



**Women in the Construction Trades:**  
Earnings, Workplace Discrimination, and the Promise of Green Jobs  
Findings from the IWPR Tradeswomen Survey

By Ariane Hegewisch and Brigid O'Farrell



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## About this Report

Based on the 2013 IWPR Tradeswomen Survey, an exploratory study of women working in construction trades, this report provides insights to working conditions for women in the construction industry, examines their earnings and employment experiences since the end of the Great Recession, and analyzes women's motivations for pursuing green training and its impact on their employment. The report builds on a previous IWPR study, *Quality Employment for Women in the Green Economy*, which mapped women's underrepresentation in green growth occupations. The research was funded by a grant from the Rockefeller Foundation's program Sustainable Employment in a Green U.S. Economy (SEGUE).

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## Chapter 1. Introduction: Women and Construction Jobs

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“As we continue this recovery, as we once again get the economy firing on all cylinders, construction will be one of the industries leading the charge.”

Thomas E. Perez, US Secretary of Labor, February 10, 2014

The construction industry is showing job growth after several years of decline. Construction and extraction occupations are predicted to grow by 21.4 percent between 2012 and 2022, more than twice the rate of job growth predicted across all occupations (U.S. Bureau of Labor Statistics 2013). Metropolitan areas, fueled by a resurgence of demand for residential and commercial buildings, are expected to see annual growth of employment in the construction and natural resource sector of 4.7 percent (IHS Global Insight 2014). New employment opportunities will further arise from the need to replace retiring workers. In 2012, almost one in five skilled construction worker was at least 55 years old (Wright 2013).

Construction occupations offer the potential of employment with family sustaining wages without the need for college education. The median hourly earnings for “construction laborers and helpers” were \$14.02 in 2012, compared with \$11.73 for nursing assistants, and \$9.57 for a personal care assistants (U.S. Bureau of Labor Statistics 2014b). A nursing assistant must have a high school diploma and some post-secondary vocational qualifications; entry-level positions as a laborer or helper in construction do not require a high school diploma. The median hourly earnings for an electrician were \$23.96 and of a sheet metal worker \$20.81; by comparison, the median hourly earnings of a social worker were \$21.25 and of a rehabilitation counselor \$16.29 (U.S. Bureau of Labor Statistics 2014a). All of these are highly skilled jobs, yet while social work or counselling requires a four-year university degree, the route to becoming a skilled electrician or sheet metal worker (or a skilled tradesperson in other construction trades) is an earn-while-you-learn apprenticeship.

Although many women work in construction – at the industry’s peak in 2006, construction occupations employed 295,000 women, a greater number than women employed as surgeons and physicians at the time—in relative terms women’s share of construction jobs has been stuck at less than 4 percent for more than 40 years. Today women range from less than 1 percent of brick masons and roofers to a high of 5.7 percent of construction painters (U.S. Department of Labor 2014a). The construction industry was one of the most severely affected sectors in the 2007-2009 Great Recession. Employment in construction and extraction occupations declined by 25 percent between 2006 and 2013. Employment for women declined by an even larger share, by 37 percent, and women’s share of construction jobs fell from 3.1 percent in 2006, to 2.6 percent in 2013 (U.S. Bureau of Labor Statistics 2006, 2014b).

Women are also underrepresented in apprenticeships that constitute the pipeline into skilled construction jobs. Construction apprenticeships take a minimum of two to five years combining

on-the-job training and formal instruction.<sup>1</sup> While students must pay to attend a college or university, apprentices earn while they learn on the job. A recent 10-state evaluation of registered apprenticeships finds significant earnings gains as a result of apprenticeships compared to similar workers without apprenticeships (Reed et al. 2012). Only 2.2 percent of apprentices in the construction trades are women, yet apprenticeships are a key entry point for the most skilled trades (National Women’s Law Center 2014).

Such stark gender segregation in the construction industry is a concern for reasons both of equity and economics. The virtual exclusion of one gender from work in the industry means that it is losing out on potential talent and is less able to respond quickly to increases in need for skilled workers. Research has found that the greater gender and race integration of occupations during the last 40 years in the significantly increased economic growth in the U.S. as well as the earnings of women and of men of color (Hsieh et al. 2013).

The low share of women in the construction trades has been the target of federal policies for a number of years. Since 1978, apprenticeship programs in construction are “expected to set a goal for women for the entering year class at a rate which is not less than 50 percent of the proportion women are of the workforce” (29 CFR 30.4(f)).<sup>2</sup> In 2013, this translated into a goal of 23.4 percent (U.S. Bureau of Labor Statistics 2014c). Yet, in that year women were only 2.3 percent of apprentices in construction industry apprenticeship programs registered with the U.S. Department of Labor’s Office of Apprenticeship (U.S. Department of Labor Advisory Committee on Apprenticeships 2013). In 2014, the President announced a \$100 million initiative to double the number of apprentices in the next five years (U.S. Department of Labor, Employment and Training Administration 2014a). The goals for the initiative include to “make [apprenticeships] more attractive to women and other Americans who have been underrepresented [...]” (U.S. Department of Labor, Employment and Training Administration 2014b).

Under Executive Order 11246, any construction contractor in receipt of a federal contract or federally assisted contract of \$10,000 or more must make good faith efforts to ensure that at least 6.9 percent of hours worked are performed by women; the 6.9 percent goal applies to all of a contractor's construction sites and not only those involved in performing the federal contract (U.S. Department of Construction Office of Federal Contract Compliance 2009). These targets were introduced in 1978, permanently extended in 1980, and have not been updated since. Unlike other federal contractors, construction industry contractors are not under the obligation to develop written affirmative action plans if they fail to meet their targets, but must only show ‘good faith’ efforts to meet them (U.S. Department of Construction Office of Federal Contract Compliance 2002). The regulations, however, give clear guidance on the need to provide a workplace free of

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<sup>1</sup>Given the irregular and seasonal nature of work in much of construction, it may take longer for apprentices to work the hours required to reach journey level and become a qualified trades worker. A laborer requires 2000 work hours to become qualified at journey level, up to 8000 hours for an electrician or sheet metal worker.

<sup>2</sup>In 2010, the U.S. Department of Labor announced its intention to revise the regulations (U.S. Department of Labor 2010); at the time of writing, new recommendations have not yet been published.

harassment, intimidation, and coercion. Contractors are to assign two women to a worksite where possible, provide adequate toilet and changing facilities, and ensure that supervisors are aware of their responsibilities for women and minorities (U.S. Department of Labor 2014, Baker 2008).

Previous research with women in the construction field has consistently shown that they enjoy the work and are capable of performing highly skilled jobs, but barriers remain. Molly Martin recorded stories of the “struggle and success” of tradeswomen in her book *Hard Hatted Women: Life on the Job* (1997). LaTour (2008) presents an in-depth look at tradeswomen in New York City, and Moccio (2009) examines the experiences of women electricians, in their respective books. Eisenberg (1998) provided historical and policy analysis using the voices of tradeswomen from across the country in her book on women construction workers. The tradeswomen tell stories of pride and accomplishment in the work and people who helped, as well as isolation, intimidation, and (sometimes life threatening) harassment on the job, by managers, supervisors, and coworkers. Others have shown the effectiveness of programs providing apprenticeship readiness training and outreach to help women enter the trades, as well as technical assistance programs for employers and union to improve recruitment and retention of women in construction (Westat 2003; Mastracci 2004). All note the lack of funding and enforcement of government regulations.

The experiences of today’s tradeswomen provide insights to overcome barriers and help ensure that projected growth in employment during the coming decade provides equitable opportunities for women to increase their share of skilled, well-paying construction occupations. The new \$100 million American Apprenticeship initiative announced by the White House in June 2014<sup>3</sup>, the resurgence of growth of construction jobs, and the need to replace workers in response to the aging of the workforce provide new opportunities to tackle women’s exclusion from these jobs.

One potential opportunity for women in the trades lies in “green” construction. As the construction industry recovers, green building activities are projected to make up a growing share of the construction sector; according to a recent industry survey, the share of companies reporting that the large majority (60 percent or more) of their projects involve green construction and design principles grew from only 16 percent in 2009 to 40 percent in 2012, and projected to 53 percent in 2015 (McGraw Hill Construction 2013). The greening of many traditionally male technical and trade occupations may prove a powerful tool for revitalizing efforts to improve the gender balance in construction because of the high interest of young women in environmental issues. Women, for example, are more than one in five environmental engineers, but only one in eight civil engineers.<sup>4</sup>

The construction industry is a key building block of efforts to improve energy efficiency in the United States. It was the target of considerable investments for the retrofitting of residential and public buildings in the American Recovery and Reconstruction Act of 2009, as well as for

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<sup>3</sup> Full details of the \$100 million American Apprenticeship grants initiative are available at U.S. Department of Labor Employment and Training Agency (2015).

<sup>4</sup> According to IWPR’s analysis of the American Community Survey 2009-2011, as provided by Ruggles et al. 2010, women are 21.8 percent of environmental engineers, and 12.7 percent of civil engineers.

investments in building renewable energy plants and facilities to make equipment like solar panels and wind turbines as well as install them. At the same time, demand for energy conscious and environmentally aware building methods is growing in the commercial building sector. Energy saving performance standards such as Leadership in Energy and Environmental Design (LEED) certification are rapidly gaining prominence; according to industry estimates, about one third of non-residential floor space and 20 percent of new non-residential construction in 2011 was LEED certified (Watson 2011). A number of studies have estimated the job creation potential of further investments in energy efficiency retrofits of buildings (Pollin 2012; Deutsche Bank Change Advisors 2012).

The large majority of green occupations are not new occupations. They use or build on skills required in existing occupations although they may require supplementary ‘green’ knowledge and certification, for example, about sustainable production processes, pollution control or energy conservation (U.S. Department of Labor Women’s Bureau 2011; U.S. Department of Labor ETA 2009). In most aspects, green jobs are like other jobs in the same sector. A carpenter may work on a green project for part of the year, and on other projects for the remaining time of the year. A worker in an electric power plant may learn about new materials, or be engaged in installing new meters which encourage greater energy efficiency among electricity users, but will still need certified skills as an electrical worker. Indeed, as White (2012) has convincingly argued, focusing on green-specific skills for green occupations, such as solar panel installers or energy auditors, rather than embedding green skills in a broader and more comprehensive set of occupational skills and certifications, may trap a worker in a lower wage sector and increase the risk of unemployment. Thus, for women already working in construction or planning to work there in the future, the greening of the industry is likely to be an increasingly important component of their work.

The 2013 IWPR Tradeswomen Survey draws on the experiences of women who already work in the construction industry. Their views and assessment of the working environment provide a picture both of the opportunities and challenges of working in construction, and of the policy reforms and interventions needed to remove the barriers to women’s work in construction.

The 2013 IWPR Tradeswomen Survey is an exploratory survey covering two broad sets of issues: employment, earnings, and work experiences of women as the construction industry climbed out of the Great Recession, and experiences with green training and green construction employment as a pathway into quality jobs for women in construction. In response to the Great Recession and the collapse of the construction industry, the U.S. Congress and many states funded billions of dollars’ worth of investments in construction projects, including green investments in weatherization of residential and commercial buildings, public transportation infrastructure, and new green energy technologies, as well as in more traditional projects, such as highway construction and bridge repair. To gain a better understanding of the role of green training and certification for work in the construction trades, the survey asked a number of specific questions about women’s attitudes to green jobs and experience with green jobs training.

In this report, Chapter 2 describes the 2013 IWPR Tradeswomen survey and methodology. The description of the sample of women who responded to the survey provides insights to the diversity of women working in the trades. Chapter 3 reports survey findings on tradeswomen’s earnings,

employment, and unemployment during the last two years. The chapter then addresses women's information sources for careers in the trades, what it means to be the only or one of few women on the job, and experiences with equal treatment, discrimination, and harassment. Chapter 4 examines both women's attitudes to green jobs and their experience with green training within the construction industry, and includes information about the sources of green jobs training, work experience in green construction, and attitudes to the green economy as a promising career orientation. The survey results in many ways reflect the slow pace of economic recovery in the construction industry, the success of some tradeswomen, as well as the continuing problems faced by many others. They also show, to date, a limited use of green construction techniques on most construction jobs, but also the extensive greening of apprenticeship training during the last few years. Survey respondents are largely hopeful about the future potential for women's progress as a result of green growth. The report ends with recommendations for policy and future research.

## Chapter 2. A Profile of Women Working in the Trades

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### Methodology

The 2013 IWPR Tradeswomen survey collected responses from women working in the construction trades with two broad objectives: to learn about women’s working experiences, earnings, and perceptions of equal treatment on the job generally, and to investigate women’s experiences with and attitudes to green construction training and jobs specifically. This exploratory survey draws on and updates two earlier surveys of tradeswomen (California Apprenticeship Council 2006; Richardson 2005) and provides the first post-recession picture of women working in construction trades. ‘Green’ was defined in the introduction to the survey as “any work related to energy efficiency, weatherization, alternative energy sources (such as wind and solar), public transportation, pollution control, environmentally aware construction, recycling and safe removal of hazardous materials”— a definition that broadly follows the U.S. Bureau of Labor Statistics’ definition of green jobs and services (U.S. Bureau of Labor Statistics 2010). The survey included a mix of multiple choice and open-ended questions. Survey questions were tested with a number of tradeswomen, including two who specialized in green construction.<sup>5</sup> The full survey is included in Appendix A.

Responses to the survey were collected via Survey Monkey between April and June 2013. Invitations to participate in the survey were distributed through the ‘Women Building California and the Nation’ conference, through pre-apprenticeship programs, union women committees, websites targeting women in the trades, as well as word of mouth. The sample also includes 12 responses collected from women who participated in more in-depth interviews as part of a related study on women’s experience following pre-apprenticeship programs. A total of 265 valid responses were received, including 219 U.S.-based construction tradeswomen, 23 respondents working in nontraditional occupations and trades outside of construction (such as truck driving), and 20 respondents based in Canada. This report is based solely on 219 respondents who are resident in the United States and work or train in the construction trades. Data are presented unweighted.

While the sample is not random and not representative of the national population of women working in construction, respondents reflect demographic differences in family status, age, education, race and ethnicity, and geography. They also vary by work related characteristics such as union membership, specific trades, and veteran status.

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<sup>5</sup>The survey was launched as the Green Tradeswomen Survey at the ‘Women Building California and the Nation’ conference in Sacramento in April 2013, an annual conference bringing together 600 tradeswomen from across the country. Because many women at the conference reported that they did not believe the survey was relevant to them because their work was not green, the word ‘Green’ was removed from the survey title; no other changes were made.

## Demographics: Family Status, Age, Education, Race and Ethnicity, Region

The large majority of respondents (78 percent) are the main breadwinner of their households. One woman identified herself as “Been a single parent all my life.” Another explained. “I am the only provider in my home. My husband is terminally ill.” Slightly over half (55 percent) of respondents have children, and 20 percent have children under 18 years of age. A third of respondents are single, four in ten are married or live in a domestic partnership, and close to three in ten are divorced, separated, or widowed. Almost a quarter of respondents identified as LGBT and in response to the question “What is your gender,” two respondents identified as ‘other’ (Appendix B Table 1).

By age, the sample is evenly divided among younger and older women; 49 percent of respondents are under 45 years of age, and 51 percent 45 years and older. Thirteen percent of respondents are 55 years and older, the same proportion as women 55 years and older in construction trades nationally in 2008-2010 (Hegewisch et al. 2013). The inclusion of both older and younger women provides an opportunity to examine whether perceptions and experiences in the industry have changed for newer generations of tradeswomen.

**The high level of educational attainment of respondents points to the skilled nature of much of construction work.**

One woman reported: “I have an MBA in Project Management.” Close to half of respondents have an associate’s degree, a bachelor’s degree, or higher levels of education. The high level of educational attainment of

respondents points to the skilled nature of much of construction work. While entry-level work in construction does not require a high school diploma, apprenticeship programs typically do require applicants to have completed high school. Only 12 percent do not have educational qualifications beyond completing high school, and 39 percent have some college level qualifications (Appendix B Table 1).

The sample over-represents white women and under-represents women of color, particularly Hispanic women. Eighty-one percent of women identified as white, 7 percent as black, 4 percent as Hispanic, 4 percent as ‘other’ (including more than one race), 3 percent as American Indian, and 0.5 percent as Asian (Appendix B Table 1). Nationally, according to IWPR’s analysis of the American Community Survey in 2008-2010, 67 percent of women working in construction occupations are white, 9 percent are black, 19 percent identify as Hispanic, and 6 percent are either more than one race, Asian, or American Indian (samples size in the ACS were too small for Asian and American Indian women construction workers to provide reliable estimates; Hegewisch et al. 2013). Hispanic women are overrepresented in the female construction workforce compared to their share of the total female workforce, just as Hispanic men are overrepresented in the male construction workforce. Black and Asian women, on the other hand, are comparatively underrepresented, also similar to men of the same racial backgrounds. White women’s share of construction jobs is proportional to their share of the female workforce.

The sample is geographically diverse with respondents from 33 states and the District of Columbia. Four states (Washington, Oregon, Illinois and California), however, account for more than half of all responses (Appendix C, Table 4).

## **Work Related Factors: Union Membership, Trades, and Veteran Status**

The sample is disproportionately unionized; 80 percent of respondents are union members. , This is much higher than union membership for all women working in construction occupations which was 21 percent in 2013 (U.S. Bureau of Labor Statistics 2013).<sup>6</sup> The findings reflected a positive, but not wholly uncritical view of unions. As one respondent simply explained, “Union jobs are the best jobs.” The composition of the sample is a reflection of networking among tradeswomen. While there are organizations for women working as construction managers and women owners of construction firms, unions or union-related organizations are the primary vehicle for networking among women in skilled trades occupations. As one respondent said, “Unfortunately non-union tradeswomen are rarely recognized for their work...I suspect it’s a story that will not get told.”

Yet, unlike other recent surveys of women in construction trades which included only union women (see, for example, California Blue Ribbon Women in Apprenticeship Survey; California Apprenticeship Council 2006 or the New York City District Council of Carpenters Women’s Committee Survey; Richardson 2005), the fact that one in five respondents are non-union brings an additional dimension to this survey. The majority of respondents (73 percent) worked solely or mostly for union contractors; respondents were more likely to report being self-employed (9 percent) than employed by a non-union contractor (6 percent).

Across the trades, the large majority of respondents, 72 percent, are qualified at the journey level, having completed an apprenticeship program, with some respondents having attained the higher level of Master Tradeswoman. Fifteen percent are at varying stages of apprenticeship programs (providing insights of women new to the trades) and the remaining 13 percent include some still in pre-apprenticeship programs, some who work in construction but do not have formal qualifications, and some who attained construction related qualifications without going through a formal apprenticeship (Appendix B Table 3). Electricians (26.5 percent), carpenters (22 percent), and iron workers (10 percent) make up the majority of respondents, but altogether responses reflect more than 15 trades (Appendix C Table 3).

Women veterans make up 10 percent of the sample. One respondent said, “I was a Communications Tech in the Army.” When serving in the military, women’s share of military occupational specialties most closely related to construction occupations, while not quite equal to their overall share of those serving in the military, is much higher than in civilian employment. In 2011, women were 14 percent of all those on active duty in the U.S. military, 9 percent of those

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<sup>6</sup> The definition includes construction and extraction occupations; data only for construction occupations are not published. Unionization among employed men in construction and extraction occupations was 19 percent in 2013 (U.S. Bureau of Labor Statistics 2013).

serving as craftsmen, 8.5 percent of those working in electrical jobs, and 14 percent of those performing ‘other technical’ military occupational specialties (U.S. Department of Defense 2011). Once returning to civilian life, women veterans are marginally more likely than other women to work in the construction industry (1 percent and 0.3 percent respectively; U.S. Bureau of Labor Statistics 2014d) but proportionately much less likely than women in the military. Military service has long been a bridge to civilian employment for men. Military service as a bridge to nontraditional employment for women, however, has often been proposed, but to date not sufficiently studied (Manning, O’Farrell, Stone and Wight 2001).

While the survey is not representative, it illustrates the diversity of women working in the trades by demographic characteristics, such as familial status, age, education, race and ethnicity, and geography, as well as by work-related characteristics, such as union membership, specific trade, and veteran status. The large majority of survey respondents’ are breadwinners and highly educated, all have at least finished high school and more than a quarter have a 4 year college degree or higher levels of education. Over half have children and a quarter identify as LGBT. They are evenly divided by ages over and under 45, and come from across the country, but the sample is more likely to be white and less likely to be Hispanic than the national average. These tradeswomen are highly unionized, but the non-union respondents provide new data. The women represent 15 different trades, both journey-level and apprentice, and one in ten are military veterans. Thus, the sample provides responses from a diverse group of tradeswomen working in construction at the end of the Great Recession.

## Chapter 3. Tradeswomen's Perspectives on Working in Construction

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This chapter examines the work experiences of tradeswomen. It addresses earnings, employment, and unemployment year prior to completing the survey, discusses women's routes into the trades, and their experiences of gender equality on the job. The results present a mixed picture. While many respondents are earning good wages, unemployment and underemployment are still high, and higher for women than men. The majority of respondents report that they largely feel that they are treated equally to men, yet far too many report unequal treatment in hiring, training, assignments, and promotions. Lack of recruitment, isolation, harassment, and retaliation remain problems for many.

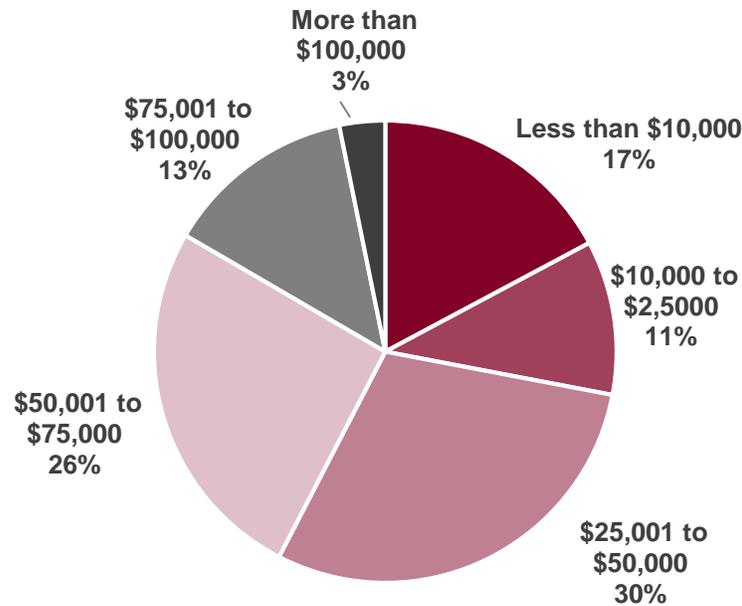
### Work and Earnings

The recession has left a heavy toll on workers in the construction industry, and respondents to this survey are no exception. Construction industry employment continues to lag far behind pre-recession levels. At the time of answering the survey, unemployed construction workers outnumber reported construction vacancies by 12 to 1 (Shierholz 2013). More than one in five (21.5 percent) survey respondents were unemployed; the majority of respondents (56 percent of union and 62 percent of non-union women), however, reported working in their trades (Appendix C Table 7).

As reported in the previous chapter, a large majority of the respondents (79 percent) are the main wage earners in their households whether married, single, divorced, separated, or widowed. Construction jobs enabled some women to adequately support their families while others struggled to make ends meet. Respondents' work experience during 2012 shows a diverse picture, with some doing very well, working full-time and earning substantial wages, while others were unemployed or only able to find work for part of the year. Over a quarter of respondents (27 percent) worked in their trade for at least 48 weeks/1920 hours during 2012. Half of the respondents had work for at least 37 weeks/1440 hours or more during the year. Of those who were able to work in their trade, over 40 percent earned at least \$50,000 in 2012. At the other end of the spectrum, 13 percent of women were not able to find any work in their trades during 2012, and more than a quarter (28 percent) of those who worked in the trades earned \$25,000 or less (Figure 3.1).

Union respondents during 2012 were both less likely than non-union women to report being unemployed (10 compared to 25 percent), and less likely to report earnings of \$25,000 or less (26 compared to 39 percent non-union respondents; Appendix B Table 7).

**Figure 3.1. Respondents' Distribution by Annual Earnings from Construction Trades Work, 2012**



Note: Only respondents who reported earnings from working in their trades are included (n=186).  
Source: 2013 IWPR Tradeswomen Survey.

### **Getting In: Family, Friends, Counseling, Outreach**

Finding out about career opportunities in the trades continues to be a haphazard affair. Construction trades offer potentially good career opportunities as well as a pathway to industry recognized qualifications through apprenticeships that does not require a substantial outlay for college education. Of all respondents, however, only one said she learned about the trades through her high school career counselor and only two through a counselor at an American Job Center. For the majority, friends and family were their source of information about trade jobs. As one woman said, “I worked side by side with my father,” and this has been the tradition for men. Another woman offered that, “If more women would put themselves out there and get into the construction trades I think the opportunities are available.”

Yet, the greater gender integration of occupations and women’s equal access to career and technical education, rather than being left up to individuals and their families, has been a goal of public policies at least since Title IX of the Educational Amendments in 1972. Under the Carl D. Perkins Career and Technical Education Act of 2006 schools and colleges in receipt of federal funds have to report on women’s and girls’ participation in programs which are nontraditional for their gender (and likewise for boys and men), and, at least in principle, are measured on their progress in closing gender gaps. Likewise, the Workforce Investment Act of 1998 and its

successor, the Workforce Innovation and Opportunities Act of 2014, which regulate the federal workforce development system and American Job Centers, include explicit provisions for improving women’s access to occupations which are nontraditional for their gender. Yet among these women who work in the trades, there is little evidence that career counselling proactively provides information on career opportunities in the trades to women and girls.

**One respondent said,  
“Let women know that  
there are women out  
there in nontraditional  
jobs. I did not know.”**

Several women also reported coming across flyers and newspaper ads from pre-apprenticeship programs, and even a television ad that highlighted training opportunities for women in the trades. One respondent said, “Let women know that there are women out there in nontraditional jobs.

I did not know.” Pre-apprenticeship programs for women, such as those provided by WINTER in Los Angeles, Oregon Tradeswomen Inc., Nontraditional Employment for Women (NEW) in New York City, or Chicago Women in the Trades, have a well-developed arsenal of publicity materials targeted at women. These initiatives have also been the subject of public policy, often funded through the Women in Apprenticeship and Nontraditional Occupations Act of 1992. Administered by U.S. Department of Labor’s Women’s Bureau and Office of Apprenticeship, WANTO provides grants to a small number of projects, three in the last round, and funding at slightly under \$1 million has been frozen since 1994.<sup>7</sup> Research has shown these projects to be effective (Westat 2002; Mastracci 2004). The respondents of this survey provide examples of the impact on women of such targeted publicity materials, and of the importance of stating explicitly that women are welcome in any recruitment materials.

## Equal and Unequal Treatment On-the-Job

Once on the job, the majority of respondents report that, on the whole, being a woman does not mean that they are treated differently from men on the job. Almost all respondents (91 percent) think that they are ‘frequently,’ if not ‘always’ treated equally with men in terms of safety, and, although the share of women replying ‘always’ or ‘frequently’ is no longer as high, more than three quarters (78 percent) think they are treated mostly equally when it comes to formal training, and three quarters (75 percent) in relation to the use of tools (Figure 3.3). One woman declared “At my job men and women get equal training.”

Similar to their experiences with earnings and the hiring process, women report a wide range of experiences with treatment on the job. Yet another woman reported that “Gender discrimination is rampant, constant, and considered normal in that industry.” Less than two-thirds of respondents report equal treatment when it comes to respect on the job, hiring and the allocation of hours, and assignments. In other words, one-third (36 percent) to almost half (43 percent) said they are never

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<sup>7</sup> In 2014, Chicago Women in the Trades, NEW and Oregon Tradeswomen Inc. received WANTO grants of \$650,000 each for a two-year period to create regional partnerships for providing pre-apprenticeship training for women and technical assistance for employers, trade unions, and other organizations to improve their access to apprenticeships and nontraditional occupations (U.S. Department of Labor 2014).

or rarely treated equally on these aspects of their jobs. Keep in mind that apprentices and journey-level workers alike must be hired for each new construction project and assigned hours and tasks on that construction site. One woman said that she faced so many barriers and setbacks that she was “once again UNEMPLOYED and trying to finally set up my own business because I can’t stand the application and hiring process anymore at my age.”

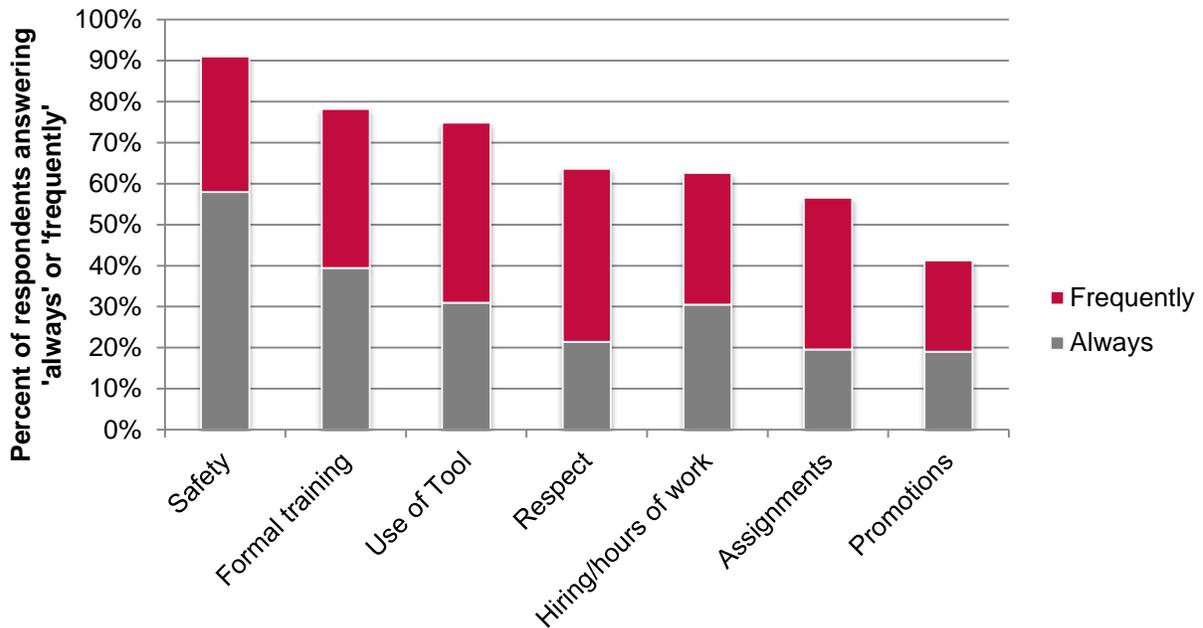
Lack of equality in the numbers of hours worked directly reduces workers’ ability to earn a living.<sup>8</sup> It can also have long-term effects. For women who are still in their apprenticeships, it can extend the time it takes to qualify at the journey level given that the completion of an apprenticeship requires a set number of working hours in one’s trade. Discrimination in assignments and the use of tools reduces women’s opportunities to become skilled in their trade. While formal classroom instruction plays a role in the trades, much of the learning is done on the job, by practicing with different tools and being exposed to different challenges and problems through a range of assignments. Apart from being frustrating, such a lack of exposure can also limit women’s potential earnings in the trades by reducing the range of tasks in which they can excel, and thus making them potentially less attractive to contractors looking for workers.

Respondents were least likely to report being treated equally when it comes to promotions. Only 40 percent report that they are ‘frequently’ or ‘always’ treated equally in this regard. Three of five women say they are “never” or “rarely” treated equally. Promotion opportunities after journey-level status might include first line supervisor, inspector, or construction manager. In 2013, these occupations were held by 2.1 percent, 7.1 percent, and 7.3 percent women respectively (U.S. Department of Labor, 2014). Lack of equality in promotions limits individual women but also holds back change in the trades overall. Women in supervisory positions can be role models for other women and can help create a more level playing field.

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<sup>8</sup> See Hegewisch, Henrici, Shaw and Hooper 2014 for a discussion of Oregon’s Department of Transportation and Bureau of Labor Statistics’ successful interventions to improve the retention and completion rate of women and minority apprentices in highway construction related trades with financial and other supports.

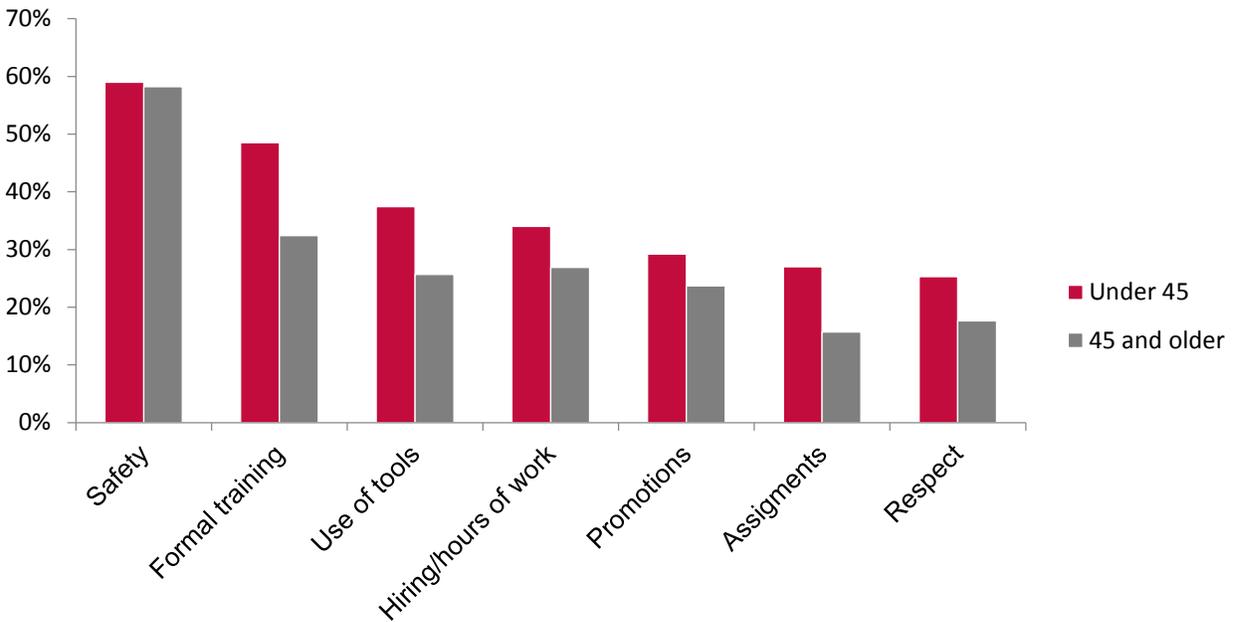
**Figure 3.2. Do You Think You are Being Treated Equally to Men in Hiring and On-the-Job? (Percent of Respondents Answering ‘Always’ or ‘Frequently Treated Equally’)**



Source: 2013 IWPR Tradeswomen Survey

Younger respondents (under the age of 45) are at least somewhat more likely than older respondents to say they are ‘always’ treated equally in response to almost each aspect of work and training surveyed (Figure 3.5). The more positive perceptions of those who are younger than 45 may be a sign of progress in the industry; it may also reflect fewer years of work experience and greater optimism among those who have been in the trades for a shorter amount of time. These perceptions of equal or unequal treatment must also be seen in the context of related factors such as isolation, sexual harassment, and other forms of discrimination.

**Figure 3.3. Do you Think you are Being Treated Equally to Men in Hiring and On-the-Job? Percent of Respondents Answering ‘Always’, by Age**

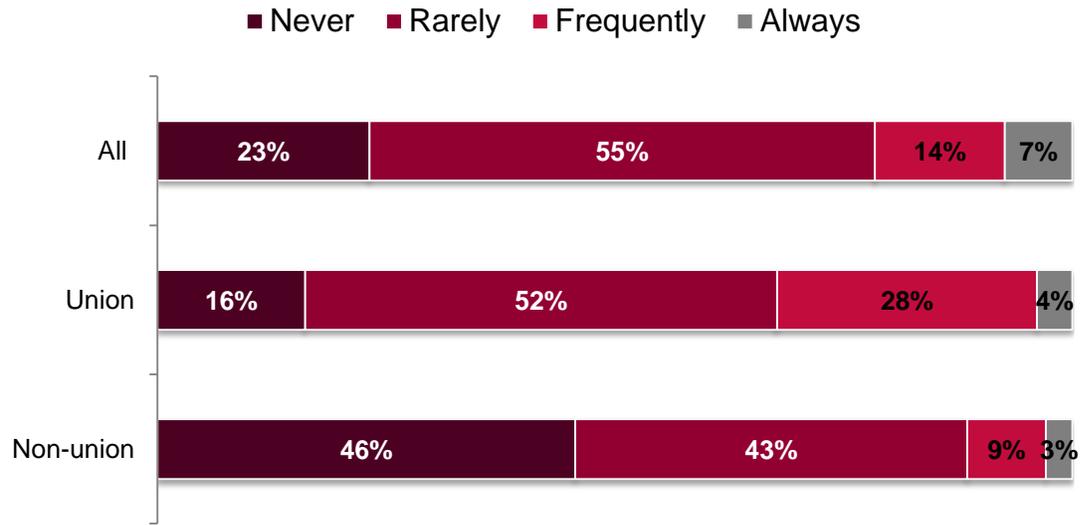


Source: 2013 IWPR Tradeswomen Survey

## Isolation

Working in the construction trades continues to be a lonely business for women despite good practice guidelines passed in 1978 that required assigning at least two women to a worksite where possible. Among all respondents, only a small minority report that there is always another woman on the job with them; almost a quarter of all respondents, and a full 46 percent of non-union respondents, report that there never is another woman (Figure 3.4). A third year apprentice interviewed for the project clarified, “If you mean another electrician, there never is another woman. I am joined by other women when the cleaning brigades arrive.”

**Figure 3.4. How Often is There Another Women on the Job With You?**

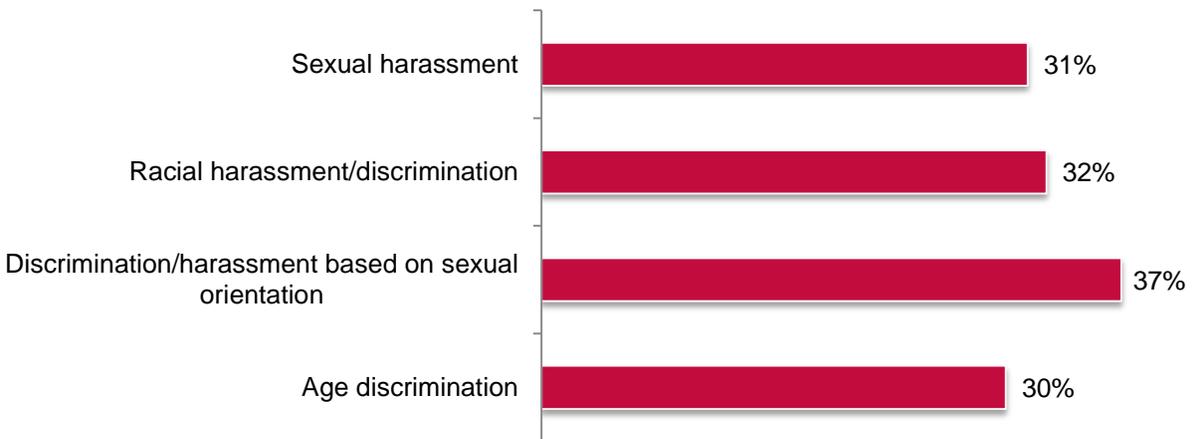


Source: 2013 IWPR Tradeswomen Survey

## Sexual Harassment and Other Forms of Discrimination

While it is important to note that a majority of women report that they rarely or never experience sexual harassment, for a substantial minority of women (31 percent) sexual harassment is a constant or frequent experience at work, and 32 percent of respondents of color report frequent racial harassment and discrimination. The proportion of respondents identifying as LGBT, who report frequent discrimination or harassment based on their sexual orientation is even higher, at 37 percent. Formally, the Age Discrimination in Employment Act (ADEA) of 1967 provides non-discrimination protection for anyone aged 40 years and older, yet respondents ages 45 years and older frequently experienced age-based discrimination (Figure 3.5).

**Figure 3.5. Experience of Harassment or Discrimination on the Job (Percent of Respondents\* answering ‘Frequently’ or ‘Always’)**



Notes: For ‘sexual harassment’ responses for all US construction trades respondents; for racial harassment, only respondents identifying as a person of color; for sexual orientation, only respondents identifying as LGBT; for age discrimination, only respondents aged 45 years and older.

Source: 2013 IWPR Tradeswomen Survey

Examples of discrimination given by respondents in open-ended questions included being demoted or not promoted because men didn’t want to work for a woman, being assigned the hardest work, being last to get work and first to be laid off, being hit with cranes, and having tires flattened. Sexual harassment ranged from inappropriate touching and unwanted and derogatory comments to intimidation in isolated areas. One woman feared for her life.

## **Tackling Harassment and Discrimination**

Understanding how men and women respond to harassment and discrimination is an important part of finding solutions. The women who participated in the survey reported different methods for coping with unequal treatment. Foremen, co-workers, and union representatives were identified by some as the problem and by others as part of the solution. Many respondents report that typically they are able to sort out harassment themselves, and often with the help of male co-workers. One respondent explains: “I have a solidarity based method for coping with harassment that has never gotten a supervisor involved. My union brothers have helped me without resorting to legal reporting.” Another one explains she “Informed other electricians. They responded valiantly.” A third found that “There is usually at least one jerk per job, but the majority of my coworkers are decent humans.”

Yet other respondents have experienced harassment and discrimination beyond what they thought they could or should address themselves, and made complaints to the U.S. Equal Employment Opportunities Commission (EEOC), or the Office for Federal Contract Compliance (OFCCP). Twenty eight respondents, or more than one in ten of all respondents, reported having made a claim to the EEOC in response to harassment and discrimination, which is a surprisingly high

number. Fewer than one in five (18 percent), however, reported that they felt the discrimination had been effectively addressed. Five respondents reported making a charge to the OFCCP.

The EEOC enforces Title VII of the Civil Rights Act of 1964, which provides protection against discrimination in hiring, training, pay, promotions, and all other aspects of the employment relationship; the EEOC also enforces the ADEA.<sup>9</sup> In one recent case the EEOC charged a New York construction contractor installing sheet metal products with finding pretext to fire every single female sheet metal worker referred to the company through the agreed union referral process. The EEOC press release related to the case states that “too often the construction industry is plagued by unrepentant discrimination” and announces its intent to challenge such “bastions of discrimination in America” (EEOC 2013).

Construction industry employers working on federally funded contracts are subject to affirmative action rules under Executive Order 11246, which is enforced by the OFCCP. A recently settled case shows the scope of OFCCP compliance reviews to address working conditions beyond hiring. The OFCCP settled a case with L&M Construction, a firm providing environmental remediation and restoration services, involving allegations of sexual harassment, retaliation against workers who complained about the harassment, and interference with federal investigations. In response to physical and verbal sexual harassment, the company retaliated by firing workers; and then fired additional workers before a pending OFCCP compliance review so they would not be interviewed by OFCCP officials. All of the 14 fired workers, seven women and seven men, were Hispanic (U.S. Department of Labor 2013).

Altogether 25.5 percent of construction trades respondents answered that they worked for a federal contractor in 2012 (Appendix B Table A7). Given the high share of respondents working for union contractors, it is likely that this presents a considerable under-estimate of employers subject to OFCCP rules. Union contracts tend to be more common with larger contractors in sectors of the construction industry which are more likely to receive federal contracts than other sectors of the industry, such as residential construction. An employer receiving a federal contract is subject to affirmative action targets for all of its workforce, not only any workers directly engaged in fulfilling the federal contract, and the rule also applies to subcontractors. Yet finding out whether a contractor or a building site is funded federally can be difficult. Unlike wages and hours regulations or minimum wage rules, where employers must display minimum standards in a place accessible to its workforce, federal contractors do not have to display information alerting workers to the fact that the employer is federally funded.

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<sup>9</sup> Title VII of the Civil Rights Act applies to employers with at least 15 employees; the ADEA applies to employers with at least 20 employees. Individuals who believe they have been subject of discriminatory practices have to lodge a complaint of discrimination with the EEOC; the EEOC then investigates the claim and tries to mediate between the parties. If mediation fails, the EEOC issues a Notice of Right to Sue Notice (without prejudice) which gives the individual 90 days to lodge a claim against the employer in a federal court. In rare cases (around 300 out of approximately 100,000 complaints received annually) the EEOC decided to charge an employer directly with discrimination.

## Fear of Retaliation

While many respondents report taking action to address discrimination, a considerable number report not to have done anything about incidents of harassment or discrimination. They put up with the harassment because they feared they would be negatively labeled (14 percent) or would jeopardize their chances of being hired in the future (11 percent) if they challenged the discriminatory actions; two percent reported to have left their jobs as a result of harassment. As one respondent explains, “It doesn't pay to report certain things. The Union says they stand behind you and your job, then there is reality. It's all about numbers for them. If you complain you will be labeled and maybe laid off as now you are a high risk of a lawsuit.”

**As one respondent explains, “It doesn't pay to report certain things. The Union says they stand behind you and your job, then there is reality. It's all about numbers for them. If you complain you will be labeled and maybe laid off as now you are a high risk of a lawsuit.”**

## Summary

The survey presents a mixed picture for women working in construction. The recession is clearly relevant, with unemployment still being high among respondents, and only a minority being able to point to a full year of work during 2012. Career counseling in schools and workforce development has failed to help integrate these jobs. A substantial number of women are working in their trades and making good wages, and, on the whole, report that while equality may still be elusive, in general they are treated equally with men at work. Yet, the fact that more than three of ten respondents report high levels of sexual and other harassment and do not feel they are equally respected on the job shows the uphill battle many women face simply for the right to work in their trade and earn a good wage. Promotion opportunities remain limited and unequal for many tradeswomen. Finally, it is important to remember that the survey only captures the women who stuck it out in construction. It does not capture the views of the many women who may have left in search for a more welcoming working environment.

## Chapter 4. Tradeswomen's Perspective on Green Construction

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This chapter examines women's views of green construction. It begins with a review of attitudes about the potential of green jobs for women's careers in the trades, examines the extent of green work done by women, and then looks at green training and its impact on employment among respondents. Half of the respondents reported taking some form of green training, but far fewer were actually doing green work. The women offer rich descriptions of their attitudes and experiences in the open-ended questions.

### Attitudes About Green Jobs

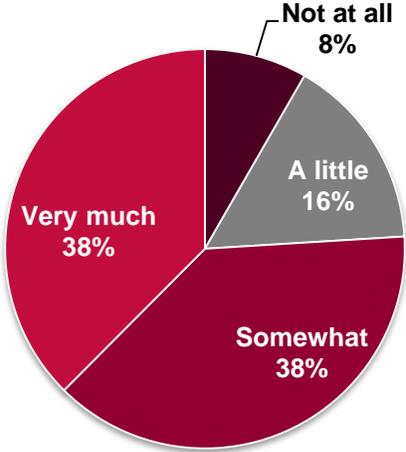
"Green is where all of the trades are headed right now, everything is going green, if you know something about it then you have better chance of staying employed."

"I think that in the near future [green jobs] will become increasingly predominant but a lot of places just aren't there yet."

"Green jobs are very limited in relation to the overall work picture. It would be very difficult to have a lifetime career in ""green"" work and ignore all the other work opportunities."

The three quotes above illustrate the of respondents' perceptions of the opportunities that will be provided by green jobs. The majority of tradeswomen are positive about the prospects offered to women by the green economy, but there is also a significant undercurrent of skepticism or uncertainty about the promise of green jobs. Thirty eight percent of respondents answered 'very much' to the question: *'Do you think that green jobs offer promising careers to women,'* and another 38 percent answered 'somewhat' to the same question (Figure 4.1).

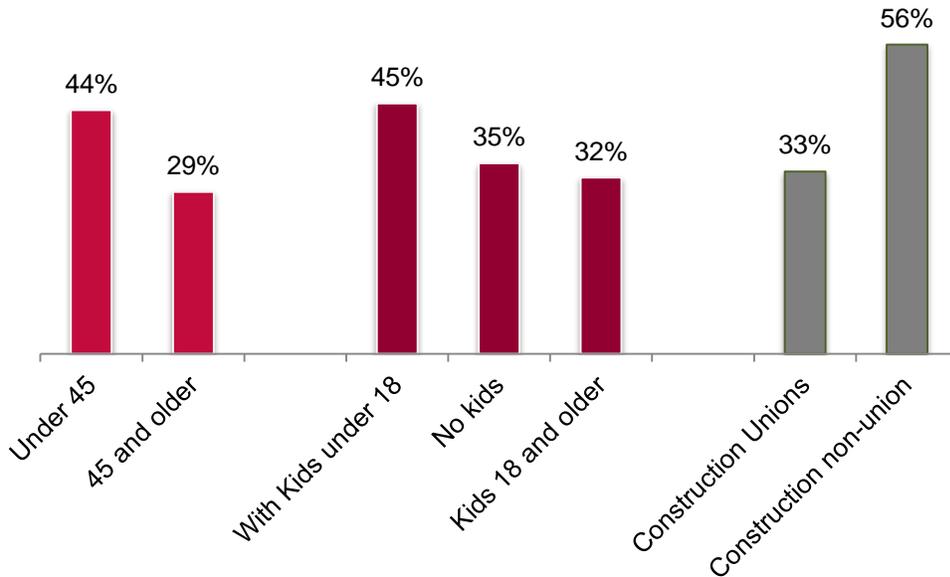
**Figure 4.1. Do You Think That Green Jobs Offer Promising Career Opportunities for Women in the Trades?**



Note: Percentage distribution for those who answered the question (valid percent).  
Source: 2013 IWPR Tradeswomen Survey

Younger women (under 45 years of age) are more likely than women aged 45 years and older to view green job prospects for women very positively (44 percent of younger and 29 percent of older women answered ‘very much’), and, similarly, women with children under the age of 18 tend to be more positive than women with older children or without children – 45 percent of women with children under 18, compared to 35 percent of women without children, and 32 percent of women with older children answered ‘very much’ – but regardless of age and parental status, positive views outweigh less positive ones (Figure 4.2). Across age and parental status, however, there is also a substantial minority of respondents who view green jobs prospects more guardedly (data not shown).

**Figure 4.2. Construction Respondents Answering “Very Much” to “Do You Think That Green Jobs Offer Promising Career Opportunities for Women in the Trades?”**



Note: Percentage distribution for those who answered the question (valid percent).

Source: 2013 IWPR Tradeswomen Survey

Non-union respondents are significantly more likely than union respondents to feel positively about green job prospects for women in the construction trades.<sup>10</sup> Among non-union construction tradeswomen, 56 percent answered ‘very much’ to the question on whether green jobs offer promising career prospects, and only 13 percent answered ‘a little,’ and none answered ‘not at all’. Even though positive perceptions of the prospects offered by green jobs still outweighed the less positive ones, union members are more evenly divided between positive and less positive responses, with a third of union women (33 percent) replying ‘very much’ and more than a quarter replying ‘not at all’ (9 percent) or ‘a little’ (17 percent; Appendix B Table 5).

The explanations offered by tradeswomen for their positive, or less positive, assessment of green jobs prospects for women provide interesting insights into different currents of thought. Some women feel there is something specific about ‘green’, or green-focused organizations, that leads to a more open environment for women compared to other construction jobs:

“Because nonprofits are involved in developing many green jobs opportunities, those organizations are often more progressive and interested in actually reaching out and engaging women and people of color. In my industry, for example, most building materials reuse centers are nonprofits by necessity (the tax deduction is a big reason why construction companies are motivated to donate their renovation leftovers and gently-used building materials).”

<sup>10</sup> Significant at the .01 level

“Non-traditional construction materials use usually involve people that are more inclusive-hence, more opportunities. Also, new methods mean women can move in on the ground floor of these new ideas and run with them.”

“The cutting edge of green and natural building has a higher proportion of women involved which sets a precedent for other women to follow. Green and natural building is also a Trojan Horse for shifting the dominant paradigm.”

“... seems like those looking to build green are forward-thinking in general and therefore very open to employing women even in non-traditional fields.”

“Green jobs are equal opportunity situations where it seems skills and knowledge will promote faster than gender.”

Other women are more skeptical about the special nature of green jobs and their potential to open doors to women in construction. These respondents stress that women face the same discrimination in green as in other jobs, and that women are unlikely to prosper in green jobs unless discrimination in construction overall is tackled, for example:

“We won't be offered the jobs.”

“I think that men are still threatened by women so I don't think that green jobs will promise any more women in any trades! It should not be green jobs that will offer more promising career opportunities; we should be treated equal!”

“Until we are not discriminated against it [green jobs] will not help us.”

“Green training is only a part of it. It is still a trade, and many women may find the challenges and the nature of the work, not to mention the nature of your co-workers, more than they want to deal with.”

“I don't quite understand why you feel women would have more of a chance of making a difference on a green job. When a lot of contracts can't seem to recognize women in the good faith contracts now through the Office of Federal Contract Compliance.”

Access or no access, the lack of green jobs and their low pay, particularly in relation to earnings in conventional unionized construction jobs, are prominent themes among those more skeptical of green jobs as a viable or desirable option for women:

“I have several friends who took the residential weatherization program, but left the work because the wages were so unbelievably low. In NH, the workers working for the state CAP doing residential weatherization were paid so badly that they qualified for fuel assistance from the CAP. Insanity.”

“Union jobs are the best jobs. Green jobs are lower paid jobs, created to sound like good deeds.”

“Maybe if you plan on being a company owner. Otherwise they seem to be low paying jobs, i.e. home weatherization. Any union company that does green work is usually small and hard for a women to get on.”

“I think green jobs are still lower wage than traditional construction jobs.”

Related to this more cautious view are perceptions of green training as a dead end for women. Women with these responses stress that green training is only likely to help women advance as part of comprehensive training and education in a trade:

“In our area green jobs mean insulation. That is one of the crappiest jobs available and rarely leads to the kind of training required to become a skilled carpenter. For a serious shot at construction work a person needs a serious shot at the wider opportunities in the industry. "Green jobs" doesn't put women in the mainstream.”

“Green jobs are very limited in relation to the overall work picture. It would be very difficult to have a lifetime career in ""green"" work and ignore all the other work opportunities.”

On the whole, slightly more skeptical views predominate among women who chose to give their open-ended assessments of the green jobs potential for women; interestingly, skeptical comments also come from respondents who assessed the general green career potential as positive for women. Respondents who were less positive about green prospects for women were also considerably more likely to have provided an additional explanation of their assessment. The positive overall assessments of the green economy, perhaps, reflect a belief about what should, or will be, in the future: the focus is on the *potential* of green construction, beyond the reality of the industry during the last few recession years. Women who are more negative in their comments, on the other hand, appear more likely to have been prompted by specific experiences.

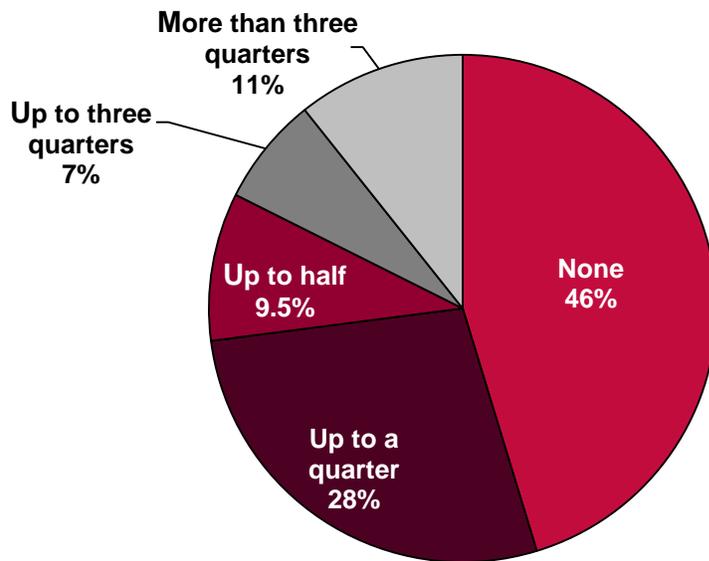
## Experience with Green Jobs

More than half of the construction trades respondents<sup>11</sup> reported having done green work in 2012. Forty five percent of respondents answered that they would describe none of their work in 2012 as green, another 27 percent said that at most a quarter of their work could be described as green, and fewer than 20 percent of respondent reported that at least half of their work was green in some way (Figure 4.3). Non-union respondents are much more likely than union respondents to have had at least some green work in 2012 (79 compared to 50 percent; Appendix B Table5).

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<sup>11</sup>Data only for respondents who reported some work and earnings in their trade for 2012.

**Figure 4.3. The Share of Green Work in 2012 for Construction Trades Respondents**



Notes: Based on respondents who reported some work in their trades during 2012; categories defined as exclusive.  
Source: 2013 IWPR Tradeswomen Survey

## Tradeswomen and Green Training

The respondents are almost evenly divided between those who took some form of green training and those who did not: 51 percent of respondents replied ‘yes’ to the question, “*Have you taken any classes/courses/certification programs/workshops specific to green construction (for example, on energy efficiency, water run-off, solar energy, energy auditing, wind turbines, safe removal of hazardous materials, etc.)?*” As one would expect, younger respondents are significantly more likely to have taken green training than women aged 45 and older (53 compared with 37 percent). Union respondents are slightly less likely than non-union respondents to have taken green training (49 compared with 54.5 percent<sup>12</sup> Appendix B Table 6). For many respondents, getting green instruction is not limited to one program; close to half of construction respondents with any green training reported having taken more than one green course. For a considerable majority (61 percent) the most recent green training activity took place after 2010; this is likely a reflection of the emphasis on green training in the American Reconstruction and Recovery Act.<sup>13</sup>

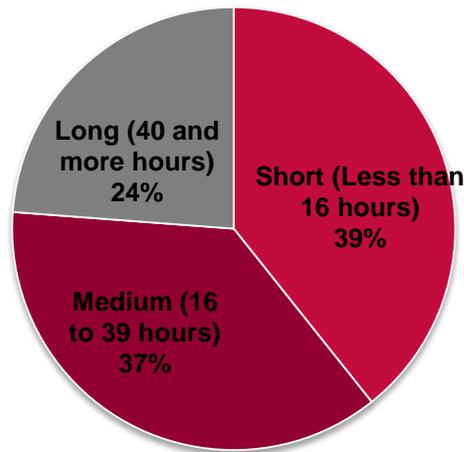
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<sup>12</sup> These differences are not statistically significant.

<sup>13</sup> It is interesting to note that among the twenty Canadian respondents to the survey (who are excluded from the analysis in this report) a much smaller number had taken green training (17 percent).

Training programs cover a considerable range of topics, from wind turbines and hazardous materials to energy audits, photo voltaics, solar panel installation, water runoff, and LED lighting. Training programs varied in length, from very short programs lasting a couple of hours, to courses stretching over several months. Short training programs predominated, with only 24 percent of those who reported on the length of the training having taken a program lasting more than 40 hours (Figure 4.4). Fewer than half of the respondents (46 percent) reported having received an industry recognized certificate for their most recent green training activity.

**Figure 4.4: Length of the Most Recent Green Training**



Notes: Construction trades respondents who reported some green training.  
Source: 2013 IWPR Tradeswomen Survey

A minority of respondents, (N=20) hold major green building certificates, such as a Leadership in Energy and Environmental Design (LEED) Green Associates certificate, LEED accreditation, Building Performance Institute (BPI) certification, or an energy auditing certificate (Table 4.1). Several of these certificates require a considerable time investment, and while it is not possible from the survey to assess whether women were unemployed at the time of seeking these certificates, unemployment is higher among these respondents than for all construction workers (30 compared with 21.5 percent).

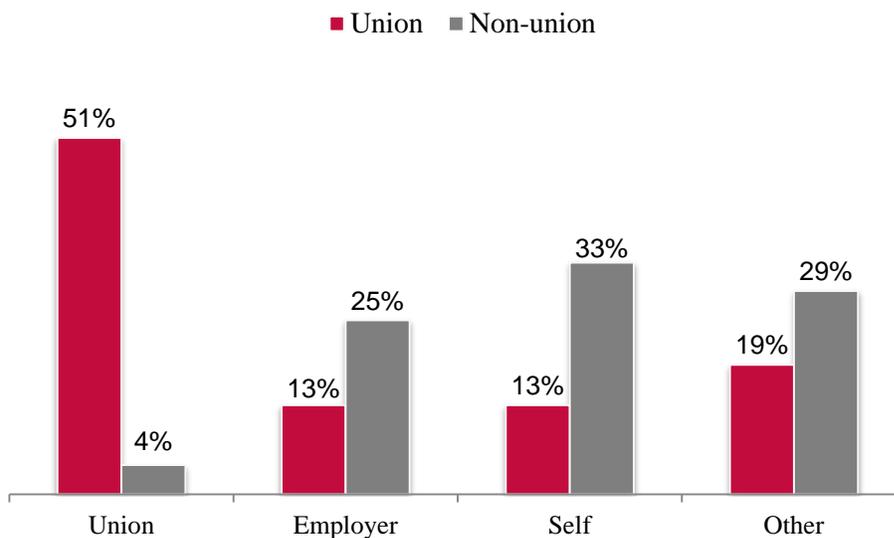
**Table 4.1. Do you hold any of the following green building certificates?**

	Number of respondents	Percent
LEED Accreditation	8	3.7
Green Associate Certificate	9	4.1
BPI Certificate	5	2.3
Energy Auditing Certificate	6	2.7
Other	9	4.1

Source: 2013 IWPR Tradeswomen Survey

The majority of those who reported training did not have to pay for the training out of their own pockets; training was paid for either by their union or the employer. The survey shows the importance of union membership for access to free green training. A third of non-union members paid for their training themselves, compared to only one in eight union members (Figure 4.5).

**Figure 4.5. Who Paid for Your Most Recent Green Training?**

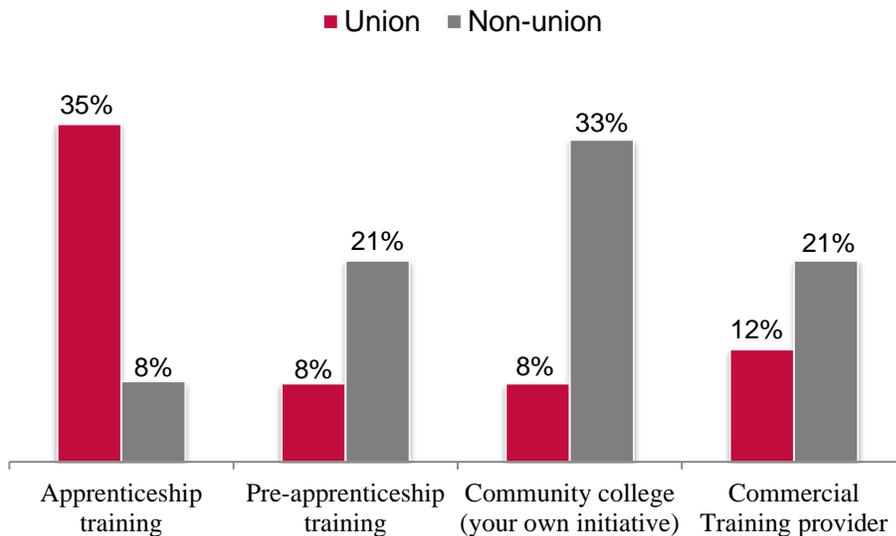


Notes: Construction trades respondents who took green training; see Appendix Table A5 for counts.

Source: 2013 IWPR Tradeswomen Survey

Non-union respondents were also much more likely than union respondents with green training to have taken green training on their own initiative at a community college (33 compared to 8 percent) or through a commercial training provider (21 compared with 12 percent). Non-union respondents are also proportionately much more likely than union respondents to have received training through a pre-apprenticeship program (21 compared with 8 percent). Apprenticeship training is an important source of training for union women (35percent of union compared with 8 percent of non-union respondents; Figure 4.6)

**Figure 4.6. Have You Taken Any Green Training as Part of the Following?**



Notes: Results shown for respondents who took green training; see Appendix Table 6.  
Source: 2013 IWPR Tradeswomen Survey

Having training offered by the union or as part of the apprenticeship program was an important source of green training for many women, but personal values and the continuous learning in one’s trade were even more important. One respondent explained, “It was a prescribed part of my pre-apprenticeship class. However, if I had been given a choice I would have chosen to take the class to improve my knowledge and skills, and because of my personal values.” Another survey participant added that although taking the course was a required part of her training, she would have taken it anyway, because she was interested in the skills that were taught, but without the training program, she would not have known where to find relevant courses.

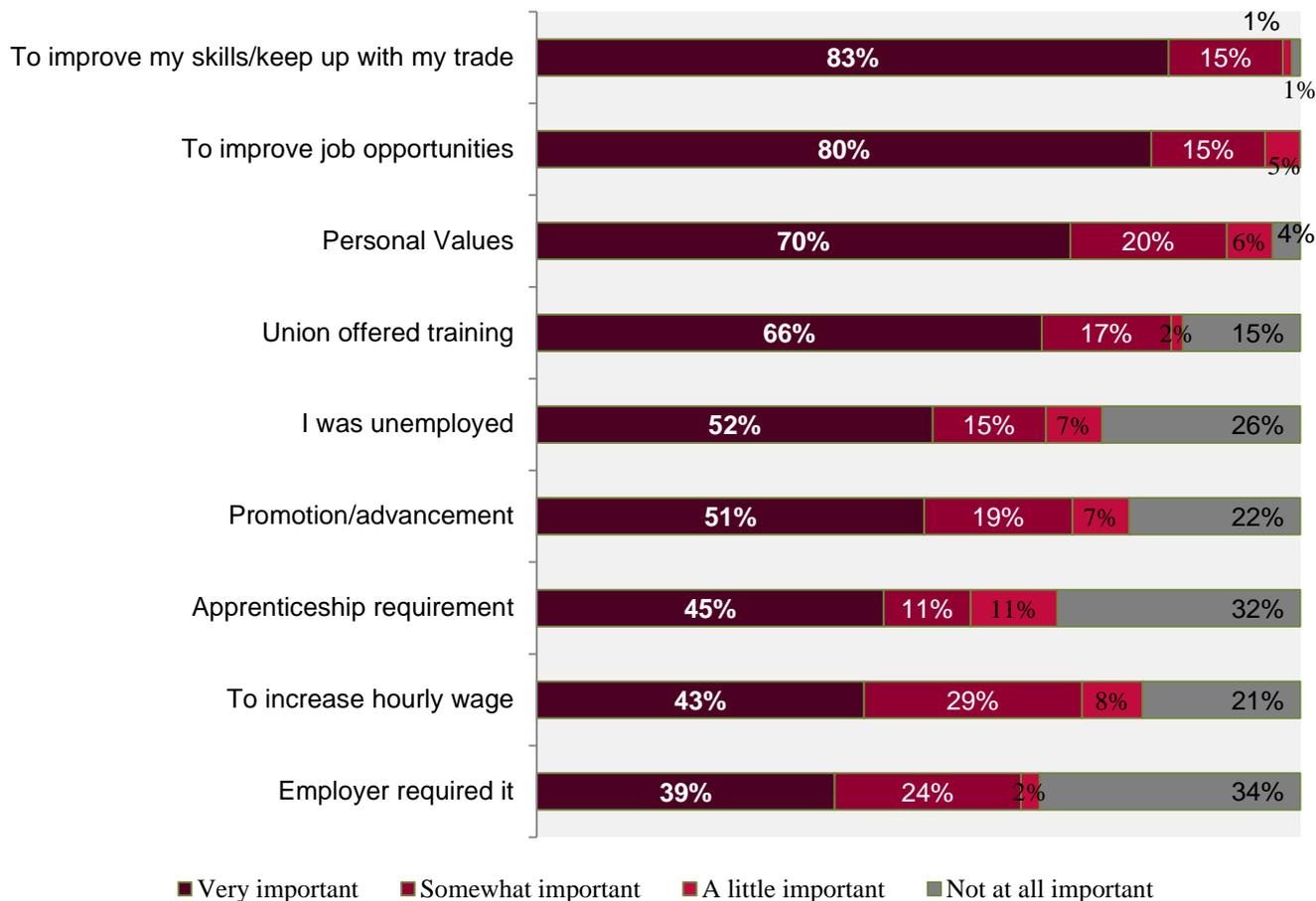
## Reasons for Pursuing Green Training

Respondents were asked to rate their reasons for taking green training among a number of options and identify for each whether the factor was ‘not important’, ‘a little important’, ‘somewhat important’ or ‘very important’ in their decision to take green training. The most important motivation, according to the respondents, was ‘to improve my skills/keep up with my trade’ (83 percent answered that this was very important) or ‘to improve job opportunities’ (80 percent, Figure 4.7). Almost as important, however, were respondents’ personal values for making the choice to engage in green training, with 70 percent reporting this was ‘very important’, and another 20 percent reporting ‘somewhat important.’

Over half of respondents (52 percent) mentioned that being unemployed was an important reason for their pursuit of green training, indicating the weak state of the labor market at the time. Respondents to this question were least likely to rate ‘Employer required it’ as a motivation for

seeking green training (39 percent said this was very important, only slightly more than those who said it was not important at all; 34 percent; Figure 4.7).

**Figure 4.7. How Important were the Factors Below in your Decision to get Green Training/Instruction?**



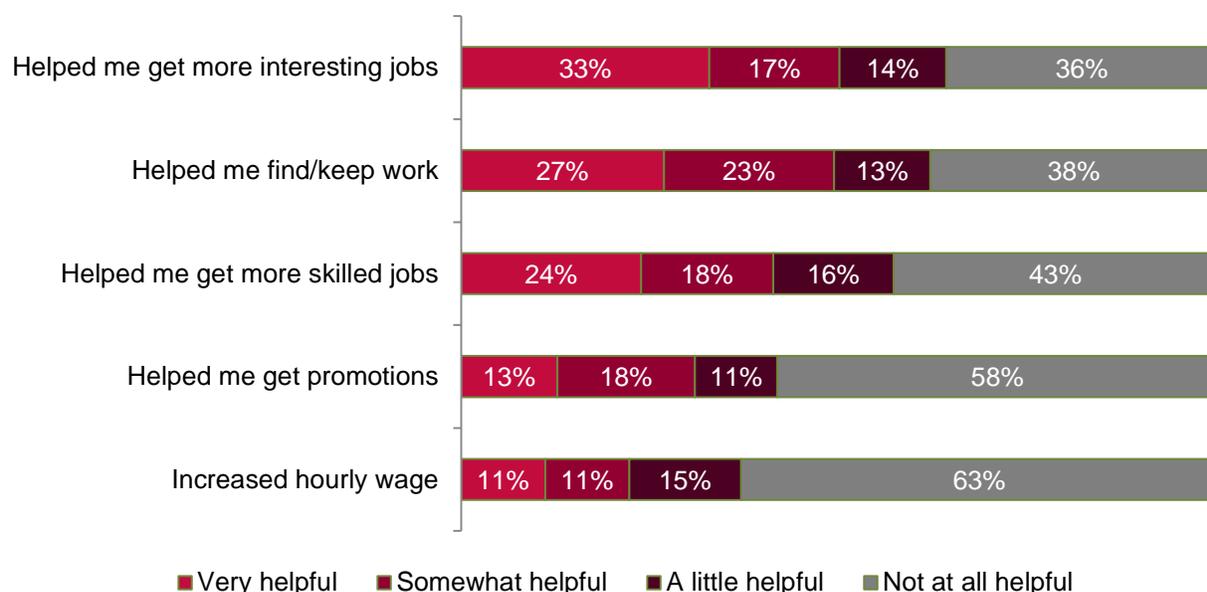
Note: U.S. construction trades respondents only; results are in valid percent  
 Source: 2013 IWPR Tradeswomen Survey

Non-union women were much more likely than union women to say that increasing their hourly wage was a very important motivation for taking green training (60 compared to 21 percent, data not shown elsewhere in this report). This makes sense since wages are likely to be higher, and the wage scale less flexible in union jobs, because of collective bargaining agreements. Promotion was also more important to nonunion women (53 percent) than union women (33 percent; data not shown elsewhere). This might also reflect the formal apprenticeship and seniority regulations of the union worksites.

## Impact of Green Training

Respondents' assessment of the impact of the green training on their job prospects were comparatively more muted. Half of the respondents who had taken green training (50 percent) said that green training had helped them get more interesting work, or that the training helped them to find or keep work (Figure 4.8). Respondents who said that unemployment was an important reason for getting green training were not significantly more likely than other to report that the training helped them find work. A not unsubstantial share of women, three in ten, said that the training was very or somewhat helpful for them in achieving a promotion.

**Figure 4.8: How Helpful was your Green Training/Instruction for the Following?**



Note: Results show the percentage distribution for those who answered the question (valid percent).  
Source: 2013 IWPR Tradeswomen Survey

Only a small number of respondents reported that green training helped them increase their earnings (22 percent said it was somewhat or very helpful in this regard; Figure 4.8). Given that many women took the training as part of their job, and that training covers a great range of employment levels, this response is not surprising. Both trainees and project managers of pre-apprenticeship programs surveyed for this study reported that on the whole demand for green-specific qualifications had not yet made it into employers' recruitment criteria for lower level trade positions. Employers instead appear to interpret such certificates as an indication of a general willingness to learn and apply oneself. For some women, the skeptical assessment of green jobs reflects their personal experience. One woman explained, "I have had a very difficult time trying to get into a steady job in green building even though I have put in a great deal of my own time, money, energy, effort, thought, initiative etc."

## Those Without Green Training

For the half of the construction trade respondents who had not taken green training, this typically was not a choice, but circumstance. A plurality (40 percent) responded that they would like to take green training, but for various reasons have not been able to do so (Figure 4.9). Among the reasons given, difficulties in physically getting to training were prominent (21 percent) also in addition to lack of available training, as well as lack of information about who provides training, and what training may be relevant to one's career. A respondent elaborated, "I would be interested in these classes if I knew where they are available and if I had the money." Another respondent, from Mississippi, explained: "It's just not offered down here."

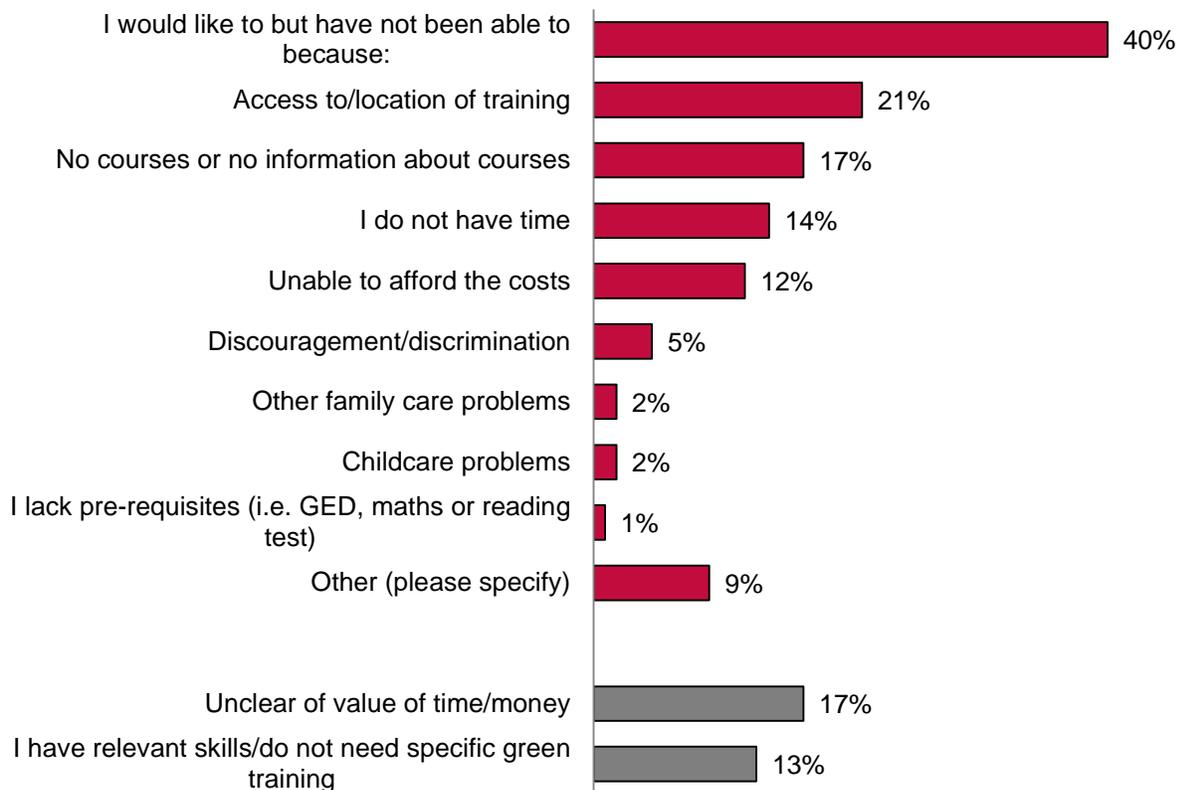
Lack of basic information about green training— ranging from where to get it, what qualifications may be appropriate, and what 'green' may mean in individual trades— was also a strong theme of focus groups IWPR convened at the "Women Building California and the Nation" conference in 2013. While the stated purpose of the session was to discuss women's experience with green qualifications, the majority of attendees at the session came because they wanted to find out where to get such qualifications, or indeed, what 'green' meant in their trade.

The response of another tradeswoman highlights broader issues in terms of the training landscape in green construction. She said, "One green training program I was interested in was only available within a specific ZIP code; another was available only to low income residents." Publicly funded green construction programs, as part of the American Recovery and Reinvestment Act, were typically targeted at particularly disadvantaged individuals and were exclusive to people living in certain areas and/or falling under special populations identified in the Workforce Investment Act.

Finally, while this is not the predominant experience of the respondents, 5 percent of women report discrimination as the major reason for not attending green training (Figure 4.9).

While for the majority of women who did not take green training this was not by choice, a significant minority of women did not actively pursuing green training. Thirteen percent of those without green training said they did not pursue green training because they had 'all relevant skills and did not need green specific training,' and 17 percent said they were 'unclear of the value of the time/money needed to do green training (Figure 4.9). One respondent elaborated saying, "I only do things to 'up' me in my trade. So if a company is not requiring it, I won't spend my time doing it." Another one explained that her union "does not offer green classes. If they engineer it, we can install it."

**Figure 4.9. Reasons for not Having Taken Green Training**



Notes: In percent of those who had not taken green training (n=109); percentages add up to more than 100 because multiple responses were possible.

Source: 2013 IWPR Tradeswomen Survey.

## Summary

The 2013 IWPR Tradeswomen survey suggests that participation in green training and instruction in the construction trades is fairly common, but that green construction work itself is not yet common for most women. Half of the tradeswomen had taken some form of green training and younger women and non-union women were generally more optimistic about the opportunities green jobs provide. The majority saw green training and work as part of their construction trade and not as a separate route into the trades. Those who received training do not report a particularly strong impact on their employment prospects or earnings. While for many union respondents, green instruction was part and parcel of their union membership, non-union women have to be more proactive in pursuing such training, and to finance such training themselves.

## Chapter 5. Unblocking the Construction Trades for Women: Summary and Conclusions

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The 2013 IWPR Tradeswomen survey provides evidence of women's success working in blue-collar skilled occupations traditionally done by men. Similar to earlier research, many who participated in this survey were successful at earning a good living by doing skilled construction work. Yet, unemployment among the respondents was high, and a significant minority of respondents reported isolation, inequality, discrimination, and harassment in the trades. This is cause for concern, especially considering that the survey only captures responses from women who were still working construction, and does not reflect the experiences of women who may have left or never entered the trades in response to discrimination, harassment, or lack of opportunities.

The survey of tradeswomen finds a high take-up of green training programs, with half of all respondents having taken green instruction, and mostly during the last few years. Access to green, and other, training among survey respondents was much more common among union members, and Unions often paid for the training, or offered it as part of on-going apprenticeship programs. The vast majority of construction workers, however, do not belong to a union. The one in five non-union respondents in this survey provide some insight into that world. They were less likely to have taken green training, although not less likely to respond that they would like such training, and when they did do such training, they paid for it themselves. Without union contracts, improving wages and gaining access to employment, rather than maintaining skills more generally, was a primary motivation. Green training was an investment in their opportunity to find and stay employed.

Survey respondents perceived complementarities between organizations focused on green/alternative construction and greater openness toward nontraditional workers. Interest in green training was high among respondents working as independent contractors, and setting up their own business was a commonly stated goal among women interviewed for the research. This is an area that may warrant further research, as this report did not address pathways into business ownership, or whether green construction provides more accessible pathways to business ownership than conventional construction.

The survey findings suggest some intergenerational differences in experiences and attitudes toward working in the trades. Younger women were more likely to report equal treatment at work and in training, and they were more likely to be positive about the green economy, both as an expression of their personal values and in their assessment of the green opportunities for women in the trades.

The extent of discriminatory behavior reflected in the survey suggests that women's low share of jobs overall is due, in part, to the adverse work environment rather than a lack of interest from women, and affirmative steps must be taken to speed the pace of progress. The issue of women's underrepresentation in trade and technical occupations has been recognized by federal employment, education, and workforce development policy since the 1970s. Enforcement of civil rights legislation and of federal contract compliance program affirmative action targets was

important for opening up the industry to women in the 1970s and 1980s. Yet, while the door was cracked open, the job of opening the industry to women was left unfinished.

During the 1980s and the first half of the 1990s, considerable funding was available for technical assistance and programs designed to achieve greater gender equity in nontraditional occupations, and progress was made in higher education, with programs aimed at increasing the numbers of women in science, technology, engineering, and math. Funding for improving gender equity in the construction industry, however, was significantly curtailed in the early 1990s. The limited programs that continued, such as those funded through WANTO<sup>14</sup> provide potential for learning and building on best practices for enforcement as well as outreach, recruitment, and retention.

The projected job openings in the construction industry offer an opportunity to renew efforts to improve women's access to nontraditional construction jobs, which poses great promise for improving women's economic security. The survey results for construction jobs in general, and green jobs in particular, suggest policy areas in need of revision and enforcement in four areas:

### **Career Advice and Outreach:**

Schools, career counseling services, and job centers need to inform women about the potential of careers in nontraditional fields such as construction. They need to be held accountable for closing the gap in access to information.

### **Funding for Training Programs and Technical Assistance:**

Programs providing apprenticeship readiness training and outreach on nontraditional occupations for women have been demonstrated to help women enter construction trades (Westat 2003; Mastracci 2004). Federal funding for such programs has not increased since 1992, however, and is currently threatened.

The U.S. Department of Labor and state workforce development agencies should build on successful models of pre-apprenticeship and community-based training programs, and provide more tools and technical assistance to employers and unions to improve the recruitment and retention of women in construction. Wider Opportunities for Women (2013) offers detailed examples of gender-focused instruction methods and program strategies for increasing women's participation. Funding is also needed for retention services to help women and minority apprentices complete their apprenticeships (Helmer and Altstadt 2013); Oregon provides an example of the strategic use of highway construction funds to support a diverse construction workforce (Hegewisch et al. 2014).

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<sup>14</sup> In 2014 three organizations, Chicago Women in the Trades, Nontraditional Employment for Women (NEW, NY) and Oregon Tradeswomen Inc. received grants under the WANTO programs to develop "Regional Multi-State Technical Assistance Resource Centers that will support women entering into nontraditional occupations." (US. Department of Labor press release at <<http://www.dol.gov/opa/media/press/eta/ETA20141177.htm>>.

## **Updating and Enforcing Regulations:**

Increased monitoring, investigation, and education by the Equal Employment Opportunity Commission, the Office for Federal Contract Compliance Programs, and state enforcement agencies are needed to end discrimination by contractors and unions. Agencies need to take a more proactive role in identifying and pursuing violators, because victims of discrimination often hesitate to file complaints because they fear retaliation, are not aware of their employers' federal contractor status and the rules that govern that status, and the lengthy nature of the complaints process. The U.S. Department of Labor Mega Construction Project initiative begins to address these problems (The White House, Office of the Press Secretary 2014). Affirmative action rules for the construction industry, which have not been updated since 1978, need to be revised to reflect the 21<sup>st</sup> century labor market.

## **More research on Women in the construction.**

Larger scale research is warranted to further explore the range of women's experiences in nontraditional training and jobs in the skilled trades. Such research could provide more information on the differences in women's experiences between union and non-union sectors, in different segments of the construction industry, and on the construction training and work experiences for women of different racial and ethnic backgrounds. Longitudinal studies, following women through apprenticeships, journey level work, and decisions to stay in or leave the trades are also urgently needed. Such longitudinal analysis, or at least follow-up with training participants and employees, would deepen understanding of the factors associated with women's persistence in the skilled trades, and the factors that make some leave. Finally, more evaluations are needed to document and disseminate effective employer and workplace practices for promoting women's success and retention in jobs.

# Appendix A. 2013 IWPR Tradeswomen Survey Questionnaire

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**Please fill in our survey on women and green jobs training.**

After a slowdown, green jobs and investments in energy efficiency are back on the table. By ‘green’ we mean any work related to energy efficiency, weatherization, alternative energy sources such as wind and solar, public transportation, pollution control, environmentally aware construction, recycling and safe removal of hazardous materials.

With this survey we are hoping to gather information about two aspects of your experience in the last few years: green jobs training specifically; and getting jobs and working in the trades more generally in the last few years. We are planning to use this information to inform national and statewide debates about policies targeted at giving women fair and equal access to quality jobs in the construction trades. The survey is supported by a grant to the Institute for Women’s Policy Research from the Rockefeller Foundation.

**The survey should take no longer than 15 minutes to complete.**

**Even better: if you have access to a computer/the internet- the survey can also be completed on –line at: <https://www.surveymonkey.com/s/womeningreenjobs>**

All responses will be anonymous and will be treated in strictest confidence.

If you are interested to talk to us in greater depth about your experience and views, we would love to hear from you. You can leave your contact details at the end of the survey, or contact us directly via e-mail at [Hegewisch@iwpr.org](mailto:Hegewisch@iwpr.org).

Thank you for your time!

Ariane Hegewisch and Brigid O’Farrell

**PLEASE RETURN THE SURVEY TO THE BOX MARKED ‘GREEN JOBS SURVEY’ IN THE REGISTRATION AREA. OR LEAVE IT FOR ARIANE HEGEWISCH AT THE HOTEL RECEPTION**



**6. Have you taken any classes/courses/ certification programs/ workshops specific to green construction (for example, on energy efficiency, water run-off, solar energy, energy auditing, wind turbines, safe removal of hazardous materials, etc.)?**

Yes (**PLEASE GO TO QUESTION 7 ON PAGE 4.**)

No (*Go to question 6a.*)

**6a. If no, please indicate why. (Please check all applicable.)**

I have relevant skills, do not need specific green training/instruction

Unclear of value of time/money needed to do green training/instruction

I would like to but have not been able to because:

Unable to afford cost

Childcare problems

Do not have time

Other family care problems

Access to/location of training/instruction

Discouraged/discrimination

I lack pre-requisites (i.e., HS diploma, math or reading test, union membership, etc.)

Other (please specify): \_\_\_\_\_

**6b. Do you think that green jobs offer promising career opportunities for women in the trades?**

Not at all     A little     Somewhat     Very much

**Please feel free to explain your answer:**

**➔ PLEASE NOW GO TO QUESTION 23 IN SECTION C. (p. 7)**





**20. How helpful was your green training/instruction for the following?**

	Not at all Helpful	A Little Helpful	Somewhat Helpful	Very Helpful	NOT APPLICABLE
Helped me find/keep work	<input type="checkbox"/>				
Increased hourly wage	<input type="checkbox"/>				
Helped me get more skilled jobs	<input type="checkbox"/>				
Helped me get more interesting jobs	<input type="checkbox"/>				
Helped me get promotion	<input type="checkbox"/>				
<i>Other reason (please specify):</i>					

**21. In your experience, do women and men have equal access to green training/instruction?**

- Yes, better than other non-green training/instruction
- Yes, same as other non-green training/instruction
- No, worse than other non-green training/instruction
- No, same as other non-green training/instruction

**22. Do you think that green jobs offer promising career opportunities for women in the trades?**

- Not at all
- A little
- Somewhat
- Very much

Please feel free to explain your answer:

**Section C. Work Experience**

**23. Are you currently employed?**

- Yes, I am employed in my trade  No, I am unemployed and looking for work  
 Yes, I am employed but not in my trade  Not working for other reason

**24. How do you usually find your jobs? (Please check all applicable.)**

- Hiring Hall  I have a regular employer  
 On-the-job contacts  Self-employed/own business  
 Other (please specify): \_\_\_\_\_

**25. During 2012, approximately how many weeks/hours were you employed working in your trade?**

- I was unemployed/unable to find work in my trade  
 Up to 12 weeks/less than 480 hours  
 Between 12 and 24 weeks/480 up to 960 hours  
 Between 24 and 36 weeks/ 960 up to 1440 hours  
 Between 36 and 48 weeks/ 1440 up to 1920 hours  
 More than 48 weeks/ 1920 hours or more

**26. What were your gross earnings from trade work for 2012?**

- Less than \$10,000  \$25,001-\$50,000  \$75,001-\$100,000  
 \$10,001-\$25,000  \$50,001-\$75,000  Above \$100,000

**27. During 2012, broadly what percent of your work could be described as green (e.g. energy or water efficiency, build to LEED standard, weatherization, solar or wind energy, safe removal of hazardous materials, etc.)?**

Enter \_\_\_\_\_ %

**28. During 2012, did you work mainly for union contractors, non-union contractors, or as self-employed/own business?**

- All/almost all union contractors  I was unemployed  
 All/almost all non-union contractors  Not relevant  
 All/almost all self-employed/own business  
 Mix of above

**29. During 2012, did you work for a federal contractor (an employer performing work under a federal contract)?**

Yes No Don't know

**30. How often is there another woman on the job with you?**

Always Most of the time Sometimes Never

**31. Do you think you are being treated equally to men in hiring and on the job?**

	Never treated equally	Rarely treated equally	Frequently treated equally	Always treated equally
Hiring/hours of work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Formal training	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Assignments	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Respect	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promotion	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**32. Have you ever personally experienced the following in your trade?**

	Never	Rarely	Frequently	Always
Sexual harassment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Racial harassment/discrimination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Discrimination/harassment based on sexual orientation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Age discrimination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**33. Have you ever responded to harassment or discrimination by doing any of the following?  
(Please check all applicable.)**

- Notified shop steward
- Notified other union representative
- Notified foreman/supervisor
- Notified business agent
- Made complaint to the Office of Federal Contract Compliance Programs (OFCCP)
- Made complaint to the Equal Employment Opportunity Commission (EEOC)
- Did none of the above

**34a. If you decided not to report incidents of harassment/discrimination, please explain why (check all that apply).**

- Sorted it out myself
- Didn't think it would help
- Fear of losing job
- Fear of being negatively labeled by coworkers
- Would jeopardize being hired for future jobs
- Left Job
- Other (please explain): \_\_\_\_\_

**34b. Do you feel the discrimination/harassment was addressed effectively?**

- Yes
- No
- Pending

**34c. Before we turn to a few final personal background questions, please use this space if you would like to expand on your answer to this or any other question.**

**Section E. Demographics**

**35. What is your gender?**

- Female                      Male                      Other

**36. What is your age?**

- Under 25 years      25-34 years      35-44 years      45-54 years      55 and Older

**37. What is your race/ethnicity?**

- White (not Hispanic)   Black (not Hispanic)   Hispanic  
Asian                      Other (please specify): \_\_\_\_\_

**38. What is your state of residence?**

- California  
 Other (please specify): \_\_\_\_\_

**39. What is your highest level of education?**

- Less than high school completion   High School or GED completion      Some college  
Associate's degree                      Bachelor's degree                      More than 4 years college/graduate degree

**40. Are you a veteran of the U.S. Armed Forces?**

- Yes   No

**41. Do you have children?**

- Yes : If Yes How many children? \_\_\_\_\_ Age of youngest child? \_\_\_\_\_  
No

**42. What is your personal status?**

- Married      Divorced                      Domestic partnership/living together      Separated  
Single      Widowed

**43. Are you the head of your household/main wage earner?**

- Yes      No

**44. Do you identify as lesbian, gay, bisexual or transgender?**

- Yes                                      No

**Thank you very much for your participation.**

All responses will be anonymous and will be treated in strictest confidence (and this page will be detached from the questionnaire). However, if you would like to receive a copy with the results of the survey and/or would be interested in speaking with us further, please provide us with your contact details. You can contact us at [Hegewisch@iwpr.org](mailto:Hegewisch@iwpr.org), or call Ariane Hegewisch at 202-785-5100.

- I would like survey results
- I would be happy to be contacted by you

**Contact Information:**

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Address 2: \_\_\_\_\_

City/Town: \_\_\_\_\_

State: \_\_\_\_\_ ZIP: \_\_\_\_\_

Country: \_\_\_\_\_

Email Address: \_\_\_\_\_

Phone Number: \_\_\_\_\_

**THANK YOU FOR YOUR TIME!**

## Appendix B. 2013 IWPR Tradeswomen Survey Tables

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**Table 1. Demographic Characteristics of Construction Trades Respondents**

	US Construction Trades All		Construction Union members		Construction Trades: Non-Union	
	Count	%	Count	%	Count	%
<b>Gender<sup>1</sup></b>						
Female	189	99	154	99.4	35	97.2
Other	2	1	1	0.6	1	2.8
<b>Age<sup>2</sup></b>						
Under 45	94	49.2	75	48.4	19	52.8
45 or older	97	50.7	80	45.7	17	47.2
<b>Race/Ethnicity<sup>3</sup></b>						
White	152	81.3	124	81.5	28	80
Black alone	13	6.9	8	5.2	5	14.2
Hispanic alone	8	4.3	8	5.2	0	0
Asian	1	0.5	1	.06	0	0
Native Amer./Alaskan	5	2.7	4	2.6	1	2.8
Other/more than one	8	4.3	7	4.6	1	2.8
<b>Personal Status<sup>4</sup></b>						
Married	54	28.5	41	26.6	13	36.1
Divorced	43	22.8	39	25.3	4	11.1
Domestic partnership/living together	20	10.6	14	9.1	6	16.7
Separated	8	4.2	7	4.5	1	2.8
Single	62	32.8	51	33.1	11	30.6
Widowed	2	1.1	2	1.3		
<b>Do you Have Children<sup>5</sup></b>						
No	86	45.1	62	40	24	66.7
Yes	105	54.9	93	60	12	33.3
~of which under 18	53	50.5	46	49.4	8	66.6
<b>Main wage-earner<sup>6</sup></b>						
Yes	149	78.9	123	80.4	26	72.2
No	40	21.1	30	19.6	10	27.8
<b>Highest Level of Education<sup>7</sup></b>					36	
High School or GED	22	11.5	20	12.9	2	5.6
Some college	74	38.7	66	42.6	8	22.2
Associate's Degree	41	21.5	33	21.3	8	22.2
Bachelor's Degree	34	17.8	21	13.5	13	36.1
More than 4 years college	19	9.9	14	9	5	13.9

Notes: Columns may not sum to 100 because of rounding. 1-7-Results are shown as valid percent, taking as reference all those who provided an answer to the question. Missing percent are shown separately.

**Appendix B Table 1. Demographic Characteristics, Cont.**

	US Construction Trades All		Construction Union members		Construction Non-Union	
<b>Do You Identify as LGBT?<sup>8</sup></b>						
Yes	45	23.8	34	22.2	11	30.6
No	144	76.2	119	77.8	25	69.4
<b>Are you a veteran?<sup>9</sup></b>						
Yes	21	11.1%	17	11	4	11.1
No	169	88.9%	137	89	32	88.9

Notes: 8 and 9 -Results are shown as valid percent, taking as reference all those who provided an answer to the question. Missing percent are shown separately.

**Table 2. Trade Unions Membership of Construction Trades Respondents**

	US Construction Trades All		Construction Union members		Construction Non-Union	
<b>Are you a member of a union?</b>	N=	%	N=	%	N=	%
Yes	175	79.9	175	100	0	0
No	44	20.1	0	0	44	100

**Table 3. Distribution of Construction Respondents by Trades**

	US Construction Trades All		Construction: Union members		Construction: Non-Union	
<b>Trade<sup>1</sup></b>	N=	%	N=	%	N=	%
Electrician	63	26.5	59	33.7	4	9.1
Carpenter	52	21.9	38	21.7	14	31.8
Iron worker	24	10.1	21	12.0	3	6.8
Laborer	16	6.7	13	7.4	3	6.8
Operating engineer	10	4.2	9	5.1	1	2.3
Painter	5	2.1	2	1.1	3	6.8
Pipe fitter	10	4.2	10	5.7	0	0
Plumber	6	2.5	6	3.4	0	0
Sheet metal worker	6	2.5	5	2.9	1	2.3
Welder	11	5.0	4	2.3	7	15.9
Other	35	16.0	19	10.8	16	36.8
<b>Trade Level</b>	N=	%	N=	%	N=	%
Journeywoman	158	72.1	144	82.3	14	31.8
Apprentice	32	14.6	24	13.7	8	18.2
Other	29	13.2	7	4	22	50

Notes: 1- Responses add up to more than 100 percent because some respondents have more than one trade.

**Table 4. State of Residence**

What is your state of residence? <sup>1</sup>	Construction Trades All		Construction Union members		Construction Trades: Non-Union	
	N=	%	N=	%*	N=	%
Alabama	1	.5	0	0	1	2.8
Alaska	0	0	0	0	0	0
Arizona	0	0	0	0	0	0
Arkansas	0	0	0	0	0	0
California	23	12.3	21	13.9	2	5.6
Colorado	2	1.1	2	1.3	0	0
Connecticut	1	.5	1	.7	0	0
Delaware	0	0	0	0	0	0
Florida	0	0	0	0	0	0
Georgia	3	1.6	3	2	0	0
Hawaii	0	0	0	0	0	0
Idaho	0	0	0	0	0	0
Illinois	24	12.8	23	15.2	1	2.8
Indiana	3	1.6	3	2	0	0
Iowa	0	0	0	0	0	0
Kansas	2	1.1	1	.7	1	2.8
Kentucky	2	1.1	1	.7	1	2.8
Louisiana	1	.5	1	.7	0	0
Maine	0	0	0	0	0	0
Maryland	4	2.1	1	.7	3	8.3
Massachusetts	7	3.7	6	4	1	2.8
Michigan	5	2.7	5	3.3	0	0
Minnesota	2	1.1	1	.7	1	2.8
Mississippi	4	2.1	0	0	4	11.1
Missouri	7	3.7	6	4	1	2.8
Montana	0	0	0	0	0	0
Nebraska	0	0	0	0	0	0
Nevada	3	1.6	3	2	0	0

**Table 4. State of Residence, Cont.**

What is your state of residence?	Construction Trades All		Construction Union members		Construction Trades: Non-Union	
	N=	%	N=	%*	N=	%
New Hampshire	1	.5	0	0	1	2.8
New Jersey	6	3.2	6	4	0	0
New Mexico	0	0	0	0	0	0
New York	5	2.7	3	2	2	5.6
North Carolina	1	.5	0	0	1	2.8
North Dakota	0	0	0	0	0	0
Ohio	3	1.6	3	2	0	0
Oklahoma	0	0	0	0	0	0
Oregon	27	14.4	21	13.9	6	16.7
Pennsylvania	5	2.7	4	2.6	0	0
Rhode Island	0	0	0	0	0	0
South Carolina	0	0	0	0	0	0
South Dakota	1	.5	1	.7	0	0
Tennessee	3	1.6	3	2	0	0
Texas	2	1.1	2	1.3	0	0
Utah	0	0	0	0	0	0
Vermont	0	0	0	0	0	0
Virginia	0	0	0	0	0	0
Washington	34	18.2	27	17.9	7	19.4
West Virginia	1	.5	1	.7	0	0
Wisconsin	1	.5	1	.7	0	0
Wyoming	0	0	0	0	0	0
Washington, DC	3	1.6	1	.7	2	5.6
<b>Missing/no answer</b>	32	14.6	24	13.7	8	18.2

Notes: 1-Results are shown as valid percent, taking as reference all those who provided an answer to the question. Missing percent are shown separately.

**Table 5. Green Jobs and Construction Trades Respondents**

	Construction Trades All		Construction Union members		Construction Trades: Non-Union	
	Count	%	Count	%	Count	%
<b>Do you think that green jobs offer promising career opportunities for women in the trades?<sup>1</sup></b>						
Not at all	14	7.2	14	9.0	0	0
A little	32	16.5	27	17.4	5	12.8
Somewhat	75	38.7	63	40.6	12	30.8
Very much	73	37.6	51	32.9	22	56.4
<b>During 2012, broadly what percent of your work could be described as green?<sup>2</sup></b>						
None	72	45.3	67	49.6	5	20.8
1 to 25 percent	44	27.8	34	25.1	10	41.6
26 to 50 percent	15	9.5	13	9.6	2	8.3
50 to 75 percent	11	7	8	5.9	3	12.5
More than 75 percent	17	10.8	13	9.6	4	16.6

Notes: 1 and 2- Results are shown as valid percent, taking as reference all those who provided an answer to the question.

**Table 6. Green Jobs Training in the Construction Trades**

	Construction Trades All		Construction Union members		Construction Non-Union	
<b>Have you had green training?</b>	219		175		44	
Yes	110	50.2	86	49.1	24	54.5
No	109	49.8	89	50.9	20	45.5
<b>If No, why not?<sup>1</sup></b>						
I have relevant skills/don't need green training	14	12.8	12	13.5	2	10.0
Unclear of value of time/money needed for green training	18	16.5	13	14.6	5	25.0
I would like to do green training, but have been unable because:	45	41.3	37	41.6	7	35.0
Unable to afford cost	13	11.9	9	10.1	4	20
Do not have time	15	13.8	11	12.4	4	20
Access to/location of training	23	21.1	22	24.7	1	5
<b>If Yes, how long was the most recent green training?<sup>2</sup></b>						
Short (Less than 16 hours)	33	39.3	27	40.3	6	35.6
Medium (16 to less than 40)	31	36.9	27	40.3	4	23.5
Long (40 or more hours)	20	23.8	13	19.4	7	41.2
<b>If you had green training, when was the most recent one?<sup>3</sup></b>						
2012/2013	39	40.6	29	37.7	10	50
2011	20	20.8	14	18.2	6	30
2010	16	16.6	13	16.9	3	15
2009	10	10.4	9	11.7	1	5
2008 or earlier	11	11.5	12	15.6		na
<b>Did you receive an industry recognized certificate or qualification?<sup>4</sup></b>						
Yes	45	46.4	37	43	8	38.1
No	42	43.3	30	34.9	12	57.1
Don't know	10	10.3	9	10.5	1	4.8

**Table 6. Green Jobs Training in the Construction Trades, Cont.**

	Construction Trades All		Construction Union members		Construction Non-Union	
<b>Do you hold any of the following green building certificates?</b>						
LEED Accreditation	8	7.3	5	5.8	3	12.5
Green Associate Certificate	9	8.2	6	7	3	12.5
BPI Certificate	5	4.5	3	3.5	2	8.3
Energy Auditing Certificate	6	5.5	4	4.7	2	8.3
Other	9	8.2	6	7	3	12.5
<b>Have you taken green training as part of (check all that apply) ?</b>						
Pre-apprenticeship training	12	10.9	7	8.1	5	20.8
Apprenticeship training	32	29.1	30	34.9	2	8.3
Community college (your own initiative)	15	13.6	7	8.1	8	33.3
Commercial Training provider	15	13.6	10	11.6	5	20.8
Other	57	50.9	47	54.7	9	37.5
<b>Who paid for the most recent green training?</b>						
Union	45	40.9	44	51.2	1	4.2
Employer	17	15.5	11	12.8	6	25.0
Self	19	17.3	11	12.8	8	33.3
Other	23	20.9	16	18.6	7	29.2
<b>Overall, how satisfied are you with the most recent green training/instruction?<sup>5</sup></b>						
Extremely satisfied	20	20.2	15	19.2	5	23.8
Very satisfied	34	34.3	26	33.3	8	38.1
Somewhat satisfied	30	30.3	22	28.2	8	38.1
Slightly satisfied	12	12.1	12	15.4	0	0
Not at all satisfied	3	3.0	3	3.8	0	0

Notes: 1-Percent based on those who did not take green training; 2- Percent based on those who took green training. 3, 4, and 5- Results are shown as valid percent, taking as reference all those who provided an answer to the question; na- sample insufficient to show results for non-union respondents.

**Table 7. Work Experience of Construction Trades Respondents**

How many weeks/hours did you work in your trade in 2012? <sup>1</sup>	Construction Trades All		Construction Union members		Construction Non-Union	
	N=	%	N=	%	N=	%
Unemployed/unable to find work in my trade	24	12.6	15	9.7	9	25
Up to 12 weeks/ less than 480 hours	19	9.9	17	11	2	5.6
Between 12 and 24 weeks/ 480 to 959 hours	14	7.3	11	7.1	3	8.3
Between 25 and 36 weeks/960 but less than 1440 hours	38	19.9	35	22.6	3	8.3
Between 37 and 48 weeks/ 1440 but less than 1920 hours to	44	23	39	25.2	5	13.9
More than 48 weeks/ 1920 hours	51	26.7	38	24.5	13	36.1
<b>2012 Gross earnings from trades work?<sup>2</sup></b>						
Less than \$10,000	32	17.2	23	14.8	9	29
\$10,000 to \$25,000	20	10.8	17	11	3	9.7
\$25,001 to \$50,000	55	29.6	43	27.7	12	38.7
\$50,001 to \$75,000	48	25.8	44	28.4	4	12.9
\$75,001 to \$100,000	25	13.4	23	14.8	2	6.5
More than \$100,000	6	3.2	5	3.2	1	3.2
<b>During 2012, did you work for a federal contractor?<sup>3</sup></b>						
Yes	44	23.5	38	25	6	17.7
No	129	69	102	67.1	27	77.1
Don't know	14	7.5	12	7.9	2	5.7
<b>During 2012, did you work mainly for<sup>4</sup>:</b>						
All/almost all union contractors	126	77.8	120	87.6	6	24
All/almost all non-union contractors	11	6.8	4	2.9	7	28
All/almost all self-employed/own business	15	9.3	4	2.9	11	44
Mix of above	10	6.2	9	6.6	1	4
<b>Current employment status<sup>5</sup></b>						
Working in my trade	114	57	90	55.9	24	61.5
Working in other job	13	6.5	9	5.6	4	10.3
Unemployed	43	21.5	39	24.2	4	10.3
Not working for other reasons	30	15	23	14.3	7	17.9

Notes: 1-5 - Results are shown as valid percent, taking as reference all those who provided an answer to the question.

**Table 7. Work Experience of Construction Trades Respondents, Cont.**

	Construction Trades All		Construction Union members		Construction Non-Union	
	N	%	N	%	N	%
<b>How do you usually find jobs?<sup>6</sup></b>						
Hiring hall	124	56.6	120	68.6	4	9.1
Regular employer	47	21.5	36	20.6	11	25.0
I am self-employed/business owner	20	9.1	3	1.7	17	38.6
On-the-job contacts	32	14.6	29	16.6	3	6.8
Other	18	16.4	22	12.6	13	29.5

Notes:6-Sums to more than 100 percent because respondents may work in more than one trade.

**Table 8. Working in Construction**

	Construction Trades All		Construction Union members		Construction Non-Union	
	N=	%	N=	%	N=	%
<b>How often is another woman on the job with you?<sup>1</sup></b>						
Never	44	23.2	28	18.1	16	45.7
Rarely	105	55.3	90	58.1	15	42.9
Frequently	27	14.2	24	15.5	3	8.6
Always	14	7.4	13	8.4	1	2.9

Notes:1- Results are shown as valid percent, taking as reference all those who provided an answer to the question.

**Table 9. Have you ever personally experienced any of the following in your trade?**

	<b>Construction Trades All</b>		<b>Construction Union members</b>		<b>Construction Non-Union</b>	
<b>Sexual harassment<sup>1</sup></b>						
Never	34	18	25	16.1	9	25.7
Rarely	96	50.8	80	51.6	16	45.7
Frequently	53	28	44	28.4	9	25.7
Always	6	3.2	6	3.9		na
<b>Racial harassment/discrimination<sup>2</sup></b>	N=	%	N=	%	N=	%
Never	13	38.2	10	35.7		na
Rarely	10	29.4	9	32.1		na
Frequently	9	26.5	7	25		na
Always	2	5.9	2	7.1		na
<b>Discrimination/harassment based on sexual orientation<sup>3</sup></b>						
Never	9	20.9	6	18.2		na
Rarely	18	41.9	14	42.4		na
Frequently	16	37.2	13	39.4		na
Always	0	0	0	0		na
<b>Age discrimination<sup>4</sup></b>						
Never	35	37.2	29	37.2		na
Rarely	31	33	26	33.3		na
Frequently	28	29.8	23	29.5		na
Always	0	0	0	0		na

Notes: 1- Results are shown as valid percent, taking as reference all those who provided an answer to the question. 2. Results for women of color only; 3. Results for LGBT women only. 4. Results for women aged 45 and older only; na- sample insufficient to show results for non-union respondents

**Table 10. Do you think you are being treated equally to men:**

	Construction Trades All		Construction Union members		Construction Non-Union	
	N=	%	N=	%	N=	%
<b>Hiring/hours of work?<sup>1</sup></b>						
Never	16	8.4	16	10.3	0	0
Rarely	55	28.9	46	29.7	9	25.7
Frequently	61	32.1	50	32.3	11	31.4
Always	58	30.5	43	27.7	15	42.9
<b>Formal training<sup>2</sup></b>						
Never	10	5.3	10	6.5	0	0
Rarely	31	16.5	24	15.7	7	20
Frequently	73	38.8	59	38.6	14	40
Always	74	39.4	60	39.2	14	40
<b>Use of tools<sup>3</sup></b>						
Never	8	4.3	7	4.6	1	2.9
Rarely	39	20.9	30	19.6	9	26.5
Frequently	82	43.9	72	47.1	10	29.4
Always	58	31	44	28.8	14	41.2
<b>Assignments<sup>4</sup></b>						
Never	18	9.5	17	11.0	1	2.9
Rarely	64	33.9	55	35.7	9	25.7
Frequently	70	37	57	37.0	13	37.1
Always	37	19.6	25	16.2	12	34.3
<b>Safety<sup>5</sup></b>	N=	%	N=	%	N=	%
Never	3	1.6	3	1.9	0	0
Rarely	14	7.4	13	8.4	1	2.9
Frequently	62	33	49	31.8	13	38.2
Always	109	58	89	57.8	20	58.8
<b>Respect<sup>6</sup></b>						
Never	18	9.6	17	11.0	1	3.0
Rarely	50	26.7	39	25.3	11	33.3
Frequently	79	42.2	67	43.5	12	36.4
Always	40	21.4	31	20.1	9	27.3
<b>Promotions<sup>7</sup></b>						
Never	39	21.8	35	23.6	4	12.9
Rarely	66	36.9	56	37.8	10	32.3
Frequently	40	22.3	32	21.6	8	25.8
Always	34	19	25	16.9	9	29.0

Notes: 1-7- Results are shown as valid percent, taking as reference all those who provided an answer to the question.

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