Even though the study's initial intention was to approach all participants face-to-face, due to the company's time limitations, the questionnaire was also self-administered and conducted as a group. Participants responding to the questionnaire by themselves were not able to ask questions, while some participants who answered the questionnaire with the researcher were able to, and did asked questions. Furthermore, even though a pilot study was conducted, a variable the researcher did not considered was few participants could not read or write. In this respect, the researcher evidenced several participants needed assistance to complete the questionnaire due to their lack of education.

Another special consideration is the complex nature of career awareness and how it can be influenced by the cyclical nature of construction. This study captured drywall tradesmen's career awareness in a particular moment of time. Over the years and

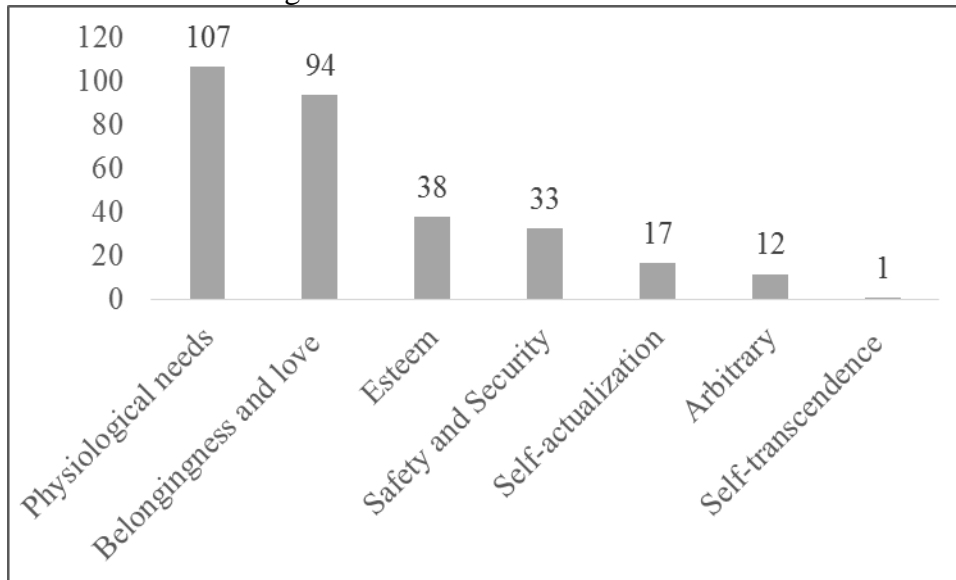
depending on the country's economy and demand for construction work, this perspective can vary. Another limitation was that the study considered all skill levels, and career awareness for new entrants compared to that of experienced workers could be different.

5.3 Conclusions

5.3.1 Conclusions for Research Question 1: What factors influenced construction craft workers to choose a career in construction and in their specific trade?

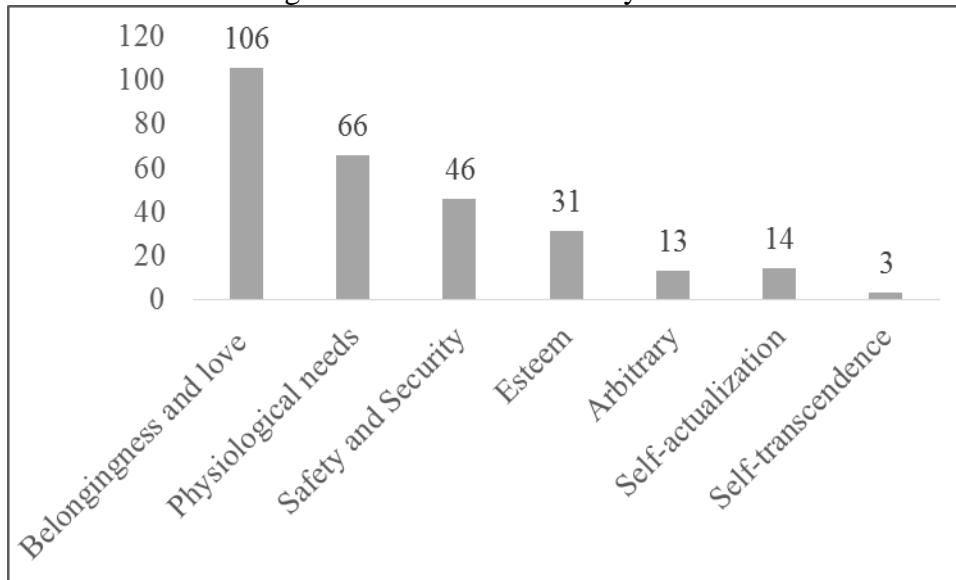
The study was able to identify the “needs” and factors influencing drywall tradesmen to choose a career in construction and in their trade. According to participants' responses on what influenced them to choose construction as a career, this study determined the majority of participants were classified under the first hierarchical level of “Physiological needs” (107), based on “Maslow's Hierarchy of needs theory.” This signifies most participants' priorities were to satisfy their basic survival needs including breathe, food, shelter, clothing, sleep, money, and overall everyday necessities (Koltko-Rivera, 2006). Specifically, the “Physiological needs” category was subdivided into “Money” (64), “Necessity” (38), and “Lack of Education” (5). Consequently, since salary and necessity were important factors influencing drywall tradesmen to join construction; it can be inferred that participants are particularly sensitive to changing their work if other companies or industries offers them a better salary. Figure 18 summarizes the general “needs” category influencing drywall tradesmen to choose construction as a career.

Figure 18: Needs influencing workers to choose construction as a career



Regarding the “need” categories influencing participants to choose the drywall trade, interestingly “Belongingness and love” (106) was the most influential category. It is assumed that participants under this category had fulfilled in some extent their basic survival needs in order to aspire to be affiliated with a group, friendship, family, intimacy, sense of connection (Koltko-Rivera, 2006). This category was divided into “Sense of Connection, belonging, like it” (70) and “Affiliation with a group, family or friends” (36). A summary of the “need” categories influencing the decision to choose the drywall trade is displayed in Figure 19.

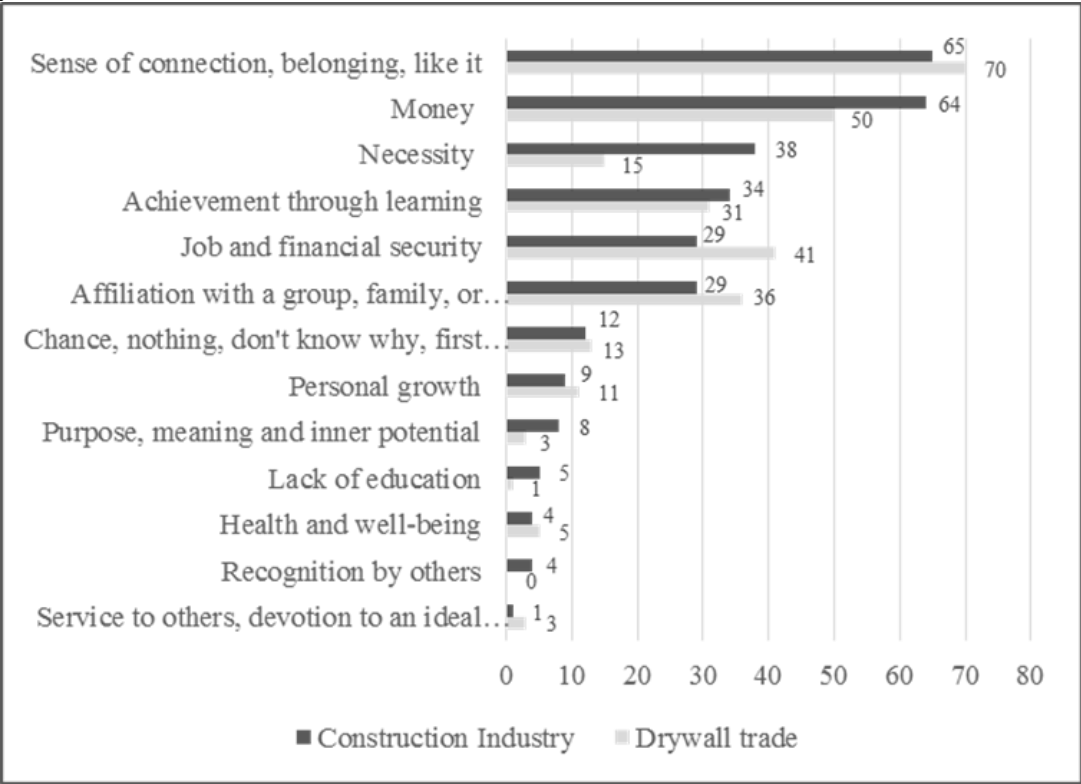
Figure 19: Needs influencing workers to choose the drywall trade as a career



Furthermore, the study also identified and ranked the independent factors influencing workers' career decisions. Figure 20 summarizes and graphically compares the influencing factors for construction and the drywall trade. The top ranked factors for both construction and the drywall trade were "Sense of connection, belonging, like it" (65/70 correspondingly) and "Money" (64/50). This is a positive starting point for company's retention strategies, since the study's results evidence that most participants were not only attracted by the salary, but also because they felt connected with their work and they actually liked what they do. Enjoying what you do can be a powerful incentive to remain working in the same company or the same field. Yet, this "enjoyment" must be maintained and developed because most participants belong to the "Physiological needs" category which makes them sensitive to better salaries. Therefore, maintaining employees' "sense of connection or preference" to construction and their

trade can become a powerful retaining strategy for companies. Perhaps, programs to encourage employees' sense of pride on what they do can reinforce this topic. Similarly, as mentioned by Kappia et al, providing employees with structured career development programs is crucial to motivate workers in the long-term (Kappia et al., 2007). Also, since salary is such an influencing factor, providing prospect and current employees with competitive salaries and transparent information on this topic, can help them be aware of what the industry is offering compared to other industries.

Figure 20: Comparison of factors influencing workers to join construction versus the drywall trade

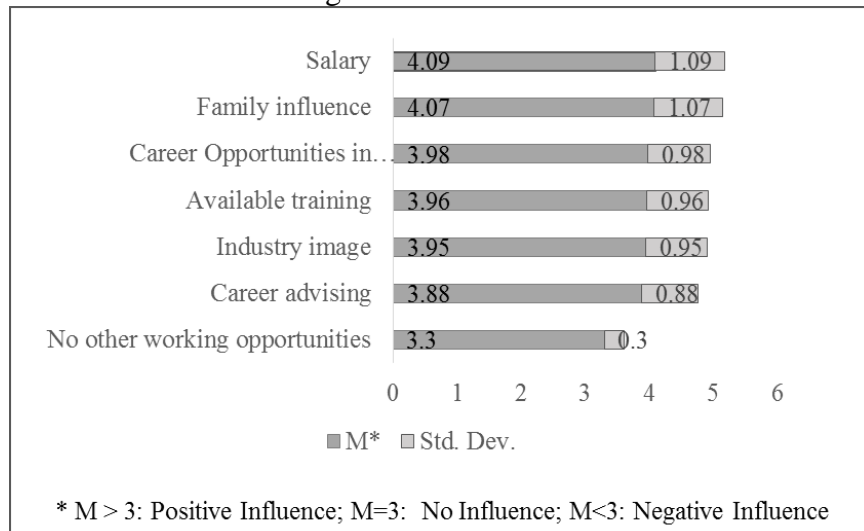


Concentrating on the other factors influencing participants to choose the drywall trade, “Job and financial security” (41), “Affiliation with a group, family or friends” (36) and “Achievement through learning” (31) were the next ranked factors. Understanding this factors can also assist companies in their attracting and retaining efforts. For instance, companies can attract more workers by increasing promotion efforts focused on providing clear information on the amount of work available (working hours per week) and the company benefits. Also, another important recruiting and retaining factor is the influence of family and friends. Companies can create incentive programs for workers who recommend family members or their friends to join the industry. Considering the influence that “affiliation with a group” has in the recruiting process, this “word of mouth” promoting efforts could help significantly. Finally, “achievement through learning” can be accomplished through training. This topic will be addressed on a question below.

Furthermore, to compare and enhance results within the same research questions, participants were also asked to identify the level of influence certain factors had on their decision to join the construction industry. Likert scale questions included factors identified in the literature review and were aligned with the study’s further research questions. Each factors’ level of influence was determined using descriptive statistics, specially the mean (3.0) and standard deviation. As results deviated from the mean, a higher or lower influence was determined. Results showed that all factors influenced participants’ decision to join the construction industry. Figure 21 ranks the factors participants indicated had an influence in their decision to enter the construction

industry; 1) Salary; 2) Family influence; 3) Career Opportunities in construction; 4) Available training; 5) Industry image; 6) Career advising; 7) No other working opportunities.

Figure 21: Other factors influencing workers to enter the construction industry



Overall, participants did mentioned several of these factors in their open-ended responses. For instance, salary, family influence, and available training were specifically mentioned. Yet, there was a difference between what participants mentioned in the open-ended responses versus the Likert scale questions. For instance, few participants mentioned “career opportunities”, “industry image”, “career advising” and “no other working opportunities” in their responses. This can evidence that although these factors have an influence, participants are not aware or knowledgeable about them.

The fact that participants did not mention specific phrases referred to “career opportunities in the industry” means that they need more information on this topic.

5.3.2 Conclusions for Research Question 2: What types of training have craft workers received during their career in construction? How can training influence their willingness to remain in their trade?

The study found that the most common type of training drywall tradesmen had received was, “On-the-job training” (76%). Similarly, the other types of attained training were (in order); 2. “Previous work experience” (57.1%); 3. “Vocational certificate or Apprenticeship” (17.1%); 4. “Some college” (6.9%); and 5. “Associate’s degree” (2.8%). These findings evidence that the grand majority of drywall tradesmen were receiving company-specific training and not formal transferable skills. Also, the low results of the apprenticeship programs (17.1%), corroborates Woods (2012) statement of the necessity to reform these programs.

Although “on-the-job training” and “previous work experience” contribute significantly to the professional preparation of workers, these are not necessarily transferable forms of education. This means workers were not necessarily receiving formal education that could qualify them to obtain transferable certificates. Not having formal or industry-accredited education could hamper workers, companies and the industry in general since workers do not have all the required professional education. Also, drywall tradesmen lacking transferable certificates will probably need to start at entry level positions when changing companies or joining a different trade, forcing

companies to re-train them. Also, not all participants recommended the type of training they received. For instance, only (75%) and (45%) of participants who had received “on-the-job training” and “previous experience” respectively, recommend this type of training for new hires. This results evidence that, although the majority of participants are receiving these types of training, workers are not completely satisfied with them.

The “other” types of training participants mentioned to have received were: “Safety” (5.65%); “Further technical training” (4.34%); “Company’s general construction training” (1.74%); “Supervision” (0.86%); and one participant mentioned he/she had not receiving any training. Although answers under this category included certification-level degrees and training, the percentage of participants addressing this type of training was very low. This results can have two interpretations: few participants are receiving certification-level degrees, or few participants thought this type of training was worth mentioning in this question.

Regarding training’s funding, (62%) of participants mentioned their employer had financed it, (20%) of participants mentioned that both their employer and themselves had financed it, and finally, (19%) addressed they financed their training. These findings evidence a considerable amount of the participants’ training was funded by employers, which means companies were aware of the importance of investing in training. The low percentage of self-financed training (19%) could be associated with the fact that most participants have “physiological needs” as their priority. It can be suggested that if companies require trained workers, they should continue to partially or totally fund employees’ training since workers cannot afford it, or are not willing to pay for it.

Companies can develop structured training programs were both the employee and the company could benefit from the training. For instance, companies can fund training in exchange for certain years of service.

Regarding the type of training participants would recommend for a new hire interested in their trade, the majority of participants (74.8%) recommended receiving "On-the-job training". The other types of training addressed by the study were also recommended in a lower proportion, specifically, "Previous work experience" (39.5%); "Vocational certificates or apprenticeships" (17.6%), "Some college" (9%); and "Associates degree" (4.3%). Participants also recommended "other" types of training such as: working for a company that provides a decent training program; continue studying (high school diploma, study on-line); safety training; train and learn from other experienced workers within the trade; learning about tool handling; and practice and be interested in the trade. The emphasis participants placed on "on-the-job training", suggests companies were adequately providing them with this type of training. Still, given the previously mentioned need to provide transferrable education programs, companies can enhance this type of training with additional certified education.

The final question related to training, asked participants if training will motivate them to remain in their trade. The result was that a significant majority of participants (91.4%) mentioned that "yes", training will motivate them to remain working in their trade. Only an (8.6%) of participants mentioned that training will not motivate them. Therefore, investing in employees' training can constitute a promising long-term retaining strategy for construction companies.

5.3.3 Conclusions for Research Question 3: What is craft workers' awareness of career opportunities and required skills and qualifications within their trade?

According to this study, the majority of participants (194) answered this question with a positive connotation, meaning they do though their trade offered them job opportunities. Some participants (10) mentioned their trade could “maybe” offer them opportunities, which was interpreted as a neutral connotation. Finally (7) seven participants had a negative connotation in their response since they mentioned their trade did not offered them any opportunities. Participants mentioning their trade have no opportunities were Hispanics (85.7%) and American Indian of Alaskan Natives (14.3%).

The previous classification allowed the researcher to understand that in general, participants though their trade did offered opportunities. The next step was to identify participants' knowledge of such opportunities. Responses were classified into; 1. “awareness of career-promotion opportunities or career paths” (85), 2. “awareness of non-promotion career opportunities” (109); and 3. “unaware of available opportunities” (17). The first category included participants who mentioned specific job positions within their career path, or concise future plans. The second category included participants who mentioned growth and benefit opportunities, but no specific examples of career scaling. Finally the third category included participants who thought they had no opportunities or “maybe” they could have some opportunities. Overall the results showed that the majority of drywall tradesmen though their trade did provided them with general non-promotion career opportunities such as: personal growth, learning, employment benefits, work stability, and a better salary. Likewise, several participants

were able to define specific scaling or career path opportunities such as: foreman, leadman / supervisor, superintendent, work independently, work in a different trade, coach / helper, mechanic trainee, and project manager.

The literature addresses that providing career development programs and progression opportunities influence employees' satisfaction and thus their willingness to stay working in a particular company (Kappia et al., 2007). Overall, results showed that participants thought drywall companies had career opportunities for their employees. Nevertheless, to improve the retaining efforts, it is important that workers clearly understand what those opportunities are, and how to achieve them. An ideal awareness of career opportunities will be a knowledge of both the promotion and non-promotion opportunities. Consequently, companies can focus on clarifying what opportunities they provide and overall offer more information on this topic.

Furthermore, participants were also asked about their awareness of the skills and qualifications required to be successful in their trade. Responses were categorized based on repetitive words and phrases. Seventeen (17) "skills and qualifications" categories were identified (Refer to Table 14). The top ranked skills and qualifications participants thought were necessary to be successful in their trade were; 1. "Education" (58); 2. "Motivation" (52); 3. "Attitude" (39); 4. "Intelligence" (31), 5. "Discipline" (29); 6. "Responsibility" (27); 7. "Physical capacity" (18); 8. "Growth" (16); 9. "Team work" (13); 10. "Safety" (10); among others. These are the skills and qualifications drywall tradesmen thought were necessary to be successful in their trade. It would be interesting to compare the responses with the skills and qualifications listed on each employee's job

descriptions to see if they match. Similarly employee job descriptions and job profiles for new hires can include these skills and qualifications. Also, by understanding what workers think is necessary to be successful, companies can focus on training their employees on those skills or hire people with such skills.

5.3.4 Conclusions for Research Question 4 What are craft workers' career expectations in their trade? Do they anticipate a successful future?

To determine participants' perceptions of a future in construction, they were asked if they thought their job had a successful future. The results were that the majority of participants (84.8%) answered "yes". Similarly, when participants were asked if they planned to remain working in the drywall trade, a significant majority (90.6%) answered "yes". Also, (80.4%) of participants mentioned they do anticipate a long-term career in construction. Overall, few participants complemented their response as to why they do, or do not see construction as a long-term career. Yet, the study identified several factors influencing drywall tradesmen to anticipate a long-term career in construction, namely; 1. "Opportunities, job stability, salary" (39); 2. "High demand for construction work" (30); 3. "Like the construction industry" (22); 4. "Necessity" (18); 5. "Satisfaction, sense of fulfillment" (14); 6. "Personal achievement goals" (12); 7. "Learning opportunities" (11); and 8. "Lack of education, only acquired skill" (3). Some factors like "job stability", "salary", "like the construction industry", "necessity", "learning", and "lack of education" are the same factors influencing drywall tradesmen to join construction and their trade. Interestingly, the first ranked factors addressed the opportunities the industry

offers. This corroborates the literature stating that opportunities can motivate people in the long-term (Kappia et al., 2007). Still, the previous factor and second factor of “High demand for construction work”, are vulnerable to the construction industry’s economic cycles. For instance, these factor can vary significantly when there is a low demand for construction. The third factor of “Liking the construction industry”, reinstates the findings of the factors motivating workers to join construction and their trade.

The study also found the factors influencing drywall tradesmen not to see construction as a long-term career. Again few participants provided arguments for their response, yet certain factors were identified; 1. “Pursue something different or better if possibility arises” (10); 2. “Hard/heavy work, health concerns, and age” (9); 3. “Not a stable work” (2); and 4. “Seeking a better salary” (1). The first factor of “Pursue something different or better if possibility arises” is completely logical in any career or industry. The second factor of “Hard/heavy work, health concerns, and age” verifies the literature addressing that drywall installation affects musculoskeletal health (Sengupta Dasgupta et al., 2014) and that craft workers are aging (Francis & Prosser, 2013). Surprisingly, few participants mentioned this issues as a reason not to continue in construction.

Finally, given the strong influence family has in the industry, participants were asked if they would recommend their children to pursue a career in construction and in their trade. In general, (51.9%) of participants mentioned they would not recommend their children to pursue a career in construction, and (48.15%) mentioned they would recommend it. Similarly, (53.45%) of respondents mentioned they would not

recommend their children to pursue a career in their trade and (46.6%) mentioned they would recommend it. Overall, the majority of participants mentioned a negative willingness to recommend their children to get involved into construction or into the drywall trade. Considering “Belongingness and love” was the most influential factor/category when choosing the drywall trade, if the majority of workers are not willing to recommend their trade to their children, this result can cause a downturn.

5.3.5 Conclusions for nonparametric statistical analysis

The statistical tests demonstrated that non-U.S. born drywall tradesmen are more likely to recommend the drywall trade to their children than U.S. born drywall tradesmen. This is an important result for the future workforce of the drywall trade. This relationship can become an important recruiting strategy for companies. Although the statistics demonstrate that there is a greater tendency for non-U.S. born drywall tradesmen to recommend their children a career in the drywall trade, this is not enough to guarantee that they will recommend it, and that their children will actually join the trade. Therefore, companies must reinforce this tendency with strategic future plans. For instance, constantly engaging non-U.S. workers and their families with the company and the trade, can help reinforce and promote this tendency. As mentioned before, creating family programs such as family days, take your kids to work days, camaraderie meetings, etc, can be one alternative.

The statistical tests also demonstrated that people who chose construction as a first choice career are more likely to recommend their children to join the construction

industry than people who did not chose construction as a first choice career. Again, for companies to take advantage of this results, strategic action plans must stablished. In general, companies must first identify who this people are in order to incentivize them to recommend the drywall trade not only to their children, but also to their extended family and social circles.

5.4 Recommendations for drywall companies

The study allowed the researcher to identify several opportunities for improvement and development. Starting by addressing workers' demographics, it is evident Hispanics (82%) represent the majority of the work force. In detail, (64.78%) of participants were first generation workers. Although the questionnaire did not asked participants if they spoke English or not, (73.92%) of participants preferred to answer the questionnaires in Spanish. Likewise, during the interview visits, the researcher evidenced that the majority of participants did not speak English. Therefore, if companies want to provide a better career for their employees, language training can be a priority. Employees' country of origin also has an influence of career advising since several participants were unaware of its meaning.

Another key topic is understanding what motivates employees to enter and stay in construction to improve the attraction and retaining efforts. For instance, although raising salaries will always help attract more employees, salary is not the only influencer. The majority of employees mentioned family or friends as major influencers to join the industry and their trade. Yet, most employees are not willing to recommend

this career for their children. Still, the statistical tests demonstrated that non-U.S. tradesman and people who chose construction as a first career are significantly more willing to recommend the drywall trade and construction (respectively) to their children. As mentioned before, companies can take advantage of these results by creating action plans. Perhaps, companies can encourage workers to invite their friends and relatives through incentive programs. Likewise, companies can work on increasing “family awareness” of the opportunities in construction. This could be achieved by involving and engaging workers’ families into the company and the industry through family events, training sessions, project visits, etc. Furthermore, the study showed participants had a sense of connection, belonging and overall they liked what they do. Companies could train and incentivize workers to promote the opportunities offered by the industry through word of mouth to family, friends and their social circle who probably have the same interests and needs. Companies can also improve work force diversity. Increasing the number of workers from other ethnicities can be a challenge, yet it can help enhance the team with other perspectives and abilities.

Regarding training, the study demonstrated that investing in it can motivate workers to remain working in their trade. Companies should continue investing in “on-the-job training” and also in transferable forms of training. Likewise, companies can invest in training and assess employees on the scaling and non-scaling opportunities within the company. Most participants had a general idea of the available opportunities, but overall participants were not completely aware of them. Improving employees’ self-

esteem and mentoring them on how they can scale within their trade could also assist them.

Finally, an important aspect to consider is providing an on-going and sustainable career development program. The study found non-monetary incentives like training, scaling opportunities, and non-scaling opportunities to be important. Therefore companies can create structured program to guarantee their employees' aspirations are met. A summary of all this study's results and the recommended Best Practices for drywall companies can be found in Appendix I.

5.5 Recommendations for future study

This study was a first attempt to identify construction worker's career awareness. Yet, there are several opportunities for further research. To start with, the study could be replicated to other trades that are experiencing a labor shortage. Also, a study combining more than one trade could be developed as well.

There is also an opportunity to focus on employees' self-esteem and self-concepts to find out if construction workers think they could be promoted or not. Also, as mentioned by Navarro, construction employees' motivation could also be studied as a group and not just for individuals (Navarro, 2009). Similarly, further research on non-financial incentives for construction workers could help significantly. An example of a nonmonetary incentives could be psychological contracts. Finally, studying what motivates and influences new generations could also generate interesting findings. For

instance, millennials' are the future work force, so understanding what influences, motivates and engages them in the work environment could help significantly.

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APPENDIX A

ENGLISH QUESTIONNAIRE

Interview Questionnaire

1. How old are you? _____
2. What is your gender? Male Female
3. What is your ethnicity? (Select all that apply)
 American Indian or Alaska Native Hispanic or Latino
 Asian Native Hawaiian or Other Pacific Islander
 Black or African American White
 Other
4. What educational level have you attained? (Select one)
 Elementary school or less
 Middle school
 High school
 Some college
 University graduate
5. Where were you born?
Town or City: _____
Region or Country: _____
Were you raised there (until 18 years of age)? Yes No
If not, in what place(s) have you lived while growing up (until 18 years of age). List from most recent to oldest:

6. Where do you currently live?
Town or City: _____
Region or Country: _____
7. How long have you been working in the construction industry? (Select one)
 1 year or less
 1 – 5 years
 5 – 10 years
 More than 10 years
8. In what construction trade are you currently working?
 Drywall installer Ironworker
 Plumber Bricklayer
 Roofer
 Other(s) Specify: _____
9. What attracted you to work in the construction industry? _____

What attracted you to work in your current trade? _____

10. List other working experience you have from most recent to oldest: _____

11. Was construction your first choice career? Yes No
12. Have you left and re-entered the construction industry? Yes No
If yes, why did you re-entered?



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APPENDIX B

SPANISH QUESTIONNAIRE

Entrevista

1. ¿Cuántos años tiene? _____
2. ¿Cuál es su género? Masculino Femenino
3. ¿Cuál es su etnicidad? (Seleccione todas las que aplican)
 Indio Americano o Nativo de Alaska Hispano o Latino
 Asiático Nativo de Hawai u otras islas del Pacífico
 Negro o Afroamericano Blanco
 Otro
4. ¿Qué nivel de educación ha alcanzado? (Seleccione una)
 Escuela primaria o menos (Elementary school - 1^{ro} a 5^{to} grado)
 Escuela intermedia (Middle school - 6^{to} a 8^{vo} grado)
 Escuela secundaria (High school - 9^{no} a 12^{vo} grado)
 Algo de universidad
 Graduado de universidad
5. ¿Dónde nació?
Pueblo o Ciudad: _____
Región y/o País: _____
¿Usted se crió ahí (hasta los 18 años de edad)? Sí No
Si su respuesta fue no, ¿en qué lugar(es) ha vivido usted mientras crecía hasta los 18 años de edad?

6. ¿Dónde vive actualmente?
Pueblo o Ciudad: _____
Región y/o País: _____
7. ¿Por cuánto tiempo ha estado trabajando para la industria de la construcción? (Seleccione una)
 1 año o menos
 1 – 5 años
 5 – 10 años
 Más de 10 años
8. ¿En qué oficio de la construcción está trabajando actualmente?
 Instalador de paneles de yeso (Drywaller) Herrero (Ironworker)
 Plomero (Plumber) Albañil (Bricklayer)
 Techador (Roofer)
 Otro (s) Especifique: _____
9. ¿Qué lo/a motivo a trabajar en la industria de la construcción? _____

¿Qué lo/a motivo a trabajar en su actual oficio? _____

10. Indique en qué otras áreas tiene experiencia laboral: _____

11. ¿Usted eligió trabajar en el área de la construcción como primera opción? Sí No
12. ¿Usted se ha retirado y ha vuelto a ingresar en la industria de la construcción? Sí No
Si su respuesta fue si, ¿por qué reingresó?



IRB NUMBER: IRB2015-0160
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13. ¿Cómo influenciaron su decisión de trabajar en la construcción los siguientes factores?

	Altamente Negativo	Ligeramente Negativo	Ninguna Influencia	Ligeramente Positivo	Altamente Positivo
Asesoramiento de las profesiones disponibles	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Influencia de familiares	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Salario	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Imagen de la industria	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
No habían otras oportunidades de trabajo	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Habían oportunidades de hacer una carrera en la construcción	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Había entrenamiento disponible	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. ¿Qué tipo de entrenamiento ha recibido usted en su posición actual? (Seleccione todas las que apliquen)
- Entrenamiento significativo en el trabajo Grado de asociado (Associate's degree)
 Experiencia laboral previa Algo de universidad
 Certificado profesional (Apprenticeship)
 Otro(s) Especifique: _____

15. ¿Quién financió su entrenamiento? (Seleccione una)
- Autofinanciado Empleador Ambos

16. Para un nuevo empleado interesado en su oficio, ¿qué tipo de entrenamiento le recomendaría?
- Entrenamiento significativo en el trabajo Grado de asociado (Associate's degree)
 Experiencia laboral previa Algo de universidad
 Certificado profesional (Apprenticeship)
 Otro(s) Especifique: _____

17. ¿Recibir entrenamiento lo motivaría a permanecer en su oficio actual? Sí No

18. Indique las oportunidades laborales que ofrece su oficio:
- _____
- _____

19. ¿Cree que su trabajo tiene un futuro exitoso? Sí No
- ¿Por qué? _____

20. ¿Piensa permanecer trabajando para su oficio actual? Sí No

21. ¿Ve usted a la construcción como una carrera de largo plazo? Sí No
- ¿Por qué? _____

22. ¿Recomendaría usted a sus hijos que ejerzan una carrera en la construcción? Sí No

- ¿Recomendaría que ejerzan una carrera en su oficio actual? Sí No

23. ¿Qué habilidades requiere una persona para ser exitoso en su oficio actual? _____
- _____

24. ¿Alguno de los siguientes factores le motivaría a permanecer trabajando en su oficio actual?

	Sí	No	No Aplica
Asesoramiento de las oportunidades disponibles en su oficio	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oportunidades de crecimiento personal	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Oportunidades de crecimiento profesional	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incremento salarial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Mejor liderazgo (ej. supervisores, gerentes, etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Recibir entrenamiento adicional (ej. certificaciones profesionales)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Incentivos no monetarios	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Especifique otros: _____



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 IRB APPROVAL DATE: 03/27/2015
 IRB EXPIRATION DATE: 03/15/2016

APPENDIX C

IRB APPROVAL LETTERS

DIVISION OF RESEARCH
Research Compliance and Biosafety



DATE: March 27, 2015

MEMORANDUM

TO: Ben Bigelow
TAMU - College Of Architecture - Construction Science

FROM: Dr. James Fluckey
Chair
Institutional Review Board

SUBJECT: Expedited Approval

Study Number: IRB2015-0160

Title: Exploring where the construction work force comes from and construction craft workers' career awareness

Approval Date: 03/16/2015

Continuing Review Due: 02/15/2016

Expiration Date: 03/15/2016

Documents Reviewed and Approved:

Submission Components			
Study Document			
Title	Version Number	Version Date	Outcome
Interview Spanish V2	Version 2.0	03/11/2015	Approved
Interview English V2	Version 2.0	03/11/2015	Approved

Document of Consent: Waiver approved under 45 CFR 46.117 (c) 1 or 2/ 21 CFR 56.109 (c)1

- This research project has been approved. As principal investigator, you assume the following responsibilities:
- Continuing Review:** The protocol must be renewed by the expiration date in order to continue with the research project. A Continuing Review application along with required documents must be submitted by the continuing review deadline. Failure to do so may result in processing delays, study termination, and/or loss of funding.
 - Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB.
 - Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.

750 Agronomy Road, Suite 2701
1186 TAMU
College Station, TX 77843-1186
Tel. 979.458.1467 Fax. 979.862.3176
<http://rcb.tamu.edu>

4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.
6. **Consent Forms:** When using a consent form or information sheet, you must use the IRB stamped approved version. Please log into iRIS to download your stamped approved version of the consenting instruments. If you are unable to locate the stamped version in iRIS, please contact the office.
7. **Audit:** Your protocol may be subject to audit by the Human Subjects Post Approval Monitor. During the life of the study please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential audit. Investigators are responsible for maintaining complete and accurate study records and making them available for inspection. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are designed to help ensure that all necessary documents are approved and in order prior to initiating the study and to help investigators maintain compliance.
8. **Recruitment:** All approved recruitment materials will be stamped electronically by the HSPP staff and available for download from iRIS. These IRB-stamped approved documents from iRIS must be used for recruitment. For materials that are distributed to potential participants electronically and for which you can only feasibly use the approved text rather than the stamped document, the study's IRB Protocol number, approval date, and expiration dates must be included in the following format: TAMU IRB#20XX-XXXX Approved: XX/XX/XXXX Expiration Date: XX/XX/XXXX.
1. **FERPA and PPRA:** Investigators conducting research with students must have appropriate approvals from the FERPA administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA). The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.
2. **Food:** Any use of food in the conduct of human subjects research must follow Texas A&M University Standard Administrative Procedure 24.01.01.M4.02.
3. **Payments:** Any use of payments to human subjects must follow Texas A&M University Standard Administrative Procedure 21.01.99.M0.03.

This electronic document provides notification of the review results by the Institutional Review Board.

DATE: March 16, 2015

MEMORANDUM

TO: Ben Bigelow
TAMU - College Of Architecture - Construction Science

FROM: Dr. James Fluckey
Chair
Institutional Review Board

SUBJECT: Expedited Approval

Study Number: IRB2015-0160

Title: Exploring where the construction work force comes from and construction craft workers' career awareness

Approval Date: 03/16/2015

Continuing Review Due: 02/15/2016

Expiration Date: 03/15/2016

Documents Reviewed and Approved:

Submission Components			
Study Document			
Title	Version Number	Version Date	Outcome
Information Sheet V2	Version 2.0	03/13/2015	Approved
questionnaire - spanish	Version 1.0	02/26/2015	Approved
questionnaire - english	Version 1.0	02/26/2015	Approved

Document of Consent: Waiver approved under 45 CFR 46.117 (c) 1 or 2/ 21 CFR 56.109 (c)1

Comments: This study is approved for 120 participants. Stamped forms can be found in iRIS.

This research project has been approved. As principal investigator, you assume the following responsibilities:
1. **Continuing Review:** The protocol must be renewed by the expiration date in order to continue with the research project. A Continuing Review application along with required documents must be submitted by

the continuing review deadline. Failure to do so may result in processing delays, study termination, and/or loss of funding.

2. **Completion Report:** Upon completion of the research project (including data analysis and final written papers), a Completion Report must be submitted to the IRB.
3. **Unanticipated Problems and Adverse Events:** Unanticipated problems and adverse events must be reported to the IRB immediately.
4. **Reports of Potential Non-compliance:** Potential non-compliance, including deviations from protocol and violations, must be reported to the IRB office immediately.
5. **Amendments:** Changes to the protocol must be requested by submitting an Amendment to the IRB for review. The Amendment must be approved by the IRB before being implemented.
6. **Consent Forms:** When using a consent form or information sheet, you must use the IRB stamped approved version. Please log into iRIS to download your stamped approved version of the consenting instruments. If you are unable to locate the stamped version in iRIS, please contact the office.
7. **Audit:** Your protocol may be subject to audit by the Human Subjects Post Approval Monitor. During the life of the study please review and document study progress using the PI self-assessment found on the RCB website as a method of preparation for the potential audit. Investigators are responsible for maintaining complete and accurate study records and making them available for inspection. Investigators are encouraged to request a pre-initiation site visit with the Post Approval Monitor. These visits are designed to help ensure that all necessary documents are approved and in order prior to initiating the study and to help investigators maintain compliance.
8. **Recruitment:** All approved recruitment materials will be stamped electronically by the HSPP staff and available for download from iRIS. These IRB-stamped approved documents from iRIS must be used for recruitment. For materials that are distributed to potential participants electronically and for which you can only feasibly use the approved text rather than the stamped document, the study's IRB Protocol number, approval date, and expiration dates must be included in the following format: TAMU IRB#20XX-XXXX Approved: XX/XX/XXXX Expiration Date: XX/XX/XXXX.
1. **FERPA and PPRA:** Investigators conducting research with students must have appropriate approvals from the FERPA administrator at the institution where the research will be conducted in accordance with the Family Education Rights and Privacy Act (FERPA). The Protection of Pupil Rights Amendment (PPRA) protects the rights of parents in students ensuring that written parental consent is required for participation in surveys, analysis, or evaluation that ask questions falling into categories of protected information.
2. **Food:** Any use of food in the conduct of human subjects research must follow Texas A&M University Standard Administrative Procedure 24.01.01.M4.02.
3. **Payments:** Any use of payments to human subjects must follow Texas A&M University Standard Administrative Procedure 21.01.99.M0.03.

This electronic document provides notification of the review results by the Institutional Review Board.

APPENDIX D

AUTHORIZATION E-MAILS APPROVING PARTICIPATION IN THE STUDY



Veronica Zarate Morales <veronica.zarate@tamu.edu>

Request for participation in Texas A&M University study

9 messages

Mon, Mar 2, 2015 at 6:56 PM

To: Veronica Consuelo <veronica.zarate@email.tamu.edu>, A Soto <jsotogoico@neo.tamu.edu>

Cc: [REDACTED]

Dear Veronica & Jose,

We will be happy to accommodate you to interview some of our employees for your research. I did not receive a copy of the questionnaire that was attached to your email to [REDACTED]. Please let me know what day, what time and where would be the best location for you and I will give you the address and contact information for one of our field project to visit. Looking forward to hearing from you. I be also happy to refer you to friends in a roofing company & brick/ mason company if you need some.

Regards,

[REDACTED]
Division Operations Manager

[REDACTED]
Houston, Texas. [REDACTED]

Appointment Date and Time: Survey TAMU study

To: Jose Soto <jsotogoico@tamu.edu>

Mon, Apr 13, 2015 at 7:31 PM

Cc: Veronica Zarate Morales <veronica.zarate@email.tamu.edu>

I will see you tomorrow. [REDACTED], Austin Texas

Thank you

[REDACTED]

APPENDIX E

STUDY'S INFORMATION SHEET

1

Information about the study

1. Introduction

Howdy! We are Construction Management students at Texas A&M University. We are conducting a study that will try to find where the construction workforce comes from, what types of training have workers received, and overall construction worker's career awareness.

2. Voluntary participation

Even though your employer let us contact you and potentially interview you. It is important that you know that your participation is voluntary. If you decide not to participate there will be no consequences. We are trying to reach at least 100 construction workers and your cooperation will help us reach our goal. If you are interested and agree to take part of the study, please continue to read the information below.

3. Logistics

If you are willing to participate in this study, please attend the following appointment we have scheduled with your employer:

Date: mm/dd/yyyy Time: hh:mm Location: XXYYZZ

The questionnaire will take you no longer than 8-15 minutes to complete. There are two different methods of responding, you have the option of choosing the one of your preference:

- **Method 1 – Audio Recorded Interview:** In this method we will audio record the interview to minimize its duration.
- **Method 2 – Non-Recorded Interview:** In this method researchers will write down your responses with pen and paper.

4. Purpose and characteristics of this study

- The purpose of this study is to generate knowledge about the origin, demographic characteristics, and career awareness of the construction workforce in the state of Texas. The study will focus on construction workforce performing drywall installation, roofing, iron work, bricklaying, and plumbing.
- The findings of this study will provide construction professionals with the necessary information to help them focus recruiting efforts where they can be more effective.
- This is an academic study with no economic, political or legal purposes.
- The following information may affect your decision to participate or not in this research study, please review it.

5. Participants selection criteria

You were selected to be a possible participant in this study because you are currently a construction worker performing one or more of the following trades in the state of Texas: drywall installation, roofing, iron work, bricklaying, and plumbing.

6. Value of your participation

Your opinion and point of view can significantly contribute to the construction industry and to this study. That is why we ask you to voluntarily participate and give us your valuable feedback. There is no compensation for your participation on this survey. However, your opinion will make a contribution to understanding where the construction workforce comes from, training workers receive, and construction career awareness.

7. Information concerning the survey

- **Participation:** Again, your participation is voluntary. If you agree to participate in this study, you will be asked to answer questions concerning the type of training workers receive, construction career awareness, and the location where workers come from. You may decide not to answer partially or any of the survey without your current or future relations with Texas A&M University being affected.
- **Risk associated with the study:** The risks associated in this study are minimal, and there are not greater risks than those encountered in daily life.
- **Confidentiality:** Every effort will be made to protect your confidentiality. The records of this study will be kept private. No identifiers linking you to this study will be included in any sort of report that might be published. Research records will be stored securely and only Dr. Ben F. Bigelow will have access to the records. If you have questions regarding this study, you may contact Dr. Ben F. Bigelow at (979) 458-4457, bbigelow@arch.tamu.edu. This research study has been reviewed by the Human Subjects' Protection Program and/or the Institutional Review Board at Texas A&M University. For research related problems or questions regarding your rights as a research participant, you can contact these offices at (979) 458-4067 or irb@tamu.edu.

If you agree to participate in this study please continue wit



IRB NUMBER: IRB2015-0160
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IRB EXPIRATION DATE: 03/15/2016

APPENDIX F

RECRUITING FOLLOW-UP EMAIL FORMAT



Veronica Zarate Morales <veronica.zarate@tam.u.edu>

Follow up: Site Access Authorization Letter for Texas A&M Study

7 messages

Jose Soto <jsotogoico@tam.u.edu>

Wed, Feb 18, 2015 at 2:51 PM

To:

Cc: "Bigelow, Ben" <BBigelow@arch.tam.u.edu>, Veronica Zarate Morales <veronica.zarate@email.tam.u.edu>

Good afternoon

We want to thank you for allowing us to introduce ourselves and our study today. We are writing to follow up on the status of the site authorization letter.

Please note that there are no risks associated with our study. Your participation, as noted in our information sheet, will only benefit the construction industry.

Attached, you will find:
-Site access authorization letter
-Study information sheet
-Interview sample in English and Spanish

Let us remind you that as of now we only require your approval for future access and coordination of interviews. You can authorize this by replying to this e-mail or a written approval of the letter.

If you have any questions or need additional information, feel free to contact us. You may also contact our faculty advisor Dr. Ben Bigelow, who is the principal investigator.


Thanks and best regards,


Jose Soto
(917)794-7755
jsotogoico@tam.u.edu


Veronica Zarate
(832) 931-2105
veronica.zarate@tam.u.edu


Ben Bigelow
(979) 458-4457
bbigelow@arch.tam.u.edu

4 attachments

 Information Sheet.pdf
89K

 Interview in English.pdf
90K

 Interview in Spanish.pdf
91K

 Site Access Authorization.pdf

APPENDIX G

RECRUITING EMAIL



Veronica Zarate Morales <veronica.zarate@tamu.edu>

Invitation to participate in a Texas A&M University study: Labor shortage in Texas

3 messages

Zarate Morales, Veronica Consuelo <veronica.zarate@email.tamu.edu>

Mon, Apr 13, 2015 at 6:47 PM

To: [REDACTED]

Dear [REDACTED]

We are Veronica Zarate and Jose Soto, construction management graduate students at Texas A&M University. We are conducting a study as part of our thesis addressing the evident **labor shortage in your construction trade (drywall installers)**. We are trying to determine where the construction workforce comes from, the types of training that motivate them, and their overall construction career awareness.

The purpose of this email is to ask if your organization would give us the opportunity to interview as many members as possible who agree to participate in our study.

To accomplish this, we need to perform short interviews (**10-15 minutes**) to the **drywall installers**. We are willing to perform the interviews at any time convenient for you and for your workers. Please note that there are no risks associated with our study. Their participation will only benefit the construction industry.

Attached are a **study information sheet** and the **interview questions in English and Spanish**. These documents provide more information about our research project.

Can you let us know if [REDACTED] is willing to participate and when would be the best time to coordinate the short interviews?

We sincerely appreciate your time and attention. Your collaboration will contribute significantly to the construction industry. If you have any questions or need additional information, feel free to contact us.

Thanks and best regards,

Invitation to participate in a Texas A&M University study: Labor shortage in Texas

1 message

Zarate Morales, Veronica Consuelo <veronica.zarate@email.tamu.edu>
To: [REDACTED]

Mon, Mar 30, 2015 at 11:39 AM

Good morning,

We are Veronica Zarate and Jose Soto, construction management graduate students at Texas A&M University. Given the evident **labor shortage in construction** and particularly in your trade, we are conducting a study as part of our thesis that will try to find where the construction workforce comes from, what types of training have workers received, and overall construction worker's career awareness. Our objective is to find alternative solutions to an evident labor shortage in the industry. To do so, we will need to perform face-to-face interviews to the following construction tradesmen: **drywall installers, roofers, iron workers, bricklayers, and plumbers.**

The purpose of this email is to ask if your company will be interested in participating in this study.

If you voluntarily decide to participate, we will conduct short interview-questionnaires (10-15 minutes) to your personnel. Please note that there are no risks associated with our study. Your participation will only benefit the construction industry.

You can review the attached information to help you decide if you will like to participate:

- Study information sheet
- Interview sample in English and Spanish

We sincerely appreciate your time and attention. Your collaboration will contribute significantly to the construction industry and particularly address the labor shortage issue. If you have any questions or need additional information, feel free to contact us. You may also contact our faculty advisor Dr. Ben Bigelow, who is the principal investigator.

Thanks and best regards,

APPENDIX H

Q9A: WHAT ATTRACTED YOU TO WORK IN THE CONSTRUCTION INDUSTRY?

- 1 There is a lot that you can learn.
- 2 School trade
- 3 I like it.
- 4 Learning
- 5 I can grow and manage people to do right jobs.
- 6 Money
- 7 I like working with my hands, benefits
- 8 Financial progress and to learn the trade and work
- 9 Progress and my family
- 10 Money
- 11 The salary
- 12 Like working with hands
- 13 Because the schedule is good.
- 14 Because I needed the work
- 15 Earn more money
- 16 Money
- 17 I did not have a health insurance
- 18 Better salary
- 19 I do not have the knowledge to work in other things
- 20 I wanted to learn how to build
- 21 The salary is better
- 22 The salary
- 23 The work is more safe
- 24 The salary and because this is better work
- 25 The salary is good
- 26 It was the first thing I found
- 27 Because I did not have a good health insurance
- 28 Necessity
- 29 They pay a little better and I like the schedule.
- 30 I like this work.
- 31 Because in fast food they pay less.
- 32 Money and easy to get job.
- 33 Because I like my construction work.
- 34 I like my job and for necessity.
- 35 Money so I can support my family.
- 36 For money and because I don't have education.

**Q9A: WHAT ATTRACTED YOU TO WORK IN THE CONSTRUCTION
INDUSTRY? (CONTINUED)**

- 37 First for necessity and second because I like my job.
- 38 In my country there are no job and because of necessity
- 39 Earn more money.
- 40 I like my work.
- 41 Necessity.
- 42 It was the first thing I found when I arrived here.
- 43 I like it.
- 44 Necessity.
- 45 Learning
- 46 Increase the quality of my life and my family's
- 47 I like to build, I like this job.
- 48 Succeed
- 49 To learn and necessity.
- 50 Because it is growing and there are all kinds of trades.
- 51 Sheetrock
- 52 That the work is safe and well paid.
- 53 Necessity
- 54 Learn one more trade.
- 55 There is the possibility to gain a little more money per hour.
- 56 Poverty and family influence.
- 57 A friend referred the job to me.
- 58 I was forced to
- 59 I started working on it and I liked it.
- 60 They pay a better salary
- 61 Legal status, not having enough studies, and opportunities.
- 62 You can earn a lot of money at a young age.
- 63 A friend referred me to it.
- 64 I like it and I have a good salary.
- 65 Because there are more job opportunities
- 66 Poverty
- 67 You get better pay in this work
- 68 A better salary
- 69 Because typically this is the most widely job done as Latinos
and it is the one that pays best
- 70 The necessity of work
- 71 The necessity
- 72 My family and the lack of opportunities in my country

**Q9A: WHAT ATTRACTED YOU TO WORK IN THE CONSTRUCTION
INDUSTRY? (CONTINUED)**

- 73 I like it
- 74 Needed the money to live
- 75 The salary is better and I learn different things
- 76 Because I'd like job
- 77 To learn
- 78 The family
- 79 The need for money
- 80 Because I like construction
- 81 To improve
- 82 More secure
- 83 The need for work
- 84 Salary is better
- 85 There was nothing else
- 86 I like construction
- 87 The payment to support my family.
- 88 The opportunity to get to know better and salary
- 89 Lack of work and this is the place where I found it.
- 90 The necessity of work
- 91 To get better
- 92 The necessity
- 93 Because it is a good way to improve myself
- 94 My family, bills, needed to move forward
- 95 It was the option where you could earn more money.
- 96 The pay
- 97 The money
- 98 The learning, the field where I work in
- 99 They pay a little better.
- 100 Better salary, experience, benefits
- 101 They pay better and they have more hours.
- 102 Family was in construction.
- 103 My father
- 104 Pay bills
- 105 I like working with my hands.
- 106 Money
- 107 I needed a job.
- 108 A job

**Q9A: WHAT ATTRACTED YOU TO WORK IN THE CONSTRUCTION
INDUSTRY? (CONTINUED)**

- 109 Father worked in industry
- 110 Best job I found when I moved to Houston, TX.
- 111 My whole family have been carpenters, it runs in family.
- 112 Money
- 113 Third generation.
- 114 Make a living
- 115 I grew up working with my hands and enjoy building anything from the ground up to see the finish product.
- 116 Familiarity and recommended by a family member.
- 117 The building part.
- 118 I like to work hard and with my hands.
- 119 Cash money back then
- 120 Like to build.
- 121 Family- Majority of my family is in construction so I pretty much followed.
- 122 Job availability
- 123 I like it.
- 124 More money.
- 125 Vocation.
- 126 I like it.
- 127 Learn a trade.
- 128 It is a workplace with an opportunity to learn a trade.
- 129 To learn a trade, grow in the company and earn more money.
- 130 I like construction.
- 131 I like construction.
- 132 I have it a try and loved it ever since.
- 133 The company I work for
- 134 Money
- 135 The money
- 136 Work
- 137 (Don't know) money
- 138 Wanting to learn how building were made.
- 139 Sustain my family.
- 140 Family
- 141 Need a job.
- 142 Personal liking, better salaries.
- 143 Needed a job.
- 144 Salary

**Q9A: WHAT ATTRACTED YOU TO WORK IN THE CONSTRUCTION
INDUSTRY? (CONTINUED)**

- 145 The way how the things got built.
- 146 Get to work with your hands.
- 147 I like the job
- 148 Because it is the way I sustain myself.
- 149 Earn more money.
- 150 No need for High School. diploma and like to work with
my hand
- 151 I've always liked working with my hands and building.
- 152 My family, family business.
- 153 Steady work.
- 154 Love to build and the gratitude of seeing a finish result
- 155 Family Dad, uncles, etc.
- 156 The opportunity to move up in the company and the program
has to order
- 157 Was raised in the industry, family business.
- 158 Earning potential.
- 159 Need of job.
- 160 My parents motivated me
- 161 Growing industry.
- 162 Because I like the job
- 163 Because it was the first learned job.
- 164 A career and a better salary
- 165 I like it
- 166 To learn a trade
- 167 I like construction.
- 168 Nothing
- 169 Workforce development program
- 170 Because I like construction.
- 171 Need.
- 172 I helped my father when I was a child
- 173 I like it and part of the money.
- 174 I like building, the pay is good, and you learn things every day.
- 175 To succeed
- 176 In this country the lack of education.
- 177 Working in residential.
- 178 To sustain / provide for my family
- 179 Opportunity to learn and grow.
- 180 I like it

**Q9A: WHAT ATTRACTED YOU TO WORK IN THE CONSTRUCTION
INDUSTRY? (CONTINUED)**

- 181 Availability of work, opportunity.
- 182 I liked to see how people did their job
- 183 Learning the different parts the drywall industry has.
- 184 Personal growth to earn a better salary
- 185 Need money
- 186 Money, hands-on
- 187 To try new opportunities
- 188 I like it
- 189 Money
- 190 To know about other type of works
- 191 I like it and it has more money
- 192 To learn about the trade
- 193 I earn more money
- 194 Necessity
- 195 Money
- 196 For the salary y because I like what I do
- 197 My family and a better future
- 198 Better salary
- 199 The option to have a better salary and a better work schedule
- 200 The salaryThe schedule
- 201 To give my children a better education
- 202 Learn a new thing in life
- 203 Salary
- 204 The salary
- 205 Maybe because there are more jobs here
- 206 I have always liked to work in the construction industry
- 207 It offers a better salary than in restaurants
- 208 I like construction
- 209 I knew I will have a job in construction.
- 210 I like to build things with my hands so I can say "I did that"
- 211 The hand work and the satisfaction of going home being proud
of what I built.
- 212 Started out of high school
- 213 I wanted to try something different.
- 214 all the facilities my company give to everybody to learn.
- 215 The buildings that were being built.

Q9B: WHAT ATTRACTED YOU TO WORK IN YOUR CURRENT TRADE?

- 1 Great company.
- 2 My brother works here and he help me enter the business.
- 3 Something different
- 4 Salary and opportunities
- 5 Wish I could do and be something else
- 6 I like painting
- 7 Better job opportunities
- 8 Salary
- 9 I like it
- 10 Money
- 11 The salary
- 12 Lots of work available
- 13 Because it is a work to have a trade in the future.
- 14 Every day something different
- 15 Money
- 16 The salary is better than in others
- 17 A family member
- 18 A friend
- 19 A friend brought me in
- 20 Because there is abundant work
- 21 Someone talked to me about it and it is a good job
- 22 Because this is an indoor type of work and the sun does not affect you; it is easier
- 23 It is a good job
- 24 The salary
- 25 A friend in the job
- 26 It is the first thing I learned and I like it.
- 27 Good salary.
- 28 You become active.
- 29 Started at 13 years old. Stayed in it, all I know good.
- 30 They invited me to it.
- 31 A friend
- 32 It is what I learned to do since I arrived to this country.
- 33 I like it and my family does it too.
- 34 I like interior design and creating designs.
- 35 I like this job and I feel well here

**Q9B: WHAT ATTRACTED YOU TO WORK IN YOUR CURRENT TRADE?
(CONTINUED)**

- 36 Earn more money.
- 37 Earn enough money to give my family a better quality of life.
- 38 Money and the need to provide for my family.
- 39 Make money.
- 40 The salary.
- 41 Shortage in other jobs
- 42 The job stability and the personal growth and my family's growth.
- 43 A friend that worked in the same area motivated me for this job.
- 44 I like this job.
Because it is good to learn different trades. It is a good and growing trade.
- 45 Walls and ceilings.
- 46 That it is a good job and it is well paid.
- 47 Learn another trade.
- 48 This was the only thing I heard of at that moment.
- 49 A friend that has a lot of experience in this trade.
- 50 A friend of mine motivated me to work here.
- 51 They pay better per hour and we can live a little better.
- 52 My son.
- 53 I like to work in it.
- 54 Money
- 55 I like it.
- 56 They pay more
- 57 Opportunity
- 58 It was the first thing I learned to do.
- 59 There is sufficient work.
- 60 That I like it and it pays well.
- 61 Because the pay is a little better than in restaurants
- 62 My friends
- 63 Because of a family member
- 64 Because I have a family member that works here and he trains me in this trade
- 65 Because it is a job that never ends
- 66 It is what I knew
- 67 You invest in tools and learn to work in this trade
- 68 Self-improvement
- 69 Carpentry, Plumbing
- 70

**Q9B: WHAT ATTRACTED YOU TO WORK IN YOUR CURRENT TRADE?
(CONTINUED)**

- 71 Better salary than others
- 72 The need and the willingness to learn
- 73 because it is a good job
- 74 I like it
- 75 Money
- 76 More practical and the payment is more or less good
- 77 Because I like to frame and place sheetrock
- 78 Better job
- 79 Because it pays better
- 80 Through my family
- 81 There are more work opportunities and it's easy.
- 82 The payment and desire to learn how to do this kind of job.
- 83 Interest in getting to know about it
- 84 Financial necessity
- 85 I liked the job
- 86 Because I like it and I wish to learn everything
- 87 This is where I started and I liked it
- 88 Because I had tools for drywall installation
- 89 More money
- 90 The family well-being
- 91 The money
- 92 The salary and the trade is what attracted me
- 93 I like this trade, it is not that risky.
- 94 I like it.
- 95 Making stuff.
- 96 Building stuff
- 97 My father was a finisher,
- 98 Union pension.
- 99 Job was available.
- 100 Job
- 101 Good at it.
- 102 Oil field.
- 103 Always busy, like the pace.
- 104 More money
- 105 Third generation.

**Q9B: WHAT ATTRACTED YOU TO WORK IN YOUR CURRENT TRADE?
(CONTINUED)**

- 106 Money
- 107 I had a chance to briefly working the trade and it sparked my interest so I stuck with it, Really gave me a different perspective.
- 108 I always like to share the knowledge, and my work allows me to help others.
- 109 Other workers.
- 110 A little more money, a little liter work task.
- 111 More technical
- 112 Enjoyed seeing my completed work.
- 113 Seen it as a way that fit me more- was more interesting to me.
- 114 Skills and knowledge of how they do it.
- 115 To work to pay for expenses
- 116 The pay.
- 117 I like it.
- 118 Great working environment
- 119 I like my job
- 120 My job
- 121 I like it.
- 122 The need to have a job.
- 123 Besides liking my job, you earn good money and you can grow in this company.
- 124 I got motivated by the job, it is like building a puzzle.
- 125 I like what I do.
- 126 I like my job.
- 127 Painter
- 128 Family history
- 129 The money
- 130 Money
- 131 Money
- 132 Structural interest.
- 133 I like it.
- 134 To live.
- 135 Need a job.
- 136 Family responsibility.
- 137 Acoustic
- 138 Money.
- 139 The look when the job is done.
- 140 Because I like to build.

**Q9B: WHAT ATTRACTED YOU TO WORK IN YOUR CURRENT TRADE?
(CONTINUED)**

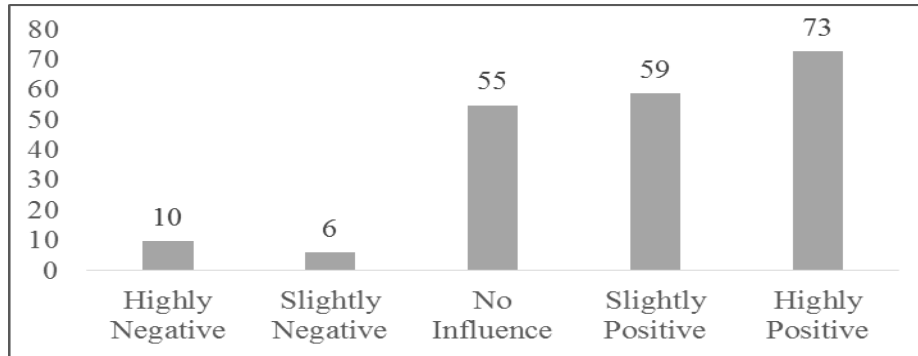
- 141 Something new.
- 142 I understood it easier.
- 143 My family so that I can help them prepare better.
- 144 Love for the job.
- 145 My brother in law had a friend in the trade.
- 146 Being able to build monumental structures for other people
to see.
- 147 Only trade family was not in.
- 148 Good skill to have.
- 149 Like carpentry
- 150 Following footsteps when I walk on a new job and start layout and
buildings we set the pace for other trades
- 151 Gave it a chance
- 152 Money and I am a journeyman.
- 153 Inherent skill set.
- 154 Enjoy the work.
- 155 I see construction as a career
- 156 New opportunity.
- 157 The money
- 158 Help others maintain safe
- 159 Money
- 160 My family
- 161 Just because I like it.
- 162 Nothing
- 163 Training to be a foreman
- 164 Because I like it.
- 165 Money.
- 166 I like construction
- 167 Good pay.
- 168 I like it.
- 169 Because the company I work for is very good, my family and
the salary
- 170 I want to learn something different.
- 171 I like the job
- 172 High interest.
- 173 Family.
- 174 I wanted to be an advanced employee
- 175 The different steps of how to mark all kinds of drywall.
- 176 Personal growth

**Q9B: WHAT ATTRACTED YOU TO WORK IN YOUR CURRENT TRADE?
(CONTINUED)**

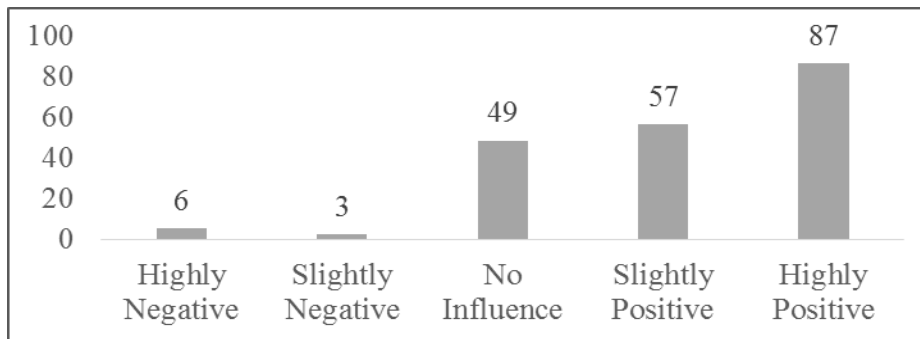
- 177 Don't know
- 178 Offered on the job training
- 179 For a better salary
- 180 All my brothers do it
- 181 Good pay
- 182 Have a good benefit for my retirement
- 183 The easiness to develop
- 184 I feel good
- 185 The type of work
- 186 The type of work
- 187 Wall framing and installing drywall caught my attention
- 188 To be someone better
- 189 I like it and it pays well
- 190 To have a vocation with a better salary
- 191 The schedule fits my necessities and I also like the salary
- 192 To live better
- 193 My family
- 194 Salary
- 195 The salary
- 196 I don't know, maybe for a better progress
- 197 I like heavy jobs
- 198 I like to learn new things
- 199 Everything, work motivates me.
- 200 Money
- 201 A friend + lots of work
- 202 The amount of work that the drywall industry is active in.
- 203 Job opportunity after High School
- 204 It is more hands on, you get to work with a lot of different tools.
- 205 I wanted to experience different types of trades.
- 206 Is part of the training development for work.
- 207 Its part of a program not the people

Q13. HOW DID THE FOLLOWING FACTORS INFLUENCE YOUR DECISION TO WORK IN THE CONSTRUCTION INDUSTRY?

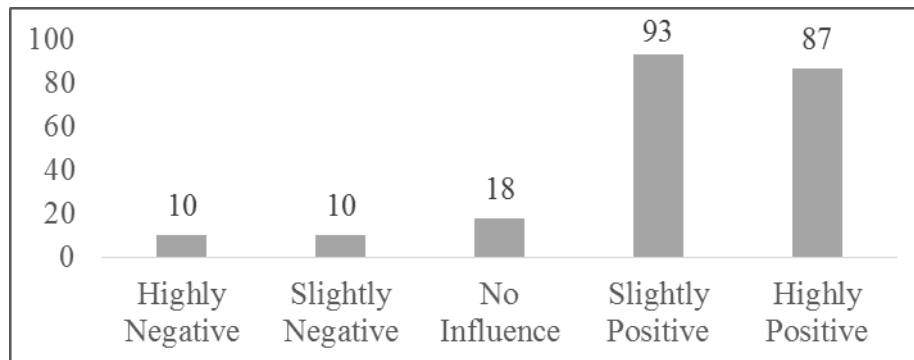
a. Career advising



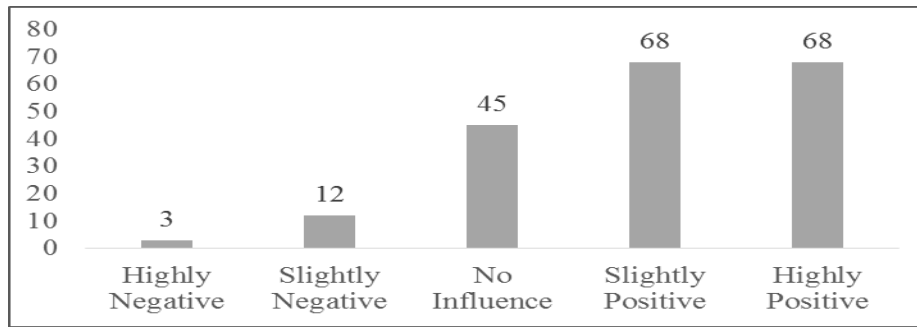
b. Family influence



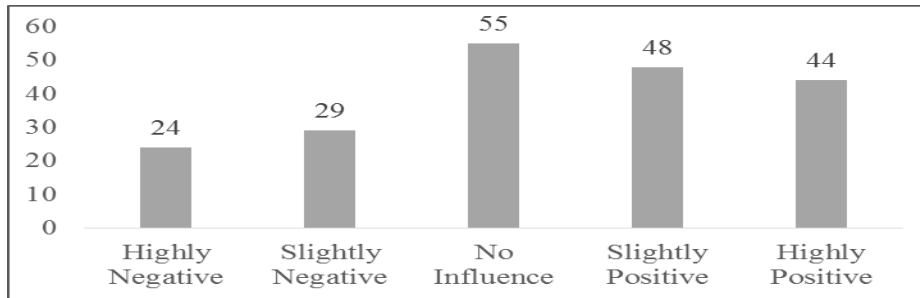
c. Salary



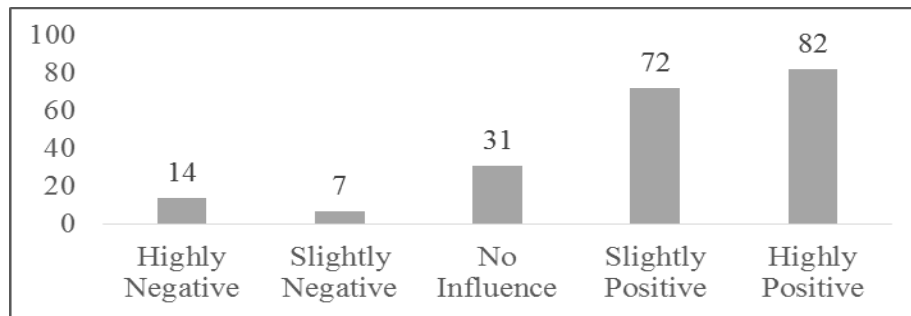
d. Industry image



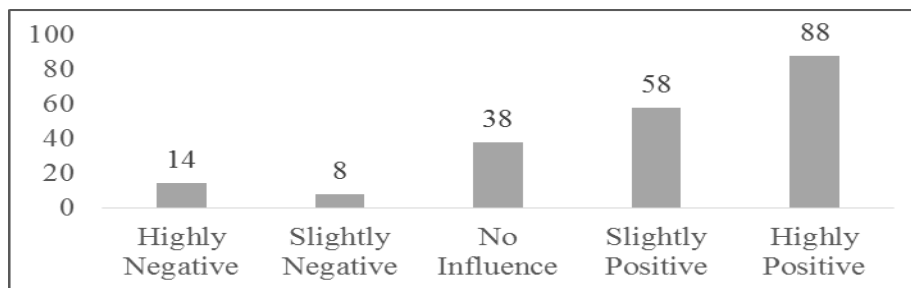
e. No other working opportunities



f. Career Opportunities in construction



g. Available training



**Q14: WHAT TYPE OF TRAINING HAVE YOU RECEIVED ON YOUR
CURRENT TRADE? SPECIFY-OTHER**

- 1 Safety
- 2 OSHA 10 hour
- 3 Safety
- 4 Safety
- 5 All training in the job
- 6 Tools training
- 7 Safety
- 8 Machinery
- 9 ADC plan reading
- 10 Safety
- 11 Welding, radiographer, plumber, drafting, flagor.
- 12 Safety and everything concerning construction
- 13 OSHA 30 hours
- 14 Union
- 15 My company's Training
- 16 Blue prints (advance), NCCAR, 30 hours OSHA.
- 17 Safety
- 18 Supervisor training and safety classes.
- 19 I haven't received any.
- 20 Fork lift
- 21 Security
- 22 Advance blueprint, Frontline supervision
- 23 NCCER instructor certified
- 24 Welding
- 25 Safety on the job

Q18: WHAT KIND OF JOB OPPORTUNITIES DOES YOUR TRADE OFFER?

- 1 Become coach, leadmen, foreman.
- 2 It is difficult.
- 3 Grow in the field
- 4 More opportunities in the job performance
- 5 All kinds
- 6 Better benefits, salary, employment benefits
- 7 Lots-miscellaneous-unlimited
- 7 I think everybody should understand a little of putting things together.
- 8 Have better capabilities in all areas of the trade like making ceilings and reading layouts.
- 9 There are many
- 10 Foreman
- 11 Learn to analyze blueprints
- 12 Foreman
- 13 Foreman
- 14 Supervisor and foreman
- 15 Group leader
- 16 Yes I would like to be a foreman
- 17 There are none
- 18 A lot of opportunities
- 19 Different positions
- 20 There are opportunities
- 21 Bricklayer, carpenter and sheetrock.
- 22 Yes, I want to have my own company.
- 23 Maybe if you put a lot of effort.
- 24 Become a Foreman or become independent.
- 25 Be able to become a Foreman or a Superintendent. Something requiring less physical work.
- 26 Grow as a foreman or other upper position.
- 27 Learn about the work, gain experience and then possibly be able to work independently.
- 28 Maybe I can scale to be something more and not just a worker
- 29 Scale to a better position on my current job.
- 30 No because of lack of education.
- 31 Grow in different positions.
- 32 Better quality of life and economic solvency.
- 33 Scale better positions according to my performance.
- 34 Training, Family stability.
- 35 Training opportunities in various construction areas.
- 36 Learn more of all types of trades.
- 37 Training in Safety.
- 38 None.

**Q18: WHAT KIND OF JOB OPPORTUNITIES DOES YOUR TRADE OFFER?
(CONTINUED)**

- 39 If I could
- 40 First look at the areas where we are working or where we plan to work.
- 41 Learn things I did not know before.
- 42 Ensure oneself that own can earn a better salary.
- 43 Climb in better positions
- 44 Opportunities to scale at work
- 45 Be a better employee
- 46 From laborer, to foreman, to mechanic
- 47 Mechanic
- 48 There are numerous opportunities specially having the position of supervisor (mayordomo), foreman
- 49 You climb in positions
- 50 Foreman, supervisor
- 51 You get to know the job
- 52 Yes learn more
- 53 Laborer, helper, mechanic, supervisor (mayordomo)
- 54 Be promoted or be more than just an employee
- 55 Be a leadsman or look into another trade
- 56 You get to be foreman
- 57 You can have a better salary or job
- 58 There are opportunities to grow
- 59 Financial improvement and job growth
- 60 To be able to learn a lot
- 61 Working on your own.
- 62 As a contractor
- 63 The opportunity to learn more for my own benefit and try to set up your own business.
- 64 Better salary
- 65 Some day be promoted to other position
- 66 Become a foreman
- 67 You get to be the best in the job
- 68 Safe stability
- 69 Grow as a worker and person, increase in salary pay
- 70 Carpenter, foreman, superintendent
- 71 Study, put a lot of effort and continue studying.
- 72 Experience, better positions like a leader man, foreman, etc.
- 73 There are several opportunities in my company.
- 74 Movement up in the trade
- 75 Steady work
- 76 Insurance and benefits.

**Q18: WHAT KIND OF JOB OPPORTUNITIES DOES YOUR TRADE OFFER?
(CONTINUED)**

- 77 Foreman to field superintendent.
- 78 Advancement to foreman.
- 79 Advancement to higher levels in company
- 80 To build anything that society requires.
- 81 Management opportunities.
- 82 Leadership.
- 83 Advancement
- 84 Supervision, Foreman
- 85 Lead man, foreman, superintendent.
- 86 Learning different trades, and going from helper level to foreman level.
- 87 Not that many
- 88 Some, with training.
- 89 Advancement, recognition
- 90 Lots... lead man, foreman, superintendent, safety supervisor. As high as you'd like to go.
- 91 401K and vacations.
- 92 Painting
- 93 Lead man or Foreman
- 94 Benefits for safety.
- 95 Grow to be a supervisor (mayordomo)
- 96 Leadman, foreman, get more benefits.
- 97 If you are a good finisher and you meet the requirements you can become a good supervisor (mayordomo) and direct jobs.
- 98 Grow in recognition, salary
- 99 Leadman and Forman
- 100 Hard work
- 101 Management
- 102 Foreman, superintendent
- 103 To be a foreman in the future.
- 104 Drywall
- 105 Learn and grow.
- 106 None.
- 107 Because you can work your way up to the top.
- 108 The company gives you all help we need.
- 109 Hang on
- 110 Being a supervisor or superintendent
- 111 Training classes.
- 112 In house training.
- 113 They offer leadman foreman positions, health benefits.
- 114 Being a coach, leadman, foreman.

**Q18: WHAT KIND OF JOB OPPORTUNITIES DOES YOUR TRADE OFFER?
(CONTINUED)**

- 115 Is a good skill to have for personal use and maybe other jobs.
- 116 I started as a help now I am a foreman I can go as high as I want
- 117 Framing, Sheetrock
- 118 Advancement to management of teaching positions.
- 119 Advancement
- 120 All the necessary ones
- 121 Foreman, project manager, etc.
- 122 401 K and insurance
- 123 Foreman
- 124 Better salary to increase quality of life.
- 125 A secure job, retirement, health insurance (not always), this could be a factor to look for another job because of the money
- 126 Learn more and earn more money.
- 127 Learn much more than what I knew before
- 128 One can become someone important if you decide it.
- 129 Supervising, Superintendent
- 130 Have the capacity to do jobs for the future
- 131 Lead man up to foreman.
- 132 For the new people and studies to earn more
- 133 Become a foreman
- 134 Job growth
- 135 Job progress
- 136 Opportunities to grow in the trade
- 137 Superintendents
- 138 They have English school and training on how to read blue prints
- 139 The company
- 140 Foreman or supervisor
- 141 Personal security
- 142 Become a steward
- 143 Make new offices and paint them
- 144 Blueprint reading
- 145 Drywall hanger, Framing, Acoustical ceiling, Finisher, Painter
- 146 Advancement, paid vacation, paid holiday, work, medical, blue prints, Spanish, formal training.
- 147 Steady pay A sense of pride
- 148 Leadership, advancement opportunities, working as a team.
- 149 To go as high as you can. Superintendent.
- 150 Several different types
- 151 Several
- 152 It offers great influence to help you move up.

**Q23: WHAT SKILLS AND QUALIFICATIONS DO YOU THINK ARE
REQUIRED TO BE SUCCESSFUL IN YOUR TRADE?**

- 1 Smart, Good with numbers. Attitude.
- 2 Job training
- 3 Intelligence, discipline and responsibility.
- 4 Motivation
- 5 Experience and want to grow in the field
- 6 Be able to listen and understand, and working with other people
- 7 Responsibility in the workplace
- 8 Training
- 9 The will to work.
- 10 Responsibility, desire to excel
- 11 Good with hands, common sense, foresee how to put a project together.
- 12 First be friendly and gentle, and obedient in every assigned task.
- 13 Be responsible
- 14 Quickness
- 15 Speak English, be legally eligible to work
- 16 Put effort into it, learn
- 17 Speak English
- 18 Desire to work and responsibility
- 19 Punctuality
- 20 Seriousness and enthusiasm
- 21 Be punctual, respectful, get along with co-workers
- 22 Safety in the workplace and knowledge of tools
- 23 That you like to work.
- 24 Be smart
- 25 Put effort into it
- 26 Know the job and work well.
- 27 Know what you are doing and be positive.
- 28 Put a lot of effort and work
- 29 Construction framing.
- 30 Do the work properly and study a lot.
- 31 Put a lot of effort, be punctual, and learn a lot of things.
- 32 Know how to read layouts, know how to work, and put your effort on it.
- 33 Speaking English and a great physical capacity.
- 34 Have an opened mind and be a constant worker.

Q23: WHAT SKILLS AND QUALIFICATIONS DO YOU THINK ARE REQUIRED TO BE SUCCESSFUL IN YOUR TRADE? (CONTINUED)

- 35 Be clever, skillful, smart and have willingness to work.
- 36 It requires a lot of responsibility.
- 37 Be focused at work.
- 38 Determination, accomplish work, and study.
- 39 Know more.
- 40 Studies.
- 41 Responsibility, seriousness and security in yourself.
- 42 Be consistent and do your best every day.
- 43 Be competent.
- 44 Be a hard worker, the younger generation seem lazy.
- 45 Youth
- 46 Work safely and put attention at your work.
- 47 Learn.
- 48 A lot of effort and work
- 49 A lot of will to work.
- 50 A great desire to work.
- 51 Responsible, respectful, educated.
- 52 Try to be the best one.
- 53 Learn and have a good attitude.
- 54 Have good communication skills.
- 55 Have dreams
- 56 Be responsible and be creative.
- 57 Be fast and intelligent.
- 58 Education, practice, be legally allowed to work
- 59 Respectful and be active
- 60 Intelligence
- 61 Responsible, creative
- 62 In the first place be a good worker and have good habits
- 63 Perseverance and responsibility
- 64 Cautious and responsible
- 65 Physically and mentally
- 66 Be righteous (correcto), follow the rules.
- 67 Give it your effort, be active, hard worker, know the job
- 68 Be smart and chrome

Q23: WHAT SKILLS AND QUALIFICATIONS DO YOU THINK ARE REQUIRED TO BE SUCCESSFUL IN YOUR TRADE? (CONTINUED)

- 69 Give it your best to the job and learn more
- 70 Good attitude, punctual, safety, responsibility
- 71 Hard worker
- 72 Be friendly with all your coworkers
- 73 Do things right once, work with dedication and safety
- 74 Be responsible
- 75 Safety
- 76 Be responsible with your job
- 77 Be honest in everything
- 78 Math skills and job execution
- 79 Put much effort into the job.
- 80 Responsibility, consistency, continuous practice
- 81 Pay attention
- 82 Be consistent in your profession and the vision of a winner
- 83 A lot of experience
- 84 Be patient
- 85 Be responsible, be careful, caution (safety concern)
- 86 Be responsible, pay attention to your supervisors
- 87 Be reliable, be punctual
- 88 Have a desire to improve yourself
- 89 Be very confident
- 90 Quick learning, interest, health
- 91 Training in the field and willingness to get better
- 92 Study to be able to get another job.
- 93 Studies, experience and attitude.
- 94 Teach a little of the experience.
- 95 Math, common science.
- 96 School.
- 97 Patience and dedication.
- 98 Drywall finishing to painting.
- 99 Experience in this trade,
- 100 Willing to work hard.
- 101 Work with hands well, understand how things go together (other trades).
- 102 Math ability to read documents and work with my back and hands.

Q23: WHAT SKILLS AND QUALIFICATIONS DO YOU THINK ARE REQUIRED TO BE SUCCESSFUL IN YOUR TRADE? (CONTINUED)

- 103 Good knowledge of trade
- 104 To be able to work safely, correctly and productively.
- 105 Just good attitude.
- 106 To be a hard working individual that is self motivated to complete the job.
- 107 Responsible, good attitude, and willing to help others.
- 108 Ability to learn quickly.
- 109 Show up on time, work everyday, try your best
- 110 Learn quickly.
- 111 Motivation, good with hands, think for yourself.
- 112 Ability to learn all the time and work safe, enjoy your work.
- 113 Quick learning and attendance
- 114 Responsibility and determination.
- 115 Discipline
- 116 Intelligence
- 117 Love the work and vocation.
- 118 Willing to learn.
- 119 Education, prepare better
- 120 Persevere
- 121 Be focused, be disciplined, and love your job.
- 122 A lot of dedication, be responsible, be a leader, and build a good working team.
- 123 Responsibility, attitude, and training
- 124 Be punctual for work and that you like what you do.
- 125 The will to learn.
- 126 Read a tape measure
- 127 Good at working
- 128 Common sense, willingness to learn (college)
- 129 School
- 130 Good math skills and understanding blue prints.
- 131 Have the desire to work.
- 132 Move forward.
- 133 School.
- 134 Lots of desire to self-improve (grow)
- 135 Be a person who praises others for favors.
- 136 Willing to learn the trade.

Q23: WHAT SKILLS AND QUALIFICATIONS DO YOU THINK ARE REQUIRED TO BE SUCCESSFUL IN YOUR TRADE? (CONTINUED)

- 137 Have a good presentation and speak English.
- 138 Training, be responsible.
- 139 Motivation, responsible, that you like it, good attitude.
- 140 Don't be lazy
- 141 Paying attention to detail, and being persistent.
- 142 Have good heart, good attitude, and most of all willing to learn.
- 143 Good with problem solving and with your hands.
- 144 Bachelor degree in construction management
- 145 Math skills, communication skill, and management
- 146 Listening, and teaching.
- 147 Good listener, stays focused, works hard.
- 148 Ambition, physical and mental strength, aggressive and intelligent attitude.
- 149 34 years
- 150 An opened mentality to succeed in life
- 151 Patience, open mind, able to apply things learned.
- 152 Motivation
- 153 That you like what you do.
- 154 Willingness to learn and help others
- 155 Dexterity, intelligence, tool management
- 156 Just give it your best.
- 157 School
- 158 Physical, mental, and common sense
- 159 Quickness, quality, and safety.
- 160 Dedication
- 161 Positive self-esteem and decision to excel.
- 162 Learn and see how to take advantage doing things right (quality).
- 163 Study
- 164 Maintain a positive mentality.
- 165 Intelligence
- 166 Willingness to learn and like to job.
- 167 Have friendships and be intelligent
- 168 Craftsmanship, basic math, good morals.
- 169 Have a good friendship with people of high ranks in the company
- 170 Intelligence, endurance, and understanding.

Q23: WHAT SKILLS AND QUALIFICATIONS DO YOU THINK ARE REQUIRED TO BE SUCCESSFUL IN YOUR TRADE? (CONTINUED)

- 171 Dedication
- 172 Team work
- 173 Willing to be taught
- 174 Work hard and be punctual
- 175 Speak English and have education
- 176 Attitude
- 177 Be responsible at work and respect
- 178 Knowledge
- 179 Being active
- 180 Do a good job and love what you have to do
- 181 Be prepared
- 182 Want to do the job and that you like to do it
- 183 Talent, velocity with the hands, intelligence
- 184 English and bilingual studies
- 185 Study
- 186 Learn and put a lot of attention
- 187 High studies
- 188 High study
- 189 Be responsible, Be intelligent, Have a good conduct
- 190 Put a lot of effort into work
- 191 Have motivation
- 192 Must be strong, Confident, Sarcastic
- 193 Smart, Humble, The ability to listen and pay attention. Positive character.
Communication
- 194 Problem solving skills, the ability to handle hard work, getting hot and sweaty
- 195 Common sense, attention to detail.
- 196 Show up on time, wanting to learn everyday.
- 197 Pay attention and learn what you can learn FAST!
- 198 Safety
- 199 Just the right attitude and an eagerness to learn.

APPENDIX I

THESIS TECHNICAL REPORT FOR DRYWALL COMPANIES

Given an evident labor shortage in the construction industry, understanding workers' career awareness can assist companies to better focus their hiring and retaining strategies. This study's results and recommended best practices are summarized below.

1) Factors influencing a career-decision to join construction and the drywall trade

Based on "Maslow's hierarchy of needs theory;" most participants were attracted to construction due to "Physiological Needs," and to the drywall trade due to "Belongingness and love" needs.

The top ranked factors influencing workers to choose construction were; a) "sense of connection, belonging, like it;" b) "money;" c) "necessity;" and d) "achievement through learning."

Likewise, the most influential factors to choose a career in the drywall trade were; a) "sense of connection, belonging, like it;" b) "money;" c) "job and financial security;" and d) "affiliation with a group, family, or friends."

Recommended Best Practices

- Most participants felt connected with their work and liked what they do, therefore reinforce this sense of connection and develop a sense of pride in their career
- Most participants belong to the "physiological needs" category, meaning their priorities are basic survival needs, so "money" is important. Companies need to provide competitive salaries and transparent information on salaries, benefits, career development programs, and offered training compared to other companies and industries

- Belongingness (family and friends), are key motivational factors. Consequently, successful recruiting and retaining strategies can result from incentivizing workers who recommend their trade to their social circles, and engaging their families with the company and the industry through: family days, take your kid to work days, site visits, camaraderie events

2) Type of attained training and if training will motivate workers to remain in the drywall trade

The most common types of attained training were: a) On-the-job training (76%), b) Previous work experience (57.1%), Vocational certificate or Apprenticeship (17.15%),

Some college (6.9%), and Associate's degree (2.8%). Their training was funded by the "Employer" (62%), "Both" (20%) and by "Themselves" (19%). Also, (91.4%) of participants mentioned training will motivate them to remain working in their trade.

Recommended Best Practices

- Continue investing in employees' training. This is a promising long-term retaining strategy. Fund training totally or partially since most participants are in the "physiological needs" category and presumably cannot afford it for themselves
- Create structured training programs benefiting both the employee and the company. On-the-job training and previous work experience are not transferable forms of education, and few participants mentioned receiving certification-level degrees. Also, revise "on-the-job training" methodologies since (25%) of participants receiving it, do not recommend it. Gain employees' feedback on how to improve this program and what training/s fits their needs and expectations

3) Awareness of career opportunities and skills required to be successful

The majority of responses had a “Positive connotation” (194), meaning participants thought their trade did offer them opportunities, some mentioned a “Neutral connotation” (10), thinking maybe they had opportunities. Finally, few participants thought they had “no opportunities” (7, Hispanics 85.7% and American Indian or Alaskan 14.3%). Most participants were aware of “non-promotion career opportunities” (109), some of “career-promotion opportunities or career paths” (85), and few were “Unaware of available opportunities” (17). The top ranked skills and qualifications participants thought were important to be successful in the drywall trade were: “Education” (58), “Motivation” (52), “Attitude” (39), “Intelligence” (31) and “Discipline” (29).

Recommended Best Practices

- Retaining strategies: guarantee workers clearly understand what opportunities they have and how to achieve them. Provide them with information and mentoring on both the promotion and non-promotion opportunities
- Provide career development programs and progression opportunities since they influence employees’ satisfaction and thus their willingness to stay working in a particular company
- Understand the skills and qualifications participants mentioned are important to be successful in the trade. Further develop these skills with training, and hire and retain workers possessing these skills and qualifications

4) Workers’ expectations for the future

Overall, (84.8%) of participants thought their job has a successful future. Also, (90.6%) are willing to remain working in the drywall trade and (80.4%) anticipated a long-term career in

construction. Yet, only (48.15%) are willing to recommend their children a career in construction and (46.6%) are willingness to recommend their children a career in the drywall trade.

Recommended Best Practices

- Reinforce the positive likelihood to remain working in the construction industry and the drywall trade by accomplishing employees' career expectations
- Improve the willing to recommend their trade to their children since “Belongingness and love” was the most influential factor to pursue a career in the drywall trade

5) Results for non-parametric statistical tests

Non-U.S. born drywall tradesmen are more likely to recommend the drywall trade to their children than U.S. born drywall tradesmen. Also, people who chose construction as a first choice career are more likely to recommend their children to join the construction industry than people who did not chose construction as a first choice career.

Recommended Best Practices

- Develop recruiting and reinforcing strategies around this tendencies
- Engage non-U.S. workers and their families with the company and the trade
- Create strategic action plans identifying who this people are to incentivize them to recommend the drywall trade to their children, extended family and social circles
- Ensure more people chose construction as their first career. Train and engage high school counselors and families on how skilled trades are alternative paths to higher education