



National Center for Construction
Education and Research

In Her Own Words:

Improving Project Outcomes

Research Report

May 2023

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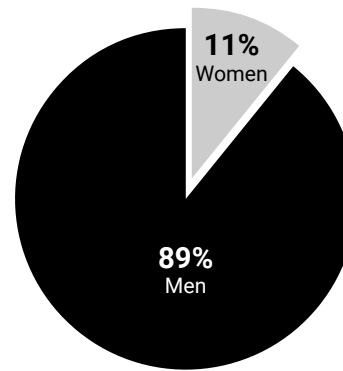
1. Introduction

While the most recent U.S. Census estimates that women comprise 50.5% of the U.S. population, they still make up just 11% of the overall construction workforce. However, this does not represent the actual percentage of women working in construction trades. A significant portion of the 11% works in an office within the construction industry doing engineering, legal, insurance, medical, and administrative work. In reality, the percentage of women working in construction trades is less than 4% (US Bureau of Labor Statistics, 2021) (Figure 1).

The construction industry has made significant progress in recruiting and retaining women within the professional, managerial, and administrative segments of the construction industry but has had less success in the construction craft segment. This leads to some obvious questions: Why are women significantly underrepresented within the construction trades? What qualities do women bring to jobsites that lead to improved project outcomes? What can contractors do to better recruit and retain women in the industry? The National Center for Construction Education and Research (NCCER) decided to not only find the answers to these questions but to also find solutions. Barriers to women’s increased involvement in the skilled trades may be related to jobsite cultural barriers, but additional barriers may exist around a lack of knowledge as to which trades are best suited to the desires and abilities of women. The industry must make a significant and concerted effort to address this issue to overcome the increasing risk posed by craft workforce shortages to project performance.

The objective of this report is to understand women’s perspective and their experience in the construction industry relating to several issues including their perception of the industry, their motivation to join, barriers they face, unique qualities they bring, and recommendations to aid the recruitment and retention of women. This report details the results of this investigation. The next section provides an overview of background literature on previous work on women in the construction trades. Section 3 describes the research methodology for the current work and Section 4 presents the detailed

WOMEN IN THE CONSTRUCTION INDUSTRY



WOMEN IN THE CONSTRUCTION TRADES

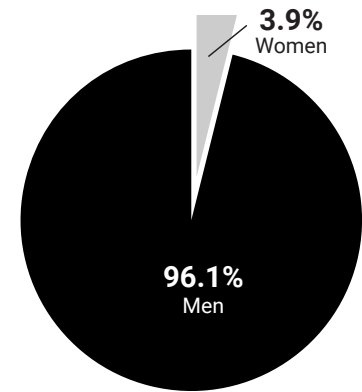


Figure 1: Percentage of Women in the Construction Industry.

data analysis. Section 5 presents conclusions and recommendations for increasing the participation of women and for future work in this area.

2. Literature Review

The experience of women in the construction industry has received attention in both academic and general literature. Much of this work focuses on internal and external perceptions of the industry and factors that may contribute to gender disparities. The construction industry is not generally perceived to have a culturally or socially tolerant workplace compared to other industries, particularly for women (Chandra & Loosemore, 2004). Work in the construction industry is perceived to be characterized by long hours, job insecurity, conflicts, and imbalance between work and family life (Turner & Lingard, 2016). The prevalent societal norms that influence labor market segregation into masculine and feminine jobs today are well established, particularly in the skilled construction crafts (Aulin & Jingmond, 2011; Clarke et al., 2005). Some studies have highlighted the existence of a gender hierarchy within the construction industry where characteristics of masculinity, toughness, and roughness play a fundamental role in determining a worker’s position in the hierarchy (Iaccone, 2005; Norberg & Johansson, 2021).

Research indicates that women face significant challenges and barriers in their recruitment, participation, and career progression in the male-dominated construction industry.

For instance, there is a presumption that women are not physically strong enough to undertake construction work, and would have to consistently prove their competence despite having the necessary qualifications and experience (Clarke et al., 2004). Beyond technical skills, women have to be psychologically strong to withstand the construction workplace culture, and need to be able to adapt to the accepted workplace behavior of a traditional blue-collared industry (Clarke et al., 2004; Olofsson, 2003).

Beyond societal norms, female workers often lack adequate personal protective equipment and may have to resort to using ill-fitting PPE which can lead to compromising personal health and safety. This is because most tools, equipment, and clothing were not originally designed for a women's physique (Occupational Safety & Health Administration, 1999). Moreover, another study (Hossain & Kusakabe, 2005) highlighted the discriminatory hiring practices in the construction industry against women. The recruitment process favors male workers to keep the organization male dominated (Dainty et al., 2000).

One study found that some of the top barriers facing women in the construction industry include negative attitudes, behaviors and perceptions and struggles ranging from stereotyping and sexism to bullying and harassment. The inflexibility of working practices, including long work hours and the penalization of women who need more flexibility due to family commitments limits female participation in the industry. Finally, the lack of training opportunities, support, networking, and mentorship can hinder women's participation in the industry and career progression (Worrall et al., 2010).

Another study found that the main career barriers for women in the construction industry include inability to manage a work-family balance due to industry inflexibility and family commitments, gender stereotypes, lack of promotion opportunities, inadequate working conditions that favor men over women, the prevalence of a sexist culture and harassment, lack of recognition for work contributions, and informal recruitment and hiring processes that favor job candidates who have contacts within the industry, which often disadvantages women (Navarro-Astor et al., 2017).

The construction industry is perceived to be characterized by a masculine dominated culture. The prevalence of sexual harassment can increase the challenges women face (Fridner et al., 2009). Women in the construction industry are more likely to report anxiety and depression compared to males due to gender discrimination and harassment (Chan et al., 2022; Kamardeen & Sunindijo, 2017). This may be related to psychological and sociological strain that women experience due to the organizational climate in the construction industry (Bowen et al., 2014).

A study of over 2,700 construction workers found that women, on average, are statistically more likely than men to be disrespected at work, to be treated unprofessionally, and be subjected to derogatory comments at work. A similar analysis of the U.S. labor force at large does not show that women have a worse experience compared to men across the three stated issues, indicating that the negative experience women face in the construction industry is unique and much worse than the general nationwide workforce culture (Ramadan et al., 2020).

Despite all this, research has discussed the importance of having women on construction sites. For instance, one study of over 2600 construction workers that examined the impact of gender diversity on the performance construction crews found statistically significant benefits of having women on construction crews compared to crews that lack gender diversity (Ramadan et al., 2023).

The existing body of literature highlights the negative perceptions and experiences of women within the construction industry but less understood are the motivations for women entering the industry, the unique benefits that women bring to the industry, and strategies for increasing the representation of women within the construction trades. The current work addresses this knowledge gap.

3. Research Methods

The objective of this research is to better understand a women's perspective and experience with the construction industry and identify specific strategies to mitigate barriers

to women's involvement in craft trades. To achieve this objective, the research team conducted focus groups with 176 women in the construction industry.

To develop a questionnaire for the focus groups, the research team identified major issues that potentially impact women in construction by examining the literature on this topic, identifying the gaps in the literature that may be relevant, and consulting with industry experts. Initially, a list of more than 30 questions was developed. After multiple iterations of the questionnaire tool, the list of questions was reduced to 12 specific questions relating to the research topic to ensure the focus groups were concise and questions could be adequately addressed during a 45-60-minute session. During this process, the questionnaire was independently reviewed by experts who were not on the research team, including construction industry leaders and construction workers, in order to ensure the validity and relevance of the questions and topics. Table 1 shows the list of interview questions for the focus groups of women in construction.

To recruit participants for the focus groups, the research team contacted major construction companies in the U.S. and Canada. Companies were briefed on the goals and objective of the research and the importance of the topic. Ultimately, five companies agreed to cooperate with the research effort and helped to identify women who were willing to participate in the focus group sessions. Four of the companies are in the industrial construction sector and one company is in the commercial construction sector.

Over the course of three months, a total of 29 focus groups were conducted. The research team traveled to both Texas and Canada to complete the focus groups. A total of 176 women participated in focus groups sessions of three to nine people each, with an average of six women per focus group. The participants had varying levels of experience in the industry, ranging from new entrants to over 30 years of experience. The participants had varying roles/ranks in the industry, including helpers, apprentices, journeymen, and foremen. The women participating in the focus groups included laborers and trade workers certified in different crafts. Four of the focus groups included Spanish speakers

Question

1. What motivated you, or, why did you decide to join the construction industry?
2. What perceptions, in general, did you have of women working in the construction industry before you joined?
3. What do you think your career opportunities are in this industry?
4. What value (qualities, work habits, etc.) do women bring to the jobsite that our industry misses out on with an predominately male workforce?
5. Do you believe your contributions to the construction industry are valued?
6. Does the construction industry offer you the flexibility you need in terms of work hours?
7. Are there any barriers for women joining the construction industry that you feel the industry is blind to?
8. How would you describe the hiring practices you experienced when starting a new job in the construction industry?
9. Do you know of any women in field-based leadership roles within your current company or past companies you've worked for? What impact did that have on project sites and project performance?
10. Have you had any mentors in the construction industry who helped guide your career? Please elaborate on what type of help they provided.
11. Do you have any suggestions on recruitment or retention practices to attract more women into the construction industry?
12. What advice would you give to contractors to better accommodate and retain women in their companies?

Table 1: List of interview questions for focus groups of women in construction.

only. In those sessions, a translator was used to facilitate communication between the facilitator and the focus group participants.

At the beginning of each focus group session, the women were advised that the sessions would be audio recorded only for transcription purposes. They were also advised that their anonymity would be protected, and that anything they say would not be relayed to anyone outside of the focus groups. No names were used in the transcription, and any identifying information was scrubbed from the transcripts. They were told that their participation was voluntary, and that they had the right to refuse to respond to any questions or leave the session at any point without negative consequences. The participants were then offered a brief description of the goals and objective of the research effort. All focus group interviews were conducted by a tradeswoman to ensure the participants were comfortable to share their experiences, particularly if sensitive topics were discussed.

After the completion of focus groups, audio recordings were transcribed using online tools “rev.com” and “temi.com.” The transcripts were then verified for quality by reading through the transcripts and listening to the audio recordings. Any identifying information was then scrubbed.

The focus group data analysis approach included content analysis. Content analysis is a “research method that provides a systematic and objective means to make valid inferences from verbal, visual, or written data in order to describe and quantify specific phenomena” (Downe-Wamboldt, 1992). Content analysis focuses on the meanings, intentions, consequences, and context. The process of describing the occurrences of sentences, phrases, or words without context of the data is inadequate and inappropriate. Context in content analysis is what justifies the findings in the data (Downe-Wamboldt, 1992).

Content analysis, as an analytical technique, facilitates the description of qualitative data by measuring the frequency of responses based on the specific context (Krippendorff, 1980). As a scientific method, content analysis relies on clearly defining the unit of analysis,

creating and defining categories for the coding, inter-coder reliability, and revising and reassessing the validity of the coding and the categories.

For this research, the unit of analysis is the complete response to the interviewer’s question at hand by each participant who spoke during the focus groups. Each unit of analysis could be assigned to one or more codes if multiple issues were raised by the participants (Saldaña, 2013). Also, the authors developed a coding framework/codebook for each question based on the responses of the participants. NVivo software was used to structure and organize the qualitative coding (QSR International, 2022).

The full scope of the content analysis was completed by one researcher. When half of the coding of the interviews was finished, a second researcher independently coded three focus groups. Then, the two researchers reconciled discrepancies between the coding and updated the codebook. The primary researcher then re-coded all focus group transcripts based on the updated codebook, and a second intercoder reliability check was performed using three focus groups. The check was iterative, and when a final codebook was agreed on by the researchers, the coding was updated for all focus groups.

4. Results & Discussion

This chapter presents the results of focus group analysis for each question in the questionnaire. This section details the prevalent responses of women along with selected unedited quotes that describe their experience in the construction industry with regards to highlighted issues in their response. To present the results of the content analysis, a tree-map chart of the responses is created to visually represent the frequency of each response. For each tree map question, the frequency of responses adds to 100%. Additionally, a bar chart is created to present the percentage of total response each response was mentioned, and another bar chart is created to present the percentage of all focus groups in which each response was mentioned.

4.1 Motivation to Join the Industry

The research team wanted to understand the motivation

women had for joining the industry. In that endeavor, women in construction focus groups were asked the following question: What motivated you, or, why did you decide to join the construction industry? The results of the analyzed focus groups are presented in Figures 2, 3 and 4. Overall, 169 responses were received for this question. Figure 2 shows a tree map distribution of the main reasons women join the industry. Figure 3 shows the percent of all references each reason was mentioned. Figure 4 show the percent of focus groups each reason was discussed in. The results show that “money” is the primary motivation for women entering the construction trades, as this reason made up 44% of all responses and was mentioned as a motivation in 97% of focus groups. For example, focus group participants made the following statements:

- *“I did my first year of college, but needed more money so I could go into my second year. I decided to go up to the trades, and I ended up getting a job as a welder up there.”*
- *“There’s no money in my other job, right? So that’s why I changed to work here - the money.”*
- *“Obviously, you go into construction, the money’s better, but eventually I kind of found a passion in materials, and that’s why I stuck here.”*
- *“In all honesty, I don’t know. It could be money-driven also, what you make. When you weigh the scales and work a regular, ordinary job and work the same amount of hours and less pay”.*

Moreover, many women indicated that they joined the industry for family reasons, as it made up 19% of responses and was mentioned in 69% of focus groups. Some women wanted to provide for their family through the relatively high wages paid within the construction industry. Others joined because a family member introduced them to the construction industry. For example, focus group participants made the following statements:

- *“I think it was more financially motivated. I have two kids and my partner has a back injury.”*
- *“When I finished school, I had the chance to go with my dad and proceeded to be in operating cranes and equipment, and then it kind of just stuck with me.”*
- *“My Dad kind of showed me. He said, “It’d be best to set yourself up if you had a trade, because it’s something you can always fall back on. So, I took his advice and went into a trade, and then I think it was one of the best decisions I’d made”.*

Several women said that they joined the industry because they love the type of work they can do in the construction industry. This reason made up 7% of all responses and was mentioned in 28% of all focus groups. For example, focus group participants made the following statements:

- *“I like it. I just like the hard labor work.”*
- *“I got into it because I was born and raised on a farm and I do not see myself sitting in an office. When I picked*

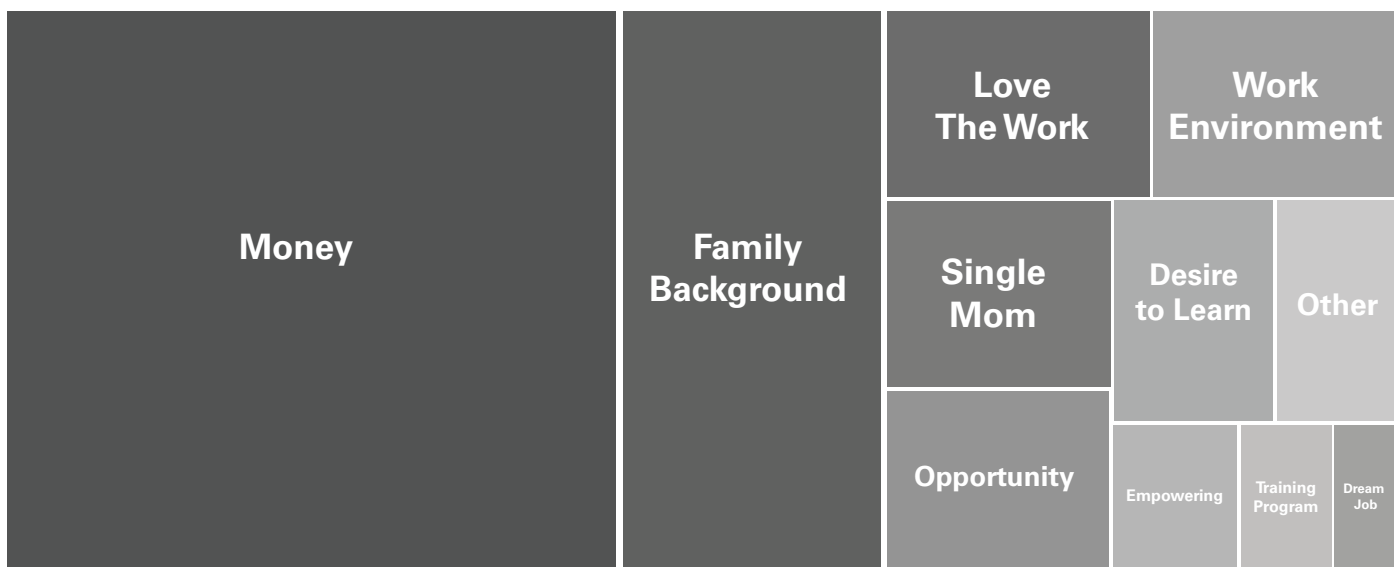


Figure 2: Tree map distribution of responses for motivations for joining the construction industry.

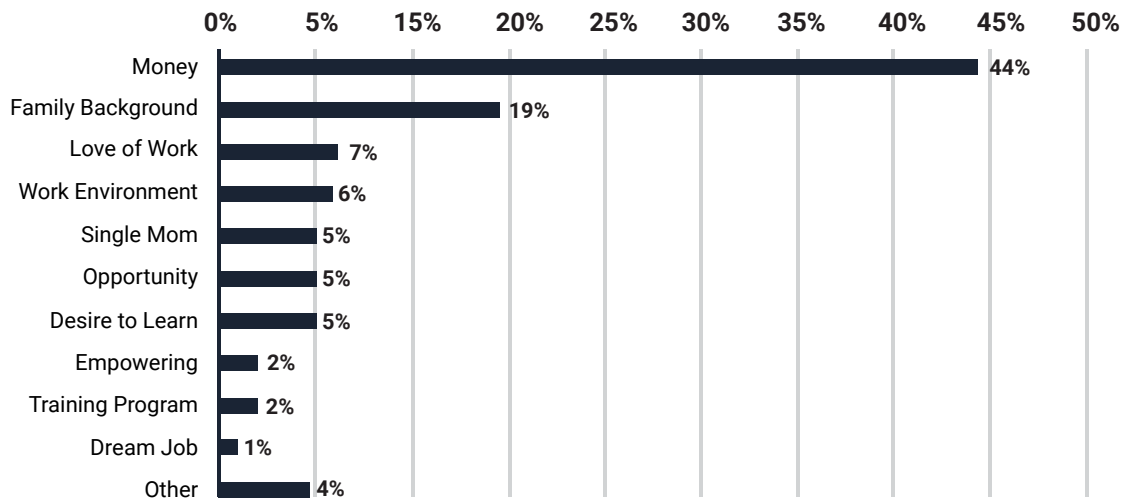


Figure 3: Percent of total responses for motivations to enter the construction industry.

rocks and drove a tractor, that's me. Office work, it's not, it's not happening."

like that. I just see people being there for each other and especially in your own trade."

Some women highlighted the construction work environment as a factor for joining the industry. These women did not enjoy an office workplace environment and preferred an open work environment where they are able to interact more with colleagues. This factor made up 5% of all responses and was mentioned in 28% of all focus groups. For example, focus group participants made the following statements:

Additionally, some women suggested that being a single mom was the main reason they joined the industry. Since the construction industry paid significantly higher wages, they were able to provide for their kids and set them up for a better life without the support of a spouse. Being a single mom made up 5% of all responses and was mentioned in 28% of all focus groups. For example, focus group participants made the following statements:

- *"I don't like being in an office. I don't like the office environment. I like being out here. I like being out in the open and being able to talk to people but not having to sit in one spot at one time."*
- *"I like the way that people have each other's back here. I think in a lot of like different workplaces and stuff, it's not*

- *"I've worked in Walmart and you know, the money there is not a lot, so being here where I get paid weekly and the money is way better, I'm able to support my kids because I am a single mother. I can say that's what's motivating me to just stay put, you know, and just keep on, so I can be able to afford to take care of them."*

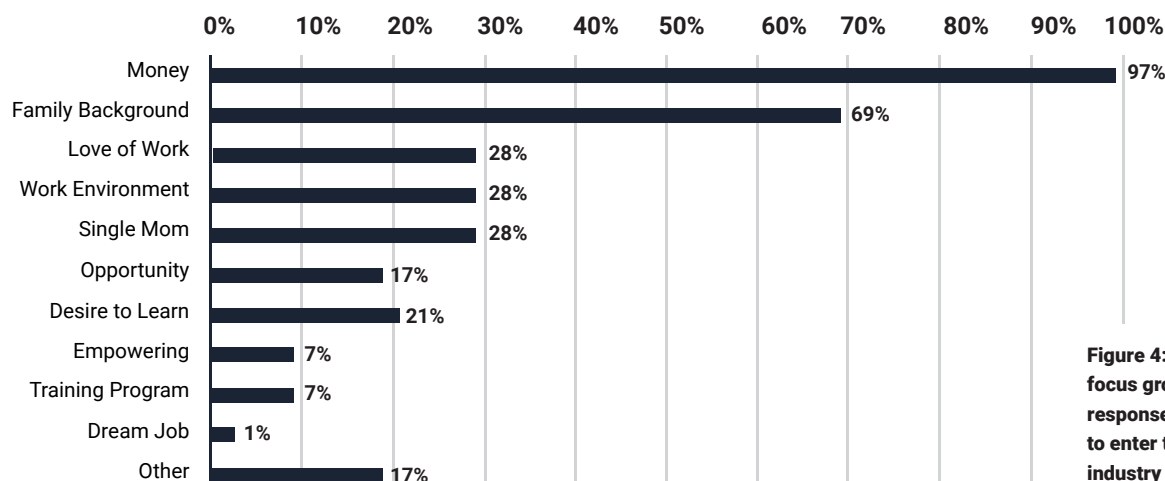


Figure 4: Percent of total focus groups that each response for motivations to enter the construction industry is mentioned.



Figure 5: Tree map distribution of responses for perception of the construction industry prior to joining

- *"I became a single mom with two kids, and you can't make it on a McDonald's wage or anything like that. So, I started off as a helper."*
- *"What drove me to come is I was a single mother, and I had to make the money to raise my kids. That's what originally drove me to come out to the industry."*

The focus group participants cited other reasons for joining the industry. Several women indicated that they were given the opportunity and thus seized it. This reason made up 5% of the responses and was mentioned in 17% of the focus groups. Other women stated that they joined to learn a new skill and start a career. This

reason made up 5% of the responses and was mentioned in 21% of the focus groups. Also, women stated the construction industry was empowering and contributed to their independence. They wanted to prove people wrong about the perception of women's ability to work tough construction jobs. This reason made up 2% of the responses and was mentioned in 10% of the focus groups. Finally, a few women said they were motivated to join the industry because of a training program, and others said because it was their dream job. A few other reasons were mentioned for entering the construction industry, including COVID-19, being an immigrant, and wanting to travel etc.

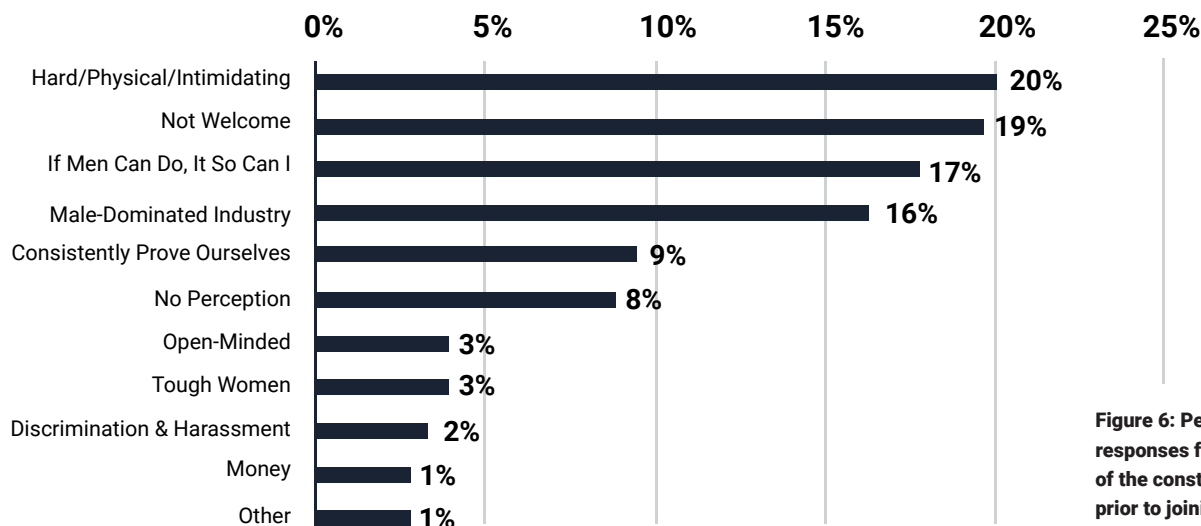


Figure 6: Percent of total responses for perceptions of the construction industry prior to joining.

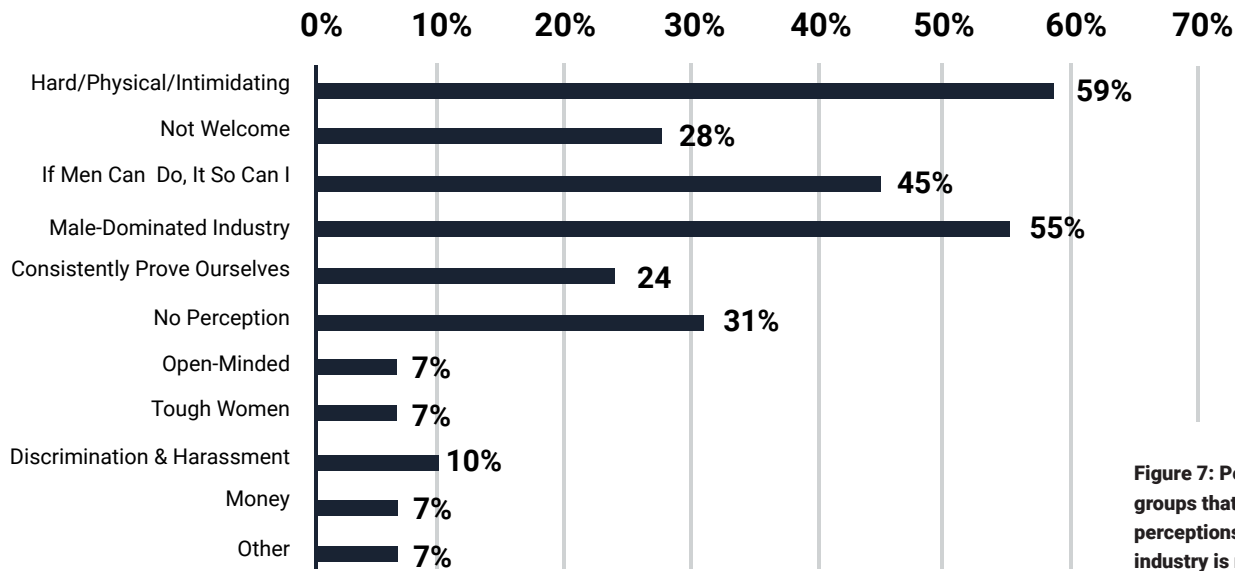


Figure 7: Percent of total focus groups that each response for perceptions of the construction industry is mentioned.

4.2 Perception of the Industry Prior to Joining

The research team wanted to understand the perception women had of the construction industry prior to entering. For that purpose, women in construction focus groups were asked the following question: What perceptions, in general, did you have of the construction industry before you joined, in terms of women working in it? The results of the analyzed focus groups are presented in Figures 5, 6 and 7. Overall, 143 responses were received for this question. Figure 5 shows a tree map distribution of the main perceptions women had of the industry. Figure 6 shows the percent of all responses each perception was mentioned. Figure 7 show the percent of focus groups each perception was discussed in.

The most prevalent perception women had of the construction industry is that it was hard, physical or intimidating. This perception made up 20% of all responses and was mentioned in 59% of focus groups. For example, focus group participants made the following statements:

- *"I thought it was very heavy."*
- *"I thought it was going to be hard. I thought a lot of members were gonna give me a hard time, but I worked under some good people."*
- *"I was a little bit intimidated just coming up here."*
- *"I don't know, I was definitely intimidated thinking about getting into it, I mean, as a detail, working around guys all the time."*

- *"I thought it was going to be hard because you're a woman. I thought this is a man's world."*

The second most common perception women had was that they felt they were not welcome in the industry, which made up 19% of the responses and was mentioned in 28% of the focus groups. The women had the perception that men don't want them to be around or giving them orders, and that they would be constantly underestimated. For example, focus group participants made the following statements:

- *"I definitely had people straight up tell me, 'I don't think a woman would be a good fit for this job.'"*
- *"They [men] really feel like a lot of women don't belong out here. I mean, we can do just as much as they do. Their way of thinking is different also, from what I've been seeing."*
- *"They just don't want a female being superior to them."*
- *"They underestimate you a lot, because they think that you can't do it. For me, I'm small and they think, 'No, she can't do it. Oh, no. I won't hire her. I don't want her.'"*

Moreover, women felt that construction is a male dominated industry. This feeling made up 16% of the responses and was mentioned in 45% of the focus groups. Of course, this perception is not without merit. According to the U.S. Bureau of Labor Statistics, 96% of construction workers are male. Some of the focus group participants made the following statements:

- *"I know it's male dominated."*
- *"Well, you know, you don't see a lot of females in the trades."*
- *"It was weird because you wouldn't see a lot of women in construction. It was just men and it was kind of scary".*

Still, a lot of the women believed that if men can do the work, so can women. This feeling made up 17% of the responses and was mentioned in 45% of the focus groups. They felt that women working in construction are empowering and put them on the same level as men. For example, focus group participants made the following statements:

- *"If they [men] can do it. We can do it."*
- *"There's the ideology that women don't belong doing the rough stuff, but it's like no, women can do the rough stuff. You can do just as much or even more than men can on this site."*
- *"I thought that women can do the exact same things that men can."*
- *"It's really empowering and inspiring to see, you know, oh, and being a worker, right? Women laboring, anything like this in a male-dominated world and construction is great. I love it."*

However, the women had the perception that they had to consistently prove themselves. They felt they would have to work harder to prove themselves and gain recognition from their male colleagues. This perception made up 9% of the responses and was mentioned in 24% of the focus groups. For example, focus group participants made the following statements:

- *"I thought it was going to be tough and that it was hard, or I really had to work hard to prove myself. I didn't know when getting into construction if it was going to be the same. If I was going to constantly have to try even harder than everybody else."*
- *"We will always have to work 10 times harder than a man to make ourselves be, not even equal, but close to what they are. So, I mean, it's challenging as a woman working in construction because we'll always be the minority, and we're always going to have to work double and triple harder than any man will ever have to in construction."*

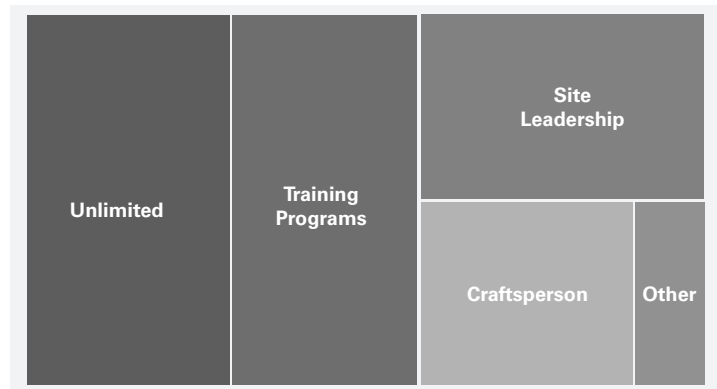


Figure 8: Tree map distribution of responses for what women believe are their career opportunities in the construction industry.

Beyond those perceptions, several women indicated that they had no perception of women working construction at all, which made up 8% of the responses and was mentioned in 31% of the focus groups. Other women were open-minded about the idea of working construction, which made up 3% of the responses and was mentioned in 7% of the focus groups. Also, some women stated that they thought women working in the construction industry are tough. This perception made up 3% of the responses and was mentioned in 7% of the focus groups. Moreover, several women felt they would face discrimination and harassment in the industry. This perception made up 2% of the responses and was mentioned in 10% of the focus groups. Finally, very few women had the perception that the industry paid a lot of money, which made up only 1% of the responses and was mentioned in 7% of the focus

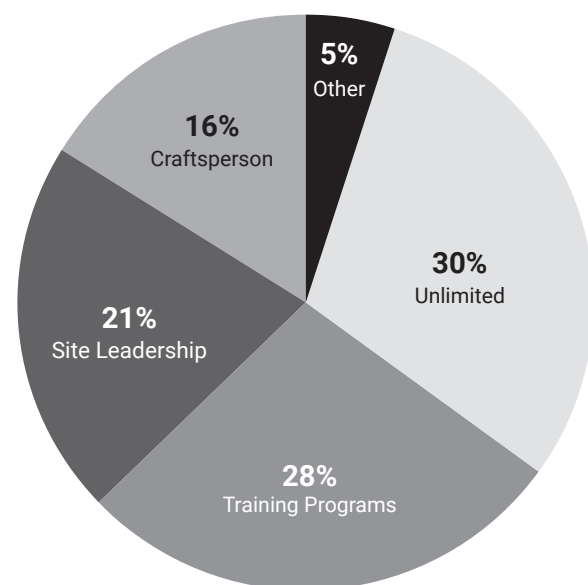


Figure 9: Percent of total responses for what women believe are their career opportunities in the construction industry.

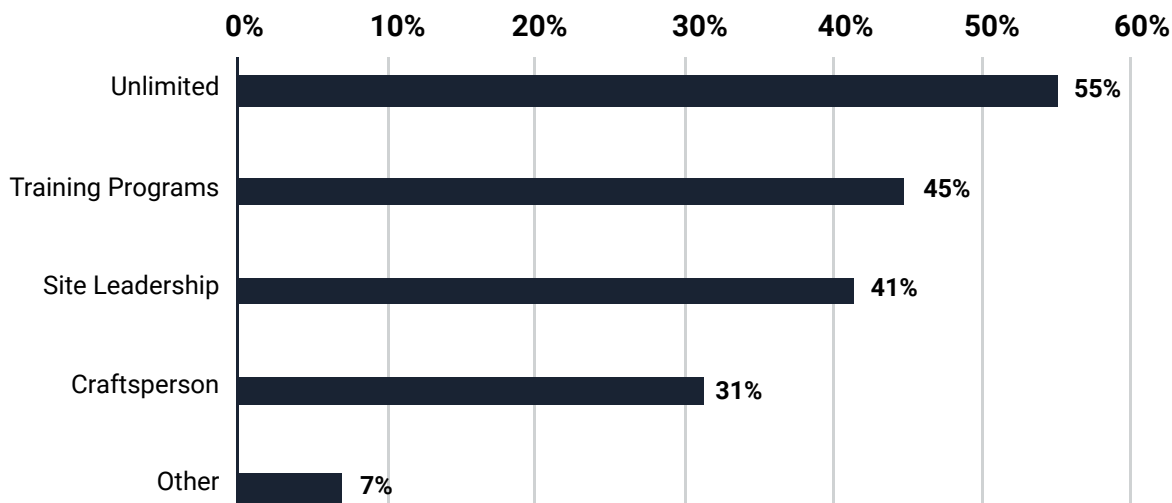


Figure 10: Percent of total focus groups that each response for what women believe are their career opportunities in the construction industry is mentioned in.

groups. Of note, money was the primary reason women joined the industry as explored in the earlier question. To further promote gender diversity in the construction industry, it is vital to spread the message of the relatively higher wages the industry provides compared to other lines of work. A few other perceptions of the industry were mentioned, including a broad negative view, and that it was low level work.

4.3 Career Opportunities

The research team wanted to understand what women believe their career opportunities are in the construction industry. To achieve this goal, women in construction focus groups were asked the following question: What do you think your career opportunities are in the construction industry? The results of the analyzed focus groups are presented in Figures 8, 9 and 10. Overall, 75 responses were received for this question. Figure 8 shows a tree map distribution of the main career opportunities women believe they have in the industry. Figure 9 shows the percent of all responses each response was mentioned. Figure 10 shows the percent of focus groups each response was discussed in.

The majority of responses indicated that there is a sentiment that women have unlimited opportunities in the construction industry. This sentiment made up 31% of all responses and was mentioned in 55% of focus groups. These women believe they can advance and have the same opportunities as their male colleagues. For example, focus group participants made the following statements:

- *"In the industry? Kind of endless. It just depends on what you want to pursue."*
- *"I mean, there's a lot of opportunities where they are, you know, giving you a chance to keep growing."*
- *"Since we all have the same opportunities, it depends on the one. We have to decide, and we have to grow, get better."*

A second major opportunity women believe they have is making use of training programs, which made up 28% of all responses and was mentioned in 45% of focus groups. Training programs, whether its training course materials and modules, or hands-on practical training can help women gain the necessary qualifications to choose and advance their path in the construction industry. For example, focus group participants made the following statements:

- *"There's more training too, within the companies to move forward and move ahead."*
- *"Well, if you're young enough, make sure you start doing online courses and such. Yeah, it's good to do. Courses can teach you a lot, even as you get older too."*
- *"I have goals and I've been working towards them. I just finished on this project, and I finally finished all my training modules. I'm working towards things, and I'd like to see more female supervisors."*

More specifically, 21% of the responses suggested that women have the opportunity to advance and be part of



Figure 11: Tree map distribution of responses for the unique qualities women bring to the construction industry.

site leadership, including foreman, general foreman, and superintendent. This response was mentioned in 41% of focus groups. On the other hand, 16% of the responses suggested that women can become craftspersons. This response was mentioned in 31% of focus groups. This sentiment was mostly prevalent among helpers, apprentices, and newcomers to the construction industry who saw a craft as the next step in their career progression.

Finally, a few other responses addressed other issues. A couple of women highlighted that it is easier to progress now compared to the past. One women mentioned that women have less opportunities than men, and another stated that because you are a women, you are excluded

from promotion opportunities because you might be busy with family-related issues.

4.4 Unique Qualities Women Bring

The research team wanted to understand what unique qualities women bring to the jobsite in the construction industry. In that endeavor, women in construction focus groups were asked the following question: What unique value (qualities, work habits, etc.) do women bring to the jobsite that our industry misses out on in a predominately male workforce? The results of the analyzed focus groups are presented in Figures 11, 12 and 13. Overall, 201 responses were received for this question. Figure 11 shows a tree map distribution of the unique qualities women bring

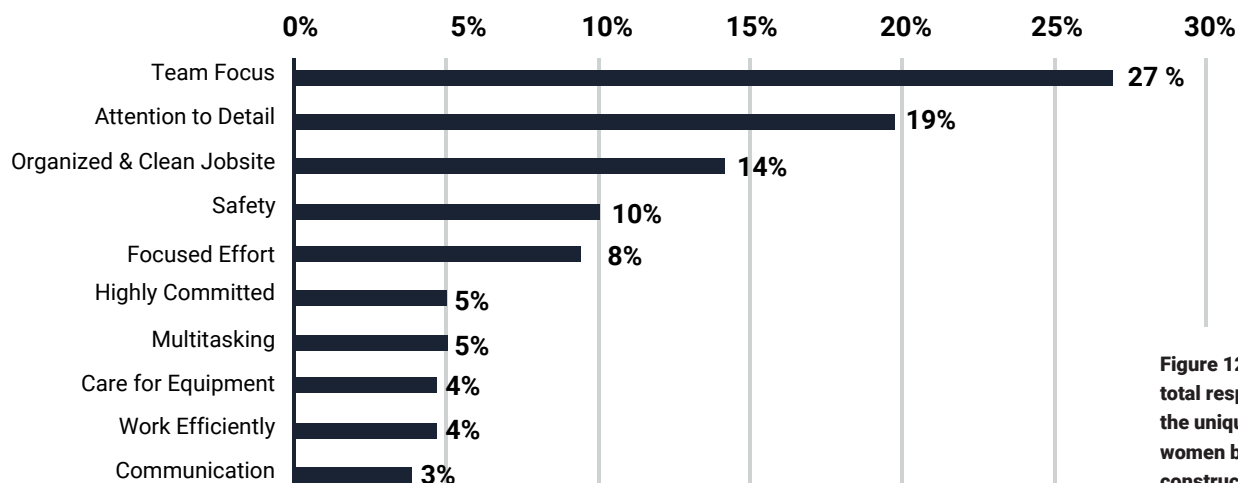


Figure 12: Percent of total responses for the unique qualities women bring to the construction industry.

to the industry. Figure 12 shows the percent of all responses each quality was mentioned. Figure 13 shows the percent of focus groups each quality was discussed in.

The most prevalent quality that women highlighted is that they are team focused. This quality made up 27% of all responses and was mentioned in 59% of focus groups. Women tend to have personalities that make them compassionate towards their coworkers, more likely to engage in teamwork, lift up morale, help their coworkers, and offer them support. For example, focus group participants made the following statements:

- *"We're probably more compassionate as well. Yes, absolutely. We're more likely to lift each other up than boys will."*
- *"I just definitely think women encourage success with everybody. I think everybody needs to see somebody having a hard day and be compassionate to them. You know, make them feel better."*
- *"I think we look out for each other. We associate each other as individuals and as a group. Whereas the men, it's like, no, you're on your own."*

More importantly, a unique quality women have is attention to detail. This quality was underscored in 19% of all responses and was mentioned in 69% of focus groups. Women tend to be more careful in executing their tasks with the required detailed specifications. For example, focus group participants made the following statements:

- *"A specific attention to detail that men often overlook. Yeah, women are way more likely to be perfectionists. That can be a positive and a negative, but when it really comes down to it, we're way more likely to double check our own work and make sure that what's happening around us is proper."*
- *"I'm not saying that males don't have it either, but I've been told, for example, that females, when welding, they have the best welds because they have steady hands and things like that."*
- *"I think another thing we bring to the table is the ability to actually follow instructions, details, and read instructions."*
- *"Women generally pay a attention to detail more than men."*

Additionally, women were better at maintaining a clean and organized jobsite compared to men. This quality was pointed out in 14% of all responses and was mentioned in 45% of focus groups. Women keep things organized in their workspace and ensure they clean up after the work is done. For example, focus group participants made the following statements:

- *"So, a women's thing, it has to be all nice and shiny or, you know, even in the tool group, if it's dusty, I just want to vacuum this. Cleaning up after people is second nature, and then they learn how to do that, to put everything nice and neat."*

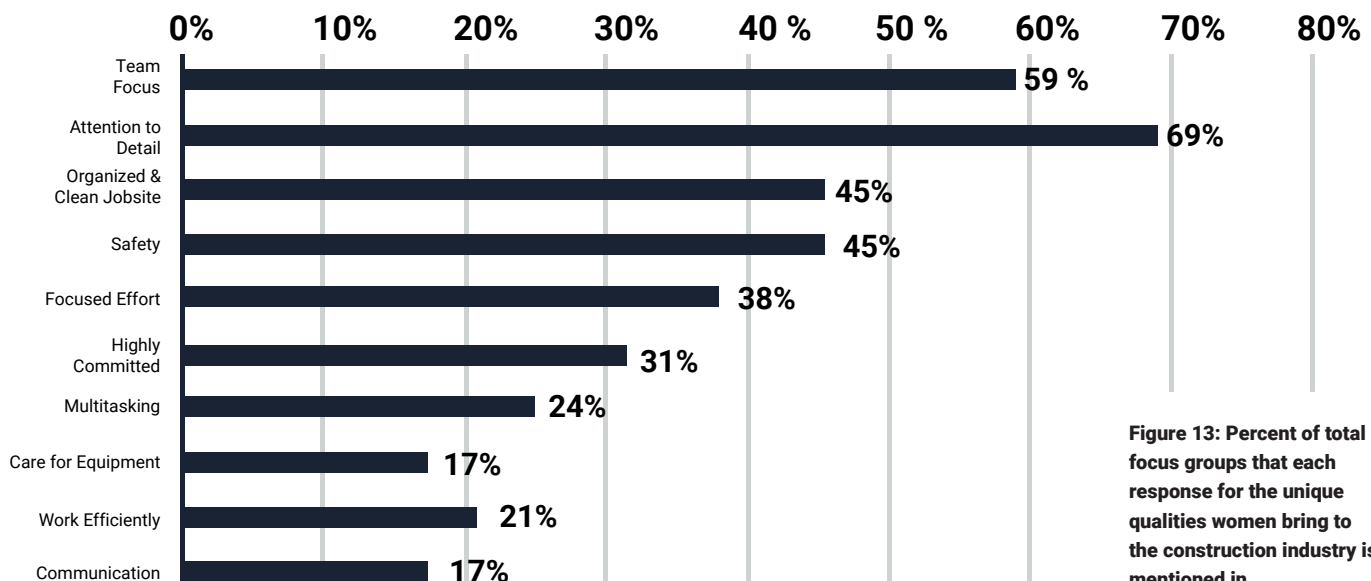


Figure 13: Percent of total focus groups that each response for the unique qualities women bring to the construction industry is mentioned in.

- *“Something that sets us apart is that as a woman, there has to be this touch because they do it clean. You know, they really make sure that the job is well done compared to mundane. They [men] rarely clean.”*
- *“No offense, but housekeeping. Women know how to clean a lot better than men.”*

Moreover, safety is a very high concern for women. Women believe that safety is of the highest priority. While men sometimes tend to be reckless, women ensure they follow all safety protocols because they often feel they have a duty to return to their families. This concern made up 10% of all responses and was mentioned in 45% of focus groups. For example, focus group participants made the following statements:

- *“Yeah, safety. As a woman, you’re more family oriented from the get-go. You are worried about my babies, my family, my whoever depends on me. You know the guys, as long as they’re making money, that’s all they got to do. That’s their mentality out there”.*
- *“Well, I’m not aggressive. I’ve got some guys that like, oh, well you don’t strap me, this is the right way. And I feel like, no, you have to use a certain strap for certain weights and some guys will get offended, but then I show them, you know, like some guys get defensive. Right. I have no problem showing them.”*
- *“You see men, they’re just like, “Yeah, I’m going to go do that.” You’re like, “Hey, maybe we should just calm down. That’s not the safest approach.” Yeah, for sure. That’s what I think.”*

Furthermore, women tend to put focused effort into their work because they take a lot of pride in it. This response made up 8% of all responses and was mentioned in 38% of focus groups. For example, focus group participants made the following statements:

- *“I think they [women] take a lot more pride and put more effort into what they’re doing.”*
- *“We bring a certain amount of pride to our job because I know, as a woman who started out many years ago in construction, I had to work twice as hard as any man in the field to even be taken seriously.”*

- *“They [men] can see you doing something that could literally cost you your job and they’ll look the other way because it’s not their problem. It’s a “one less person I have to deal with” kind of thing. That’s not what women do.”*

Also, women are highly committed to their job, which makes them reliable workers. They feel like they have to consistently work harder to prove themselves otherwise they get fired. This sentiment made up 5% of all responses and was mentioned in 35% of focus groups. For example, focus group participants made the following statements:

- *“We work harder because we’re under the spotlight. You know that you’re going to stick out, and you have to always be on your game. Whereas, I find if you aren’t female, you can kind of get away and just sort of slide under the radar for half the things. But as a female, it’s going to be noticed.”*
- *“I not only had to work twice as hard as any man in the field to even be taken seriously, but I had to fight for my job every single day. There was some man out there that didn’t think that I belonged in this industry, and I was told that many times.”*

Beyond those qualities, women are capable of multitasking as identified in 5% of the responses and mentioned in 24% of the focus groups. Women tend to take better care of equipment, where, unlike men, they don’t use brute force to achieve their tasks. This quality made up 4% of the responses and was mentioned in 17% of the focus groups. Also, some women stated that they prefer to work



Figure 14: Tree map distribution of responses for whether women believe their contributions are valued in the construction industry.

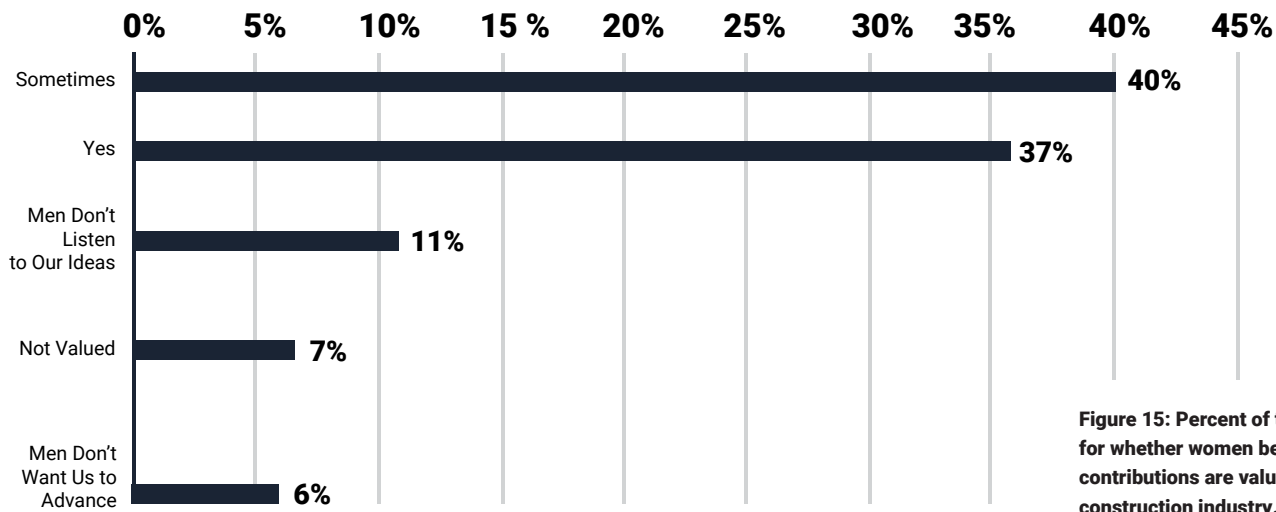


Figure 15: Percent of total responses for whether women believe their contributions are valued in the construction industry.

smarter, not harder. While some tasks may require a lot physical strength that women are not used to, they work around the problem or use machinery or equipment to get the job done. This quality made up 4% of the responses and was mentioned in 21% of the focus groups. Finally, women possess better communication skills, which allows for better working relationships and understanding of instructions. This quality made up 3% of the responses and was mentioned in 17% of the focus groups.

4.5 Are Women's Contributions Valued?

The research team wanted to understand if women believe their contributions are valued in the construction industry. To achieve this goal, women in construction focus groups were asked the following question: Do you believe your contributions to the construction industry are valued? The results of the analyzed focus groups are presented in

Figures 14, 15 & 16. Overall, 90 responses were received for this question. Figure 14 shows a tree map distribution of the women's responses regarding how valued their contributions are in the industry. Figure 15 shows the percent of all responses each response was mentioned. Figure 16 shows the percent of focus groups each quality was discussed in.

Only 37% of the responses received to this question indicated that they believe their personal contributions are valued in the construction industry. This response was mentioned in 69% of focus groups. However, the most prevalent response was that women's contribution is only "sometimes" valued. This response made up 40% of all responses and was mentioned in 55% of focus groups. Here, women believed that their contributions are not always valued, and they are often underestimated.

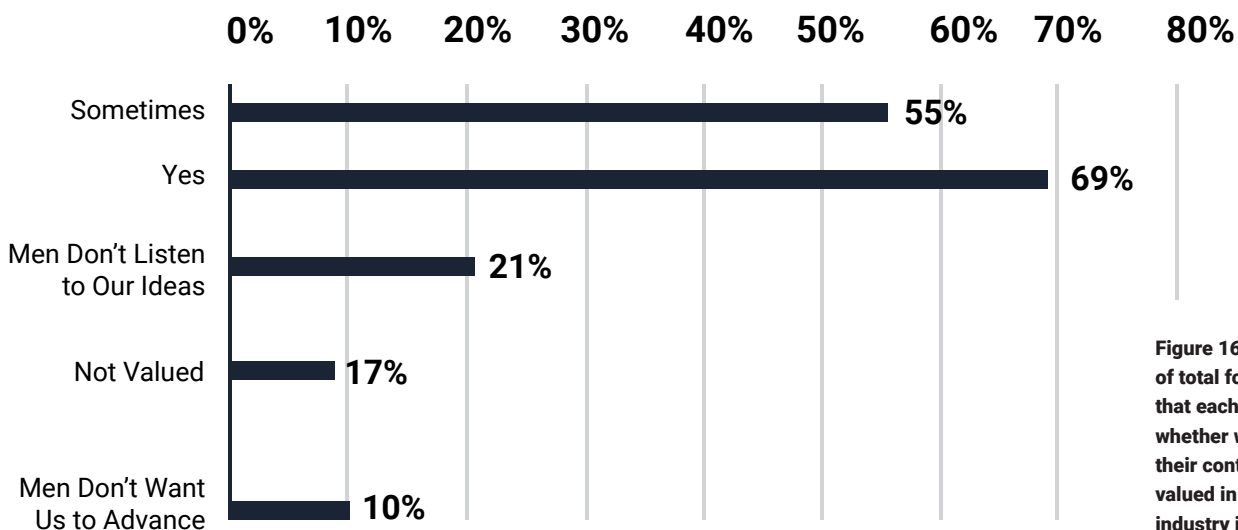


Figure 16: Percent of total focus groups that each response for whether women believe their contributions are valued in the construction industry is mentioned in.

For example, focus group participants made the following statements:

- *"I wanna be honest. Sometimes it does. Sometimes it doesn't. It depends who is there. It depends, it depends on how I received it. Some people they don't value our contribution."*
- *"Not enough, not enough. Because I know like in my craft it's a lot of people that come in who have less experience than me, and I'm better than them and that's just what it is."*
- *"I just know like, because I'm laboring and like most of the time my partner's a man and I find lots of the time, like if someone needs a spot, like a spotter or something, they immediately go to like the person I'm with, instead of me. And like, I'm pretty confident with what I'm doing. So, it's kind of like it put, puts you down, like without saying anything, but like, you notice it."*

Still, several women indicated that their contribution simply are "not valued" in the construction industry which made up 7% of the responses and was mentioned in 17% of focus groups. For example, focus group participants made the following statements:

- *"Not really. That's my own experience."*
- *"I have done a jam up job for 16 months that I've been here, and they know it, but you don't get told."*
- *"The bosses wouldn't even give me two seconds worth of time."*

Beyond that, some women had the distinct feeling that "men don't listen to their ideas", which made up 11% of the responses and was mentioned in 21% of focus groups. For example, focus group participants made the following statements:

- *"Oh, that's a hard one. I find that people will often not hear me, but then somebody else will conveniently have the exact same idea and see it a little louder and they're a little taller and everyone on their plane of existence hears them perfectly."*
- *"I think a big one is for me then was like, what she said*

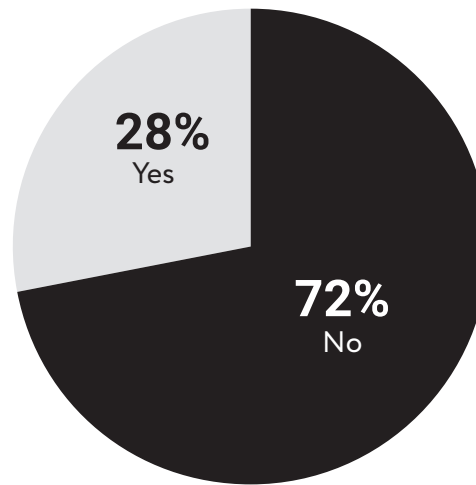


Figure 17: Pie chart of responses regarding flexibility with work hours in the construction industry

earlier is like, you have the idea and you say it out loud and they're talking, doing whatever, still trying to figure out the problem. And then somehow later on they come up with whatever you said five minutes ago and then they go and do it. And it's like, you weren't even heard."

- *"If you want somebody to listen, if you want a guy to listen to you, just tell them that your father told you, my dad told me this trick. And then, and then they'll listen to what you're telling them. If you tell them how to do something, they don't listen. But oh, my dad showed me this, oh, okay."*

Finally, a few women suggested that "men don't want them to advance". This sentiment made up 11% of the responses and was mentioned in 21% of focus groups. For example, focus group participants made the following statements:

- *"There's other people, like you said, there's guys that don't want to see you higher up. They don't want you to see them take their job, cause you're a woman. They don't listen to us. I've noticed that."*
- *"They don't want us up, they just want us right here."*
- *"I was told 'this is the only position we can give you, you know, the higher ups really don't want to have a female labor foreman out here.'" And, and I'm just looking at them going, that kind of hurt."*

4.6 Work Hours Flexibility

The research team wanted to understand if women believe the construction industry offers them flexibility in terms of work hours. For that purpose, women in construction focus groups were asked the following question: Does the construction industry offer you the flexibility you

need in terms of work hours? The results of the analyzed focus groups are presented in Figures 17, 18 and 19. Overall, 75 responses were received for this question. Figure 17 shows a pie chart distribution of the responses. Figure 18 shows the percent of focus groups that each response was discussed in. Figure 19 shows the pie chart distributions of responses among women who said the industry does not offer work hour flexibility. \Twenty eight percent of the responses to this question indicated that women believe the construction industry offers flexibility with work hours. This response was mentioned in 55% of focus groups. Here, women did not feel pressured to work when they needed a break or had an emergency to take care of. For example, focus group participants made the following statements:

- *"I think they're pretty good. If you need a day, to go to an appointment, they're more than willing to accommodate."*
- *"Yeah. Like if we need a vacation, the foreman is just like, 'Tell us and give us a heads up. It's all good.'"*
- *"For the most part, you have their understanding."*
- *"Oh, definitely, yeah. Good shifts, as far as flexibility for work".*

However, that was not the prevailing sentiment. Overwhelming, women felt the construction industry does not offer flexibility with work hours. This sentiment made up 72% of the responses and was mentioned in 79% of focus groups. Among those who said the industry does not offer flexibility, the majority of the responses (35%) suggested that this is simply the nature of construction work and that it is demanding. The women did not complain about this, but acknowledged the reality of this type of work. For example, focus group participants made the following statements:

- *"Sometimes it doesn't, but I mean it's understandable. It depends on what project you're in".*
- *"Out here, we're here to do a job, and that's just construction in general. We're here to do a job, and they expect you to be here every day for that job. They don't want you to miss work, to go to a softball game or to a Thanksgiving lunch for your kids. It's, you're here to do a job."*

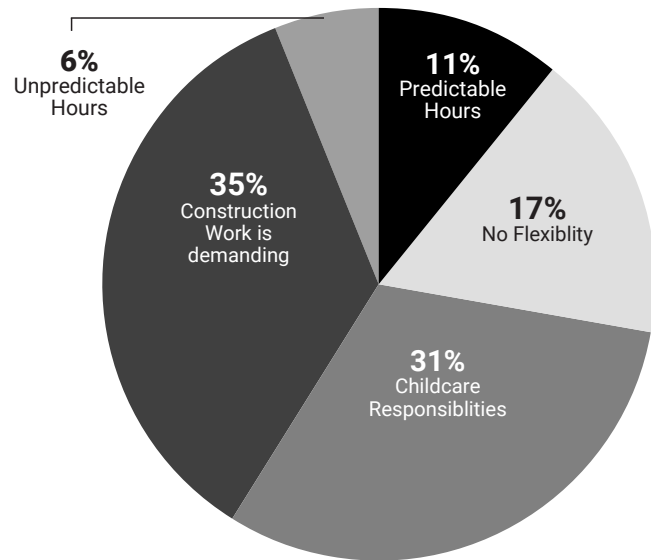


Figure 19: Pie chart of responses among those who found there is no flexibility in work hours in the construction industry.

- *"It's construction hours. I mean, don't come into construction if you can't work the hours, especially when you have small kids, because it's not flexible for that."*

A second prevailing point women made is that the industry is not flexible as it cannot accommodate their childcare responsibilities, which made up 31% of the responses of those who responded no. Women with kids are often the primary caretaker of children, and they felt like the industry does not offer the flexibility to address any of their needs when it comes to taking care of their children, whether its medical appointments, education, or childcare. For example, focus group participants made the following statements:

- *"I know they have to be strict, but women, we've got kids, no husbands, so we're the ones that have to take care of family. A lot of it is if you miss too many days you're held responsible. If your kid is sick you're held responsible, but we're the ones who have to take care of all that."*
- *"I was in construction for a few years and left because I had a young daughter."*
- *"Women have to have more options for flexible hours or childcare options because a lot of women are the providers, but they're also the caregivers for children."*
- *"You're going to have various schedules from time to time, but you have motherly responsibilities too."*



Figure 20: Tree map distribution of responses for the barriers for women to join the construction industry

Finally, among those who said the industry does not offer flexible hours, 17% did not further elaborate on the issue. Moreover, 11% indicated that while there is no flexibility, the hours are predictable, and while it can be strict and routine, you know what you are getting, Still, 6% said that construction has unpredictable hours, which can be challenging.

4.7 Barriers to Entry

The research team wanted to understand what the barriers are for women to join the construction trades that the industry may be unaware of. In that endeavor, women in construction focus groups were asked the following question: Are there any barriers for women joining the construction industry that you feel the industry is blind to? The results of the analyzed focus groups are presented in Figures 20, 21 and 22. Overall, 106 responses were received for this question. Figure 20 shows a tree map distribution of the barriers for women to join the industry. Figure 21 shows the percent of all responses each barrier was mentioned. Figure 22 shows the percent of focus groups each barrier was discussed in.

According to the focus groups, the primary barrier women face to joining the industry is discrimination and harassment, which made up 21% of all responses and was mentioned in 31% of focus groups. The prevalence

of sexual harassment often discourages women from joining the industry. Also, women are usually discriminated against and not treated equally where they don't have the same opportunities as men, which creates a challenge for them. For example, focus group participants made the following statements:

- "Sexism. Yeah. Big one. Number one."
- "I think there's a fear of harassment. A lot for women. That's kind of the question and barriers as to why they probably wouldn't join is harassment and sexual harassment, especially in camps and stuff."
- "It's just, sometimes, the opportunity is very, very hard for us. I was hired here in March and I've been waiting to have my opportunity to go to the closure welds, which is a little bit more money for the welders. I was told by the hiring people that I talked to that it's gonna come, it's gonna come. Now it's August. All the people that were hired after me are there already and I'm still behind. I don't understand why because I passed all qualifications. I have the skills and everything."
- "Yeah. It's been a lot of discrimination to be honest. Sometimes it's really hard at the beginning. It was really hard to create a path. I can tell you."

Moreover, women suggested that to join the industry,

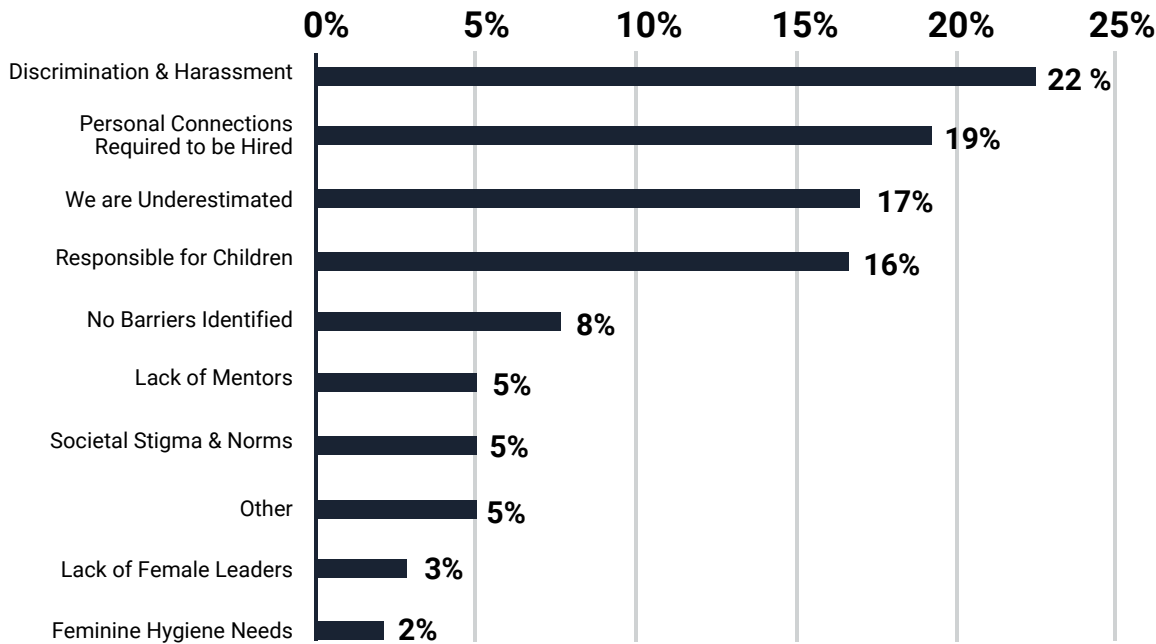


Figure 21: Percent of total responses for barriers for women to join the construction industry.

personal connections were required to be hired. This barrier made up 19% of all responses and was mentioned in 28% of focus groups. Having a connection to someone already working in the industry who can recommend you for jobs and vouch for your skills is necessary. Considering that women often don't have as many connections in the industry since they are new to it, they often struggle to get hired. For example, focus group participants made the following statements:

- *"It's harder for women to get in, you gotta know somebody and it's still like that. You gotta know someone to get in."*

- *"I mean, straight off the street, if you don't know anybody, yeah, it's tough."*
- *"I've heard this a lot from other women that you have to know someone to get in a craft or in the job or in the industry."*
- *"Sometimes I feel like, 'It's not what you know, it's who you know.' If you have family in the industry and you're ready to come out and make money, they're going to bring you in."*

To add, women in focus groups reflected that they are often underestimated. They are not expected to be able to do the job and therefore are overlooked. This barrier made up

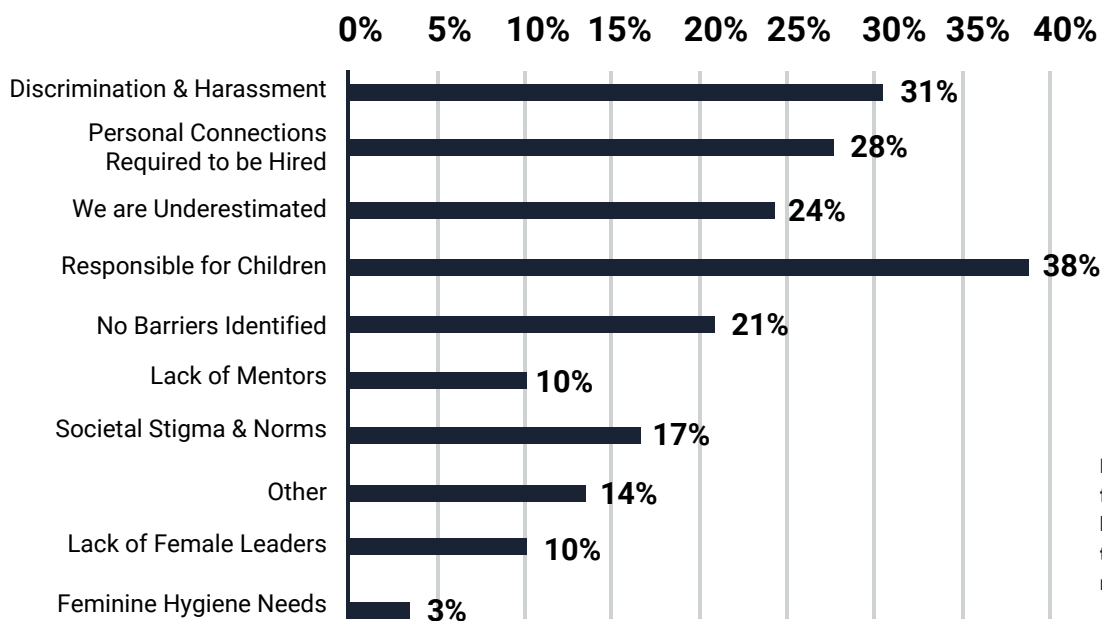


Figure 22: Percent of total focus groups that each barrier for women to join the construction industry is mentioned in.

17% of all responses and was mentioned in 24% of focus groups. For example, focus group participants made the following statements:

- *"If you're pouring concrete, the physical shape, they'll still pick a guy over a girl. Anything like that. That stigma is still out there too. That's a barrier as well. They don't think we have the strength that men have to do the 50 pounds over every day."*
- *"I feel like when it comes to women, like that right there, they just want hole watch, or they want civil. Whenever I have a conversation with anybody, especially in this industry and I tell them, I'm a pipefitter, they look at me like 'Are you outside? Okay, can you sit there and do the things that those men do?' 'Yes, I can.'"*
- *"When another woman came on, I told everybody, I said, 'Man, you've got a good worker in your crew because she can do everything that those men can do and probably stuff that they can't do.' They didn't believe me."*

One major barrier that women highlighted is their responsibilities to their children. This barrier made up 16% of all responses and was mentioned in 38% of focus groups. Overwhelming, in today's world, and despite the

societal progress on this issue, women are still the primary caregivers in the family. The responsibility of taking care of the kids falls on them, and the industry, with its work hours, can be unforgiving to motherly responsibilities such as childcare, and taking care of their kids when they are sick. For example, focus group participants made the following statements:

- *"It was because at one time, my son was sick. I was working at ..., so I called them. When I told them I have to go for a week, they said, 'Okay, you can go.' I called him afterward, and I said, 'Can I come back?' He said, no."*
- *"I don't have children, but I know a lot of women do. We fly in and fly out. If we had kids, we would not be able to do that. With men, they can do that, and then the women would have to stay home."*
- *"The fact that you're mothers and you have children, you gotta raise them because they require attention."*
- *"I think childcare is a big one for a lot of people."*

Still, 8% of the responses suggested that women face no barriers to joining the industry, which was mentioned in 21% of the focus groups. On the other hand, some



Figure 23: Tree map distribution of responses for women's experiences with the hiring process to join the construction industry.

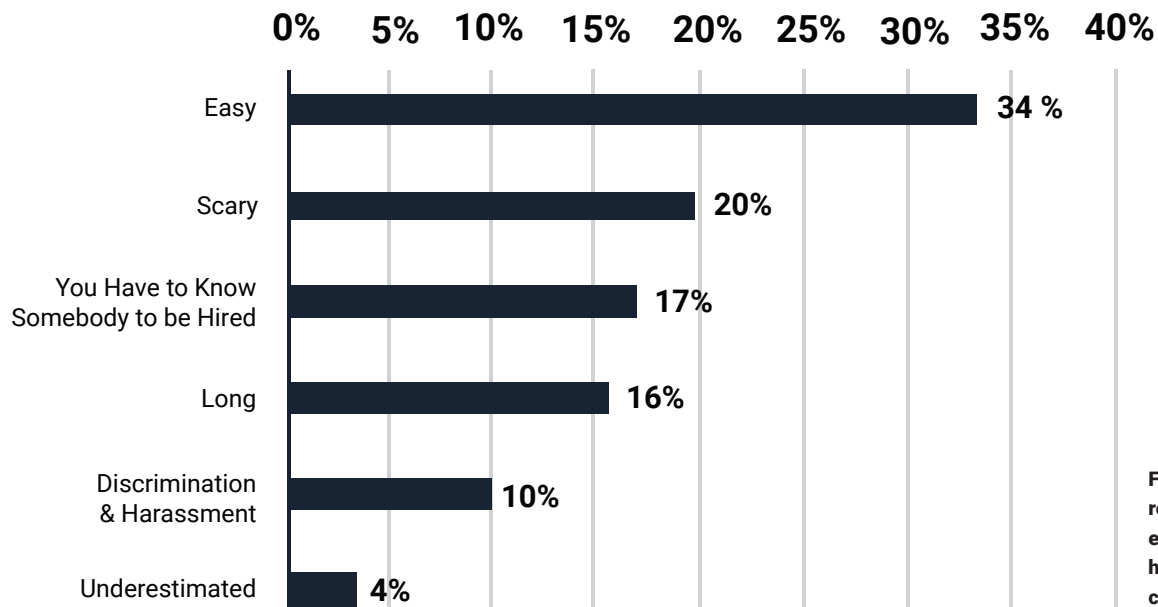


Figure 24: Percent of total responses for women's experiences with the hiring process to join the construction industry.

women highlighted the lack of mentorship in the industry to adequately train women during apprenticeships as a barrier, which made up 5% of the responses and was mentioned in 10% of the focus groups. Also, some women stated that societal stigma and norms remain prevalent enough in communities to stave women from joining. This barrier made up 5% of the responses and was mentioned in 17% of the focus groups. A few women highlighted the lack of female role models in the industry because there is not enough women and leadership, and also the lack of awareness for feminine hygiene needs as barriers for women. Finally, women had a few other responses to this question including that construction is a male-dominated industry, that the industry is not blind to the barriers, but they simply choose to ignore them, and the some women can't handle the difficulty of construction workers.

4.8 Experience with the Hiring Process

The research team wanted to understand the experience of the hiring process for women in the construction industry. For that purpose, women in construction focus groups were asked the following question: How would you describe the hiring practices you've experienced when starting a new job in the construction industry? The results of the analyzed focus groups are presented in Figures 23, 24 and 25. Overall, 101 responses were received for this question. Figure 23 shows a tree map distribution of the women's experiences with the hiring process to join the industry. Figure 24 shows the percent of all responses

each experience was mentioned. Figure 25 shows the percent of focus groups each response was discussed in.

For the most part, women had an easy hiring experience. The process was smooth, simple and mostly straightforward. This description made up 34% of all responses and was mentioned in 69% of focus groups. For example, focus group participants made the following statements:

- "It was quite simple for me. We took the course and then waited for a phone call."
- "I got a call from my union or my dispatch that said, 'Oh, there's a position open. You want it?' I said, yep."
- "It was easy. When I first got with..., it was as a driver. What they did was had us working between an hour instead of leaving and coming back. The hiring process was fine. It was quick for me."

Alternatively, many women said the hiring process was scary. They were nervous, anxious, or felt intimidated by the process, partly because it is an entirely new experience for women to join an industry that is male dominated. This experience made up 20% of all responses and was mentioned in 31% of focus groups. For example, focus group participants made the following statements:

- "You're sitting in a group with a bunch of guys. Some guys can be intimidated."

- *"If someone comes on, it's gonna be scary for them and it's okay. They're out, done."*
- *"A little bit nervous - the job site, the people, how they would act. It was the not knowing. Everything was not new."*
- *"I was very nervous. I am very shy and have very bad anxiety as well. So, it was hard."*
- *"Intimidating for sure. There were 65 men. I was the only girl. I was the first female trades person on site and craft. So yeah, it was intimidating."*

On a separate note, several women stressed the issue that you have to know somebody to get hired. Without having the connections with someone already in the industry who can recommend you for the job and vouch for your skill and commitment, it can be hard to get hired. Interestingly, this issue was raised as a major barrier for women joining the industry in an earlier question. This issue made up 17% of all responses and was mentioned in 34% of focus groups. For example, focus group participants made the following statements:

- *"It's harder for women to get in. You gotta know someone to get in."*
- *"Especially if knowing somebody, then you've got a job."*
- *"Like all of us probably, I knew somebody to get hired in as a girl, but even when you've got years of experience and you've got a big resume, that doesn't always guarantee you a spot. Some of the companies, it's all about who you hire in or who you know."*

Some women described the hiring process as long. It took them a long time to get through the process, or they had to be very persistent to get the job. This experience made up 16% of all responses and was mentioned in 28% of focus groups. For example, focus group participants made the following statements:

- *"As soon as I call to get a dispatch then here we go. 'Okay. I'll call you right back.' Then the day goes by, and you have to call back again tomorrow. I kept calling them like 50 times until they dispatched me."*
- *"It was like a whole lot of promises that didn't really work out to be totally honest. I still came, and it took a little bit longer. I think it was like a couple months before I was released here. That was a bit of a headache, but it all worked out."*
- *"After you get into the union, it's like a waiting game for the company to pick your name out and be like, 'No, I want this person to hire them.' That's probably the most challenging part in my personal opinion."*

Moreover, several women said that they faced discrimination and harassment during their hiring process. Women were not treated the same as men and were often paid less money despite having the necessary qualifications. This experience made up 16% of all responses and was mentioned in 28% of focus groups. For example, focus group participants made the following statements:

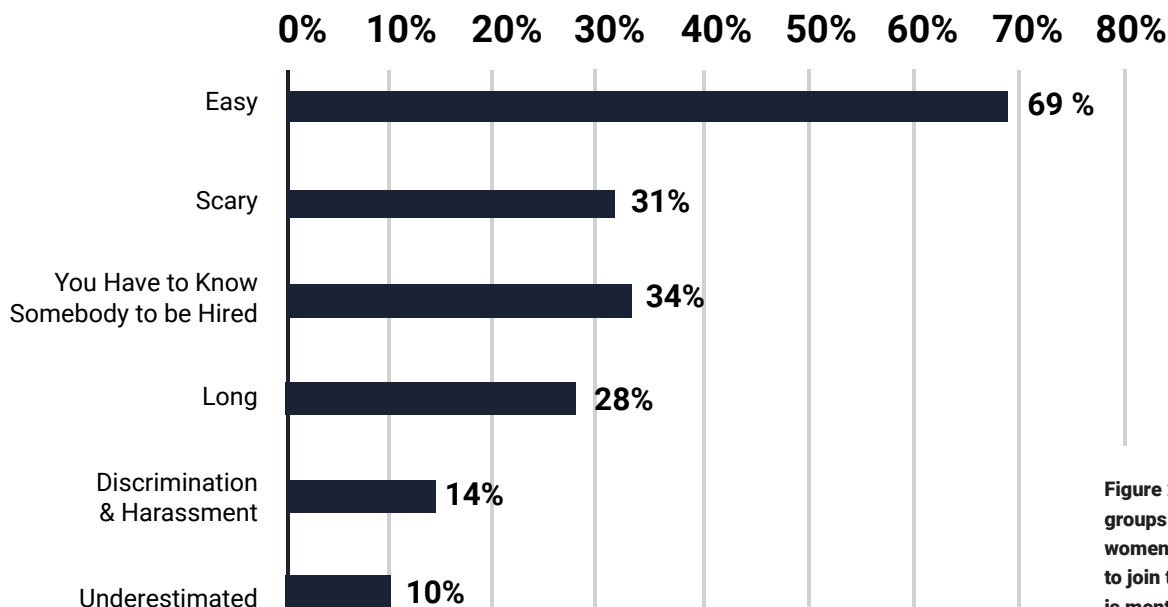


Figure 25: Percent of total focus groups that each experience for women with the hiring process to join the construction industry is mentioned in.

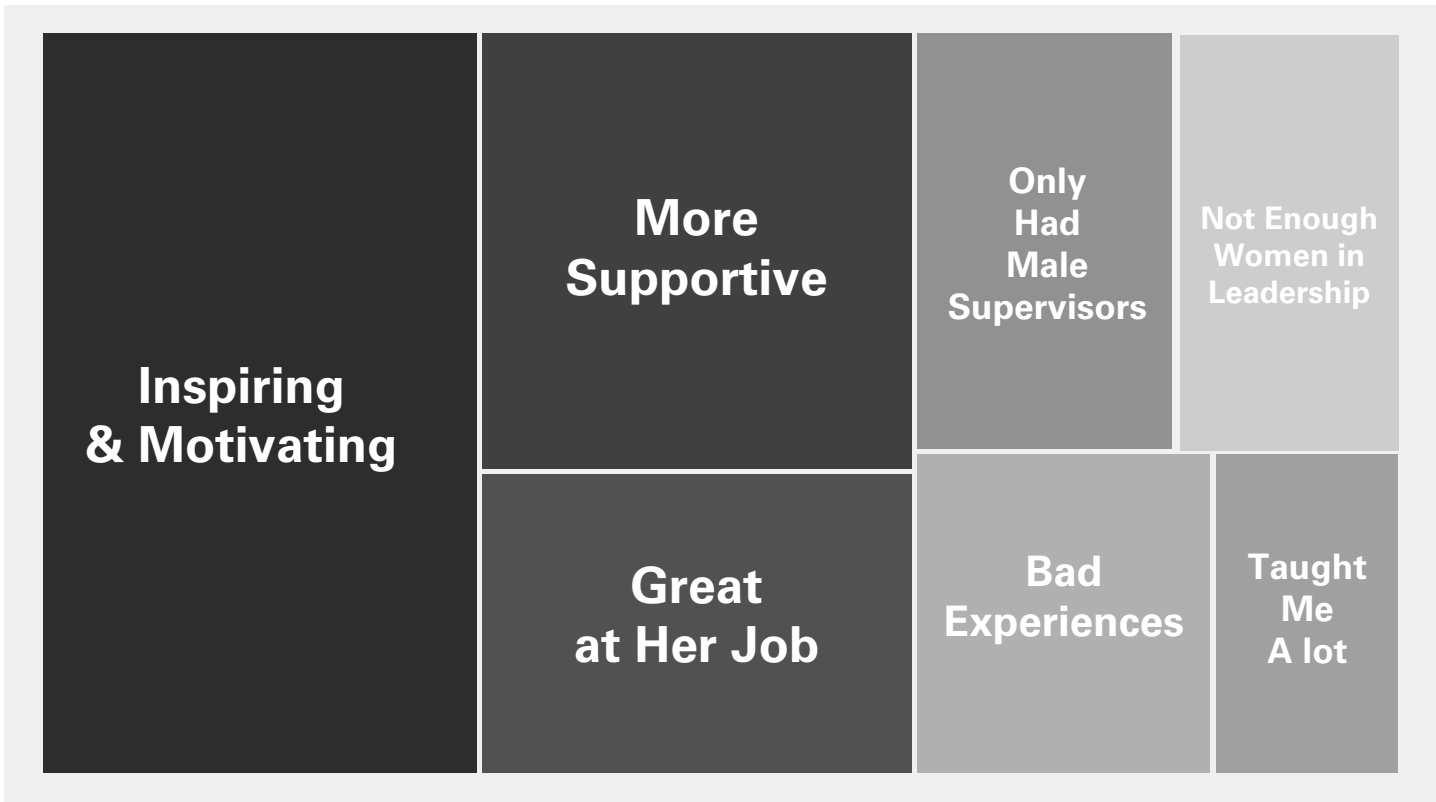


Figure 26: Tree map distribution of responses for women's experiences with field-based female supervisors in the construction industry.

- "When I first started out, it was hard. A lot of guys didn't really worry. Most women that come in, you don't get that respect."
- "It was because I was a girl because they didn't treat the guys like that. Then at the same time, the owner of the company, he was like that too. I feel like that's where they don't offer as much money."
- "I experienced this on my last job. One of the management did not like to work with women."
- "There was this experience that I had right out of my

welding school. There was a guy in my class who had less tickets than me and less experience welding than I did. We both applied to work for the same private company, and they offered him a \$30-an-hour job. At first, they offered me the same, and then the next day I called them to finalize the hiring. They basically were like, 'Hmm, actually you need more welding experience. We're only going to pay you \$22 an hour to work in the fab shop.' First of all, no... my time is worth more than \$22 an hour. Second of all, I didn't say it to them."

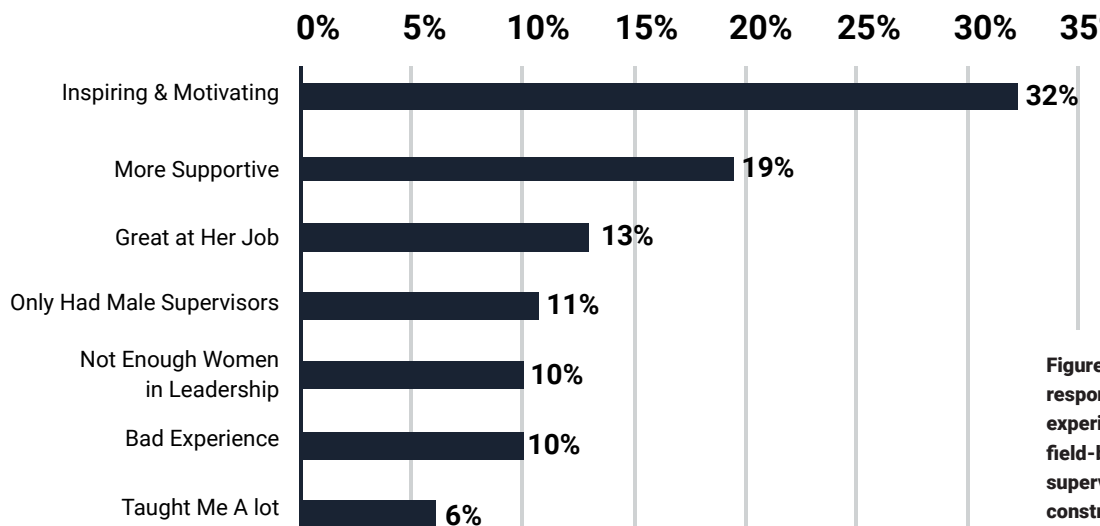


Figure 27: Percent of total responses for women's experiences with field-based female supervisors in the construction industry.

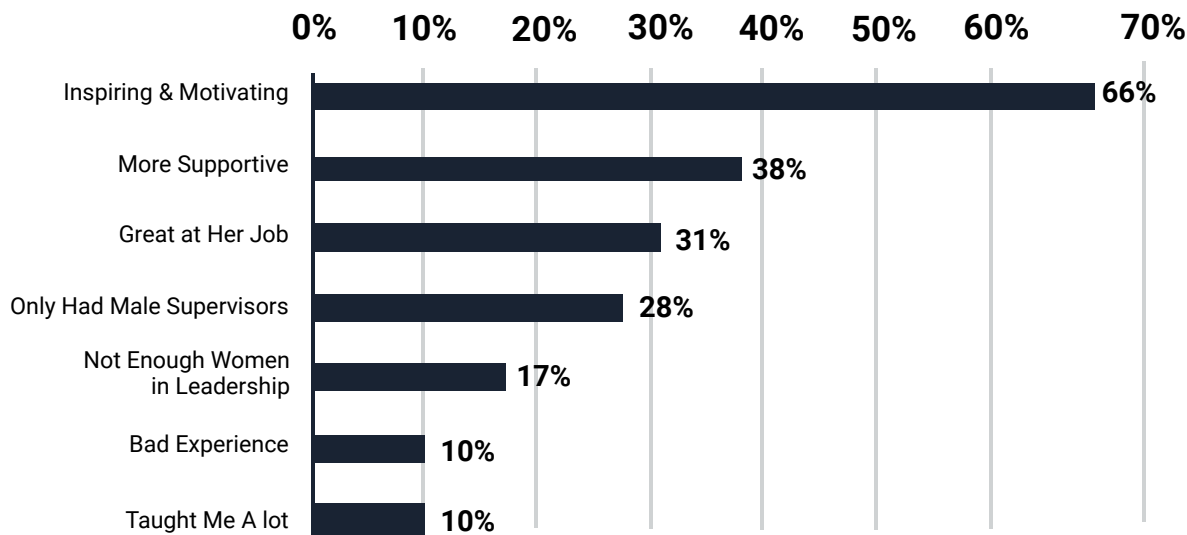


Figure 28: Percent of total focus groups that each experience for women with field-based female supervisors in the construction industry is mentioned in.

- *“Sometimes they’re more scared of you than you are of them nowadays because they are scared of getting fired if they say something wrong. ‘I can’t talk to her. I might say the wrong thing.’”*

Finally, a few women felt like they were underestimated during their hiring process, which made up 4% of all responses and was mentioned in 10% of focus groups. For example, focus group participants made the following statements:

- *“Maybe they looked down on us saying, ‘What’s a woman doing here in the construction field?’”*
- *“It was pretty rough for me. There’s no women allowed to be there. ‘Oh, she can’t do it or touch anything.’ I had to fight for that. It was a fight the whole time. It was the perception of women on the rigs.”*

4.9 Women in Site Leadership

The research team wanted to understand the women’s experience with field-based female supervisors in the construction industry. To achieve that goal, women in construction focus groups were asked the following question: Do you know of any women in field-based leadership roles within your current company or past companies you’ve worked for? What impact did that have on project sites and project performance? The results of the analyzed focus groups are presented in Figures 26, 27 and 28. Overall, 84 responses were received for this question. Figure 26 shows a tree map distribution of the women’s experiences with field-based female supervisors in the construction industry. Figure

27 shows the percent of all responses each experience was mentioned. Figure 28 shows the percent of focus groups each response was discussed in.

Overwhelmingly, women in the focus groups found that field-based women supervisors are inspiring and motivating. It showed them that advancement to a better position is possible and paves a road map for this path. This experience made up 32% of all responses and was mentioned in 66% of focus groups. For example, focus group participants made the following statements:

- *“Makes it possible for a lot of other women. Let’s see it.”*
- *“I feel empowered.”*
- *“Proud that someone could get there and go against some odds working against her.”*
- *“I mean, she’s a go-getter, she’s a trailblazer, and she’s an advocate. She’s genuine with it. I’ve seen that in the whole orchestration of this because she took ownership and pulled all this together to make this happen.”*
- *“It motivates you that your vision to reach the top tier can be done. It’s like, yeah, you can do it. Absolutely.”*

Moreover, focus group participants found that field-based female supervisors are more supportive. Female supervisors are more understanding of other women’s needs and women feel comfortable approaching them with their issues. This experience made up 19% of all responses and was mentioned in 32% of focus groups. For example, focus group participants made the following statements:

- *"Any issue, you kind of feel more comfortable talking to a woman, and she's there, like a team. That's good."*
- *"She's on our level. She is a little bit more understanding to everybody's feelings."*
- *"It's better to have a woman to talk to than a man if you have personal problems."*
- *"My experience was that she was more understanding, more willing to help if you needed it. It was just a good experience."*

Additionally, several women found that field-based female supervisors are great at their job and generally have a positive impact on the project. This experience made up 13% of all responses and was mentioned in 31% of focus groups. For example, focus group participants made the following statements:

- *"We had one woman who was qualified to run the recovery boiler, and she was in charge of all the procedures for the department. She knew everything about that place, and she was a great person to work with."*
- *"Hands down. Thumbs up. Good job. Yeah."*
- *"I mean, she's an elite person."*
- *"I had a female general foreman. She was good."*

On the other hand, some women had a bad experience with field-based female supervisors. Sometimes, female supervisors had to be extra tough to prove they can do the job and to avoid looking soft in front of their male colleagues. This experience made up 10% of all responses and was mentioned in 10% of focus groups. For example, focus group participants made the following statements:

- *"It could be because they might feel like they have to prove themselves more, and therefore, they push a little too much, which is kind of a weird."*
- *"I've met maybe one, and usually women in leadership roles give a lot of women bad names, because I think they have to be extra tough since they're female. They don't want to be taken as too soft or letting people get away with things."*
- *"I've seen women who they get in power, and it's a scary mess. They take things out on you."*

Beyond those, focus group participants had other responses to this question. For example, some women said there are not enough women in leadership, which made up 10% of the responses and was mentioned in 17% of focus groups. Several women stated that they only had male supervisors, which made up 11% of the responses and was mentioned in 28% of focus groups. Finally, a few

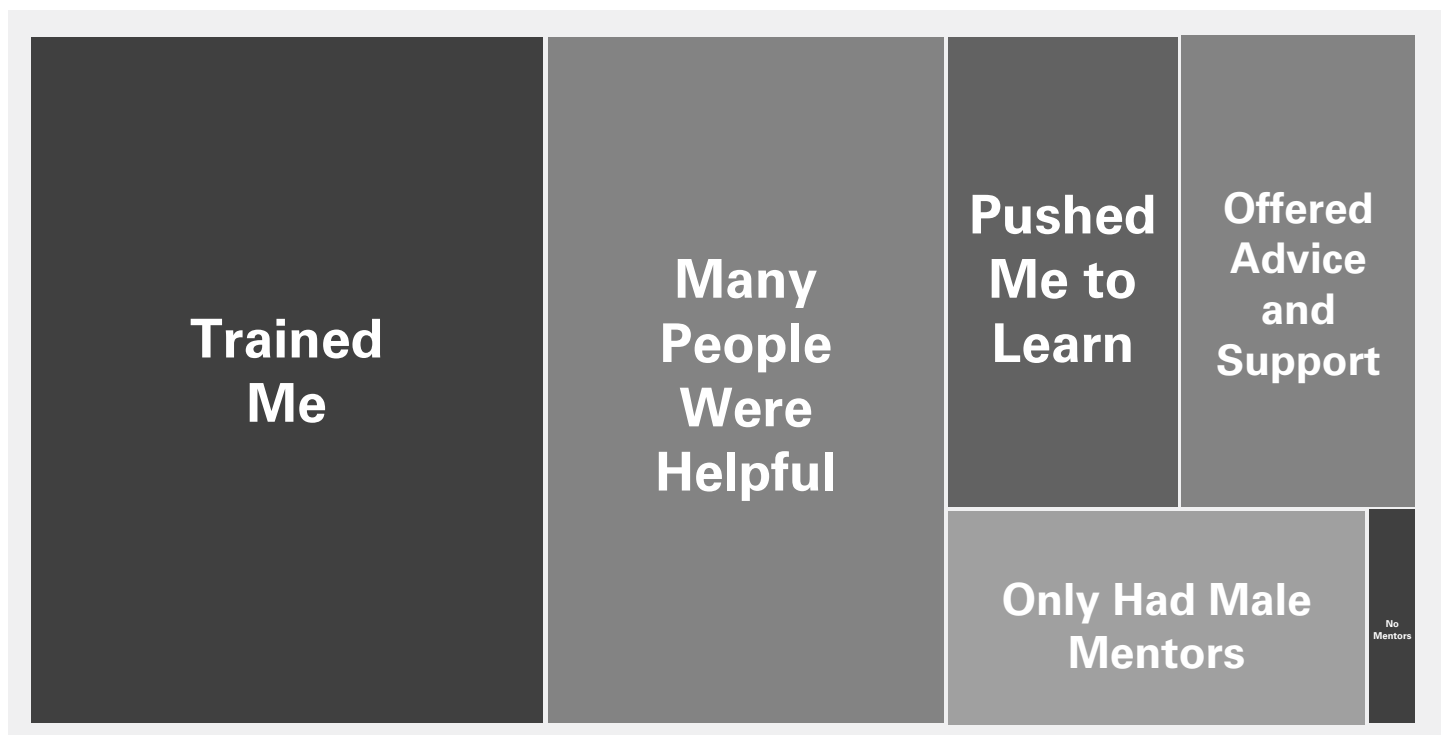


Figure 29: Tree map distribution of responses for women's experiences with mentors in the construction industry.

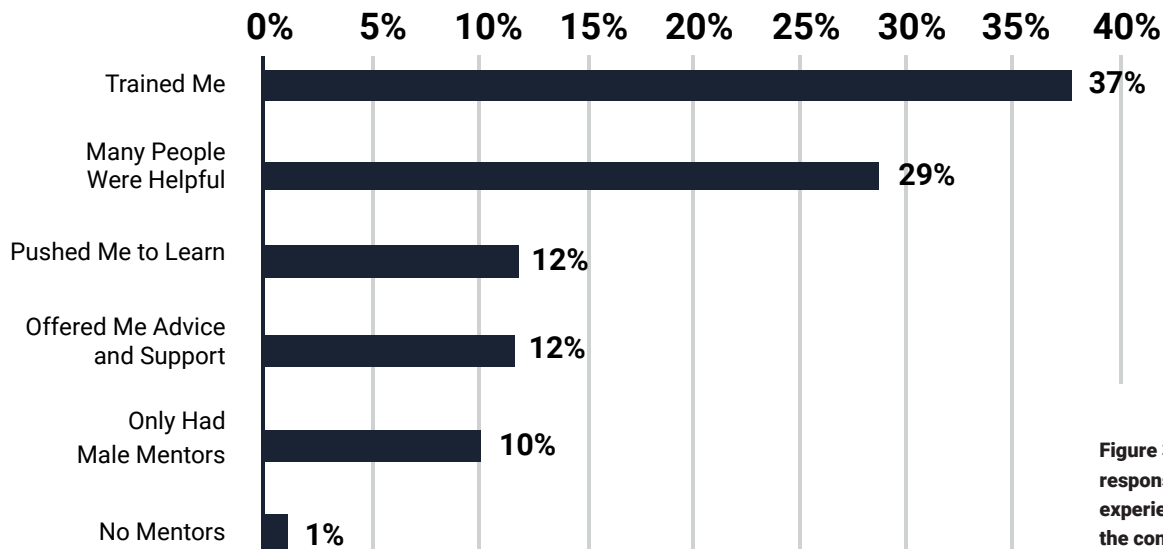


Figure 30: Percent of total responses for women's experiences with mentors in the construction industry.

women shared that female supervisors helped and taught them a lot of their construction trades, which made up 6% of responses and was mentioned in 10% of focus groups.

4.10 Mentorship

The research team wanted to understand women's experience with mentors in the construction industry. In that endeavor, the women in focus groups were asked the following question: Have you had any mentors in the construction industry who helped guide your career? Please elaborate on what type of help they provided. The results of the analyzed focus groups are presented in Figures 29, 30 and 31. Overall, 94 responses were received for this question. Figure 29 shows a tree map distribution of the women's experiences with mentors in the construction industry. Figure 30 shows the percent of all responses each

experience was mentioned. Figure 31 shows the percent of focus groups each response was discussed in.

Overwhelmingly, women in the focus groups stated that their mentors have helped train me. They taught them their trade and how to do the job. This experience made up 37% of all responses and was mentioned in 62% of focus groups. For example, focus group participants made the following statements:

- *"He definitely guided me, taught me the ropes. He was the first journeyman that I worked with when I was going through the program. Definitely a lot of positivity. He didn't underestimate or judge. He's like, 'Come on, learn. I'm going to teach you the road. I'm going to teach you and just go from there.'"*

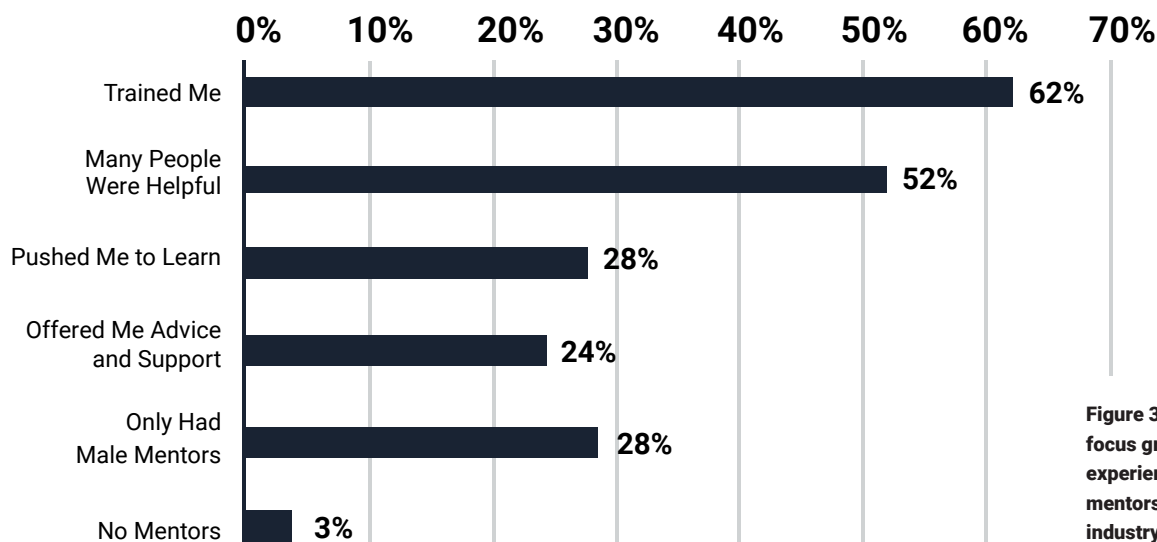


Figure 31: Percent of total focus groups that each experience for women with mentors in the construction industry is mentioned in.

- *"The past five years in the company, I had one mentor who taught me the ropes and how to run jobs, how to do paperwork, how to run through, and how to do everything."*
- *"With the bolt bin, she taught me everything I needed to know about the bolts - how to put them together, how to keep track of them all. She was very helpful."*
- *"He taught me a lot after a couple of turnarounds I had with him."*

Moreover, many women said there have been many people who helped mentor them over the course of their career. This experience made up 29% of all responses and was mentioned in 52% of focus groups. For example, focus group participants made the following statements:

- *"I jumped around between quite a few mentors because they're always working with different people. That's good. The majority of the guys that I've worked with have been awesome. They take the time to show me."*
- *"As far as a mentor, I honestly can't say that I've had one because almost everybody taught me a couple of things."*
- *"The men helped me out with what I needed to know. They were there to ask, and when I needed to ask questions, they answered my questions."*

Additionally, several women said their mentors pushed them to learn throughout their career, which made up 12% of all responses and was mentioned in 28% of focus groups. For example, focus group participants made the following statements:

- *"I never thought I would be welding. That blew my mind, but they pushed me. I said, 'Hey, I want to try this.' They were like, 'Yeah, I'll teach you. Let's do this. Let's do that.'"*
- *"He was providing them with some inspiration, some motivation and encouraging them to take advantage of training opportunities."*

Furthermore, some women said their mentors offered them advice and support during their career, which made up 12% of all responses and was mentioned in 24% of focus groups. For example, focus group participants made the following statements:

- *"He was great for building up my confidence. He'd tell me, 'If any of your ideas are good, you just gotta say them a little louder.' He would always encourage me to speak up and share my thoughts in our group meetings."*
- *"He was always supportive and would say, 'Oh, you should go for this.'"*

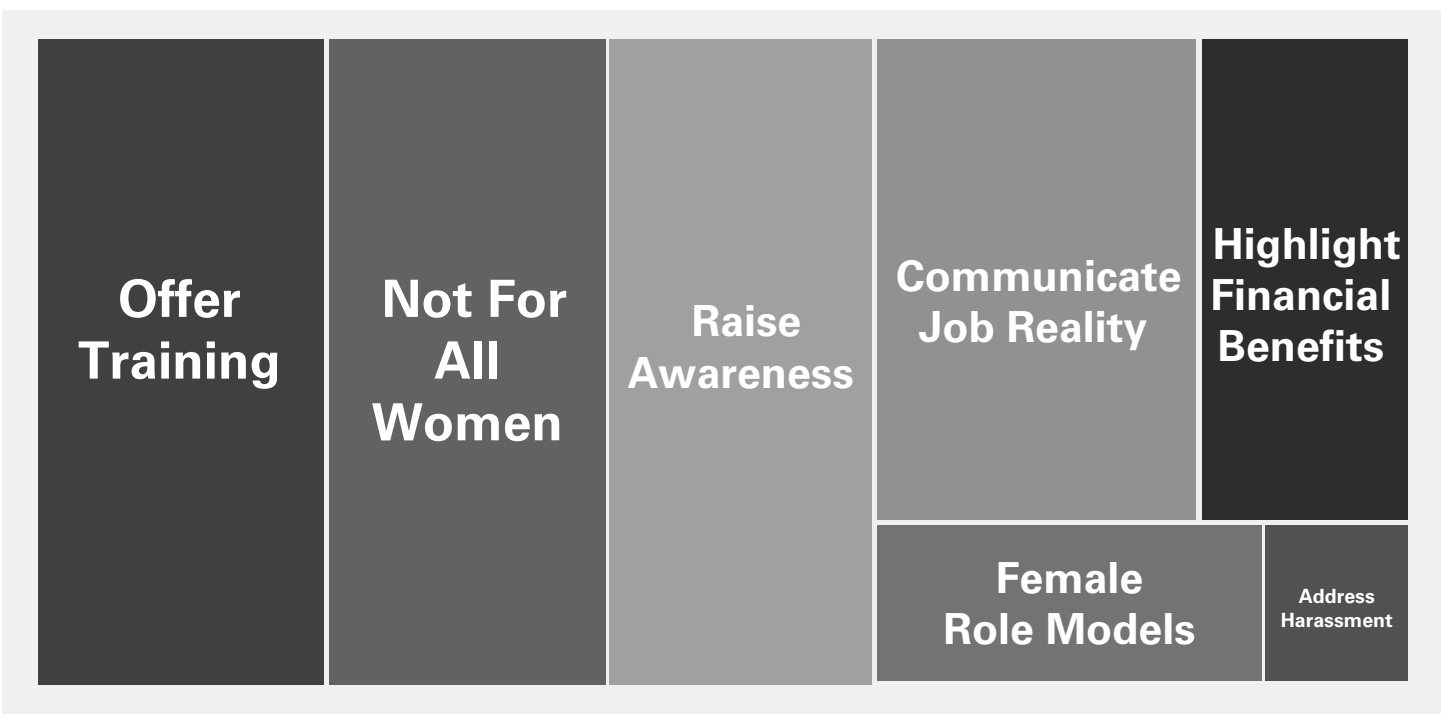


Figure 32: Tree map distribution of responses for suggestions on recruitment or retention practices to attract women into the construction industry.

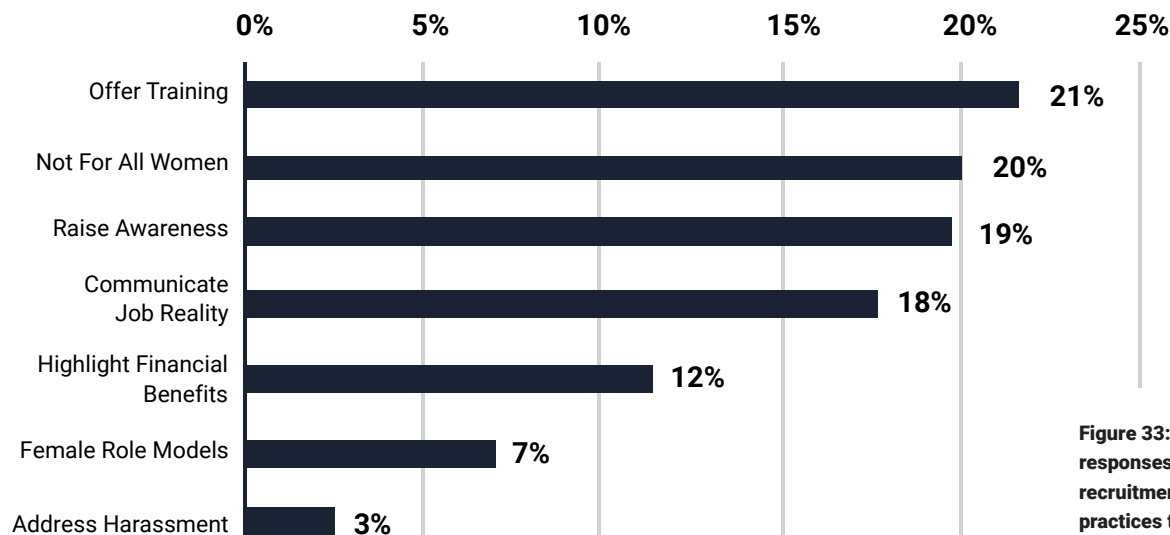


Figure 33: Percent of total responses suggestions on recruitment or retention practices to attract women into the construction industry.

- *“What I appreciate about him was that he made me feel like that I was doing a good job because he was the one who got me hired here.”*

Finally, some women observed that they only had male mentors, which made up 10% of the responses and was mentioned in 28% of focus groups. Only 1% of the responses suggested that they had no mentors throughout their career.

4.11 Retention and Recruitment Practices

The research team wanted to understand what suggestions women have on recruitment or retention practices to attract more women into the construction industry. For that purpose, the focus groups were asked the following question: Do you have any suggestions on recruitment or retention practices to attract more women into the construction industry? The results of the analyzed focus groups are presented in Figures 32, 33 and 34. Overall, 113 responses were received for this question. Figure 32 shows a tree map distribution of the women’s suggestions for recruitment or retention practices in the construction industry. Figure 33 shows the percent of all responses each suggestion was mentioned. Figure 34 shows the percent of focus groups each response was discussed in.

The most prevalent suggestion to attract more women into the construction industry is to offer training, which made up 21% of all responses and was mentioned in 38% of focus groups. Training programs, including course modules, allow women to experience the industry and alleviate some of

their concerns relating to their ability to do the job. Training can also offer them a path to advance in their careers, which makes it more likely their success prompts them to stay with the construction industry. For example, focus group participants made the following statements:

- *“I didn’t know what anything was. I just showed up there naïve. It was a very challenging environment, but training programs such as this are so wonderful for that introduction into it.”*
- *“Well I did that training program. It gets women on site. That program was awesome. If it wasn’t for that program, I wouldn’t be here today.”*
- *“They have training in the beginning for how to do construction, working, safety or anything about that in one week.”*
- *“We need to train them before they get here.”*
- *“To have the actual program, have an instructor who is teaching you the ropes. Not get blindsided and come in here for people to say you’re green.”*

However, many women simply acknowledged that construction as a job is not for all women. Construction work can be demanding in tough physical conditions, and it is not suitable as a career path for some women who are not willing to do this type of work. This observation made up 20% of the responses and was mentioned in 28% of focus groups. For example, focus group participants made the following statements:

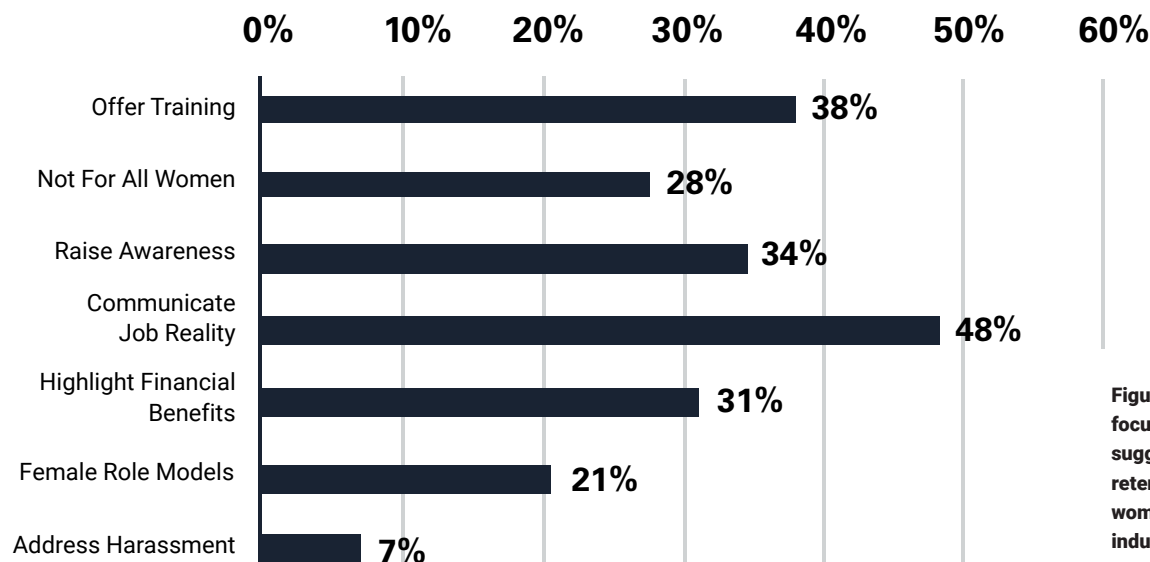


Figure 34: Percent of total focus groups that each suggestion on recruitment or retention practices to attract women into the construction industry is mentioned in.

- *"I think the reality is that these jobs are hard, and most of the women that I know that are my good friends, they look at me and they're like, 'I would never do your job. There is no way in hell I would ever do what you do.' You're not gonna recruit people who are not interested in this type of work."*
- *"I still think it's up to the person. A lot of people can't handle it. A lot of women can't handle this, and you see a lot of them come out here and they don't last long."*
- *"This is not for everybody. Working six, seven days sometimes, long hours, and the sun, the heat, the cold. It's really hard to try and persuade some women. Even my family members say 'Girl, you crazy working out in the sun or out in the cold. It's not for me.'"*

Regardless, women highlighted the importance of raising awareness and introducing women to construction, which made up 19% of the responses and was mentioned in 34% of focus groups. It's important to raise awareness starting in high school to showcase the possibility of construction as a career path, and also create other general public awareness campaigns to introduce women to construction. For example, focus group participants made the following statements:

- *"Start hitting up the high schools. Talking to like the younger generation. Give them more insight because schools are still really pushing university and college. No one really knows at that age."*
- *"Find ways into high school. Put it on when they're young and you talk to them."*

- *"Maybe have more women involved in recruiting at high schools, so they know what it's about before they get into this."*
- *Focus on getting the information out there at career fairs and such to help get the word out. Getting the word out and promoting, advertising and exposing the careers that are available in construction.*

Moreover, women believe it is critical to communicate the reality of the job. It is important to provide female prospects with all the information they need regarding what trades are available, how the job is, what to expect, and how to deal with issues to avoid being blindsided on day one. This suggestion made up 18% of the responses and was mentioned in 48% of focus groups. For example, focus group participants made the following statements:

- *"We need to be loud and clear about more information about the site and more information about the trades. They need to see what something sounds like. There needs to be more visuals."*
- *"Messaging them on the preparation for coming into the industry, coming onto the job site. That would be helpful."*
- *"Showing people that there's a variety of different trades too. Before I came, I didn't know that there was anything other than a plumber, an electrician, and a carpenter. I really had no idea. I thought it was just that."*
- *"I think that you can't sugarcoat it. We've got to let them know, 'Hey, there's going to be people who are going to*

like you, and there's going to be people who don't like you. There's going to be men who are trying to take you to bed. There's guys that are going to respect you. You're going to have a little bit of everything.' You have to be strongly prepared, mentally and physically. You build your way up. Know your place and know how to not get disrespected. You want respect, you give respect."

- "Information. Good information. For someone who's never worked in construction, that's the kind of information they need to know because they don't know what they don't know. If they've never worked in it, they don't know what to expect. Those are some things that I feel that we, as women, can voice and do because if they show up like that, obviously they don't know not to."

Additionally, highlighting financial benefits can be a great way to attract women into the industry. A construction career can be a very lucrative opportunity compared to other industries, and it does not require a college degree that leaves you in debt. Such a career can make you independent and self-reliant. This suggestion made up 12% of the responses and was mentioned in 31% of focus groups. For example, focus group participants made the following statements:

- "Advocate to get into the trades. It's good for you, and you make good money. There's a lot of growth. I feel like not everybody's made to be a doctor or nurse."
- "For a lot of younger girls who don't know what they want to do, money to me was independence. Whether I liked it or not, I was like, I'm gonna make money, and I can get out my parents' house, and I don't have to rely on a man to help me."
- "The more money you make, the more money you spend. Maybe more marketing to the average woman."
- "I mean, you don't have to go to college."
- "I went to university and didn't even get the job that they wanted. Yeah, that's why I went right into the trades and had my first house at 20."

Beyond that, some women suggested showcasing female role models in construction site leadership roles. Such women can inspire other women to join the industry and prove that a successful career is possible. This suggestion made up 7% of the responses and was mentioned in 21% of focus groups. Finally, a few women said that it's important to address harassment in the construction industry. Not only did the women suggest the need to reduce sexual harassment and protect women, some



Figure 35: Tree map distribution of responses for women's advice to contractors to better accommodate and retain women in their company.

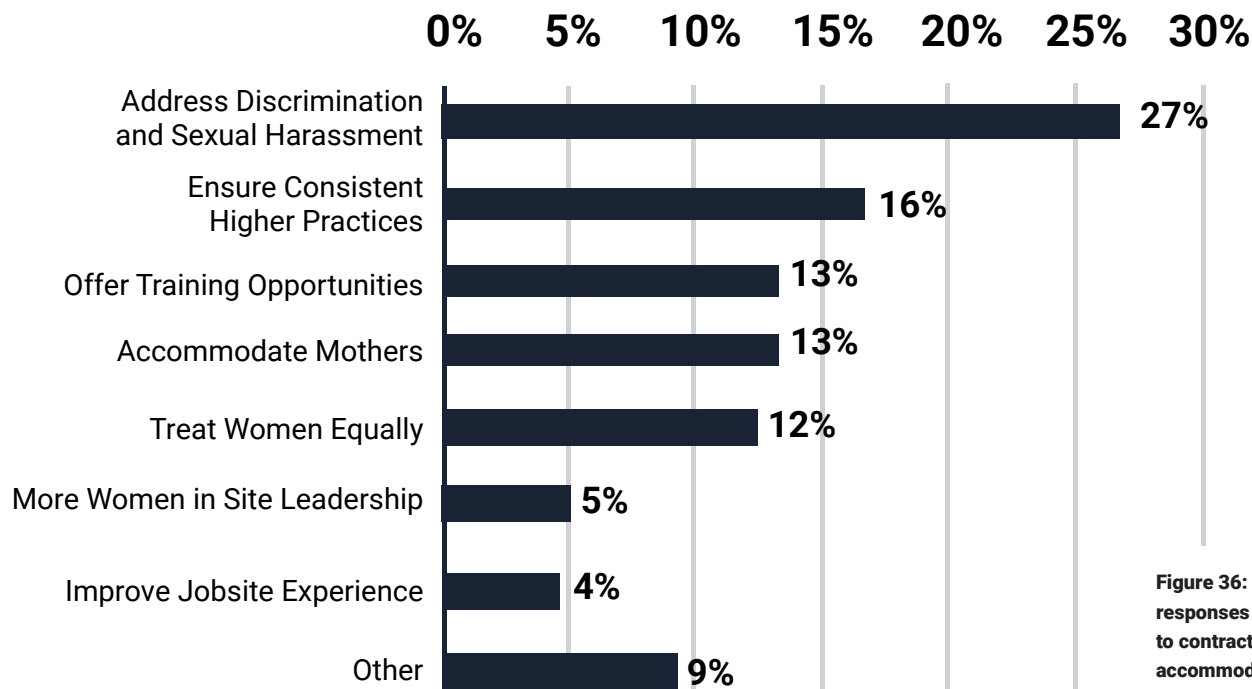


Figure 36: Percent of total responses for women's advice to contractors to better accommodate and retain women in their company.

stressed the importance of teaching women how to better deal with such incidents with men. While, reducing the harassment women face is critical, some of the women in the focus groups were not convinced this is an issue that can be completely solved, and therefore, it was important to teach women how to be resilient afterwards. This suggestion made up 3% of the responses and was mentioned in 7% of focus groups.

4.12 Advice to Contractors

The research team wanted to understand what advice women would give contractors to better accommodate and retain women in their company. To achieve this goal, the focus groups were asked the following question: What advice would you give to a contractor to better accommodate and retain women to their company?

The results of the analyzed focus groups are presented in Figures 35, 36 and 37. Overall, 116 responses were received for this question. Figure 35 shows a tree map distribution of the women's advice to contractors to accommodate and retain women in their company. Figure 36 shows the percent of all responses each suggestion was mentioned. Figure 37 shows the percent of focus groups each response was discussed in.

The main advice women offered to contractors is that they should take steps to address sexual harassment,

which made up 27% of all responses and was mentioned in 24% of focus groups. Sexual harassment is a serious problem in the construction industry and it is important to take active steps to protect women, from creating better HR policies and procedures that handle these issues, to educating men on how to behave and be respectful around women. For example, focus group participants made the following statements:

- *"Stricter goals when it comes to harassment. Zero tolerance."*
- *"I've found that I've had to shelter myself a little bit or shield myself. I've always, and this is a little controversial, but I've always worn baggy clothes and stuff like that. It shouldn't be like that, I shouldn't have to feel like I have to do that."*
- *"Some training for the women on how to handle these situations when it does happen. Frontline supervisor training on how to address it, whether it's open form versus not open form privacy, confidentiality, sensitive topics."*
- *"It would be really helpful if there was a line or an email or something that could be guaranteed to be read by a woman where we could always have access to this. I feel like, not like I'm saying that this is gender discrimination, but being pulled off the job because I'm a woman and then asked about my experiences. It would be easier if I could just text somebody."*

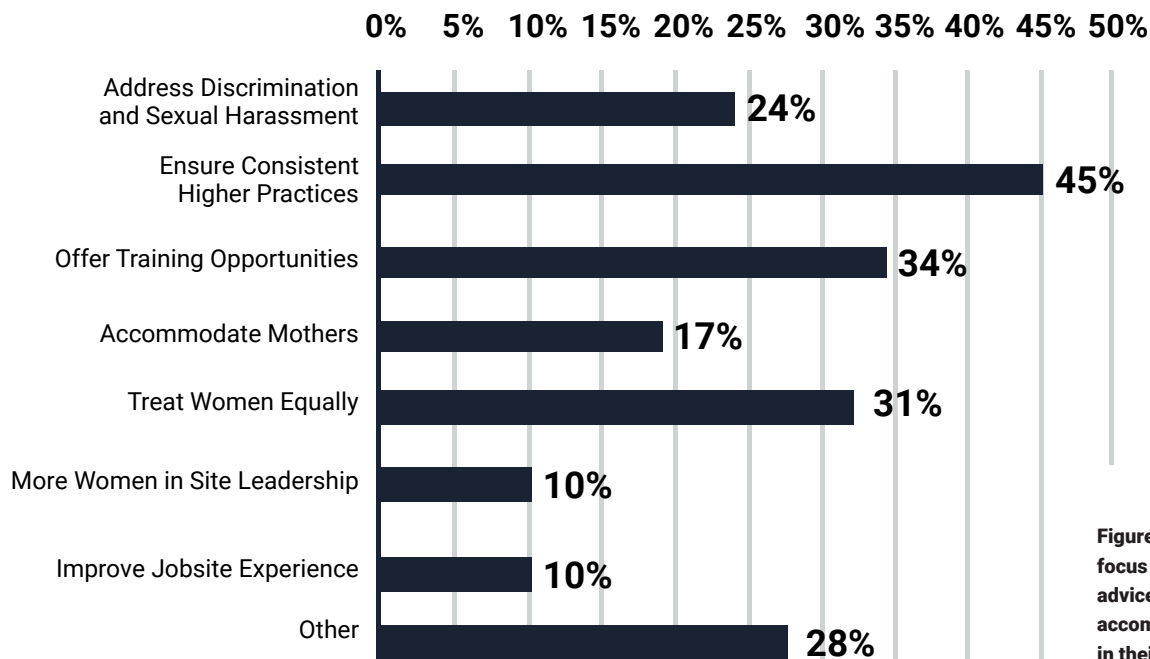


Figure 37: Percent of total focus groups that each women's advice to contractors to better accommodate and retain women in their company is mentioned in.

- *"We talk about how we deal with problems with men in the workplace, but they need to do something like this where they can deal with women in the workplace. A lot of the guys that I've worked alongside, they've never even worked with a woman before, or I'm the first woman they've seen on site in like 30 years."*
- *"Teach men to do better."*

Second, women would tell contractors to simply give women a chance, and afford them the benefit of the doubt that they can do the job. Don't just assume they would leave if they get hired because they can't handle the work. This advice made up 16% of all responses and was mentioned in 45% of focus groups. For example, focus group participants made the following statements:

- *"Hey, we will accept you for being a woman."*
- *"Not, not every woman knows how to do the job, but if they don't get a chance, then how are they gonna learn? They need opportunity. You have to give them an opportunity."*
- *"It's about getting the chance. When she was looking for other work with the superintendent, and they asked, 'What can you do?' She says nothing. 'Okay, well I need master people. They know how to do the work.' She's like, nobody gave me a chance."*
- *"Give the woman a chance."*

- *"You can't gain experience without getting experience. That's how most jobs are. You're expected to have so many years of experience, but no one's giving you that opportunity."*

Moreover, it's important to offer training to women. Training allows women to learn crafts and advance in their careers, which makes it more likely they will stick with construction work. This advice made up 13% of all responses and was mentioned in 34% of focus groups. For example, focus group participants made the following statements:

- *"The training program, I took that. You get to do plumbing, electrical, carpentry, and welding. That shows you a little bit. That would be the best way. Maybe they need to promote themselves a little bit."*
- *"Offer them more training."*
- *"Offering more training. I mean, there are companies, a lot of them do not like to hire women and they should say, 'we'll keep you at helper,' but they won't teach you anything. I think there's a lot of stuff that we lack offering to teach women."*
- *"What I find is that a lot of programs are entry-level programs. There's never the support, the career development. You need career development and to focus on the next steps."*

Additionally, women say that it is critical to have policies that accommodate mothers on the job. Mothers are still the primary caregivers in the family, and the responsibility of taking care of the kids falls on them. The industry, with its work hours, can be unforgiving to motherly responsibilities including childcare. Offering support for mothers can be very helpful in attracting and retaining women in the construction workforce. This advice made up 13% of all responses and was mentioned in 17% of focus groups. For example, focus group participants made the following statements:

- *“Get on-site daycare. I would love it.”*
- *“We can get more women in if I can have my child looked after, and I actually can work without worrying which of my friends can jump in tonight to take her for a couple hours.”*
- *“My experience with a lot of women is that they have issues finding nannies or daycares. I bet it’s hard trying to juggle work and kids at the same time when work is not supporting you. You are kind of in the middle, and you’re stuck.”*
- *“More flexibility if they are a single parent with the kids.”*
- *“Something that helps with childcare. Some kind of childcare support for single moms, and more understanding when it comes to things like that.”*

Furthermore, women would tell contractors to treat women equally, and not to discriminate based on gender. Women don’t want special treatment. They simply want to be on equal footing with men, whether it is related to general workplace treatment or work compensation. This advice made up 12% of all responses and was mentioned in 31% of focus groups. For example, focus group participants made the following statements:

- *“Treat us as equal as the men. Don’t give special treatment. If the men are treated this way, then we should be treated the same way.”*
- *“I understand at some point that with dress code, but it does feel like it’s kind of towards women when you have to have your shoulders covered and certain things like that.” Whereas, men in muscle shirts walk into places and no one says anything. Then if I do it, I’m immediately noticed.*

- *“It’s not fair. Sometimes men don’t even work, and they make more than we do. They’re the ones who get angry, so go work because you’re making more than us, you know? They’re making more than us, and they’re doing this in work and then they’re not even doing it well.”*
- *“We just want to be treated equally. That would be the advice to give contractors is make it an even, equal playing field. Not because I’m a woman, but treat me just like you would everybody else.”*
- *“I can’t think of anything extra. I don’t think we should be treated any different or have any extras besides the men. We’re to work with them.”*

Beyond that, women believe you can attract and retain more women in the construction industry when contractors have more female site leadership. Female supervisors are inspiring to female workers and show them prosperous career paths are possible. This advice made up 5% of all responses and was mentioned in 10% of focus groups. It is also important for contractors to improve women facilities and equip them with feminine hygiene needs, which made up 4% of all responses and was mentioned in 10% of focus groups. To add, simplifying the hiring process can do a great deal in attracting and retaining women. This advice made up 3% of all responses and was mentioned in 7% of focus groups. Also, contractors offering higher pay can convince women to stick with the industry, which made up 2% of all responses and was mentioned in 7% of focus groups. Finally, few women offered other advice to contractors, including raising awareness, highlighting the rewards and benefits of the industry, and getting the word out that they are hiring and welcoming to women.

5 Conclusions

The current work investigates the experiences of women working in the construction trades in North America through a series of focus groups with 176 tradeswomen. The research identifies the following unique qualities that women bring to the construction industry:

- Team focus
- Attention to detail
- Maintaining a clean and organized jobsite
- Safety focus

Despite these identified benefits, women still report discrimination and harassment as the most frequent problem women face in the industry. The women offered the following insight to contractors to increase the representation of women within the construction trades:

- Address discrimination and sexual harassment
- Ensure consistent hiring practices
- Offering training opportunities
- Accommodate mothers
- Treat women equally

The limitation of the current work is that it relies on focus groups as the sole method of data collection. However, the results presented here are consistent with previous research on the topic. Future work can expand these results by focusing on specific elements identified within the focus groups. For example, the quantification of safety performance between men and women.

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