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# Apprenticeship Needs Assessment in Heavy Highway Construction Workforce

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**Apprenticeship Needs Assessment in Heavy Highway Construction Workforce**  
Final Report  
August 2012

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Portland State University

### **Project Objective**

To gain an understanding of the reasons that women and men of color are not retained in apprenticeships relevant to the heavy highway trades at the same rate as are white men. Particular attention shall be focused on the reasons that apprentices refuse job assignments/dispatches, leave assignments before the contractor's job is finished, and retention in the third period of apprenticeships. Differences in motivations, the nature of obstacles faced and the type and effectiveness of particular supports to affect retention rates shall be considered, with attention to the potentially different experience of people in different trades and regions, as well as to key demographic variables such as gender, race, ethnicity, age, and family status.

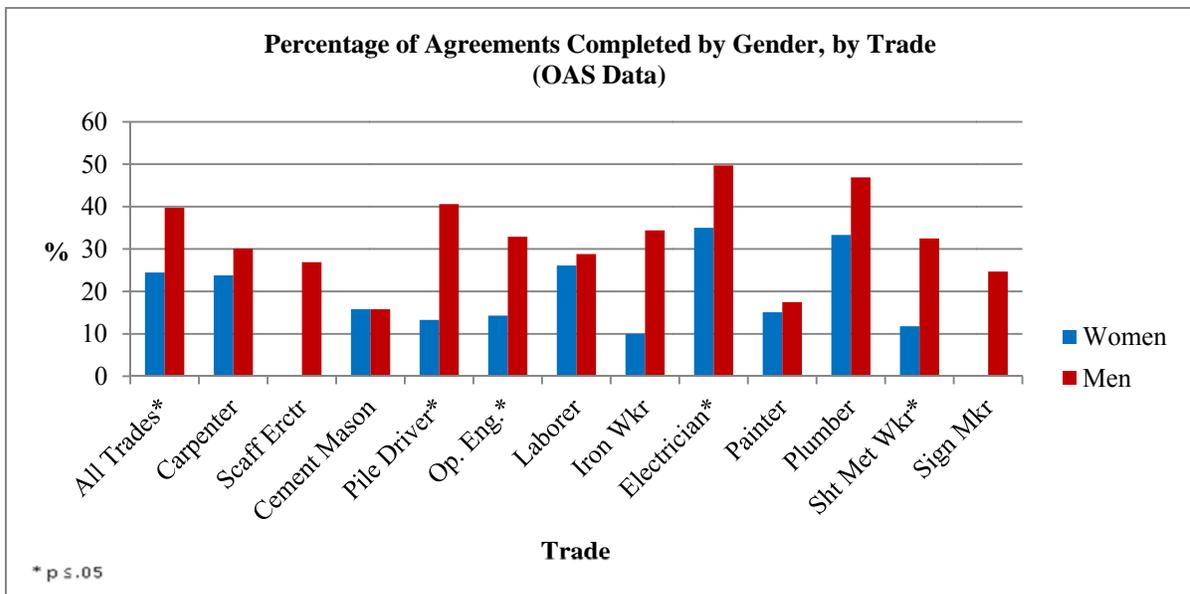
### **Overview of Methods**

- **Analysis of BOLI/ODOT database of current and past apprentices.** We used quantitative data from the Oregon Apprenticeship System (OAS) database of current and past apprentices to examine rates of apprenticeship completion in the heavy highway construction trades by gender and race/ethnicity as well as by other key variables including region, trade, and union status. We used a sample of all new registrations in the Oregon Apprenticeship System initiated between January 1, 2001 and December 31, 2010 that were not cancelled with less than zero hours of credit, resulting in 11,390 apprentice agreements. This includes 793 (7%) agreements initiated by women, 10,597 (93%) initiated by men, 180 (1.6%) initiated by women of color, 613 (5.4%) initiated by non-Hispanic white women, 1,616 (14.2%) initiated by men of color, and 8,981 (78.9%) initiated by non-Hispanic white men.
- **Interviews with staff.** We conducted interviews with a total of 20 individuals currently working in positions related to apprenticeship programs relevant to the highway trades in Oregon. Staff interviews included participants from 15 different organizations including: union and open-shop apprentice programs, contractors employing apprentices, pre-apprenticeship programs, and state agencies and departments working on programs or policies related to apprenticeship programs
- **Interviews with apprentices.** We interviewed 24 apprentices who either completed or failed to complete an apprentice program between 2008 and 2011. The sample included 8 Non-Hispanic white women, 8 men of color, and 8 women of color. Within each of these three groups, half of the participants successfully completed an apprenticeship and the other half left an apprenticeship program prior to completion. Participants were chosen to reflect diversity in type of trade, union and non-union program, and region of the state.
- **Survey of apprentices.** We surveyed 177 past and current apprentices via a mail questionnaire sent to apprentice addresses obtained through the OAS database. The sampling frame used for this component included apprentices in the OAS database who initiated an apprenticeship in the heavy highway construction trades between 2006 and 2010. We used a stratified sampling design to ensure equal numbers of participants by race and gender as well

as by region, trade, and completion status. Our final analytic sample includes 177 past and current apprentices: 28 women of color, 59 non-Hispanic white women, 47 men of color, and 42 non-Hispanic white men.

**Overview of findings**

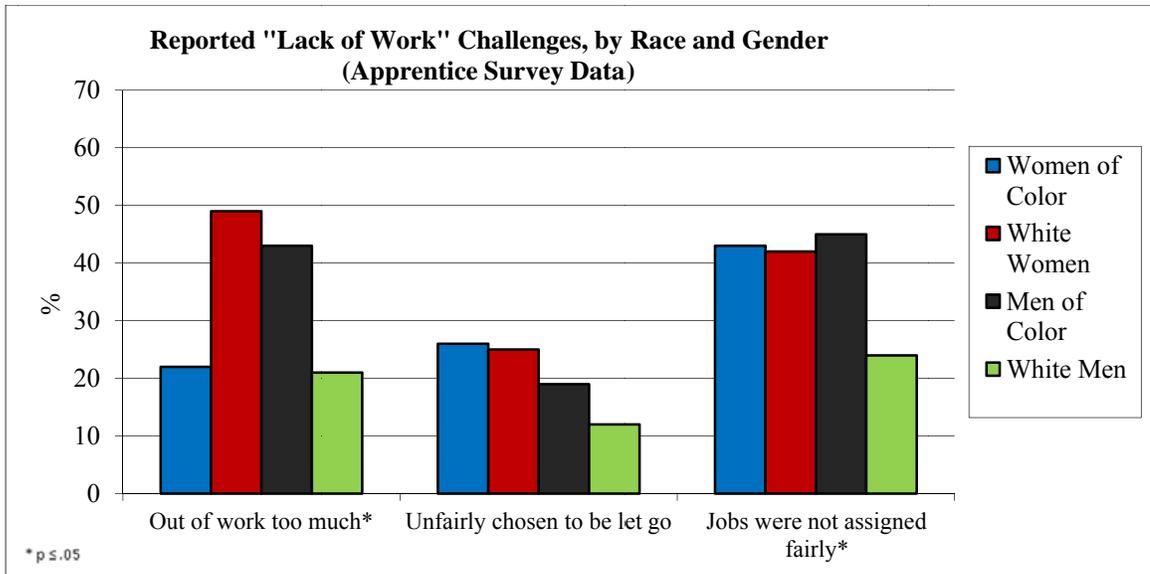
- Women and racial/ethnic minorities in apprenticeship programs:** There are relatively few women and people of color in the trades. Non-Hispanic white men accounted for 79% of apprenticeship agreements, whereas 14% were men of color, 5.4% were non-Hispanic white women, and 1.6% were women of color (BOLI/ODOT records of 11,390 apprentice agreements from 2001-2010). Across the majority of trades, there are differences in rates of completion of apprenticeship programs by gender and race/ethnicity. Combining all trades, we see that 41% of apprentice agreements by non-Hispanic white men were completed, compared to 32% of men of color, 25% of non-Hispanic white women, and 19% of women of color (BOLI/ODOT records of 11,390 apprentice agreements from 2001-2010). However, there appear to be specific trades in which differences by gender and race may be smaller, such as laborer, where we see no significant gender or race differences. We also see fewer differences in completion rates by race than we do by gender, with the smallest differences in completion rates by race among women. However, it is important to emphasize the very small number of women, particularly women of color, in the trades. Gender differences in completion rates are consistent across all regions, cohorts and by union status. Racial differences in completion rates are less consistent across these variables, with, for example, racial differences in completion largest in region one.



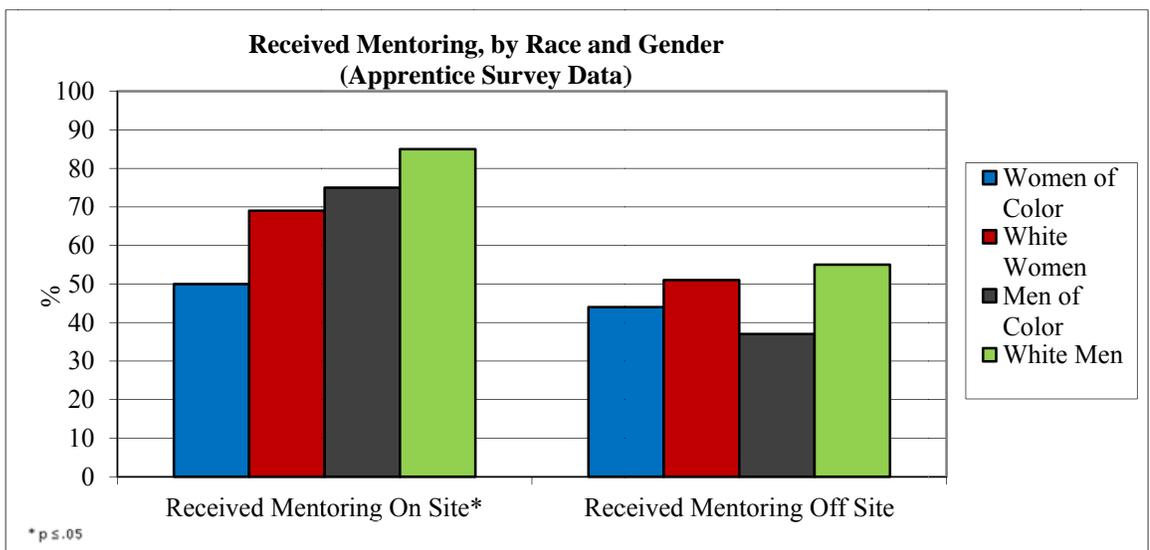
- Challenges facing women and racial/ethnic minority apprentices:** Based on our interviews with staff and apprentices as well as our survey of apprentices, we identified three major challenges that likely contribute to lower retention rates among female and racial/ethnic minority apprentices: (1) discrimination and harassment, (2) lack of work, and (3) lack of mentoring on and off the job site. While these are problems that are potentially

relevant to all apprentices, we find that female and racial/ethnic minority apprentices are disproportionately affected by these issues.

- **Discrimination and harassment:** Female and racial/ethnic minority apprentices perceive that they experience discriminatory treatment at their job sites. In the survey of apprentices, 24% of men of color and 30% of women of color reported experiencing discriminatory treatment in their work environment because of their race/ethnicity. In addition, 39% of non-Hispanic white women and 50% of women of color reported experiencing discriminatory treatment at work due to their gender. Gendered and sexual jokes and comments were reported as common experiences during apprentice interviews and in open-ended survey questions. Racial jokes and slurs were less common. Some female and racial/ethnic minority apprentices perceived they were unwelcome or treated differently on the job site. Based on our interviews, some female and racial/ethnic minority apprentices felt these discrimination and harassment experiences were minor and did not affect their training as apprentices while others experienced these as major challenges. The effects of prejudice and discrimination have consequences for apprentices' ability to stay employed and be mentored on the job.
- **Lack of work:** Being out of work too much was one of the most common challenges and reasons for leaving apprenticeships mentioned in interviews and on the survey of apprentices. We find some evidence that women and people of color are out of work more than non-Hispanic white men. For example, in examining the BOLI/ODOT data from 2001-2010, we find that women and people of color accrue fewer credit hours per month on average. According to our survey of apprentices, there were small differences in the average number of months out of work per year by gender and race/ethnicity: women of color were out of work 2.4 months per year, compared to non-Hispanic white women (2.3 months), men of color (2.2 months), and non-Hispanic white men (2.0 months); however, these differences were not statistically significant. Survey results reveal that a higher average number of months out of work is associated with failure to complete among non-Hispanic white women and non-Hispanic white men. Also, analysis of survey data reveals that only 21% of non-Hispanic male apprentices said that being out of work too much was a challenge experienced during their apprenticeship, compared to 46% of men of color, 49% of non-Hispanic white women, and 22% of women of color. Although apprentice programs generally have some variation on the "out of work list" which seeks to provide equal opportunities for all apprentices to work, we find that the ability to remain employed is largely dependent on personal relationships. For example, apprentices have an advantage when they are chosen to stay on a job after a reduction in force, when they are asked by their current employer to transition to a new job once a job has been completed, and when they are requested by name by an employer. Overall, we found that 61% of apprentices thought that jobs were fairly assigned, with significant differences by gender and race/ethnicity. 76% of non-Hispanic white men thought jobs were fairly assigned compared to 55% of men of color, 58% of non-Hispanic white women, and 59% of women of color

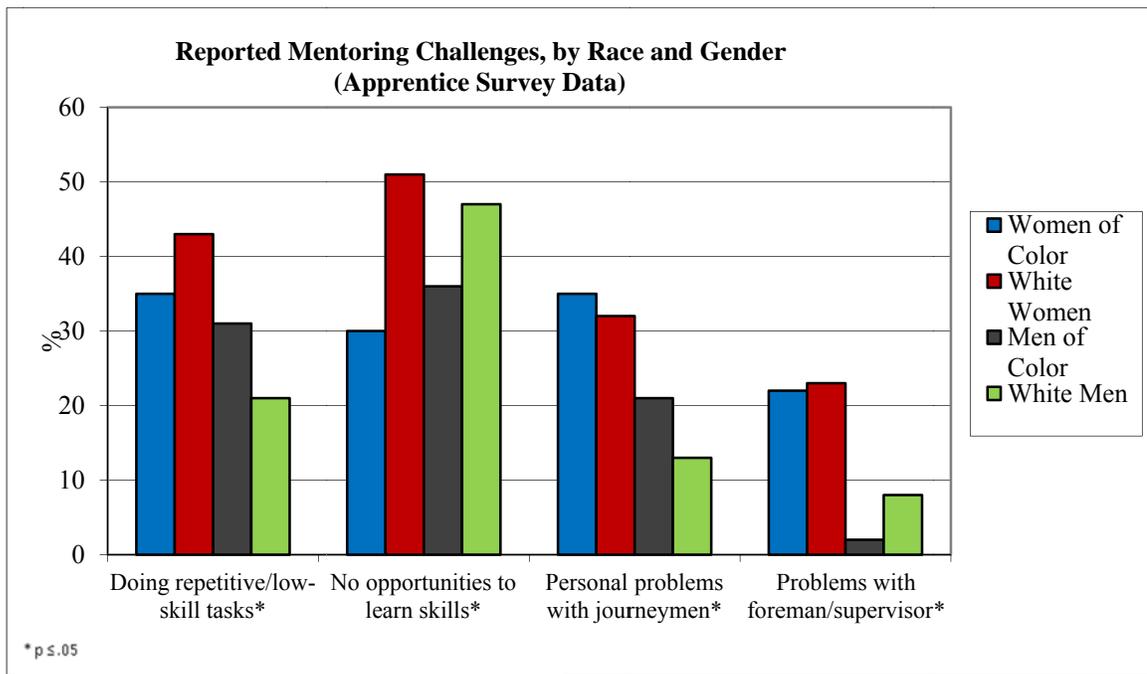


- Lack of mentoring:** Having mentors on and off the jobsite, that is, individuals who teach apprentices the technical skills as well as assist them in navigating the culture of the trades, is extremely important for success in the trades. Women, and to a lesser degree, racial/ethnic minorities, have difficulty finding mentors. Survey data shows that 79% of non-Hispanic white men reported receiving mentoring on the job, compared to 67% of men of color, 57% of non-Hispanic white women, and 38% of women of color. Also, women were more likely than non-Hispanic white men to report receiving no mentoring during their most recent apprenticeship and more likely to report that receiving mentoring on site was helpful to them during their most recent apprenticeship. Survey results indicate that non-Hispanic white women and men of color who received on the job mentoring were more likely to complete than to cancel their most recent apprenticeship.



In addition, women and people of color were more likely to identify “doing repetitive or low skill tasks” as a challenge experienced during their apprenticeship. While only 21% of non-Hispanic men reported this as a challenge, 43% of non-Hispanic white women reported doing repetitive or low skill tasks as a challenge. In addition, women were more

likely than men to report that having personal problems with journeymen and foremen/supervisors were challenges experienced during their most recent apprenticeship. For example, 32% of women compared to 18% of men reported that personal problems with journeymen were a challenge in their apprenticeship, and 23% of women compared to 5% of men reported that personal problems with foremen or supervisors were a challenge during their apprenticeship. Results from apprentice survey data suggest that women who completed a pre-apprentice program were less likely to have cancelled their most recent apprenticeship and more likely to have received both on site and off site mentoring, relative to women who did not complete a pre-apprenticed program, although these differences were not statistically significant. In addition, women who completed a pre-apprentice program are less likely to report problems with journeymen and foreman as challenges

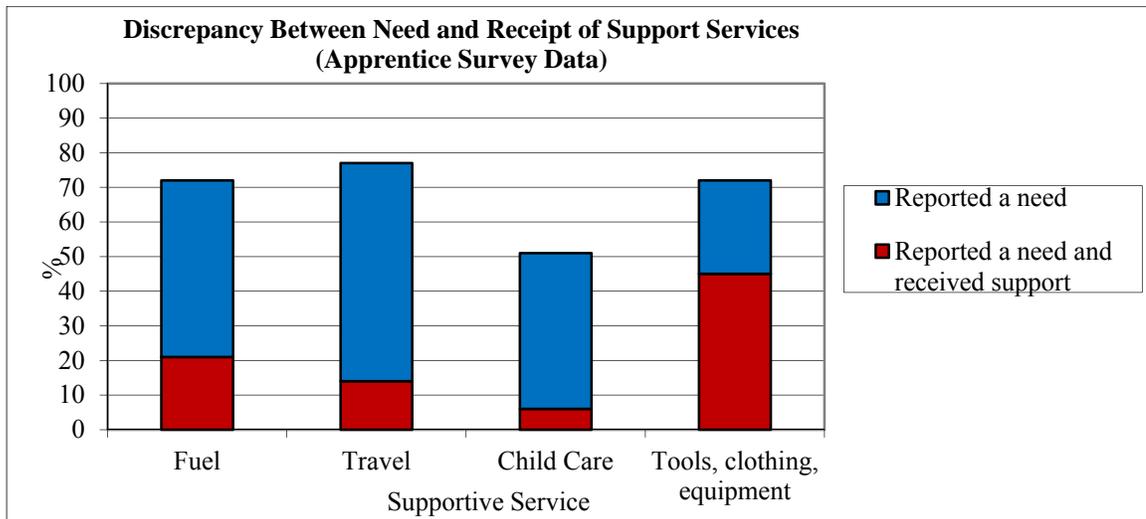


- **Supports to increase retention of women and racial/ethnic minority apprentices:** We evaluated the need for specific supportive services: fuel assistance; overnight travel; childcare; and tools, clothing, and protective equipment. Based on our interviews and survey of apprentices, all of these services were viewed as potentially helpful. In some cases, supportive services may enable apprentices to remain in their programs. More commonly, apprentices have a variety of challenges that contribute to the decision to leave the program. Implementing supportive services may alleviate one specific challenge, such as the cost of fuel, which may be enough to encourage apprentices to stay in the program. Given that women and people of color face more challenges, targeting those populations to receive supportive services may help improve retention rates of women and people of color.
  - **Fuel assistance:** 17% of surveyed apprentices reported that paying for gas to get to and from work was a challenge; people of color were disproportionately affected by this issue. 26% of men of color and 22% of women of color said paying for gas was a challenge. In the survey, 5% of apprentices who did not complete stated that the main reason for leaving a program was being unable to afford travel for work. In interviews,

staff and apprentices noted that paying for gas was a particular challenge when an apprentice was beginning his or her apprenticeship (because starting wages are lower) and when apprentices were returning to work after a period of being laid off. 15% of apprentices surveyed said they received fuel assistance, and, on average apprentices receiving this support reported that it has been “somewhat helpful.” On average, apprentices reported that fuel assistance would be “very helpful” in the future, with women of color more likely to view fuel assistance in the future as “very helpful.” Current apprentices are more likely to report receiving fuel assistance than those who have cancelled or completed their most recent apprenticeship.

- **Support for overnight travel:** 15% of surveyed apprentices reported that they had difficulty paying for food and lodging for out of town jobs; there were no significant differences across gender and race/ethnicity in reports of difficulty paying for food and lodging. Not all apprentices experienced working out of town and some jobs offer a per diem for out of town work. 11% of surveyed apprentices received this type of support. On average apprentices receiving this support reported that it has been “very helpful,” and apprentices, on average, report that support for overnight travel would be “very helpful” in the future.
- **Childcare:** About half of all apprentices had children under 18; female apprentices were less likely to have children under 18 and children under 5 living in their household than male apprentices. Non-Hispanic white women were the least likely to have children under the age of 5 living in their household during their most recent apprenticeship. However, results from the apprentice survey show that women with children under 5 years of age in their household were much less likely to complete their apprenticeship relative to those who did not have children under 5 living in their household, and this association is stronger among women of color. Surprisingly, male apprentices with children under 5 in their household were *more* likely to complete their most recent apprenticeship. Given the often irregular hours and potential for out of town work, it is a significant challenge to balance an apprenticeship and parenting without the support of family and/or friends who are able to take on childcare while the apprentice is working. Male apprentices who are married and have children may be better able to juggle work and family responsibilities given gendered expectations related to child care. This may be one reason why we see more single, childless female apprentices relative to single, childless male apprentices and why we see much more of a disadvantage in completion rates for mothers relative to fathers. When asked about challenges they experienced during their apprenticeship, 18% of respondents with children said they had difficulty paying for the cost of child care, 5% said they had difficulty finding consistent childcare, and 10% said they had difficulty finding childcare that accommodated their work schedule. There were no differences by gender or race/ethnicity in challenges reported related to childcare. We did find that apprentices with small children in the home were more likely to turn down jobs due to issues related to gas and child care. Only 2% of apprentices surveyed received childcare subsidies (5% of those with children under 18 in the home and 7% of those with children under 5 in the home), yet the majority of apprentices with children in their home reported that child care supports would be very helpful or necessary for completion in the future. On average, those who received childcare supports rated these as “very helpful.”

- **Tools, clothing, and protective equipment:** For most trades, the tools, clothing, and protective equipment required prior to starting the program are minimal; however, assistance in purchasing these items can be helpful, particularly for those who are unemployed or in low-wage jobs prior to starting an apprenticeship. Some apprentice programs and employers currently provide this type of assistance; 36% of apprentices reported that they received some support purchasing tools, clothing, or protective equipment. Apprentices report, on average, that these supports would be “somewhat” or “very helpful” in the future.



## Recommendations

- **Recommendations for supportive services.** The findings of this report suggest that apprentices, particularly women and racial/ethnic minority apprentices are in need of supportive services in the form of fuel assistance, support for overnight travel, childcare, and tools/clothing/equipment. Given that female and racial/ethnic minority apprentices face more challenges than their non-Hispanic white male counterparts and have lower retention rates, focusing supportive services on these groups may contribute to increased retention of female and racial/ethnic minority apprentices. We offer the following suggestions:
  - Allocate resources to focus on providing fuel assistance and support for overnight travel, which may be particularly helpful forms of support for apprentices in the early years of their apprenticeships and when returning to work after being unemployed. Support for fuel assistance may be particularly helpful for those apprentices with small children, and support for overnight travel may be particularly helpful for those apprentices living outside of region one.
  - Provide childcare subsidies to apprentices who are able to secure stable paid childcare arrangements, while acknowledging that apprentices who are parents need a broad support system in place to assist with childcare, given the often irregular schedules.
  - Provide assistance with tools, clothing, and protective equipment, usually at the start of the apprenticeship, although in allocating resources consider that this is the service that is currently most widely available as some assistance is offered by some employers and unions.

- Consider that these services will be most effective in increasing retention of women and racial/ethnic minorities if resources are targeted to these groups; however, since women and racial/ethnic minorities have higher need, need-based or by-request targeting will also benefit these groups.
- **General recommendations.** The findings of this report suggest a variety of possible interventions that may increase retention rates of women and racial/ethnic minorities in apprenticeship programs. We suggest the following:
  - Continue support for programs focusing on recruitment of women and people of color into the apprenticeship programs.
  - Ensure that employers, unions, and apprentice programs work together to prevent hostile work environments through education and monitoring as well as support female and racial/ethnic minority apprentices who experience harassment and discrimination.
  - Assist in developing programs to provide apprentices guidance on strategies for dealing with hostile work environments, including how to manage small incidences on an individual level as well as when to report incidences to supervisors/foremen, apprentice program staff, and/or union representatives (through pre-apprentice and/or apprentice programs).
  - Monitor apprentice program protocols for assigning jobs (both stated procedure and practice), ensuring that women and racial/ethnic minorities are not at a disadvantage.
  - Monitor compliance on contracts with diverse workforce goals in order to promote the employment of female and racial/ethnic minority apprentices.
  - Continue support for pre-apprenticeship programs that support women, racial/ethnic minorities, and first generation apprentices.
  - Explore options for programs promoting mentoring off the jobsite, such as mentoring and support by paid staff or mentoring by volunteers (one-on-one volunteer mentoring programs should be carefully evaluated before they are implemented as they are unlikely to be successful unless there is continued oversight by program staff as well as incentives for mentors to participate).
  - Assist existing programs that provide ongoing mentoring and support (such as OTI) to expand and increase visibility in the trades.
  - Ensure all apprentice programs provide apprentices with on-the-job mentoring by journeymen by implementing clear guidelines for mentoring, which includes being taught the varied skills of the trade.
  - Encourage apprentice programs to explore mandatory or optional rotation in job assignments to ensure apprentices have opportunities to learn varied skills.
  - Provide information on community and local/state/federal resources available to apprentices, particularly when apprentices experience unemployment and personal problems.

## **METHODS**

### **BOLI/ODOT Data 2001-2010**

## *Data*

The quantitative component of this study uses data from the Oregon Apprenticeship System database of current and past apprentices to examine different rates of apprenticeship completion in the heavy highway construction trades by gender and race/ethnicity as well as other key variables including region, trade, and union status. We also use the Oregon Apprenticeship System database to examine reasons given for the cancellation of apprentice agreements. The following trades are included in this study: electrician, painter, plumber, sheet metal worker, sign maker/installer, carpenter, cement mason, operating engineer, laborer, and ironworker. The unit of analysis used for the database is individual apprentice agreements, rather than individual apprentices, with many apprentices having more than one agreement. Because we are interested in the completion of agreements, we primarily focus on apprentice agreements as the unit of analysis; however, we also briefly describe the characteristics of individual apprentices, including the average number of agreements of individual apprentices, by gender, race/ethnicity, and completion rates.

We limit our sample to all new registrations in the Oregon Apprenticeship System from January 1, 2001 to December 31, 2010 that were not cancelled with less than zero hours of credit, resulting in an analytic sample of apprentice agreements of 11,390. This translates into an analytic sample of individual apprentices of 10,472. Table 1 provides characteristics of apprentice agreements by gender and race/ethnicity. The total sample of agreements includes 793 (7%) initiated by women, 10,597 (93%) initiated by men, 180 (1.6%) initiated by women of color, 613 (5.4%) initiated by non-Hispanic white women, 1,616 (14.2%) initiated by men of color, and 8,981 (78.9%) initiated by non-Hispanic white men.

## *Measures*

Variables representing gender, race/ethnicity, age, cohort, trade, status, union status, and ODOT region were taken directly from the Oregon Apprenticeship System database of current and past apprentices. For the purposes of this study, individuals of color, or racial/ethnic minorities, include African Americans, Native Americans, Asians, and Latinos. The variable representing education was created by adding the number of years the apprentice reported being in high school and college, resulting in a continuous variable ranging from 9 to 18. The variables representing reasons for cancellation were created using action history data provided by BOLI/ODOT. Each time an action such as a hold, suspension, or cancellation is taken on an apprentice agreement that is cancelled, the reason for the action is reported. The reasons included in this study (see Table 1) represent the most frequently occurring reasons reported for actions leading to cancellation. Given that each cancelled agreement may have multiple actions, the total of the percentage for each reason in Table 1 is greater than 100%.

Variables representing credit hours completed at time of cancellation, average monthly credit hours among cancelled, and average and yearly credit hours among completed are created using the following variables: *apr credit when cancelled*, *stt ojt total*, *apr indent effect date*, *apr\_ending\_date*, and *apr\_prior\_credit*. The variable representing credit hours completed at time of cancellation represents *apr\_credit\_when\_cancelled* minus *apr\_prior\_credit*. To get average monthly credit hours among cancelled agreements, we divided credit hours by the number of

months the apprentice was in the program, which was created using the `apr_indent_effect_date` and `apr_ending_date` variables. Similarly, to calculate the average and yearly credit hours among completed we subtracted prior credits from `stt_ojt_total` and divided by number of months and then number of years taken to complete the program.

### *Analytic Techniques*

In order to examine different rates of apprenticeship completion in the heavy highway construction trades by gender and race/ethnicity we first examine differences in completion by gender and race/ethnicity (see Table 1) as well as differences in key variables, including union status, region, trade, and reasons for cancellation, by gender and race/ethnicity. Because we are interested in both gender and racial/ethnic differences, we first examine differences by gender and then examine differences by race/ethnicity within each gender. To determine if differences in completion rates and other key variables are statistically significant we use chi-square tests for nominal variables and t-tests for continuous variables (Table 1). In analyses not shown, we also employ multivariate logistic regression to test whether or not the gender and race/ethnic differences in completion are due to potential confounders, including age, education, cohort, union status, trade, and region.

To assess variation in completion rates by gender and race/ethnicity by trade, we compute completion rates for each demographic sub-group within each trade and test differences using chi-square tests (Table 2). We do the same to assess variation in completion rates by gender and race/ethnicity by region, union status, and cohort (Table 3). Given that the unit of analysis of the Oregon Apprenticeship System database is the apprentice agreement rather than the individual apprentice, we felt it was important to assess the frequency at which multiple registrations occur and whether or not this frequency varied by gender and race/ethnicity as well as by the likelihood of completing at least one agreement. Tables 4 and 5 present this descriptive analysis. In addition, we examine how the reasons given for cancellation among those cancelled vary by gender and race/ethnicity within each trade, and present these results in Table 6. Finally, because research and theory suggests that a key factor in preventing completion of apprentice agreements is lack of OJT hours, we examine variation in the total number of credits earned by those cancelled as well as the average monthly credits earned. In addition, we examine variation in average monthly credits earned among agreements that have been completed. We also look at variation by gender and race/ethnicity within trade (Table 7).

## **Interviews**

### *Staff Interviews*

In order to understand apprenticeship programs from a variety of perspectives, we conducted interviews with a total of 20 individuals currently working in positions related to apprenticeship programs relevant to the highway trades. Staff interviews included participants from 15 different organizations including: union and open-shop apprentice programs, contractors employing apprentices, pre-apprenticeship training programs, and state agencies and departments working on programs or policies related to apprenticeship programs.

An initial list of possible participants and relevant organizations was provided by BOLI. Letters of invitation were sent out to these individuals by BOLI. We followed up with phone calls to schedule interviews. As we conducted the interviews, we identified a small number of additional individuals to invite to participate. These individuals were contacted by phone or email to set up interviews. Interviews were conducted at the offices of the participants. Interviews were an average of 49 minutes long.

### *Apprentice Interviews*

In order to gather information about the experiences of female apprentices and apprentices of color, we interviewed apprentices who had either completed or been cancelled from an apprenticeship program. Apprentices were identified using the Oregon Apprenticeship System database. In order to ensure the best recall of specific experiences in apprenticeship programs, we interviewed participants who had recently completed an apprenticeship program or had recently dropped out of a program. Apprentices who had zero hours of credit were excluded. All non-Hispanic white women and men of color we interviewed had completed or dropped out in 2011; women of color we interviewed had completed or dropped out of a program between 2008 and 2011 (the expanded date range was necessary due to the overall small number of women of color participating in apprenticeship programs).

We completed a total of 25 interviews with apprentices, systematically sampled from a list of all apprentices who had recently completed or failed to complete apprenticeship programs relevant to the highway trades. One interview is excluded from the analysis because the apprentice was currently in an apprentice program and had never left the program. The final sample consisted of 8 Non-Hispanic white women, 8 men of color, and 8 women of color. Within each of these three groups, half of the participants successfully completed an apprenticeship and the other half left an apprenticeship prior to completion.

Participants were chosen to reflect diversity in type of trade, union and non-union program region of the state, and racial/ethnic background. Trades represented in the sample included: laborer (46%), electrician (20%), carpenter (13%), painter (13%), cement mason (4%), and operating engineer (4%). 67% were in union sponsored apprentice programs and 33% were in non-union (open shop) apprentice programs. Regions included Portland OR (67%), Vancouver WA (17%), Salem, OR (13%), and southern OR (4%). Racial/ethnic groups represented in the sample included: Non-Hispanic white (33%), African American (33%), Latino/a (17%), Asian American (8%), and Native American 8%). The average age for non-Hispanic white women was 35; the average age for women of color was 44<sup>1</sup>; and the average age for men of color was 30.

13% of non-Hispanic white women were married or cohabiting with a man; 25% were cohabiting with a woman; and 63% were single. 38% of women of color were married or cohabiting with a man; 13% were cohabiting with a woman; and 50% were single. 63% of men of color were married or cohabiting with a woman and 38% were single. None of the non-Hispanic white women had children under 18 in the home while they were an apprentice, while 38% of women of color and 50% of men of color had children in the home.

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<sup>1</sup> One woman opted not to give her age.

Apprentices were mailed a letter describing the study and inviting them to participate. We followed up with phone calls to set up interviews. Apprentices were interviewed either in their homes, restaurants/coffeeshops, in the office of the researcher, libraries, or over the phone. Interviews were an average of 30 minutes long.

## **Apprentice Surveys**

### *Data*

The quantitative survey component of this study uses data from 177 surveys completed by past and current apprentices sampled from the Oregon Apprenticeship System database. The sampling frame used for this component included apprentices in the OAS database who initiated an apprenticeship in the heavy highway construction trades between 2006 and 2010. We used a stratified sampling design to ensure equal numbers of participants by race and gender as well as by region, trade, union status, and completion status. After initial mail outs, follow-up postcards and follow-up phone calls, we ended with a response rate of 23%. Our final analytic sample includes 177 past and current apprentices, including 28 women of color, 59 non-Hispanic white women, 47 men of color, and 42 non-Hispanic white men (see Table 8). Our sample of surveyed apprentices includes 60 (34%) apprentices who completed their most current apprenticeship, 74 (42%) apprentices who were currently enrolled in their most recent apprenticeship at the time of the survey, and 42 (24%) apprentices who cancelled their most recent apprenticeship. 122 (69%) apprentices surveyed were in union programs, with the remainder in non-union programs during their most recent apprenticeship. Surveyed apprentices were spread across the heavy highway trades and ODOT regions with the modal trade being electrician and the modal region being region one.

### *Measures*

The survey instrument mailed to apprentices included a variety of both closed and open ended questions (survey instrument is attached as Appendix A) aimed at assessing challenges apprentices face in the heavy highway construction trades in areas related to being out of work, mentorship, the need for support services, discrimination on job sites, and interpersonal relationships on job sites. The survey and sampling was designed to assess differences in these areas by race and gender. For the purposes of this study, individuals of color, or racial/ethnic minorities, include non-Hispanic African Americans, non-Hispanic Native Americans, non-Hispanic Asians, those who specify “other” race, and all Latinos (Hispanics). Race/ethnicity was determined using two separate questions: the first question asked about Hispanic/Latino origin and the second asked respondents to choose their race.

### *Analytic Techniques*

We first present socio-demographic characteristics (Table 8) for the total sample as well for each race-gender category (women of color, non-Hispanic white women, men of color, non-Hispanic white men). We performed t-tests for continuous variables and chi-square tests for nominal and ordinal variables to determine whether or not race-gender groups vary by these socio-demographic characteristics. In Table 9 we examine differences by gender and race-gender subgroups in apprenticeship status; out of work issues; prior exposure to the trades;; challenges faced as an apprentice; use of childcare; receipt of supportive services; receipt of mentorship; assessment of how useful supportive services have been and would be in the future; and experiences with foremen; and discrimination faced on the job. We test whether or not there are statistically significant differences in these variables by gender as well as across race-gender groups using t-tests for continuous variables and chi-square tests for nominal and ordinal variables. In Tables 10-12 we examine these same variables across gender and race-gender categories by most recent apprenticeship status (complete, current, cancelled). We examine differences within gender and race-gender groups by status using t-tests for continuous and chi-square tests for nominal and ordinal variables.

## **FINDINGS**

### **BOLI/ODOT Data 2001-2010**

#### *Gender*

In Table 1 we see statistically significant gender differences in completion and cancellation, with men's agreements more likely to be completed than women's and women's agreements more likely to be cancelled than men's. Specifically, 24.5% of agreements initiated by women were completed compared to 39.7% of agreements initiated by men. Gender differences in completion rates remain after controlling for potential confounding variables, including age, education, cohort, trade, union status, and region. Gender differences also can be seen in union status, region, average credit hours completed, trade, reasons for cancellation, age, and education. Women's agreements are more likely to be affiliated with a union or a mixed program, while men's agreements are more likely to be non-union. Women's agreements are more likely to be located in region one and less likely to be located in region two or four. Women's agreements that were cancelled are associated with fewer completed credit hours at time of cancellation and fewer average credit hours completed per month. In addition, agreements that were completed by women are associated with fewer average completed credits per month and per year.

In Table 1 we also see gender differences in trades affiliated with agreements. Women's agreements are more likely to be in the following trades: carpenter, cement mason, operating engineer, laborer, and painter, relative to men's agreements. Men's agreements are more likely to be in electrician and plumbing trades. In terms of reasons for cancellation, women are more likely to be cancelled due to apprentice request. Men's agreements are more likely to be cancelled due to failure to appear before committee and related training attendance. Finally, men who enter into apprentice agreements are younger and have less education, on average, than women who enter into apprentice agreements.

The first two columns of Table 2 show gender differences in the percentage of apprentice agreements completed by trade. Again we see that, overall, men's apprentice agreements are more likely to be completed than women's. When we look within trade, we see statistically significant gender differences in the following trades: pile driver, operating engineer, electrician, and sheet metal/worker (see Figure 1). However, results within some trades should be interpreted with caution due to small sample sizes of women within these trades. For example, as seen in Table 1, only nine women's agreements were initiated in scaffold erecting, only ten women's agreements were in ironworking, and only two women's agreements were initiated in sign making/installing between 2001 and 2010. Thus, in addition to retention, the recruitment of women into heavy highway construction trades clearly needs to be addressed, particularly in certain trades.

In Table 3 we see gender differences in the percentage of agreements completed by region, union status, and cohort. We see statistically significant gender differences in all regions except for region five (see Figure 4), which only had sixteen agreements initiated by women between 2001 and 2010. Thus, gender differences in completion of agreements appear to be pervasive throughout the state. We also see gender differences in completion rates within all types of union status (see Figure 5) and in all cohorts that have had a reasonable amount of time to complete agreements (2001-2006).

Table 4 shows that women, particularly African American women, appear to be more likely to have initiated more than one agreement between 2001 and 2010. While 6.4% of men entering the apprentice program between 2001 and 2010 entered into more than one agreement, 7.8% of women did so, and 19.1% of African American women did so. It is unclear how to interpret this gender and race difference given that individuals who initiate more than one agreement also appear to be more likely to complete at least one agreement (see Table 5).

Table 6 shows reasons for cancellation of agreements by trade by gender and race/ethnicity. Overall, women's agreements are more likely than men's agreements to be cancelled due to apprentice request, and this difference seems to be largest in trades such as carpentry, painting, and plumbing. In sheet metal working and electrician trades, trades that we see a statistically significant gender difference in completion (see Table 2), women's agreements also appear to be cancelled more than men's due to apprentice request. However, in additional trades that we see gender differences in completion rates, including operating engineer and pile driving, women are not more likely to be cancelled due to apprentice request. In the trade of pile driving, women's agreements appear to be cancelled more than men's due to insufficient OJT hours completed. Interestingly, among both women and men, across all trades, insufficient OJT hours appear to be a common reason leading to the cancellation of agreements. Trades with a larger gender disparity in cancellation due to OJT hours include iron working, scaffold erecting, pile driving, plumbing, and sheet metal working, with women's agreements more likely to be cancelled due to insufficient OJT hours in these trades.

Finally, Table 7 shows differences in completed credit hours among those cancelled, average credit hours completed per month among cancelled agreements, and average credit hours completed among completed agreements, all within trades. Overall we see that men's agreements that are cancelled, on average, have accumulated more credit hours by the time of cancellation.

We see this particularly in the trades of scaffold erecting, electrician, and sign maker/installer. Similarly, we see that men's cancelled agreements, on average, accumulate more credit hours per month than do women's cancelled agreements. Within trades, we only see a statistically significant difference in this variable within scaffold erecting. Finally, we also see in Table 7 that, among completed agreements, men's agreements accumulate, on average, more average credits per month than do women's. We see this gender difference particularly in the trades of operating engineer, laborer, electrician, and plumber (see Figure 6).

### *Men of Color*

While it is clear from the analyses presented above that gender difference in completion rates of apprentice agreements are pervasive and need to be addressed, it is also important to examine any racial/ethnic variation in completion rates among men and among women. In Table 1 we see an overall race difference in completion rates among men that is statistically significant. Specifically, we see that 41.1% of agreements initiated by non-Hispanic white men between 2001 and 2010 have been completed, compared to only 31.8% of agreements initiated by men of color during the same period. Table 1 also shows race/ethnic differences among men in union status, with agreements of men of color less likely to be in non-union programs and more likely to be in mixed programs. Agreements among men of color are more likely to be initiated in ODOT region one and less likely in all other regions. We also see difference by race/ethnicity among men in average credit hours completed among cancelled agreements, average credit hours completed per month among cancelled agreements, and average credit hours completed per year among completed agreements. We also see that men of color are less likely than white men to be in the following trades: electrician, plumbing, and sheet metal worker. Men of color are more likely than white men to be in carpentry, cement masonry, pile driving, laboring, ironworking, and painting. Agreements of men of color are more likely than those of non-Hispanic white men to be cancelled due to failure to submit progress reports and related training attendance. Finally, in terms of age, men of color are, on average, older than non-Hispanic white apprentices upon entry into the apprentice program.

In Table 2 we see, again, that agreements of men of color are less likely to be completed than those of non-Hispanic white men. We see that this difference in completion is more likely in the trades of carpentry, scaffold erecting, and pile driving. In Table 3 we see rates of completion among men by race/ethnicity by region, union status, and cohort. Men of color are less likely to complete relative to non-Hispanic white men only in region one and region two. Agreements of men of color are less likely to be completed within all union statuses, although the difference appears smallest within mixed programs.

In Table 4, we see that, overall, the agreements of men of color are more likely to be cancelled due to failure to submit progress reports, and this difference appears to be largest in sheet metal working and sign making/installing. In the two trades that men of color are less likely to complete relative to non-Hispanic white men, scaffold erecting and pile driving, men of color's agreements appear to be more likely to be cancelled due to apprentice related training and insufficient OJT hours. We also see in Table 7 that the agreements of men of color in these two trades accrue fewer completed credits at the time of cancellation and fewer averaged credit hours per month by completion, although these differences are not statistically significant. However, it

is also important to recognize that many of these cells have very small sample sizes due to the small number of men of color completing some trades (see Table 2).

### *Women of Color*

In Table 1 we see that only 180 apprentice agreements were initiated by women of color in the state of Oregon between 2001 and 2010. In some trades, such as scaffold erecting, ironworking, plumbing, sheet metal working, and sign maker/installer the number of agreements initiated by women of color is less than five. Thus, clearly there is a potentially large issue of recruitment of women of color into heavy highway trades. For example, the 2001 cohort included a total of only eight agreements initiated by women of color. While later cohorts include a greater number of agreements among women of color, the maximum number is thirty in 2007 and the minimum is five in 2010. Because of the smaller number of agreements among women of color, and women overall, statistical inferences comparing women of color and non-Hispanic white women are difficult to make. As seen in Table 1, we see no statistically significant difference in completion rate between non-Hispanic white women and women of color. However, we do see that the agreements of women of color are less likely to be in union programs and more likely to be in mixed programs. Agreements among women of color are also overrepresented in ODOT region one and underrepresented in ODOT region two and six. Cancelled agreements among women of color accumulate fewer credit hours by the time of cancellation and fewer average credit hours completed per month. Women of color, relative to non-Hispanic white women, appear to be overrepresented in carpentry, labor, and sign making/installing and underrepresented among electricians. Agreements among women of color are more likely than those of non-Hispanic white women to be cancelled due to failure to submit progress reports. Finally, women of color initiating agreements tend to have, on average, less education than non-Hispanic white women apprentices.

In Table 2 we see no statistically significant differences in overall completion rates or completion rates within specific trades between women of color and non-Hispanic white women. But again, it is important to remember that small cell sizes make it difficult to make statistical inferences about these two groups. Descriptive results do suggest that agreements among women of color are less likely to be completed in plumbing, iron working, painting, and labor. We also do not see any statistically significant differences in rates of completion by race/ethnicity among women in Table 3, which examines completion rates by region, union status, and cohort. However, as mentioned previously, there does appear to be something unique about women of color in terms of the likelihood of initiating more than one agreement, particularly among African American women (see Table 4).

### **Staff/Apprentice Interviews and Apprentice Surveys**

In this section of the report, we discuss findings of our interviews with 20 staff and 24 apprentices as well as our survey of 177 apprentices. We examine the reasons why apprentices choose to leave or are dismissed from their programs, with a particular emphasis on potential differences based on gender and race/ethnicity. We focus on three major themes: discrimination and harassment, lack of work, and lack of mentoring. We also address supports that may help to

address the disparities in completion rates by gender and race/ethnicity as well as by parental status and region.

### *Discrimination and harassment*

Throughout our interviews, we heard that female and racial/ethnic minority apprentices face discrimination and harassment. One immediate consequence of discrimination is that working in a hostile work environment can make it very challenging for apprentices to continue in their programs. A further consequence is that the more subtle prejudice and ostracism that some women and people of color face damages their ability to form relationships with journeymen, foremen, supervisors, and other workers on their jobsite. This, in turn, affects their opportunities to be mentored and taught on the job site and ultimately their ability to remain consistently employed.

*Discrimination based on gender.* In the survey of apprentices, 50% of women of color and 39% of non-Hispanic white women felt that they were disadvantaged based on their gender (Table 9 and Figure 7). As more recent entrants into the construction trades and as often the statistical minority on job sites, women face particular challenges that shape their experiences at work and influence their decisions about whether or not to complete their programs.

Female apprentices' experiences of prejudice, discrimination, and harassment on the job range from occasional and mild to regular and severe. Female apprentices commonly perceived that they were viewed as less competent workers and/or felt unwelcome on job sites. Many female apprentices had a sense that they were treated differently from their male counterparts. The following are some examples from interviews with apprentices:

[The biggest challenge in completing the apprenticeship program was] working with the men. Dealing with their attitudes. Some of them have different attitudes. Some, you know, they don't want women working. And then some don't mind you working as long as you do the same as the other men. And some try to baby you and you have to tell them to get out of the way, you know. Some are actually male chauvinists. There's a couple of them that I work with now [as a journeyworker]. So, they don't want to work with you or whatever. But they have no choice. (African American female apprentice who completed)

The one foreman I had at [one job], he didn't like women. I mean, he'd look at his crew, and it's all the same guys, but where's the same woman that he's had? So I knew he didn't really care for women, but he wouldn't give you the chance to go do anything, or learn or touch base with any stuff. (Non-Hispanic white female apprentice who completed)

Maybe it's just me. I just get the feeling they just don't want you out there. Some of the jobs we had, well some of the work is heavy but still, you do your best and that's what you get. But you can just tell even some of the other guy workers, employees, "Oh God, here comes this old lady." (Non-Hispanic white female apprentice who did not complete)

They're going to look at you and they're going to automatically judge you and just be like you're not strong enough to do this. You have to prove yourself more than like the guys do. I think. Just a little bit more. (Non-Hispanic white female apprentice who completed)

Sexual harassment of female apprentices was reported in both interviews and on the survey. As one apprentice recounted:

This guy, he was a mechanic and he was talking to me about going out and this kind of stuff. And I said, "No." And so then out on the job site he'd be out there working and he'd just, he would just kind of give me a hard time because I wouldn't meet him anywhere or go anywhere with him. He just would not knock it off. (Non-Hispanic white female apprentice who completed)

Some female apprentices report experiencing unwanted sexual attention, most commonly in the form of being repeatedly asked out on dates, although we also heard second-hand accounts of incidences of women being touched and grabbed.

Discrimination and harassment are generally viewed as still a part of construction culture. However, some female apprentices did not perceive that they personally faced any discrimination or harassment. For example, when asked "Did you face any challenges as a woman in your program?", one apprentice stated "No, not really. I kind of breezed right through it" (Non-Hispanic white female apprentice who completed). Some female apprentices acknowledged that there was some discrimination and harassment but did not perceive it as a major issue. For example, when asked if she heard people making jokes or negative comments about women, one apprentice said "They do, but I just took it as guys ragging. You know, guys being guys. I mean. I'm a guy's kind of girl, so it really didn't bother me" (African American female apprentice who did not complete). Others were more critical of these kinds of comments and jokes about women. As one apprentice said: "There's a lot of horsing around and just weird stuff and lot of joking... I mean, to me, if it's a joke, it has to be funny to both of us" (African American female apprentice who did not complete).

Common strategies for dealing with negative comments or mean spirited jokes included walking away or ignoring the comments, as in the following examples:

Just being the only girl you get different ... there's definitely a lot of... heckling. I don't know. I dealt with it different, but I definitely, there's a couple other women in my class who would talk about different stuff, just comments that they would get and they just played along with it. And I didn't really put up with it. I just would walk away when comments were said... I didn't particularly like how [one foreman] treated me, but there was not a lot I could do about it and that was... I just put up with it. It wasn't super super bad, it wasn't terrible. It was just negative in a lot of ways... I just remember there being a negative feel when I'd get home from work I would just be frustrated with it. (Non-Hispanic white female apprentice who did not complete)

My, they would say a lot of nasty things. They're just too nasty to really repeat. You know, about women and you know... They knew I'm a female and that I'm out there on the job. But what am I going to do? They're going to say all these nasty little comments about women and stuff. And just they're looking for my reaction and so I just tried not to react (Non-Hispanic white female apprentice who did not complete).

Other apprentices manage harassment by "dishing it back" as in the following examples:

I'm the kind of person that if someone dishes it to me, I'll dish it to them unless it's way over the top. I'll get these little teasing sort of things every once in while like "oh, did you break a nail," stuff like that. And I'll flip somebody off and be like "yeah, whatever." But that's the kind of person I am." (Non-Hispanic white female apprentice who completed)

You just, you know, stand your ground and they back away from you... That's the best strategy. If you don't stand up to them, they'll run you over... Everybody cuss each other out. Just about every other day, I have to cuss one person out. (African American female apprentice who completed)

*Discrimination based on race/ethnicity.* In the survey of apprentices, 30% of women of color and 24% of men of color said they felt disadvantaged by their race/ethnicity (Table 9 and Figure 7). Many of the staff and apprentices interviewed for this project noted that although there are still occasional incidences of racial/ethnic prejudice and discrimination, men of color tend to have an easier time being accepted on job sites than women. However, a variety of experiences of harassment on job sites were reported. We heard second-hand accounts of incidents that ranged from racial slurs written on bathroom walls, urinating in the water bottle of a male apprentice of color, to one incident where a noose was found on a jobsite where an African American male apprentice was working. As with women, some apprentices and staff felt that people of color were treated differently from their non-Hispanic white counterparts. For example, one staff member stated "There's definitely backlash and resentment regarding affirmative action and some misconceptions I think... I've heard things like 'Well they didn't even have to take the aptitude test.' Which is not true, not true at all... There's a general feeling that our rules are looser for people of color making mistakes or breaking rules, which really isn't true." (Apprentice program staff)

In interviews, men of color only occasionally reported discrimination based on race. When they did, it was sometimes in a non-specific way that indicated they felt that their difference mattered but did not necessarily have specific examples of how it affected their work experience. As one apprentice said:

Well, because, a lot of the times in construction majority are white guys. And, like I said earlier, a lot of times I've been on the job, I've been the only black guy on the job. So, a lot of times that do makes you nervous going into a situation like that. But, I just kept strong and I'm here to work, learn and, try not to think about it. (African American male apprentice who completed)

Other men of color reported only minor incidences and generally adopted a strategy of ignoring comments. When asked if he heard racist jokes at work, one apprentice replied:

Not directed at me and not...well, actually I take that back, I've heard it other trades talking negatively about certain things or tell inappropriate jokes, but nothing has ever been directed and me, and I just...I don't let it bother me, not to the point where I'm going to cause an issue at work. (Latino male apprentice who did not complete)

Women of color were more likely to reference discrimination or harassment based on their gender than their race. Although in some cases, they felt that differential treatment was based on both their gender and race/ethnicity. As one apprentice recalled:

One of my old bosses, he would joke around and say I was a token... I'm not white; I'm Japanese and a woman. [He meant that] whether I knew how to do the job or not or even if I was a screw-up, they'd keep me because I was their "token." I didn't know what the heck that meant; I thought he was just joking around. And he was, you know, he so didn't mean it like that. But I never knew what that was. (Asian female apprentice who completed)

It's not like African Americans make up for a large population in Oregon, but it's even smaller in the trades. I also think that in the trades, it's the same thing with women. It was like having two strikes: I'm a woman, and a minority woman. So yeah, I don't think that the jobs that were offered to another person would have been offered to me. (African American female apprentice who did not complete)

Maybe I feel more sensitive to it. But it's not straight out. So far, I haven't had anybody who straight out had a problem with the color of my skin or my being female. It seemed like you could feel it, but I don't know. (African American female apprentice who did not complete)

Some apprentices developed strategies for dealing with situations that go "too far," primarily by confronting the offending person and occasionally getting foremen/supervisors or union representatives involved. Several men of color felt that if they were harassed or discriminated against based on their race, they would be supported by their union in resolving the situation. As one apprentice said:

I have not had any of those kind of experiences just yet. But I'll tell you one thing, basically, our union, they don't tolerate any of that kind of stuff. So, that's all it is, a phone call away and the problem's solved. (African American male apprentice who completed)

However, most of the incidences were perceived to be minor and best handled on an individual basis. When these incidences are handled only on an individual level, the result is the perpetuation of a workplace culture in which relatively mild but regularly occurring prejudice and discrimination based on gender and race/ethnicity is tolerated.

### *Lack of work*

When asked about the reasons why apprentices do not complete their programs, the most common response in interviews and surveys was a lack of work. The economic conditions of the last several years have posed major challenges for construction trades. Even though apprenticeship programs have decreased the number of apprentices they accept into their programs, there are still many apprentices who do not work consistently. For some, the lack of work deters apprentices from completing their programs. The following are some examples from interviews:

There isn't any guarantee of work. You're off from work [and] you can be off from work for a long period of time. And what do you do in the meantime? You don't have any benefits. You still have got to feed your kids and put a roof over their heads. And it's very hard. It's very hard. (Native American female apprentice who completed)

I think the biggest [reason] people drop out is because they can't find work and they can't keep the job. Because if you're getting laid off constantly, I think that really messes with people. Not just financially. They just feel like they can't do it or there's no work out there or it's too hard for them. (Non-Hispanic white female apprentice who completed)

'Cause you can't just sit there and not work, and that's difficult. Most of them don't sit. They'll find something to do, but if construction's not going, they're usually leaving the industry, maybe going into manufacturing or retail. (Apprentice program staff)

As noted in the last quote, when apprentices are out of work for long periods of time, some will leave their programs to take other jobs that offer more dependable income (although the jobs often provide lower hourly wages).

While the lack of available work is potentially a problem for all apprentices, it seems to pose particular difficulties for women and people of color. As noted in the discussion of the 2001-2010 BOLI/ODOT data above, women accrue fewer completed credits at the time of cancellation and fewer averaged credit hours per month by completion. There is also some evidence that in some trades, men of color accrue fewer hours per month than non-Hispanic white men (Table 1). According to our survey of apprentices, there were small differences in the average number of months out of work per year by gender and race/ethnicity: women of color were out of work 2.4 months per year, compared to non-Hispanic white women (2.3 months), men of color (2.2 months), and non-Hispanic white men (2.0 months); however, these differences were not statistically significant (Table 9). Female apprentices who completed spent less time out of work (1.9 months) compared to female apprentices who did not complete (2.8 months). The differences for men were similar but not statistically significant: male apprentices who completed spent less time out of work (1.7 months) than men who did not complete (2.7 months). Examining these trends by gender and race/ethnicity, there were significant differences in the number of months out of work between completing and non-completing non-Hispanic white women and non-Hispanic white men; the differences were not significant for women of color and men of color (Tables 11 and 12). Among non-Hispanic white women, those who completed their most recent apprenticeship were out of work, on average, 1.69 months out of the

year while non-Hispanic white women who cancelled their most recent apprenticeship were out of work, on average, 2.83 months out of the year. Similarly, among non-Hispanic white men, those who completed their most recent apprenticeship were out of work, on average, 1.60 months per year, while non-Hispanic white men who cancelled their most recent apprenticeship were out of work, on average, 3.33 months out of the year.

In the survey of apprentices, 36% said that being out of work too much was a challenge, and there was variation by gender and race/ethnicity. Specifically, 21% of non-Hispanic white males said it was a challenge compared to 46% of men of color, 49% of non-Hispanic white women, and 22% of women of color. We also found that apprentices who completed their most recent apprenticeship were less likely to experience being out of work as a challenge than apprentices who did not complete (Table 10 and Figure 8). For example, among women, while 27% of those who completed their most recent apprenticeship reported being out of work too much as a challenge, 57% who cancelled their most recent apprenticeship reported being out of work too much as a challenge.

Based on our interviews and survey data, there are several explanations for why women and people of color work fewer hours on average during their apprentices. First, we assess potential differences in turning down jobs or leaving jobs before they are complete. Second, we address job assignments, including employers requesting that employees enroll in apprenticeship programs, employers requesting apprentices who have worked for them in the past, employers requesting apprentices who solicit their own jobs, apprentices staying on the job after a reduction in force, and reassignment to another job site by an employer. The findings from our interviews and survey data suggest that personal relationships and informal networks function in assisting apprentices in obtaining work and remaining steadily employed throughout their apprenticeships. While most apprentice programs operate from an out of work list in which individuals who have been out of work the longest are the first to be contacted when new jobs become available, interviews with staff and apprentices indicate that there are often deviations from this protocol. Research consistently shows that people demonstrate an affinity for people with the same characteristics as themselves (such as gender and race/ethnicity). Thus, as most journeymen, supervisors, and foremen are non-Hispanic white men, non-Hispanic white male apprentices have an advantage in creating closer personal relationships and building their professional networks.

*Turning down or leaving jobs.* Drawing on interviews and survey data, we find that it is very rare for apprentices to choose to turn down jobs (with the exception of turning down a job because they are already working) or to leave jobs before they are complete (with the exceptions of leaving one job for another job or being let go as part of a reduction in force). The general expectation is that apprentices will take any job that is offered. Some programs have specific rules, such as an apprentice may turn down a job if he or she has a good reason or may turn down a job one or two times without being penalized. There were a few examples in our interviews of apprentices reporting turning down jobs; for example, one apprentice stated that she turned down a job working on a bridge at nights that was offered with short notice because the job was undesirable. In the survey of apprentices, 11% of apprentices said they turned down a job for a reason other than already working at a job. Of this 11%, 37% said the job was undesirable, 22% said they had issues paying for gas; 32% said they had problems paying for food and lodging for

out of town work, 16% said they had problems finding or paying for childcare (Table 9). Similarly, apprentices rarely left a job before it was completed unless they were leaving because they were offered another job or were let go as a part of a reduction in force. In the survey of apprentices, 36% of apprentices said they left a job before it was completed for a reason other than being offered another job. Of this 36%, 60% said they were let go due to a reduction in force, 8% said they were let go due to performance, 7% said the job was undesirable, 7% said they had issues paying for gas; 3% said they had problems paying for food and lodging for out of town work, and 2% said they had problems paying for childcare (Table 9). Survey results suggest that women, particularly non-Hispanic white women, are more likely to leave a job before it is completed than are men. We found no differences in rates of turning down jobs by race or gender in analysis of apprentice survey data. We did find that apprentices with small children in the home were more likely to turn down jobs due to issues related to gas and child care and that apprentices outside of region one were slightly more likely to turn down jobs due to issues related to child care.

*Job assignments.* As described above, apprentice programs generally assign jobs based on some variation of an “out of work” list in which apprentices wait to reach the top of the list to be called to be offered job assignments. However, in practice, there is a lot of variation from the stated protocols. Two of the apprentices we interviewed described getting into an apprenticeship program because an employer asked them to begin the apprenticeship programs and then that employer requested them and hired them as apprentices (both cases were open-shop apprentice programs). According to our survey of apprentices, 24% of respondents stated that their employer requested that they enter an apprenticeship program (Table 9). Seventeen percent of apprentices in union programs and 40% of those in open-shop programs had employers request they enter an apprenticeship program. In these scenarios, the apprentices potentially circumvent the out of work list entirely. Non-Hispanic white women were less likely than non-Hispanic white men to have employers request that they enter an apprenticeship program. We found no other difference by race or gender.

One way that apprentices may reduce their time on the out of work list is when they are recalled by previous employers. In some apprentice programs, contractors may be able to request apprentices by name if they have worked with them before. This may lead to an advantage for non-Hispanic white men, who are more likely to have stronger personal relationships with the journeymen, foremen, or supervisors they have worked with in the past (predominantly also non-Hispanic white men). In some cases, contractors request apprentices even if they haven’t worked with them before, as in this example:

[The] foreman actually called the school and requested me because he saw me [at a jobsite], and he knows my cousins who are foremen. He actually approached me in [a bar] one night, and he is like, “Is [your foreman] keeping you busy?” and he goes, “Come on over,” and I did. I was off for four months and he called the school, and he had me come out there. So that was the only time [I’ve worked for a different company than the one I started with]. But I’ve never had to look for work (Non-Hispanic white female apprentice who completed).

Another way in which apprentices circumvent the out of work list is by soliciting their own jobs. In our survey of apprentices, 36% of apprentices sought out work on their own (Table 9). Thirty-one percent of apprentices in union programs and 47% of those in open-shop programs solicited their own jobs. In programs where apprentices seek out their own jobs rather than waiting to be contacted by the program, the dynamics of gender and race/ethnicity in creating personal networks may also be relevant. Non-Hispanic white men may not only be more able to form new personal relationships with others in the trades (who are overwhelmingly also non-Hispanic white men) but they are more likely to have family or friends in the trades who may have their own personal contacts or may be able to offer jobs or advice about how to seek out jobs. The apprentice survey data suggests that women of color are the least likely to solicit their own jobs. Specifically, while 38% of non-Hispanic white men reported soliciting their own jobs, only 21% of women of color reported soliciting their own jobs.

Programs vary in whether or not apprentices can solicit jobs or contractors can request apprentices by name. However, we found that in some cases, apprentices solicit their own work and contractors requested apprentices even when they are not supposed to. In an interview with a staff member of a union contractor, the interviewee first explained that the company was not allowed to ask for apprentices by name; however, the staff member went on to describe how the company did request and receive specific apprentices, particularly when apprentices asked if work was available. As the staff member describes:

[The apprentices] write down their skills, they write down their contact information, they write down their trade and the level that they're at so that way we know, "hey, this guy is probably somebody we can use on the project." And we call the hall and say, "hey they come in and they stopped in and asked about work. We didn't have any available when they did, but now we do. Can we call them out?" And so we talk to the unions that way so that we know that these people are coming in and actually putting forth the effort to try to get in on a project. And for apprentices especially, I know that we can't contact them specifically, like call them out specifically, but if they do come in we can always ask the hall saying, "hey, this person came in and said they were an apprentice, can we have them come out?" The hall can say "yes" or "no," or they'll be like "no, you need to take the next person on the list." So it just depends on how the hall wants to deal with it. But mostly they try to do it with people on the list, but people who actually go to the projects and actually talk to the superintendents, or actually put their name on the list for a callout, are more likely to get hired than those who just wait (Contractor staff).

Thus, in some programs, apprentices are told they are not allowed to solicit their own work, yet, those who do are more likely to get hired. This is one example where insider knowledge that comes with having family or friends in the trades, having prior experience in the trades, and having mentors on and off the job site can have an influence on an apprentice's success.

Once assigned to a job, some apprentices stay on the job or with the company for longer than other apprentices. For example, some apprentices stay longer on jobs while others are let go as part of the cyclical reductions in force that occur as projects change or jobs wind down. We found that several of the study participants (staff and apprentices) had the perception that women and men

or color were more likely to be let go when a project had a reduction in force, even if there were other apprentices who were more recently hired or less effective workers. For example:

There's a definite pecking order to how people are hired and retained on a job. Some people are of "the last one hired, first one fired." But as a woman, or as a man of color, you are always going to be in that group, regardless of if you were the last one hired and the first one fired. But you're going to be the first one. The first lay off list, you're going to be on it. (Native American female apprentice who completed)

[The biggest challenge for women is] getting laid off first. So many times, the decision about who stays on the job, who gets the training, and who stays is because of who is part of that relationship network. It's not so much who is the best worker, but who is the one that is my friend. (Pre-apprenticeship program staff)

When the number of women and the number of people of color are so few and far between, and so absent on the jobs, it makes it so easy for them to overlook them or just completely eliminate them. And you don't find very many women or people of color as project managers or superintendents. And there's kind of a bond, a social and a cultural bond that exists, that's kind of unspoken, unwritten [among white men]. And it's like they have a better understanding of how one of their peers of the same ethnic background may feel if they're let go, but then that same feeling doesn't... Is not associated with a woman or a person of color. (Pre-apprenticeship program staff)

In our survey of apprentices, we found that overall 20% of respondents felt that they were unfairly chosen to be let go during a reduction in force (Table 9 and Figure 8). Women were more likely than men to report this perception; however, the difference was not statistically significant.

Another way that apprentices may avoid returning to the out of work list occurs when an apprentice may stay with a company and be reassigned to another job once their current job draws to a close. As one apprentice related:

And once I got connected with [that foreman], I tended to move jobsites with him, or if he moved first to a new jobsite, he'd always ask the super to bring me over there because he really liked having me along and teaching me and I would do a good job for him. (Non-Hispanic white female apprentice who did not complete)

In some cases, developing a close relationship with one company allows apprentices to remain working continuously throughout their apprenticeship rather than cycling on and off the out of work list.

As indicated in some of the above examples, women and people of color do develop strong relationships with journeymen, foremen, and supervisors. However, the data suggests that women and people of color are not as successful as non-Hispanic white men in creating positive relationships that contribute to remaining consistently employed.

These trends may also be influenced by the fact that some contracts require contractors ensure that a percentage of apprentices be women and people of color, leading women and men of color to have an advantage in being called for a job before they reach the top of the out of work list. This may serve as a counter to other dimensions of job assignment processes that disadvantage women and people of color; however, our overall findings suggest that women and people of color are disproportionately affected by being out of work.

Overall, we found that 61% of apprentices thought that jobs were fairly assigned, with significant differences by gender and race/ethnicity. 76% of non-Hispanic white men thought jobs were fairly assigned compared to 55% of men of color, 58% of non-Hispanic white women, and 59% of women of color (Table 9). We also found that 86% of non-Hispanic white women who completed their most recent apprenticeship thought that jobs were fairly assigned, compared to 50% of non-Hispanic white women who did not complete (Table 11).

### *Lack of Mentoring*

A lack of mentoring was another major problem faced by apprentices, particularly female and racial/ethnic minority apprentices. As observed above, a great deal of success in apprenticeship programs had to do with personal relationships. An apprentice's experiences with mentoring (or lack thereof) largely depend on his or her ability to navigate personal relationships. In this section, we discuss pre-apprenticeship programs, mentoring off the job, and mentoring on the job.

*Pre-Apprenticeship programs.* Of the 24 apprentices we interviewed, 5 participated in the Oregon Tradeswomen pre-apprenticeship program (no other pre-apprenticeship programs were represented among our interview participants). These included 4 women of color and 1 non-Hispanic white woman. Overall, 36% of survey respondents reported completed a pre-apprenticeship program. However, we believe there was some inconsistency in the definitions of a pre-apprenticeship program among survey respondents. Of those who reported completing an apprenticeship program, 29% listed Oregon Tradeswomen Inc (OTI), 6% listed community college, and 3% listed Excellence in Trades Apprenticeship Preparation, previously Evening Trades Apprenticeship Preparation (ETAP). The remainder either did not specify the program or listed Northwest College of Construction (NWCC), local labor union, or other vague or miscellaneous descriptors. We similarly found in the interviews that when asked about pre-apprenticeship programs, some participants would report participating in one week "boot camp" type programs offered by NWCC or union apprentice programs. While these programs offer some of the same types of information and experiences, we are limiting our discussion of pre-apprenticeship programs to multi-week programs.

Pre-apprenticeship programs are designed to prepare individuals for apprenticeship programs. Programs generally cover math, hands-on training in various construction trades, and field trips to job sites. Staff of pre-apprenticeship programs explained that participants learn both about construction work as well as about construction culture. When asked about the importance of pre-apprenticeships, one staff member explained:

They get kind of acculturated to what the apprenticeship system is all about. They get some basic and very fundamental skills, understandings. They get an understanding about the psychology of the thinking around construction trades. They recognize the physicality of the work. They also understand that it's a cyclical work. So, they understand what to expect and how they navigate through it. (Pre-apprenticeship program staff)

Staff of pre-apprenticeship programs as well as staff of apprentice programs discussed the importance of pre-apprenticeship programs for women and people of color, who are often "first-generation apprentices." In other words, they are the first in their family to enter the trades and most likely have little experience or knowledge about being an apprentice. The results from the survey data show that pre-apprenticeships are targeting those without prior connections to the trades. Specifically, 52% of those who completed a pre-apprentice program had friends/family in trades, while 73% of those who did not complete a pre-apprentice program had friends/family in trades. Similarly, 36% of those who completed a pre-apprentice program had prior experience in construction, while 67% of those who did not complete a pre-apprentice program had prior experience. Pre-apprenticeship programs can provide first-generation apprentices some of the background knowledge that can be pivotal to their future success in an apprenticeship program. In turn, completion of pre-apprenticeship program provides an apprentice with knowledge and experience while illustrating that he or she is ready, able, and dedicated to their program.

Staff of pre-apprenticeship programs as well as staff of apprenticeship programs noted that a big challenge was that some apprentices, particular those who were first generation apprentices, did not know what they were getting in to. One staff member described what a first day of work might be like for an apprentice:

They say, "Tomorrow show up at the jobsite." Well, you're going to show up and you're going to see all this activity and you're going to go, "Oh, there's the jobsite." People will walk by you, almost run into you if you're standing in the wrong place and they won't offer to help you. They ignore you. They're busy, and/or why should they help you? Nobody helped them. That's sort of their mindset. So, you go to the job shack and he says, "Okay, here's a slip of paper. Go find Bill." "Where is he?" "He's out there somewhere. Just go find him." So, if you are someone who was brought up around that kind of stuff, your dad talked about it, then you got to know what to expect. But if you're woman or a person of color, it's the epitome of being disrespected, or being unwelcomed, right? If you go into an office setting, people will look at you kind of funny but, normally, they'll say, "My name is..." But in this case, nobody stops and talks to you. So, it's a very rude awakening for anyone expects to have some sort of welcoming atmosphere... So, you're expected to know stuff. You don't know anything. You're assigned to someone and they may treat you like a piece of crap, or they may treat you like they care about your introduction to this field. If you are someone that does not look like them and you happen to get someone who's insensitive, or is just a butt, you're going to be treated really poorly. And it's not going to be something that strikes like, "You know what? I really like that experience and I want to go back." (Pre-apprentice program staff)

Through classroom work as well as visits to job sites, pre-apprentice programs seek to provide participants with some information about what their apprenticeship experience will be like as well as some advice about how to navigate the challenges they will face. Pre-apprenticeship programs can offer insight into the type of work, the physical rigor of the program, information about construction culture, and the other information that will assist in completion, particularly for those without prior construction experience and/or friends and family in the trades.

The question of how potential apprentices might balance parenting and work is something that can be addressed in pre-apprenticeship program. As a staff member stated:

The instructors work with them on how to start creating that childcare plan. When they first meet with one of the counselors for admissions, we also go, "Do you have a childcare plan in place? Let's not think of, "Well, my friend said maybe I could do that." You absolutely are going to be in a situation when that employer goes, "You need to be here. You need to be there. You need to go down south for three or four days, for a week." How are you planning for that? Do you realistically have an ideal of what that challenge is going to be like for you and your children? Because again, natural for mother or father, it's painful to be away from your children for a length of time. But this is part of the industry. And if you want to be part of that industry, there's certain sacrifices that you have to make. And so clarifying that and making them understand as well, and getting some good goal setting in the beginning, and a good understanding. (Pre-apprentice program staff)

Pre-apprenticeship programs were generally positive experiences for the apprentices we interviewed; however, three of the five dropped out of their apprenticeship programs (all for reasons related to health or injury). Apprentices expressed that the pre-apprenticeship program allowed them to experience a variety of trades. This exposed them to the type of work and the requirements of being an apprentice. One apprentice described the OTI program:

Basically safety, different safety procedures. We would do exercise, things to learn to get your body ready for the job as well as how to maintain the body once you're out there. Measurements, lot of math involved. I had to do a little bit more math and then a lot of hands-on training things. And then learning more about the other things that you could go into by way of the Tradeswomen program. (African American female apprentice who did not complete)

Results from apprentice survey data suggest that women who completed a pre-apprentice program were less likely to have cancelled their most recent apprenticeship and more likely to have received both on site and off site mentoring, relative to women who did not complete a pre-apprenticed program, although these differences were not statistically significant. In addition, women who completed a pre-apprentice program are less likely to report problems with journeymen and foreman as challenges.

Finally, it is also notable that there are only a small number of approved pre-apprenticeship programs in Oregon and the two programs with the most participants (OTI and ETAP) are

located in the Portland area, which limits opportunities for potential participants in the rest of the state.

*Mentoring outside of the job.* Having prior experience in construction or having family or friends in the trades can assist apprentices in completing. From our survey data, we find that women and people of color are less likely to have these sources of knowledge and support. Specifically, while 71% of non-Hispanic white men report having prior experience in construction, only 44% of women of color and 53% of white women reported having prior experience in construction. While non-Hispanic white men were the most likely to report having family and friends in the trades, differences in this variable by race and gender were not statistically significant.

In interviews, we heard that it was particularly important for women and people of color to have outside support as they faced challenges on the job site. However, as noted above, they are more likely to be the first generation apprentices without pre-existing support system. Several staff members said that female and racial/ethnic minority apprentices need someone to check in with when they face challenges on the job site that they perceive might be related to their gender and/or race/ethnicity. As one staff member said:

You need somebody that looks like you, comes from your same background, to do the reality check with. “Okay, this is happening on the job. What does this mean? Is this because I am a woman or person of color? Or is this because this happens to every apprentice?” (Pre-apprentice program staff).

In several staff interviews, the need for formal mentoring programs was raised. Some staff members felt that apprentices, particularly those who do not have experience in construction or do not have family or friends in the trades (including many women and people of color) would greatly benefit from having a mentor assigned through a formal mentoring program. However, some of the staff members we interviewed were skeptical about how a formal mentoring system would be managed or who would serve as the mentors. As one staff member stated

Because in a perfect world we would have, there would be a journeyman out there that says, “I want to mentor him. I want this kid to be with me.” To help him with his progress reports. And if he has any issues, car trouble or something, he can call him up and get a ride to work with him. That’s in a perfect world. [But] everybody else has so much stuff going on with their life that they really don’t have time for another kid. They’ve got two kids at home. They don’t want to have to babysit another kid. (Apprentice program staff)

A staff member of a pre-apprenticeship program noted that in the past, a one-to-one mentor system had been attempted but was very difficult to make it work effectively.

Some amount of mentoring, largely in the form of problem-solving, is done by apprentice program coordinators. However, this is not ideal as program coordinators do not have the time or resources to provide individual attention to the large number of apprentices they oversee. Apprentices may not bring what they perceive to be small issues to the attention of the coordinators or may be reluctant to discuss issues with their program coordinators if they perceive that they will be viewed as less desirable or dedicated workers.

Some of the women and men of color we interviewed said they would have participated in a mentoring program outside of the job site if it had been offered. However, others stated that they would not, citing either that they did not have the time or did not need any additional support. As one apprentice stated “Probably not, but that’s just me. Only because I worked with so many people that I had a very good rapport with” (Non-Hispanic white female apprentice who completed). Results from survey data show that women are more likely than men to report that mentoring outside of the job site would be helpful in the future (Table 9), and women are more likely than men to report that mentoring on the job has been helpful. In addition, analysis of survey data suggest that more women than men who see mentoring as necessary are not receiving mentoring on or off the jobsite.

There are some models from pre-apprentice programs that follow up with participants after the pre-apprentice program is complete, such as the Oregon Tradeswomen (which provides ongoing mentoring and support throughout the career) and the ETAP program (which provides follow up support for a year). OTI, for example, provide ongoing mentoring in the form of program staff availability by phone or in person, a facebook page, and a monthly social hour.

As one participant who completed the Oregon Tradeswomen program and subsequently completed her apprenticeship stated “I did use [mentoring provided by OTI]. It was pretty cool to talk with them about stuff... They also have the social hour where you can get together with the different OTI graduates and all the girls get to talk about their work and de-stress and stuff like that. That’s really nice.” However, when we asked her if she attended OTI’s social hours, she responded “I’ve been to a couple. I haven’t been lately. But I used to go. I just get busy, with work and stuff.” (Non-Hispanic white female apprentice who completed) It is notable that the OTI social hours are open to any women in the trades, yet the women we interviewed were generally not aware of the organization. Only one woman who had not gone through the OTI pre-apprentice program knew that there was support available to women in the trades through OTI. From our interviews, there is a demand for mentoring outside of the job site so information about OTI should be more widely distributed.

*Mentoring on the job.* In our interviews, both staff and apprentices indicated that on-the-job mentoring is critical to the success of apprentices. However, our interview and survey data suggests that a lack of on-the-job mentoring is a major issue for many apprentices. Apprentices were asked to indicate whether or not they received “Mentoring at your job site, that is, access to someone on the job site who you could talk to about challenges at work, helped you learn about the trades, and/or took time to teach you new skills.” Only 38% of women of color reported receiving on the job mentoring, compared to 57% of non-Hispanic white women, 67% of men of color, and 79% of non-Hispanic white men (Table 9 and Figure 9). While the number of women of color who reported receiving mentoring appears very low, it seems that there is an across the board issue with receiving on the job mentoring. These findings were echoed in responses to the interview question “Did you have anyone that acted like a mentor to you?”

We're supposed to. That's what we're supposed to have [a mentor], but, usually, it doesn't end up [that way]... It would have worked if they did it, but they don't really do it. Not at our company... It would be easier for the apprentice to learn working with one person. Because that person can show you better than twenty other people. Because everybody

has a different style, the way they do things. So, you're doing one person's style and then turn around working with somebody else. "No. No. No. Don't do it that way." You know, so, it all depends on who you work with. (African American female apprentice who completed)

I wish there was [someone who acted like a mentor]. I had very minimal experience with that on the job. (Latino male apprentice who completed)

Further, as one staff member stated:

There's a lot of journeyman out there that just want apprentices to be their gophers and they don't teach them anything. Or they're just not the most pleasant individuals to work around so I think it's important that apprentices are placed with journeymen that are willing to teach and be good teachers and to give a variety of experience and not just use them as cheap labor... I think anybody who kind of sticks out, whether it's a woman, a person of color, or maybe real skinny guy, for example. I think they all can run into issues. And there's definitely a culture about construction that's about hunting and fishing and good old boys club. I think that is definitely changing but there's definitely remnants of it. (Apprentice program staff)

On the flip side, female and racial/ethnic minority apprentices we interviewed did experience on the job mentoring.. The following are some examples:

[The journeymen] all wanted to show me a little something, something here, something there and they were always continuously trying to point things out to teach me things. So, you know, when I did journey out, I would be a good [journeyman]. (African American male apprentice who completed)

I had quite a few journeymen that I could always call. And I sort of tried to identify those people when I first start working somewhere. 'Cause I generally get along with everybody, but I've noticed in every shop, there's kind of the go-to guy. And usually they're older, they've been in for a really long time, but everybody calls them if they have a question or we can't figure something out. (Non-Hispanic white female apprentice who completed)

A problem that some apprentices face is that in the course of their on-the-job training, they do not learn all the varied skills they need to learn to be successful journey workers. In our survey, doing repetitive or low-skill tasks and not having the opportunity to learn new skills were two of the most common challenges faced. In the survey, a large number of apprentices said that doing repetitive or low skill tasks was a challenge: 35% of women of color, 43% of non-Hispanic white women, 31% of men of color, and 21% of non-Hispanic white men (Table 9 and Figure 10). This issue was raised many times in our interviews with staff and apprentices. The following are two examples:

That company is kind of known for not giving apprentices, especially women, a chance to run equipment. Like for instance, I was supposed to be running [a specific piece of

equipment]. I was supposed to learning. That was my job. That was what I was getting paid for. And for the most part they made me just do flagging. (Non-Hispanic white female who did not complete)

I really think the largest part of [women apprentices'] frustration in on the job training and lack of varied work from their contractors. A lot of women, I think end up getting put with just the easier work. When I was an apprentice, I had to really ask for the other kind of work and that's something that I reiterate to our apprentices. (Non-Hispanic white female apprentice program staff member who completed an apprenticeship in the same trade)

Several participants noted that although they had the experience of performing low-skill tasks (such as sweeping or flagging) on specific job sites, they had the opportunity to learn new skills once they moved to a new job site (with a new foreman/supervisor). This apprentice program staff member quoted above stated that she thought that mandatory rotation would help alleviate this issue for her program. In discussing the issue of respective or low-skill work, many apprentices acknowledged that performing low-skill work was part of the apprenticeship experience; however, when women and men of color are the ones disproportionately performing this work, it will have negative impact on the quality of their training experience in the apprenticeship program.

We found that having personal problems with journeymen was an issue for many apprentices; overall 25% of apprentices indicated this was a challenge. However, 35% of women of color found it a challenge, compared to 32% of non-Hispanic white women, 17% of men of color, and 13% of non-Hispanic white men (Table 9 and Figure 10).

From our interviews, the good and bad experiences with mentoring on the job depended largely on the personality of the individuals that the apprentices come into contact with on the job sites. We have not yet found any examples of systematic approaches to ensure good mentoring of women and people of color on job sites. However, the findings we have discussed here suggest that it would be helpful to develop guidelines for on-the-job mentoring and to more vigilant in addressing conflicts between journeymen and apprentices as they arise.

The apprentices we interviewed described a variety of ways to deal with a lack of mentoring. However, many either struggled or saw others struggle with wanting to be a "good apprentice" by following orders but also be a "good apprentice" by learning the necessary skills of the trade. As one apprentice stated:

But some girls, I think, just don't want to make waves. But you've got to find a middle ground. That's like, I think, the biggest thing is finding the middle ground between not being perceived as a bitch, not being perceived as a whiner, but saying "look, I want to learn this. I'll wait my turn, but I want you to know that I want to do this" (Non-Hispanic white female apprentice who completed)

### *Miscellaneous Challenges*

In addition to discrimination and harassment, lack of work, and lack of mentoring, we found some additional challenges faced by apprentices. We briefly discuss these themes here.

*Not working hard.* Not working hard enough or being lazy was consistently given as the primary reason by apprentices why other apprentices do not complete the program. Many staff members also mentioned not working hard or lack of a work ethic as a reason why apprentices did not compete. As two apprentices stated:

Head down, ass up. Pretty much. They just got to stay at it. You can't be lazy about it. You have to stay working, you have to stay busy. Even when you're not busy, you have to find some kind of busy work to keep yourself busy. That's the kind of things that keep people going and make the apprenticeship go a lot faster. Employers like to see that too. (African American male apprentice who completed)

[The reason people are unsuccessful in completing their apprenticeship programs is because] they don't want to do it. We had 14 people to start with in our class. We only lost two of them through the five years, so it's not bad. I think most people that get in, as long as they put in the work and effort to do it, they get through just fine. It's just when they get lazy. (Non-Hispanic female apprentice who completed)

Discussion of apprentices who are not working hard enough can take a variety of forms: the apprentice does not work hard at the job site; he/she does not learn the necessary skills; he/she has a bad attitude at work; or he/she does not submit progress reports. As noted in the quantitative analysis above, agreements of men of color and women of color are more likely than those of non-Hispanic white men and women to be cancelled due to failure to submit progress reports and related training attendance. We also heard in interviews that it was a challenge for some apprentices to submit progress reports.

Although there are certainly apprentices who do not work hard and that it is likely a common reason why apprentices do not complete, the findings of this study suggest that working hard is not sufficient explanation for why some apprentices complete and others do not. There are a myriad of challenges faced by apprentices that may inhibit their ability to be successful in their programs. As we have outlined above, discrimination against women and people of color pose significant challenges to their completion. A woman may be working as hard as she can, but she will not be successful if she is not given the appropriate training by a mentor on the jobsite, or if she is let go more often because she is not able to form personal relationships with journeymen and foremen, or if she cannot afford the cost of fuel to get her to and from the jobsite. One apprentice went back and forth between a narrative of hard work and acknowledging the importance of personal relationships. She said:

Well, it's all about just like who you know and who you're buddies with I think. I mean I don't think that being a woman... I mean it does... it is hard. But really if you're like a hard worker and you can get along with people, then you can be very successful in the trade. And then there'll be some rocky patches along the way with people that won't like you because you're a female. But really I've had really good experiences. It's all about

networking. And being a good worker too. But, having friends, I think that's a really big part of it. (Non-Hispanic white female apprentice who completed)

*Issues with attending and passing classes.* In interviews and in the survey, we found that some apprentices had difficulty with the class portion of the apprenticeship. In the survey of apprentices, 6% of apprentices said attending classes was a challenge and 6% said passing required classes was a challenge. There were small differences by gender and race/ethnicity but these were not statistically significant. Electrician programs seem to be unique in that the classroom work is particularly difficult and that more apprentices are dismissed for failing classes compared to other trades. One electrician apprentice program staff member suggested it might be helpful to offer additional tutoring sessions. In other trades, it is more common for apprentices to fail to attend the classes, which can lead to being dismissed from the program. As one apprentice program staff member stated: "The hard part is people don't want to leave work to come to the training center and that'll get them in trouble because they get so far behind in the class and then they can't go to work."

*Fit for the work.* A reason why some apprentices leave programs is that they are not a good fit for the work, that is, the apprentice does not enjoy the work, the work is too physically difficult, or work conditions are uncomfortable (e.g. weather, working overnight). In interviews with staff and apprentices, we found that some women who are not as physically big and strong as other apprentices have some challenges completing the work assigned to them. Alternatively, they are assigned less physically demanding work, which may result in being evaluated as a less capable worker. In the survey of apprentices, about 42% of female workers reported feeling they were disadvantaged because of their physical size and strength (compared to only 8% of male workers). In the survey of apprentices, we asked apprentices to indicate whether or not they felt it was a challenge that "I did not enjoy the work (e.g. too physically difficult, weather was too cold, wet, or hot; hours were irregular)." Overall, only about 13% of apprentices surveyed indicated this was a challenge. We found slight differences by gender and race/ethnicity, but differences were not statistically significant.

However, for some apprentices, the work may be "not a good fit" because of challenges they face on the job (which may or may not be perceived as related to being a woman or person of color). As one staff member explained: "One [female apprentice] is on a leave of absence because she's trying to figure out if this is really what she wants to do. But she had a real frustrating experience with her contractor not training her properly and then when she went to go work for another contractor, they were like "where have you been your whole apprenticeship? Why don't you know how to do this yet?" (Apprentice program staff) Interestingly, quantitative analysis of the Oregon Apprenticeship System database show that women and men of color, particularly African-American women and men, appear to be more likely than their non-Hispanic white counterparts to initiate multiple agreements (see Table 4), which may potentially signal a sense of not being a good fit for the work.

*Personal issues:* Staff of apprenticeship programs stated that some apprentices left the programs for personal reasons, such as alcohol/drugs, legal trouble, domestic violence, or sick children. Several participants reported that not having a driver's license was a problem for some apprentices, and some study participants perceived was a problem that disproportionately

affected people of color. One apprenticeship coordinator stated that she would like to be able to offer apprentices with personal issues referrals to services or programs; however, personal issues were largely viewed by both staff and apprentices as individual responsibilities.

*Health/injuries:* Many staff and apprentices commented on how physically taxing construction work can be and the resulting strain on the body. Several apprentices we interviewed who dropped out of apprentice programs did so because they experienced physical problems related to their work. Others noted that although health problems were not the main reason why they left their apprenticeship program, it was something that concerned them and contributed to their decision to leave.

### *Supports*

In the interviews with staff and apprentices, we asked about specific types of supports that might be implemented in order to promote the retention of women and people of color. These types of supports included: fuel assistance; support for overnight travel; childcare; and tools, clothing, and protective equipment.

*Fuel assistance:* Seventeen percent of surveyed apprentices reported that paying for gas to get to and from work was a challenge; people of color were disproportionately affected by this issue. 26% of men of color and 22% of women of color said paying for gas was a challenge (Table 9 and Figure 11). In addition, survey data suggests that apprentices with small children in the home are more likely to experience paying for gas as a challenge. In interviews, staff and apprentices noted that paying for gas was a particular challenge when an apprentice was beginning his or her apprenticeship (because starting wages are lower) and when apprentices were returning to work after a period of being laid off. Fifteen percent of apprentices surveyed said they received fuel assistance, and, on average apprentices receiving this support reported that it has been “somewhat helpful.” On average, apprentices reported that fuel assistance would be “very helpful” in the future, with men and women of color more likely to view fuel assistance in the future as “very helpful” (Table 9). In Figure 12, we see that while 70% of apprentices reported that fuel assistance would be “very helpful” or that they “couldn’t complete without,” only 21% of these apprentices reported receiving fuel assistance. Not surprisingly, current apprentices are more likely to report receiving fuel assistance than those who have cancelled or completed their most recent apprenticeship (Table 10).

In interviews with staff and apprentices, there was a consensus that fuel assistance could be very helpful. A few participants mentioned that it would be particularly helpful early in apprenticeship or after periods of unemployment. The following are some examples:

I mean right now we have that huge [job] that we have a ton of apprentices at and that’s a pretty hefty gas bill. So if they’re having trouble making it to work every day and making ends meet, then that’s an issue, I think for sure. (Apprentice program staff)

I would see the fuel and the overnight being the biggest help in our specific industry. So for those of us who are doing road and bridge construction, those are going to be big. (Contractor staff)

[It would be helpful] at the beginning of the apprenticeship just 'cause of the sliding scale they use [for apprentices' wages]. (Male Latino apprentice who did not complete)

One apprentice had received fuel assistance and found it helpful:

[The BOLI staff member] said, “Well, we have this stuff available, this stuff available.” And, at the time, I was laid off from work and when I called her and I said, “Well, I’m laid off and I got this job coming up.” She said, “What is it? Find out what it is and we can help you to get started with gas.” And that helped me out because once you get that first couple of weeks, you don’t get no check. So, you know, it just helped out. It helped out a lot. So, you know, after I got my checks, didn’t have to use it no more until, just my next time. (African American male apprentice who completed)

*Support for overnight travel:* Fifteen percent of surveyed apprentices reported that they had difficulty paying for food and lodging for out of town jobs (Table 9); there were no significant differences across gender and race/ethnicity in reports of difficulty paying for food and lodging (Table 9 and Figure 11). Not all apprentices experienced working out of town and some jobs offer a per diem for out of town work. 11% of surveyed apprentices received this type of support. On average apprentices receiving this support reported that it has been “somewhat helpful,” and apprentices report that support for overnight travel would be “very helpful” in the future (Table 9). Similar to the unmet need for fuel assistance, Figure 12 shows a similar unmet need for support for overnight travel: while 77% of apprentices reported that support for overnight travel would be “very helpful” or that they “couldn’t complete without,” only 14% of these apprentices reported receiving support for overnight travel. Apprentice located in regions outside of region one were more likely to report challenges related to paying for food and lodging.

Only a few apprentices we interviewed had traveled out of town; however, of those who had, they said that offering support for overnight travel would be important. As one apprentice recalled: “For them to help pay for hotels... I remember my first job was out in the Dalles...and I had to drive back and forth every day until I finally found somebody that would rent out their basement for me to stay in their basement. That was a little better on me.” (African American male apprentice who completed)

One strategy that is often used for out of town travel is sharing lodging with another worker from the job site. This may pose particular issues for women who may be unwelcome or uncomfortable sharing a room with male workers. One female apprentice said that she knew other apprentices who shared a hotel room while working out at the coast. She said “I’m really glad I never had to approach that because I’m not sure how much they would of bent over for me being that I’m a girl, but I never had to deal with it” (Non-Hispanic white female apprentice who did not complete).

Offering assistance for overnight travel can enable some apprentices to take out-of-town jobs that they might otherwise have to decline. As noted in interviews:

If they have to travel, they need help, especially in first or second year of apprenticeship. And especially for women and people of color who, they may not work as steady. So if

you're not getting the hours in to build up your resources, then you won't have the cushion when you have to be asked to travel out of town. (Pre-apprenticeship program staff)

Now they have to go live out of town in a hotel, that could be maybe 250 bucks or more a week. Just for that, plus the gas money to drive across the state and back. And, then, food. So, it can be pretty expensive, even if you're trying to do it cheaply. That could be \$300, \$400 a week. And these people have been chronically unemployed, a lot of times, and just haven't had jobs. And so they don't have a thousand dollars saved up until they get their first check. And, then, they've got to work long enough to put that money back in their account for the next job. And so that's also part of a challenge, because we have two and three week jobs, so an apprentice can go do a two week job, put that money out and really barely recoup it. (Apprenticeship program staff)

Apprenticeship program staff members reported on how programs providing funds for out of town travel have assisted apprentices in their program:

I've seen the lodging and per diem has [helped] a lot of people that wouldn't normally be able to travel. When you're thinking about people travelling to remote areas of the state to take some of that heavy highway work, generally speaking it's people that are going to be people that are living in those areas that would be able to take that work or that live out in Eastern Oregon, Southern Oregon, people that live out in the rural areas. Most the minority populations are in a metropolitan area. So, most minorities don't usually work out on all those jobs because of that reason. So this has allowed us to say, "hey we have this support services that will help you get there until you start earning your money and you can accept this job." And so we have seen that. That's the benefit... I mean, we've seen it just by being able to offer it and there's people who have taken work that they wouldn't have otherwise accepted especially if it's, you know, overnight travel or travel, any kind of travel. The assistance has made it possible for a lot of apprentices to take that work that wouldn't have been able to do it otherwise. (Apprenticeship program staff)

And we had a project in [Eastern Oregon] and I sent an Hispanic male out there, only because he got assistance for travel, for lodging and food. If not there's no way a brand new apprentice is going to make it out there... I mean, if you're making fifteen bucks an hour and your room is eighty bucks a night, you're pretty much working for free. So, yeah, that wasn't going to work for them. (Apprenticeship program staff)

*Childcare:* About half of all apprentices had children under 18; female apprentices were less likely to have children under 18 living in their household than male apprentices (Table 8). Female apprentices were also less likely than their male counterparts to have children under the age of 5 living in their household and less likely to be married. Non-Hispanic white women were the least likely to have children under the age of 5 living in their household during their most recent apprenticeship. However, results from the apprentice survey (Table 10) show that women with children under 5 years of age in their household were much less likely to complete their apprenticeship relative to those who did not have children under 5 living in their household, and

this association is stronger among women of color. Surprisingly, male apprentices with children under 5 in their household were *more* likely to complete their most recent apprenticeship.

Given the often irregular hours and potential for out of town work, it is a significant challenge to balance an apprenticeship and parenting without the support of family and/or friends who are able to take on childcare while the apprentice is working. This may be one reason why we see more single, childless female apprentices relative to single, childless male apprentices. Male apprentices who are married and have children may be better able to juggle work and family responsibilities given gendered expectations related to child care. Several study participants noted that the work often required early morning shifts, night shifts, and out of town work. Thus, many parents cannot rely only on paid childcare; they must have other support in place to assist with childcare given their irregular schedules. As one apprentice program staff member stated: “You could go into a string of jobs where it’s all night work for two months and then all of a sudden you’re at a weekend only work; and then you’re at a normal day work. So that poses some problems with child care.” As another staff member stated

And the big thing that we always try to let them know is, you have to have a good network system around you. Whether it be mom, dad, uncle, grandma, grandpa. Someone that can help you out in a pinch, you know? If you need gas money or something or if you have young kids and daycare doesn’t work out you can drop them off at mom and dad’s house. Because it’s not a nine to five job with this. It never is. It never will be. I mean there has been times we need to start at one o’clock in the morning. There’s no daycare that’s open at one o’clock. And if you’re a single parent what are you going to do? So if you don’t have a good support system around you, you’re not going to make it in the trade. Because as soon as you don’t show up to work, call in sick all the time, have to leave early to pick up your kids. They don’t care. The contractor doesn’t care. The foreman out there doesn’t care. Because all you’re doing is hurting the rest of the crew. And pretty soon your name is around that, oh, this guy has to leave early all the time. Or she has to leave early all the time. Or, the car’s always breaking down. No one’s going to hire you and you’re going to crash and burn. (Apprentice program staff)

When asked about challenges they experienced during their apprenticeship, 18% of respondents with children said they had difficulty paying for the cost of child care, 5% said they had difficulty finding consistent childcare, and 10% said they had difficulty finding childcare that accommodated their work schedule. There were no statistically significant differences by gender or race/ethnicity in challenges reported related to childcare (Table 9). Only 2% of apprentices surveyed received childcare subsidies (5% of those with children under 18 in the home and 7% of those with children under 5 in the home), yet on average apprentices with children reported that childcare subsidies would be “somewhat helpful.” As seen in Figure 12, only 6% of apprentices who reported a need for childcare subsidies had received such support. At the same time, apprentices receiving child care supports viewed these supports as, on average, “very helpful.”

Of the apprentices we interviewed, only a few had small children while they were in apprentice programs. All of the parents had help with childcare from either a spouse or family. Those that used paid childcare said that assistance with childcare would have been helpful. For example:

I think there's lots of guys that have that same issue you know, with child care and that also gets put into so when you're a first-term apprentice is only making \$15 an hour plus all your union dues and initiation fee and child care and gas. It all adds up so yeah, that definitely would have helped. (African-American male apprentice who completed)

As indicated above, existing assistance with childcare is less common than assistance with fuel or out of town travel. However, one apprentice coordinator stated:

The child care, you know, we have apprentices that are just amazed that they're able to get that because they've been struggling with it. It's very expensive for an apprentice just starting out, it may be almost impossible for them to afford that child care if they're not getting some assistance. (Apprentice program staff)

*Tools, clothing, and protective equipment:* For most trades, the tools, clothing, and protective equipment required prior to starting the program is minimal; however, assistance in purchasing these items can be helpful, particularly for those who are unemployed or in a low-wage job prior to starting an apprenticeship.

I know a lot of apprentices, when you first come in you're looking at five hundred dollars in tools. Where are they going to get five hundred dollars for tools? You know, so you got on the job and you don't have the tools, what are you going to do?... That would help them out. Some kind of a tool allotment. (Apprentice program staff)

There's a list of stuff that you have to have of your own equipment and I had to buy most of that and none of it was really reimbursed. And, especially here, a lot of people jump into the program and they just buy a cheap set of tool bags, or whatever. And I kind of did that to start with and then realized that that was contributing to some back pain and stuff like that. So, I had to step up and buy a nice set of stuff that fit me really well. That was kind of the biggest thing just finding stuff that actually fit me because most of it's built for construction workers who tend to be bigger guys. [Assistance with buying tools] would have been super helpful, especially, because I jumped into the program after having been unemployed for three months. So, I didn't have a lot of money to upfront buy some of that stuff and I just kind of had to do it. (Non-Hispanic white female apprentice who did not complete).

Some apprentice programs and employers provide this type of assistance; 36% of apprentices reported that they received some support purchasing tools, clothing, or protective equipment and apprentices report, on average, that these supports would be "somewhat" or "very helpful" in the future (Table 9). For example, one apprentice stated: "They provide our tools when we start. They provide our basic tool set; they've added more as the years go through. They help with our boots. If steel toes are required, they'll pay half of it. They don't buy our clothes, but that's fine."

*Supports needed to accept or complete jobs.* When asked how often apprentices refuse jobs or leave jobs before they are completed, both staff and apprentices reported that this very rarely happens. Some programs have explicit rules regarding refusing jobs (e.g. apprentice must have a legitimate and documented reason; apprentices may only refuse one or two jobs before they are

put on the bottom of the out of work list). However, some apprentices face challenges in accruing OTJ hours when they are not able to accept jobs that are offered to them or are unable to complete jobs once they are started due to a lack of resources (i.e. fuel; food and lodging while working out of town; child care; and tools, clothing, and protective equipment). For example, one African American male apprentice we interviewed indicated that the reason he left his apprentice program was that he did not have reliable transportation and could not afford to keep his car in working condition to drive the long distance to his job site. As another example, among non-Hispanic white men in the apprentice survey data, those who cancelled their most recent apprenticeship were the most likely to report needing support purchasing tools, clothing, or equipment (Table 12).

## **RECCOMENDATIONS**

### **Recommendations for supportive services**

The findings of this report suggest that supportive services are needed by apprentices, particularly women and racial/ethnic minority apprentices. The findings also suggest ways that resources might be allocated.

It is clear that a lack of financial resources is impacting the successful completion of the apprenticeship program for many people, regardless of race or gender and therefore, it is suggested that BOLI continue to provide supports for fuel assistance, child care, overnight travel, and tools/clothing/protective equipment.

Our findings suggest that allocating resources to provide fuel assistance and support for overnight travel may be particularly helpful in supporting apprentices in the heavy highway trades. Our findings suggest that apprentices need these services most when they are starting their programs and when they return to work after a period of unemployment. Given irregular schedules, apprentices who are parents need support systems in place to assist with childcare. Apprentices who are able to secure stable paid childcare arrangements would benefit from childcare subsidies. Assistance with tools, clothing, and protective equipment, in the form of a one-time assistance, usually at the start of the apprenticeship, is needed by some apprentices. This is the service that is currently most widely available (some assistance is offered by some employers and unions).

These services will be most effective in increasing retention of women and racial/ethnic minorities if they are targeted to these groups; however, since women and racial/ethnic minorities have higher need, need-based or by-request targeting will also benefit these groups. Our findings demonstrate that women and people of color face challenges, some of which are a result of broad structural inequalities as well as individual prejudices. However, providing supportive services can alleviate one specific challenge for an individual apprentice, such as the cost of fuel, which may be enough to encourage that apprentice to stay in his or her apprentice program.

We suggest that efforts be made to provide more of these resources in the form of actual subsidies. When that is not possible, we suggest that more general resource and information service lists be provided to apprentices, particularly those that could help them in navigating their difficult financial situations to help bridge the gap from unemployment or underemployment to employment within the apprenticeship program.

## **General recommendations**

The findings of this report suggest a variety of possible interventions that may increase retention rates of women and racial/ethnic minorities in apprenticeship programs.

First, we suggest it is necessary to encourage recruitment of women and people of color into the apprenticeship programs. Increased number and visibility of women and people of color can help to alleviate problems of harassment and discrimination. As more women and people of color complete apprentice programs, they will move into positions such as journeymen and foremen/supervisor. Having more women and people of color in these positions will further contribute to a more positive and welcoming environment for female and racial/ethnic minority apprentices.

Our findings suggest there are widespread issues related to gender and racial/ethnic harassment and discrimination. It is critical that employers, unions, and apprentice programs work together to prevent hostile work environments as well as support female and racial/ethnic minority apprentices who experience harassment and discrimination. It would be useful to include critical information about the expectations of workplace behavior in initial and ongoing training and it is suggested that BOLI consult with the State Diversity and Inclusion Manager about increasing such training with current employees. Although it is necessary to address the behavior of others, it will also be necessary to assist apprentices on strategies they can use. We suggest that apprentices be provided guidance on strategies and supports for dealing with hostile work environments, including how to manage small incidences on an individual level as well as when to report incidences to supervisors/foremen, apprentice program staff, and/or union representatives. This might occur through pre-apprentice and/or apprentice programs.

The finding of this study suggest that the process of assigning jobs disadvantages women and people of color, which leads to more time out of work during the apprenticeship, which leads to lower completion rates. First, we suggest that BOLI monitor, and, in some cases, reassess the process of assigning jobs, ensuring that women and racial/ethnic minorities are not at a disadvantage. Second, we suggest that BOLI continue to carefully monitor compliance on contracts that require a diverse workforce in order to promote the employment of female and racial/ethnic minority apprentices.

We found that women and people of color are not receiving the mentoring they need on and off the jobsite. We suggest continue support for pre-apprenticeship programs that support women, racial/ethnic minorities, and first generation apprentices. Pre-apprenticeship programs offer a wide variety of benefits that may help to increase retention, such as preparing apprentices for navigating construction culture as well as providing ongoing support once they are in the apprentice program.

We suggest that BOLI explore options for programs promoting mentoring off the jobsite, such as mentoring and support by paid staff or mentoring by volunteers. We caution that one-on-one volunteer mentoring programs should be carefully evaluated before they are implemented as they are unlikely to be successful unless there is continued oversight by program staff as well as incentives for mentors to participate. Apprentices would benefit from efforts to assist existing programs that provide ongoing mentoring and support (such as OTI) to expand and increase visibility in the construction community.

Given that a lack of mentoring among female and minority apprentices was noted and that those who had adequate mentoring reported more success, consider implementing more of formal mentoring guidelines within the apprentice program. Research on mentoring demonstrates that effective mentoring is related to reduced turnover. Specifically, every apprentice program should ensure all apprentices receive on-the-job mentoring by journeymen by implementing clear guidelines for mentoring, which includes being taught the varied skills of the trade. To address the issue of gaining experience in all relevant skills of the trade, we suggest apprentice programs might explore mandatory or optional rotation in job assignments to ensure apprentices have opportunities to learn varied skills.

Given that being out of work prior to the start of the apprenticeship program or long periods of unemployment during an apprentice program may negatively impact the successful completion of the program, it is clear that the challenges associated with being unemployed are impacting ability for re-employment. We suggest providing a list of resources to apprentices who are out of work to help them make it through the interim unemployment, giving them supports to complete the apprenticeship program. Apprentices would also benefit from access to information on resources that could assist them with personal problems (e.g. drug and alcohol abuse, domestic violence). These resources are available from community organizations as well as local/state/federal employment and social service agencies.

## Appendix A. Apprentice Survey

This survey will be asking you about the **most recent/current** apprenticeship program you participated in.

**What trade was your most recent/current apprenticeship in?**

- Carpenter
- Cement Mason
- Electrician
- Ironworker
- Laborer
- Operating Engineer
- Painter
- Pile Driver
- Plumber
- Sign Maker/Installer
- Sheet Metal Worker
- Other \_\_\_\_\_ (Please specify)

**2. What year did you start this apprenticeship?**

**3. Which of the following applies to your most recent/current apprenticeship?**

- I am currently enrolled
- I completed this apprenticeship
- I left this apprenticeship before it was completed

**4. What type of projects have you worked on during this apprenticeship? Select all that apply.**

- Commercial       Road/Highway
- Residential       Other

**5. How many employers have you worked for during this apprenticeship?**

**6. How many job sites have you worked at during this apprenticeship?**

**7. Was/is this apprenticeship with a union or non-union program?**

- Union
- Non-union

**8. How many times have you been out of work for more than a week during this apprenticeship?**

- 0 times       11-15 times
- 1-5 times       16-20 times
- 6-10 times       More than 20 times

**9. In an average year, how many months have you been out of work during this apprenticeship?**

- Less than 1 month       8-12 months
- 1-3 months       I was not/have not been out of work
- 4-7 months

**10. Have you received unemployment benefits between assignments during this apprenticeship?**

- Yes
- No

**11. Have you worked at another job (i.e. outside of this apprenticeship) during this apprenticeship?**

- Yes, I worked at another job while out of work as an apprentice
- Yes, I worked at another job while I was working as an apprentice
- No, I have not worked at another job during this apprenticeship

**12. If you answered yes to Q. 11 above, was this job in construction?**

- Yes     No     I did not answer yes to Q. 11

**13. Have you sought out work as an apprentice on your own during this apprenticeship?**

- Yes
- No

**14. Have you ever turned down an apprentice job that was offered to you during this apprenticeship?**

- Yes
- No

**15. What reason(s) did you have for turning down a job that was offered to you during this apprenticeship? Select all that apply.**

- I never turned down a job
- I was already working on another job
- The job was undesirable (please specify): \_\_\_\_\_
- I had problems paying for gas to and from the job
- I had problems paying for food and lodging for out of town work
- I had problems paying for childcare
- I had problems finding childcare that accommodated my work hours
- I had problems obtaining childcare (please specify): \_\_\_\_\_
- Other (please specify): \_\_\_\_\_

**16. Have you ever left a job before its scheduled completion during this apprenticeship?**

- Yes
- No

**17. What reason(s) did you have for leaving a job before it was completed? Select all that apply.**

- I never left a job before it was completed
- I was offered another job
- I was let go as part of a reduction in force
- I was let go due to performance
- The job was undesirable
- I had problems paying for gas to and from the job
- I had problems paying for food and lodging for out of town work
- I had problems paying for childcare
- I had problems finding childcare that accommodated my work hours
- I had problems obtaining childcare (please specify): \_\_\_\_\_
- Other (please specify): \_\_\_\_\_

Please answer the following questions using a scale of 1 to 5.

	Strongly Agree				
	Agree				
	Neither Agree Nor Disagree				
	Disagree				
	Strongly Disagree				
	1	2	3	4	5
	1	2	3	4	5

**18.** You feel jobs were fairly assigned during this apprenticeship.

**19.** You feel that you were unfairly chosen to be let go during a reduction in force.

*Thinking about your work environment, what type of treatment do you think you and other apprentices have received based on the characteristics of race, gender, sexual orientation, age, and physical size? By treatment we mean opportunities given to you that have helped you in your apprenticeship, such as being called for more jobs, having a good relationship with your foreman, not being harassed by others on the jobsite, etc.*

**Do you think you have experienced an advantage (preferential treatment), no different treatment, or a disadvantage (discriminatory treatment) based on...**

**20.** Race/Ethnicity

**21.** Sex/Gender

**22.** Sexual Orientation

**23.** Age

**24.** Physical Size and Strength

**Do you think others have experienced an advantage (preferential treatment), no different treatment, or a disadvantage (discriminatory treatment) based on...**

**25.** Race/Ethnicity

**26.** Sex/Gender

**27.** Sexual Orientation

**28.** Age

**29.** Physical Size and Strength

	Don't Know			
	Disadvantage			
	No Different Advantage			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Don't Know			
	Discriminatory Advantage			
	No Different Advantage			
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The following questions ask about your social demographic characteristics at the time of your most recent apprenticeship.

**30. How old were you when you began this apprenticeship?**

**31. At the time you began this apprenticeship, what was your marital status?**

- Single
- Married
- Cohabiting (living with romantic partner)
- Other

**32. At the time you began your most recent apprenticeship, what was the highest level of education you had completed?**

- High school
- GED or high school equivalency degree
- Some college
- Associate or junior college degree—an AA
- Bachelor's degree—a BA, BS, or AB
- Master's degree—an MA or MS
- Other (please specify): \_\_\_\_\_

**33. At any time during your most recent apprenticeship, were you attending school?**

- Yes, I was attending a 2-year college
- Yes, I was attending a 4-year college
- Yes, I was attending a school other than a 2-year or 4-year college
- No, I was not attending school

**34. At the time you began your most recent apprenticeship, what was your occupation?**

\_\_\_\_\_

**35. What is your sex/gender?**

- Male
- Transgender
- Female
- Other

**36. What is your height?**  ft  in

**37. Please choose the description that best fits how you think about yourself**

- Heterosexual (straight)
- Bisexual—that is, attracted to men and women equally
- Homosexual (gay)
- Don't know
- Other (please specify): \_\_\_\_\_

**38. Is your sexual orientation known to others that you work with?**

- Yes
- No
- Don't Know

**39. During your most recent apprenticeship, how many children under the age of 18 did you have living in your household?**

**40. During your most recent apprenticeship, how many children under the age of 5 did you have living in your household?**

**41. During this apprenticeship, what sort of child care support did you rely on? Select all that apply.**

- I did not need child care
- Paid family/friends
- Paid others who were not family/friends
- Unpaid family/friends

**42. During this apprenticeship, did you receive Employment Related Day Care (ERDC) benefits from the Department of Human Services (DHS)?**

- Yes
- No
- Don't Know

**43. Are you of Hispanic or Latino origin?**

- Yes
- No
- Don't Know

**44. What is your race? You may give more than one answer.**

- White
- Black or African American
- American Indian or Native American
- Asian or Pacific Islander
- Other \_\_\_\_\_ (Please specify)

**45. What language do you use most often with your family and close relatives?**

- English       Spanish  
 Other (please specify): \_\_\_\_\_

**46. Were you born in the United States?**

- Yes  
 No

**47. Was your mother born in the United States?**

- Yes  
 No

**48. Was your father born in the United States?**

- Yes  
 No

*The following questions ask about your knowledge of the construction trades before entering your most recent apprenticeship.*

**49. Did you complete a pre-apprentice program?**

- Yes       No

**50. If you answered yes to Q. 49, which pre-apprentice program did you complete?**

\_\_\_\_\_  
(Please specify)

**51. Did you have any prior experience in construction?**

- Yes  
 No

**52. Do you have family or friends in the trades?**

- Yes  
 No

**53. Did your employer request that you enter this apprenticeship?**

- Yes  
 No  
 Don't know

**54. The following are possible challenges experienced during an apprenticeship. Please select all that apply to you in your most recent apprenticeship.**

- I was out of work too much  
 I was primarily doing repetitive or low-skill tasks on the job site  
 I did not get opportunities to learn all the necessary skills for my trade  
 I did not have anyone to teach me new skills  
 I did not have anyone to turn to when I had questions about my work  
 I did not have anyone to talk to about working in the construction trades  
 I had personal problems with other apprentices in my trade  
 I had personal problems with journeymen in my trade  
 I had personal problems with other workers on the job sites  
 I had personal problems with foremen, supervisors, or employers  
 I did not enjoy the work (e.g. too physically difficult; weather was too cold, wet, or hot; hours were irregular)  
 I had difficulty with reliable transportation  
 I had difficulty paying for gas to and from work  
 I had difficulty paying for food and lodging for out of town jobs  
 I had difficulty with finding consistent child care for my children (paid or family/friends)  
 I had difficulty paying the cost of child care for my children  
 I had difficulty finding care for my children that accommodated my work schedule  
 I was not working as hard as I should have on the job site  
 I sometimes had a bad attitude at work  
 I had difficulty attending the required classes  
 I had difficulty passing the required classes  
 Other \_\_\_\_\_  
(please specify)

**55. Thinking back to the challenges you faced as an apprentice, have any of the following helped you overcome these challenges? Select all that apply.**

- Family       Other apprentices  
 Community groups       Journey workers  
 Church groups       No, none of these have helped  
 Union       Other \_\_\_\_\_

The following questions ask about supports that may have been available during your most recent apprenticeship.

**56. Please indicate which of the following financial supports you have received. Select all that apply.**

- Fuel assistance
- Support for overnight travel
- Child care subsidies
- Tools, clothing, or protective equipment
- I have not received any financial supports
- I don't know if I've received any financial supports
- Other (please specify):

**57. Please indicate which of the following personal supports you have received. Select all that apply**

- Mentoring at your job site, that is, access to someone on the job site who you could talk to about challenges at work, helped you learn about the trades, and/or took time to teach you new skills.
- Mentoring outside of your job site, that is, access to someone in the trades outside of your job site that you could talk to about challenges at work, helped you learn about the trades, and/or took time to teach you new skills. A mentor outside of the worksite could be a friend or family member or someone you met through a mentoring program
- I have not received any mentoring
- I don't know if I've received any mentoring
- Other (please specify):

**58. In addition to supports listed in Q. 56 and Q. 57, is there an additional support you can think of that would have been helpful to you during your most recent apprenticeship?**

- No, I can't think of one
- Yes (please specify):

**On a scale of 1 to 5 please rate how helpful the following supports have been to you. If you have not received a support, please choose "did not receive" (X).**

	1	2	3	4	5	X
59. Fuel Assistance						
60. Support for overnight travel						
61. Child care subsidies						
62. Tools, clothing, or protective equipment						
63. Flexible work hours						
64. Mentoring at your worksite						
65. Mentoring outside of worksite						

**Did not receive**  
**Couldn't complete without**  
**Somewhat helpful**  
**Not helpful at all**

**On a scale of 1 to 5 please rate how helpful the following supports would be to you if you are currently an apprentice or if you were to enter into another apprenticeship.**

	1	2	3	4	5	X
66. Fuel Assistance						
67. Support for overnight travel						
68. Child care subsidies						
69. Tools, clothing, or protective equipment						
70. Flexible work hours						
71. Mentoring at your worksite						
72. Mentoring outside of worksite						

**Don't Know**  
**Couldn't complete without**  
**Somewhat helpful**  
**Not helpful at all**

The following questions ask about your apprenticeship enrollment and work history.

If you are currently enrolled in an apprenticeship, you are done with the survey!

**73. How many apprenticeships have you left before completion?**

If you are no longer enrolled in your most recent apprenticeship, please answer the few remaining questions.

**74. How many apprenticeships have you completed?**

**82. Have you ever worked as a journey worker in this trade?**

- Yes
- No

**75. How many months were you or have you been enrolled in your most recent apprenticeship?**

**83. If your answer to Q. 82 was yes, are you currently working as a journey worker in this trade?**

- Yes
- No

**76. If you left your most recent apprenticeship before completion, what was the main reason you left?**

\_\_\_\_\_

(please specify)

**84. If your answer to Q. 83 was no, why are you not currently working as a journey worker in this trade?**

\_\_\_\_\_

(please specify)

**77. What occupation are you currently working in?**

\_\_\_\_\_

(please specify)

**78. Approximately how many different supervisors/foreman have you worked under as an apprentice?** \_\_\_\_\_

Of these supervisors/foreman, how many have you had mostly positive experiences with, mixed (positive and negative experiences), and mostly negative experiences with?	None	A few	Most	All
<b>79. Mostly positive experiences</b>	1	2	3	4
<b>80. Mixed, positive and negative</b>	1	2	3	4
<b>81. Mostly negative experiences</b>	1	2	3	4

**THANK YOU FOR YOUR PARTICIPATION!**

**PLEASE RETURN YOUR COMPLETED SURVEY IN THE SELF-ADDRESSED STAMPED ENVELOPE INCLUDED WITH THE SURVEY.**

**UPON RECEIPT OF YOUR SURVEY, WE WILL MAIL YOU YOUR \$10 GIFT CARD.**

## **APPENDIX B: Outline of Completed Activities by Month**

### September

- Planning: Reviewed existing studies; developed initial interview guide for staff and apprentice interviews; organized the BOLI apprentice data set to allow for the creation of a sampling frame for the selection of apprentices to be interviewed; met with consultant Leslie Hammer to finalize details of interview guides and research design; and submitted the study for approval by the Portland State University Institutional Review Board.
- Analysis of BOLI/ODOT database of current and past apprentices: we obtained apprentice data from BOLI; resolved data issues through consultation with BOLI; created a data set by merging agreement and action data for each of the ten (2001-2010) apprentice cohorts; and began statistical analyses to determine different rates of completion by gender, race/ethnicity, region, trade, and union status.

### October

- Planning: study under review by the Portland State University Institutional Review Board; met with BOLI for further background on apprenticeship programs and to discuss initial list of relevant individuals to invite to participate in staff interviews
- Analysis of BOLI/ODOT database of current and past apprentices: statistical analyses to determine different rates of completion by gender, race/ethnicity, region, trade, and union status.

### November

- Analysis of BOLI/ODOT database of current and past apprentices: statistical analyses to determine different rates of completion by gender, race/ethnicity, region, trade, and union status.
- Staff interviews: conducted 17 interviews with staff of apprentice programs and staff of other organizations related to apprenticeships
- Apprentice interviews: conducted 3 interviews with apprentices who either completed or were cancelled from apprenticeship programs

### December

- Analysis of BOLI/ODOT database of current and past apprentices: statistical analyses to determine different rates of completion by gender, race/ethnicity, region, trade, and union status.
- Staff interviews: conducted 3 interviews with staff of apprentice programs and staff of other organizations related to apprenticeships (a total of 20 individuals from 15 organizations were interviewed; staff interviews complete)
- Apprentice interviews: conducted 5 interviews with apprentices who either completed or were cancelled from apprenticeship programs (a total of 8 apprentices were interviewed; 16 more apprentices to be interviewed in 2012)
- Interim Report #1 by December 31, 2011: Report on preliminary findings based on the analysis of BOLI/ODOT database, staff interviews, and interviews with apprentices.

## January

- Apprentice interviews: conducted 3 interviews with apprentices who either completed or were cancelled from apprenticeship programs (a total of 11 apprentices have been interviewed; 13 more apprentices to be interviewed)
- Planning: Identified and hired graduate students to assist with survey (mailing and data entry) in Spring term.

## February

- Apprentice interviews: conducted 11 interviews with apprentices who either completed or were cancelled from apprenticeship programs (a total of 22 apprentices have been interviewed; 3 more apprentices to be interviewed).

## March

- Apprentice interviews: conducted 3 interviews with apprentices who either completed or were cancelled from apprenticeship programs (a total of 25 apprentices have been interviewed; apprentice interviews are now complete).
- Develop survey instrument. We developed a survey instrument based on the information gathered from the review of the literature, the analysis of the BOLI/ODOT database, the informational interviews, and the in-depth interviews.

## April

- Develop survey instrument: We completed development of a survey instrument

## May

- Distribute survey: We mailed out approximately 1,000 initial surveys; Mailed out additional set of surveys to those whose surveys were returned with forwarding address given
- Analyze survey data: Created code book for data set; Began entering data from returned surveys

## June

- Distribute survey: Mailed out 750 postcards to non-respondents; Made follow-up phone calls to non-respondents; Mailed out new surveys to non-respondents who lost/threw out original survey
- Distribute gift cards: Mailed out 140 \$10 gift cards to participants
- Analyze survey data: Continued entering data from returned surveys (a total of 168 have been returned thus far); Began analyzing data

## July

- Analysis of interview data: We analyzed the transcripts of the staff and apprentice interviews.
- Distribute survey: Continued to make follow-up calls to survey non-respondents
- Distribute gift cards: mailed out 35 \$10 gift cards
- Analyze survey data: finished entering data from returned apprentice surveys (177 total); continued analysis of survey data

## August

- Analysis of interview data: We analyzed the transcripts of the staff and apprentice interviews.
- Analysis of quantitative data: We conducted quantitative analysis of the survey data.
- Write report: We integrated results obtained from the surveys with findings from the qualitative in-depth interviews

**Table 1. Apprentice Agreement Characteristics by Gender and Race (OAS Data)**

	Women		Men		Wom of Color		NH Wh Wom		Men of Color		NH White Men		Total	
	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD
<b>Total</b>	7.0	793	93.0	10597	1.6	180	5.4	613	14.19	1616	78.9	8981	100	11390
<b>Status</b>														
Completed	24.5	194	39.7	4209***	19.4	35	25.9	159	31.8	514	41.1	3695***	38.7	4403
Active	17.5	139	20.5	2168*	16.7	30	17.8	109	20.5	332	20.4	1836	20.3	2307
Cancelled	48.1	381	32.9	3491***	50.0	90	47.5	291	40.6	656	31.6	2835***	34.0	3872
Moved	8.5	67	5.8	609**	11.7	21	7.5	46	5.9	95	5.7	514	6.0	676
Other	1.4	12	1.1	120	2.8	4	1.3	8	1.2	19	1.2	181	1.0	132
<b>Union Status</b>														
Union	42.6	338	36.0	3816***	31.7	57	45.8	281***	37.6	608	35.7	3208	36.5	4154
Non-Union	31.8	252	45.3	4804***	35.0	63	30.8	189	41.6	672	46.0	4132**	44.4	5056
Mixed	25.6	203	18.7	1977***	33.3	60	23.3	143**	20.8	336	18.3	1641*	19.1	2180
<b>ODOT Region</b>														
One	50.7	402	39.4	4171***	68.9	124	45.4	278***	54.8	885	36.6	3286***	59.9	6817
Two	17.2	136	25.4	2686***	10.0	18	19.3	118**	18.1	293	26.7	2393***	24.8	2822
Three	7.3	58	8.1	855	3.9	7	8.3	51*	6.4	104	8.4	751**	8.0	913
Four	4.5	36	7.0	742**	2.2	4	5.2	32	4.8	77	7.4	665***	6.9	778
Five	2.0	16	2.2	237	2.2	4	2.0	12	2.5	40	2.2	197	2.2	253
Six (Out of State)	18.3	145	18.0	1902	12.8	23	19.9	122*	13.4	216	18.8	1686***	18.0	2047
<b>Average Credit Hours</b>														
Completed by Cancelled	1412	1847	1717	1472***	1021	1310	1532	1500**	1363	1602	1798	1890***	1687	1816
Completed per Month by Cancelled	71	48	85	55***	59	44	75	49**	72	51	88	56***	84	55
Completed per Month by Completed	139	42	156	39***	131	50	141	41	153	44	156	38	155	39
Completed per Year by Completed	1610	442	1790	377***	1517	538	1630	416	1758	436	1795	367*	1782	382

Note: \*p≤.05; \*\*p≤.01; \*\*\*p≤.001 based on chi-square tests for nominal variables and t-tests for continuous variables

Sample includes all agreements begun 2001-2010 that were not terminated with 0 hours cancelled (N=11,390)

**Table 1, cont. Apprentice Agreement Characteristics by Gender and Race (OAS Data)**

	Women		Men		Wom of Color		NH Wh Wom		Men of Color		NH White Men		Total	
	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD	%/Mean	N/SD
<b>Trade</b>														
Carpenter	23.3	185	17.2	1817***	31.7	57	20.9	128**	23.6	382	16.0	1435***	17.6	2002
Scaffold Erector	1.1	9	1.0	108	1.7	3	1.0	6	1.2	19	1.0	89	1.0	117
Cement Mason	2.4	19	1.4	152*	2.8	5	2.3	14	2.6	42	1.2	110***	1.5	171
Pile Driver	1.9	15	1.2	128	2.8	5	1.6	10	1.8	29	1.1	99*	1.3	143
Operating Engineer	7.9	63	2.7	283***	6.7	12	8.3	51	3.0	48	2.6	235	3.0	346
Laborer	19.3	153	7.4	779***	31.1	56	15.8	97***	18.3	296	5.4	483***	8.2	932
Ironworker	1.3	10	5.8	610***	0.6	1	1.5	9	10.0	161	5.0	449***	5.4	620
Electrician	25.6	203	36.6	3882***	10.6	19	30.0	184***	22.0	355	39.3	3527***	35.9	4085
Painter	6.7	53	2.7	286***	6.7	12	6.7	41	4.3	69	2.4	217***	3.0	339
Plumber	3.8	30	14.9	1580***	2.2	4	4.2	26	9.2	149	15.9	1431***	14.1	1610
Sheet Metal Worker	6.4	51	8.4	887	2.2	4	7.7	47**	3.8	62	9.2	825***	8.2	938
Sign Maker/Installer	0.3	2	0.8	85	1.1	2	0.0	0**	0.3	4	0.9	81	0.8	87
<b>Reasons for cancellation</b>														
Apprentice Request	48.0	241	38.1	1742***	45.6	56	48.8	185	30.6	270	39.8	1472***	39.1	1983
Failure to Appear before Committee	18.4	85	24.2	1175*	17.8	20	18.6	65	24.9	211	24.0	964	23.6	1260
Failure to Submit Progress Reports	25.5	160	24.6	1625	37.8	56	21.7	104**	28.4	324	23.7	1301*	24.6	1785
Related Training Attendance	17.3	115	22.9	1798*	20.0	40	16.5	75	25.8	304	22.2	1494*	22.3	1913
Insufficient OJT Hours	44.6	399	44.1	5134	45.6	101	44.3	298	42.7	807	44.4	4327	44.1	5533
<b>Age</b>	32.7	8.7	28.3	7.9***	33.4	8.5	32.5	8.7	30.1	8.3	28.0	7.8***	28.6	8.0
<b>Education</b>	13.2	1.4	12.6	1.2***	12.9	1.3	13.2	1.5**	12.6	1.2	12.7	1.1**	12.7	1.2

Note: \*p≤.05; \*\*p≤.01; \*\*\*p≤.001 based on chi-square tests for nominal variables and t-tests for continuous variables  
Sample includes all agreements begun 2001-2010 that were not terminated with 0 hours cancelled (N=11,390)

**Table 2. Percentage of Apprenticeship Agreements Completed by Gender and Race, by Trade (OAS Data)**

Trade	Women		Men		Women of Color		NH White Women		Men of Color		NH White Men	
	%	N	%	N	%	N	%	N	%	N	%	N
All Trades	24.5	194	39.7	4209 ***	19.4	35	25.9	159	31.8	514	41.1	3695 ***
Carpenter	23.8	44	30.1	546	21.1	12	25.0	32	23.8	91	31.7	455 **
Scaffold Erector	0.0	0	26.9	29	0.0	0	0.0	0	5.3	1	31.5	28 *
Cement Mason	15.8	3	15.8	24	20.0	1	14.3	2	19.1	8	14.6	16
Pile Driver	13.3	2	40.6	52 *	20.0	1	10.0	1	24.1	7	45.5	45 *
Operating Engineer	14.3	9	32.9	93 **	16.7	2	13.7	7	27.1	13	34.0	80
Laborer	26.1	40	28.8	224	21.4	12	28.9	28	26.4	78	30.2	146
Iron Worker	10.0	1	34.4	210	0.0	0	11.1	1	37.3	60	33.4	150
Electrician	35.0	71	49.7	1931 ***	31.6	6	35.3	65	46.5	165	50.1	1766
Painter	15.1	8	17.5	50	8.3	1	17.1	7	17.4	12	17.5	38
Plumber	33.3	10	46.9	741	0.0	0	38.5	10	42.3	63	47.4	678
Sheet Metal Worker	11.8	6	32.5	741 **	0.0	0	12.8	6	24.2	15	33.1	273
Sign Maker/Installer	0.0	0	24.7	21	0.0	0	0.0	0	25.0	1	24.7	20

Note: \*p<.05; \*\*p<.01; \*\*\*p<.001 based on chi-square tests

Sample includes all agreements begun 2001-2010 that were not terminated with 0 hours accumulated (N=11,390)

**Table 3. Percentage of Apprentice Agreements Completed by Gender and Race, by Region, Union Status, and Cohort (OAS Data)**

	Women		Men		Women of Color		NH White Women		Men of Color		NH White Men	
	%	N	%	N	%	N	%	N	%	N	%	N
<b>Total</b>	24.5	194	39.7	4209 ***	19.4	35	25.9	159	31.8	514	41.1	3695 ***
<b>Region</b>												
One	26.1	105	37.9	1580 ***	21.0	26	28.4	79	28.8	255	40.3	1325 ***
Two	21.3	29	41.3	1108 ***	22.2	4	21.2	25	34.5	101	42.1	1007 *
Three	27.6	16	43.5	372 *	0.0	0	31.4	16	40.4	42	43.9	330
Four	33.3	12	44.7	332 ***	0.0	0	37.5	12	36.4	28	45.7	304
Five	25.0	4	32.9	78	0.0	0	33.3	4	27.5	11	34.0	67
Six	19.3	2	38.8	738 ***	21.7	5	18.9	23	35.2	76	39.3	662
<b>Union Status</b>												
Union	29.9	101	42.2	1612 ***	26.3	15	30.6	86	34.1	207	43.8	1405 ***
Non-Union	17.1	43	39.5	1896 ***	9.5	6	19.6	37	30.4	204	41.0	1692 ***
Mixed	24.6	50	35.5	701 **	23.3	14	25.2	36	30.7	103	36.4	598 *
<b>Cohort</b>												
2001	28.6	18	55.1	505 ***	0.0	0	32.7	18	46.4	58	56.5	447 *
2002	40.7	37	59.5	705 ***	37.5	9	41.8	28	51.8	88	60.8	617 *
2003	31.9	22	58.1	504 ***	22.2	2	33.3	20	46.9	52	59.7	452 *
2004	34.9	37	57.5	675 ***	31.8	7	35.7	30	46.6	75	59.2	598 **
2005	37.2	35	55.6	841 ***	27.6	8	41.5	27	46.6	97	57.0	744 **
2006	24.8	28	39.3	616 **	23.5	4	25.0	24	37.4	86	39.6	530
2007	9.7	11	16.6	260	10.0	3	9.6	8	16.5	41	16.6	219
2008	7.8	5	8.7	80	11.8	2	6.4	3	7.2	12	9.0	68
2009	2.3	1	4.2	16	0.0	1	4.2	1	4.7	4	4.1	12
2010	0.0	0	1.8	9	0.0	0	0.0	0	0.9	1	2.0	8

Note: \*p≤.05; \*\*p≤.01; \*\*\*p≤.001 based on chi-square tests

Sample includes all agreements begun 2001-2010 that were not cancelled with 0 hours accumulated (N=11,390)

**Table 4. Individual Apprentices by Number of Agreements, by Gender and Race (OAS Data)**

	Women		Men		Women of Color		NH White Women		African American Women		Men of Color		NH White Men		African American Men	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
<b>Number of Agreements</b>																
One	92.2	658	93.6	9138	86.2	125	94.5	533	81.0	51	93.2	1366	93.9	7772	91.2	343
Two	6.7	48	5.8	563	12.4	18	4.8	27	15.9	10	6.4	94	5.5	454	8.8	33
Three	1.1	8	0.5	50	1.4	2	0.7	4	3.2	2	0.3	4	0.5	45	0.0	0
Four	NA	0	0.1	7	NA	0	NA	0	NA	0	0.1	1	0.1	6	NA	0
> One	7.8	56	6.4	620	13.8	20	5.5	31	19.1	12	6.8	99	6.4	506	8.8	33

**Table 5. Percentage of Apprentices Completing At Least One Agreement by Number of Agreements, by Gender and Race (OAS Data)**

	Women		Men		Women of Color		NH White Women		African American Women		Men of Color		NH White Men		African American Men	
	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N
<b>Number of Agreements</b>																
One	25.8		42.1		19.2		27.4		25.5		33.2		43.7		20.1	
Two	37.5		49.2		33.3		33.3		30.0		53.2		48.9		39.4	
Three	37.5		62.5		50.0		50.0		50.0		50.0		60.0		0.0	
Four	NA		100.0		NA		NA		NA		100.0		100.0		NA	
> One	7.8		50.6		35.0		35.5		33.3		53.5		50.4		34.4	

Sample includes individuals with at least one agreement begun between 2001-2010 that was not cancelled with 0 hours accumulated (N=10,472)

**Table 6. Reasons for Cancellation of Agreements by Gender and Race, by Trade (OAS Data)**

	Apprentice Request						Failure to Appear						Failure to Submit Progress Reports					
	W		W of Color		M of Color		W		W of Color		M of Color		W		W of Color		M of Color	
	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%
All Trades	48.0	38.1	45.6	48.8	30.6	39.8	18.4	24.2	17.8	18.6	24.9	24.0	25.5	24.6	37.8	21.7	28.4	23.7
Carpenter	52.0	35.5	53.6	51.4	29.7	37.4	37.8	40.0	39.3	37.1	33.7	41.9	61.2	62.0	67.9	58.6	56.8	63.7
Scaffold Erector	NA	42.0	NA	NA	41.7	42.5	66.7	53.9	0.0	66.7	66.7	50.0	66.7	65.4	0.0	66.7	50.0	70.0
Cement Mason	50.0	41.7	50.0	50.0	40.9	41.9	30.0	35.4	0.0	37.5	45.5	32.4	0.0	3.8	0.0	0.0	0.0	3.8
Pile Driver	25.0	30.8	66.7	NA	22.2	33.3	50.0	61.5	66.7	40.0	44.4	66.7	100.0	76.9	100.0	100.0	66.7	80.0
Operating Engineer	41.7	50.0	40.6	45.1	46.7	44.7	2.8	11.0	0.0	3.1	6.7	11.8	11.1	7.7	0.0	12.5	6.7	7.9
Laborer	32.4	25.5	16.7	43.2	25.2	25.8	13.5	14.5	6.7	18.2	15.5	13.8	21.6	23.2	33.3	13.6	23.9	22.7
Electrician	59.7	51.2	88.9	55.2	45.1	51.9	11.9	18.7	0.0	13.8	22.5	18.3	1.5	4.0	0.0	1.7	5.6	3.8
Painter	48.7	21.8	66.7	45.2	26.1	20.4	8.1	18.1	16.7	6.5	23.9	16.3	8.1	13.5	16.7	6.5	13.0	13.6
Plumber	69.2	39.3	66.7	70.0	36.2	39.6	0.0	23.4	0.0	0.0	25.5	23.1	7.7	7.2	0.0	10.0	8.5	7.1
Sheet Metal Worker	64.0	46.0	50.0	65.2	35.0	46.7	8.0	17.8	0.0	8.7	20.0	17.7	8.0	23.3	50.0	4.4	30.0	22.8
Sign Maker/Installer	50.0	61.4	50.0	NA	50.0	61.9	0.0	4.6	0.0	0.0	0.0	4.8	0.0	18.2	0.0	0.0	50.0	16.7
Iron Worker	25.0	20.9	0.0	28.6	19.0	21.4	0.0	9.0	0.0	0.0	10.3	8.6	0.0	1.5	0.0	0.0	3.5	1.0

Sample includes all cancelled agreements begun 2001-2010 that were not cancelled with 0 hours accumulated (N=3,872)

**Table 6, cont. Reasons for Cancellation of Agreements by Gender and Race, by Trade (OAS Data)**

	Apprentice Related Training						Insufficient OJT Hours					
	W	M	W of Color	NHW Wom	M of Color	NHW Men	W	M	W of Color	NHW Wom	M of Color	NHW Men
	%	%	%	%	%	%	%	%	%	%	%	%
All Trades	17.3	22.9	20.0	16.5	25.8	22.2	44.6	44.1	45.6	44.3	42.7	44.4
Carpenter	29.6	38.4	28.6	30.0	39.7	38.0	58.2	57.5	67.9	54.3	48.2	60.4
Scaffold Erector	33.3	26.9	0.0	33.3	58.3	17.5	66.7	25.0	0.0	66.7	41.7	20.0
Cement Mason	10.0	28.1	50.0	0.0	36.4	25.7	80.0	83.3	50.0	87.5	81.8	83.8
Pile Driver	62.5	46.2	33.3	80.0	66.7	40.0	75.0	56.0	100.0	60.0	66.7	53.0
Operating Engineer	22.2	11.0	0.0	25.0	13.3	10.5	61.1	59.3	75.0	59.4	46.7	61.8
Laborer	17.6	17.9	20.0	15.9	20.7	16.0	29.7	35.0	26.7	31.8	36.8	33.8
Electrician	4.5	22.2	11.1	3.5	18.3	22.6	26.9	34.9	33.3	25.9	35.2	34.9
Painter	8.1	15.5	16.7	6.5	10.9	17.0	21.6	28.0	0.0	25.8	19.6	30.6
Plumber	7.7	18.7	0.0	10.0	27.7	17.6	69.2	50.2	66.7	70.0	48.9	50.4
Sheet Metal Worker	8.0	9.1	0.0	8.7	5.0	9.3	48.0	36.9	50.0	47.8	55.0	35.6
Sign Maker/Installer	0.0	31.8	0.0	0.0	50.0	31.0	0.0	18.2	0.0	0.0	0.0	19.1
Iron Worker	0.0	7.1	0.0	0.0	3.5	8.1	75.0	37.3	100.0	71.4	39.7	36.7

Sample includes all cancelled agreements begun 2001-2010 that were not cancelled with 0 hours accumulated (N=3,872)

**Table 7. Mean of Credit Hour Variables by Gender and Race, by Trade (OAS Data)**

	Number Completed by Cancelled						Average Completed per Month by Cancelled					
	W	M	W of Color	NHW W	M of Color	NHW Men	W	M	W of Color	NHW W	M of Color	NHW Men
	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean	Mean
All Trades	1412	1717 ***	1021	1532	1363	1798 ***	71	85 ***	59	75	72	88 ***
Carpenter	1001	1225 *	800	1082	1111	1260	57	70	55	58	71	69
Scaffold Erector	316	991 ***	NA	316	560	1120	26	78 ***	NA	26	46	88
Cement Mason	1159	1247	199	1399	1443	1189	62	66	21	72	68	65
Pile Driver	1030	1392	615	1279	2059	1191	50	78	20	68	86	75
Operating Engineer	1926	1824	2061	1909	1092	1969	81	85	83	80	58	90
Laborer	922	1004	748	1040	1046	976	49	52	46	51	47	55
Electrician	1866	2434 **	2056	1837	2296	2449	102	113	104	102	116	113
Painter	967	1167	577	1042	815	1277	69	76	48	73	73	77
Plumber	2555	2261	2343	2619	2718	2204	112	98	107	113	108	97
Sheet Metal Worker	2907	2119	1639	3017	1517	2161	100	103	75	103	94	104
Sign Maker/ Installer	832	2800 *	832	NA	2147	2831	83	127	83	NA	81	129
Iron Worker	1629	1474	2639	1485	1292	1525	54	67	64	52	62	69

Note: \*p≤.05; \*\*p≤.01; \*\*\*p≤.001 based on t-tests

Sample includes all cancelled agreements begun 2001-2010 that were not cancelled with 0 hours accumulated

**Table 7, cont. Mean of Credit Hour Variables by Gender and Race, by Trade (OAS Data)**

	Average Completed per Month by Completed					
	W	M	W of Color	NHW W	M of Color	NHW Men
	Mean	Mean	Mean	Mean	Mean	Mean
All Trades	139	156 ***	131	141	153	156
Carpenter	174	176	163	179	175	177
Scaffold Erector	NA	219	NA	NA	240	218
Cement Mason	180	168	154	193	165	170
Pile Driver	154	184	141	168	209	180
Operating Engineer	104	170 ***	58	118	158	172
Laborer	108	130 ***	96	114	118	137
Electrician	138	153 ***	150	137	149	153
Painter	152	148	163	151	159	145
Plumber	129	151 **	NA	129	151	151
Sheet Metal Worker	129	152	NA	129	147	152
Sign Maker/ Installer	NA	162	NA	NA	154	163
Iron Worker	92	155	NA	92	170	148

Note: \*p≤.05; \*\*p≤.01; \*\*\*p≤.001 based on t-tests

Sample includes all cancelled agreements begun 2001-2010 that were not cancelled with 0 hours accumulated

**Table 8. Apprentice Socio-Demographic Characteristics by Race and Gender (Apprentice Survey Data)**

	<b>Total (N=177)</b>	<b>Women of Color (N=28)</b>	<b>Non-Hispanic White Women (N=59)</b>	<b>Men of Color (N=47)</b>	<b>Non-Hispanic White Men (N=42)</b>
	<u>Prop./Mean</u>	<u>Prop./ Mean</u>	<u>Prop./Mean</u>	<u>Prop./Mean</u>	<u>Prop./Mean</u>
<b>Gender</b>					
Female	0.49	1.00	1.00	0.00	0.00
Male	0.50	0.00	0.00	1.00	1.00
<b>Race/Ethnicity</b>					
Hispanic	0.19	0.36	0.00	0.51	0.00
Non-Hispanic White	0.57	0.00	1.00	0.00	1.00
Non-Hispanic Black	0.11	0.36	0.00	0.19	0.00
Non-Hispanic Asian	0.09	0.07	0.00	0.19	0.00
Non-Hispanic Native American	0.11	0.21	0.00	0.13	0.00
Non-Hispanic Other Race	0.02	0.04	0.00	0.00	0.00
Speaks Non-English with Family and Friends	0.08	0.04	0.02	0.23 *	0.02
First Generation	0.13	0.14	0.03	0.30 *	0.07
<b>Age at Start</b>	31.00	34.26 *	31.10 *	30.81 *	27.00
<b>Marital Status</b>					
Married	0.30	0.26	0.15 *	0.47	0.33
Cohabiting	0.18	0.15	0.24	0.13	0.19
Single	0.52	0.59	0.61	0.40	0.45
<b>Children Under 18 in Household</b>	0.52	0.56	0.40	0.66	0.50
<b>Children Under 5 in Household</b>	0.34	0.30	0.19 *	0.51	0.40
<b>Highest Level of Education</b>					
High School	0.41	0.41	0.29 *	0.45 †	0.57
Some College	0.41	0.54 *	0.46 *	0.43	0.26
College	0.17	0.04	0.25	0.45	0.17
Currently Attending	0.24	0.22	0.24	0.28	0.24
<b>Region</b>					
One	0.44	0.67 *	0.36	0.38	0.43
Two	0.23	0.22	0.25	0.21	0.21
Three	0.05	0.04	0.02	0.06	0.10
Four	0.06	0.00	0.07	0.06	0.07
Five	0.02	0.00	0.03	0.02	0.02
Six	0.21	0.07	0.27	0.26	0.17
<b>Union Status</b>					
Union	0.69	0.74	0.74	0.64	0.62
Non-Union	0.32	0.26	0.26	0.31	0.38

† Differences in proportions/means significant at  $p \leq .10$ ; \*differences in proportions/means significant at  $p \leq .05$

**Table 8, cont. Apprentice Socio-Demographic Characteristics by Race and Gender (Apprentice Survey Data)**

	<b>Total</b>	<b>Women of</b>	<b>Non-Hispanic</b>	<b>Men of Color</b>	<b>Non-Hispanic</b>
	<b>(N=177)</b>	<b>Color</b>	<b>White Women</b>	<b>(N=47)</b>	<b>White Men</b>
	<b>Prop./Mean</b>	<b>(N=28)</b>	<b>(N=59)</b>	<b>Prop./Mean</b>	<b>(N=42)</b>
<b>Trade</b>		<b>Prop./ Mean</b>	<b>Prop./Mean</b>	<b>Prop./Mean</b>	<b>Prop./Mean</b>
Carpenter	0.14	0.14	0.12	0.09	0.19
Cement Mason	0.05	0.04	0.07	0.06	0.02
Electrician	0.27	0.11	0.36	0.26	0.29
Iron Worker	0.06	0.07	0.03	0.13	0.00
Laborer	0.13	0.21	0.12	0.15	0.07
Operating Engineer	0.08	0.14	0.10	0.04	0.07
Painter	0.07	0.11	0.03	0.09	0.07
Pile Driver	0.02	0.04	0.02	0.02	0.02
Plumber	0.09	0.04	0.05	0.09	0.19
Sign Maker/Installer	0.01	0.04	0.00	0.02	0.00
Sheet Metal Worker	0.06	0.04	0.08	0.04	0.07
Other	0.02	0.07	0.02	0.02	0.00

† Differences in proportions/means significant at  $p \leq .10$ ; \*differences in proportions/means at  $p \leq .05$

**Table 9. Apprentice Characteristics by Gender and Race (Apprentice Survey Data)**

	<b>Total (N=177)</b>	<b>Women</b>	<b>Men</b>	<b>Women of Color</b>	<b>White Women</b>	<b>Men of Color</b>	<b>White Men</b>
	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>
<b>Apprenticeship Status</b>							
Completed most recent	0.34	0.31	0.37	0.48	0.24	0.32	0.43
Active	0.42	0.37	0.47	0.26	0.41	0.53	0.40
Cancelled Most recent	0.24	0.32	0.16 *	0.26	0.36	0.15	0.17
Number cancelled	0.98	1.71	0.24	1.30	1.93	0.28	0.19
Number completed	0.55	0.45	0.64 †	0.70	0.34	0.77 *	0.50
Cancelled at least one	0.27	0.35	0.18 †	0.30	0.38 †	0.16	0.19
Completed at least one	0.47	0.40	0.53 †	0.59	0.32 †	0.57	0.50
Journeyworker in trade	0.50	0.39	0.63 *	0.43 †	0.36 *	0.57	0.68
<b>Job Characteristics</b>							
Number of employers worked for	3.46	3.53	3.39	3.58	3.54	3.98 *	2.74
Number of job sites	13.48	11.15	16.08 *	8.25	12.54	18.88	13.28
<b>Out of Work Issues</b>							
Number of times out of work	2.46	2.43	2.49	2.46	2.42	2.55	2.43
Number of months out of work in an average year	2.20	2.33	2.08	2.42	2.29	2.15	2.00
Turned down a job	0.11	0.13	0.08	0.11	0.14	0.11	0.05
Job was undesirable	0.37	0.45	0.29	0.33	0.50	0.40	0.00
Problems paying for gas	0.22	0.30	0.14	0.00	0.43	0.20	0.00
Problems paying for food/lodging	0.32	0.36	0.29	0.33	0.38	0.40	0.00
Problems with childcare	0.16	0.27	0.00	0.00	0.38	0.00	0.00
Left a job before it was completed	0.36	0.47	0.26 *	0.37	0.51 †	0.19	0.33
Reduction in force	0.60	0.59	0.65	0.30	0.69	0.75	0.58
Performance	0.08	0.08	0.10	0.10	0.07	0.13	0.08
Undesirable	0.07	0.05	0.10	0.10	0.03	0.13	0.08
Gas	0.07	0.05	0.10	0.20	0.00	0.13	0.08
Food	0.03	0.05	0.00	0.10	0.03	0.00	0.00
Child care	0.02	0.00	0.05	0.00	0.00	0.00	0.08

† Differences in proportions/means significant at  $p \leq .10$ ; \*differences in proportions/means at  $p \leq .05$

**Table 9, cont. Apprentice Characteristics by Gender and Race (Apprentice Survey Data)**

	<b>Total (N=177)</b>	<b>Women</b>	<b>Men</b>	<b>Women of Color</b>	<b>White Women</b>	<b>Men of Color</b>	<b>White Men</b>
	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>
Solicited work	0.36	0.33	0.38	0.21	0.39	0.38	0.38
Employer requested apprenticeship	0.24	0.20	0.27	0.32	0.14 <sup>†</sup>	0.26	0.29
Unfairly chosen to be let go	0.20	0.25	0.15	0.26	0.25	0.19	0.12
Jobs were assigned fairly	0.61	0.58	0.65	0.57 <sup>†</sup>	0.58	0.55*	0.76
<b>Prior Exposure to Trades</b>							
Completed pre-apprentice program	0.36	0.41	0.30	0.31	0.44*	0.42*	0.17
Prior experience in construction	0.61	0.53	0.69*	0.44*	0.58	0.66	0.71
Family/friends in trades	0.69	0.69	0.69	0.81	0.63	0.62	0.76
<b>Challenges Faced in Apprenticeship (0/1)</b>							
Out of work too much	0.36	0.40	0.33	0.22	0.49*	0.43*	0.21
Doing repetitive/low-skill tasks	0.34	0.42	0.26*	0.35	0.43*	0.31	0.21
No opportunities to learn skills	0.43	0.45	0.41 <sup>†</sup>	0.30	0.51*	0.36	0.47
No one to teach you new skills	0.19	0.23	0.15	0.22	0.23	0.14	0.16
No one to ask questions	0.10	0.12	0.09	0.13	0.09	0.07	0.11
No one to talk to about working in construction	0.08	0.10	0.05	0.09	0.11	0.05	0.05
Personal problems with other apprentices	0.08	0.10	0.06	0.00	0.13	0.05	0.08
Personal problems with journeyman	0.25	0.32	0.18*	0.35*	0.32*	0.21	0.13
Problems with other workers	0.13	0.13	0.13	0.22	0.08	0.14	0.11
Problems with foreman/supervisor	0.14	0.23	0.05*	0.22	0.23*	0.02	0.08
Did not enjoy the work	0.13	0.16	0.10	0.13	0.17	0.12	0.08
Difficulty with transportation	0.06	0.10	0.01*	0.17*	0.08	0.00	0.03
Difficulty paying for gas	0.17	0.17	0.18	0.22	0.15	0.24*	0.11
Difficulty paying for food/lodging	0.15	0.14	0.16	0.09	0.17	0.17	0.16
Difficulty finding consistent childcare	0.03	0.01	0.05	0.00	0.02	0.07	0.03
Difficulty paying for childcare	0.10	0.06	0.13	0.13	0.04	0.14	0.11
Problems finding accommodating childcare	0.06	0.05	0.06	0.09	0.02	0.07	0.05

<sup>†</sup> Differences in proportions/means significant at  $p \leq .10$ ; \*differences in proportions/means at  $p \leq .05$

**Table 9, cont. Apprentice Characteristics by Gender and Race (Apprentice Survey Data)**

	<b>Total (N=177)</b>	<b>Women</b>	<b>Men</b>	<b>Women of Color</b>	<b>White Women</b>	<b>Men of Color</b>	<b>White Men</b>
	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>	<b>Prop/Mean</b>
Not working hard	0.02	0.03	0.01	0.00	0.04	0.00	0.03
Had a bad attitude	0.10	0.10	0.09	0.04	0.13	0.07	0.11
Difficulty attending classes	0.06	0.05	0.08	0.13	0.02	0.07	0.08
Difficulty passing required classes	0.06	0.09	0.04	0.09	0.08	0.05	0.03
Other	0.21	0.18	0.24	0.17	0.17	0.21	0.26
<b>Use of Childcare Among Those with Children (0/1)</b>							
Paid family/friends	0.28	0.29	0.27	0.27	0.32	0.29	0.24
Paid others	0.34	0.37	0.33	0.40	0.32	0.39	0.24
Unpaid family/friends	0.23	0.32	0.17	0.33	0.32	0.16	0.19
<b>Supports Received (0/1)</b>							
Fuel assistance	0.15	0.15	0.14	0.15	0.16	0.14	0.14
Overnight travel	0.11	0.09	0.12	0.08	0.10	0.14	0.10
Childcare subsidies	0.02	0.01	0.04	0.04	0.00	0.07	0.00
Tools, clothing, protective equipment	0.36	0.39	0.33	0.35	0.40	0.33	0.33
No supports	0.55	0.54	0.55	0.62	0.52	0.50	0.60
<b>Mentorship received (0/1)</b>							
On the job	0.61	0.52	0.69*	0.38*	0.57*	0.60	0.79
Outside of the job	0.37	0.34	0.40	0.31	0.34	0.33	0.48
No mentoring	0.31	0.35	0.27	0.42*	0.33 <sup>†</sup>	0.37	0.17
<b>How Helpful Supports Are/Were (1-5)</b>							
Fuel assistance	3.75	3.85	3.64	4.75*	3.44	3.40	3.83
Overnight travel	4.00	4.00	4.00	4.00	4.00	3.80	4.25
Childcare subsidies	4.00	5.00	3.67	5.00	--	3.67	--
Tools, clothing, protective equipment	3.95	3.91	4.00	4.11	3.83	3.75	4.23
Flexible work hours	3.27	2.95	3.52	2.67	3.00	3.29	3.82
Mentoring on site	4.06	4.20	3.96	3.90	4.30	3.91	4.00
Mentoring off site	3.98	4.07	3.90	4.00	4.11	4.18	3.74

<sup>†</sup> Differences in proportions/means significant at  $p \leq .10$ ; \*differences in proportions/means at  $p \leq .05$

**Table 9, cont. Apprentice Characteristics by Gender and Race (Apprentice Survey Data)**

	Total (N=177)	Women	Men	Women of Color	White Women	Men of Color	White Men
	Prop/Mean	Prop/Mean	Prop/Mean	Prop/Mean	Prop/Mean	Prop/Mean	Prop/Mean
<b>How Helpful Supports Would Be (1-5)</b>							
Fuel assistance	3.93	3.88	3.97	4.09	3.82	4.09	3.84
Overnight travel	4.03	3.97	4.11	4.18	3.93	4.23	4.00
Childcare subsidies (among parents)	3.37	3.13	3.57	3.26	2.96	3.89	3.68
Tools, clothing, protective equipment	3.97	3.97	3.99	4.00	3.94	4.03	3.94
Flexible work hours	3.43	3.26	3.63 <sup>†</sup>	3.26	3.31	3.57	3.70
Mentoring on site	4.13	4.21	4.04	4.04	4.27	4.06	4.03
Mentoring off site	3.91	4.09	3.71 <sup>*</sup>	4.05	4.09 <sup>†</sup>	3.77	3.67
Average	3.90	3.85	3.96	3.84	3.86	4.12	3.81
<b>Experiences with Foreman</b>							
Mostly positive	3.04	3.01	3.07	3.00	3.02	3.02	3.12
Mixed	2.19	2.22	2.15	2.35 <sup>*</sup>	2.17	2.37 <sup>*</sup>	1.92
Mostly negative	1.60	1.64	1.57	1.60 <sup>†</sup>	1.65 <sup>*</sup>	1.83 <sup>*</sup>	1.31
<b>Discrimination on the Job (0/1)</b>							
Disadvantaged due to race/ethnicity	0.15	0.15	0.15	0.30 <sup>*</sup>	0.07	0.21 <sup>†</sup>	0.08
Disadvantaged due to sex/gender	0.26	0.44	0.09 <sup>*</sup>	0.50 <sup>*</sup>	0.39 <sup>*</sup>	0.10	0.08
Disadvantaged due to sexual orientation	0.09	0.15	0.03 <sup>*</sup>	0.20	0.14	0.05	0.00
Disadvantaged due to age	0.09	0.12	0.07	0.08	0.13	0.08	0.06
Disadvantaged due to physical size/strength	0.24	0.42	0.08 <sup>*</sup>	0.32 <sup>*</sup>	0.45 <sup>*</sup>	0.07	0.08

<sup>†</sup> Differences in proportions/means significant at  $p \leq .10$ ; <sup>\*</sup>differences in proportions/means at  $p \leq .05$

**Table 10. Apprentice Characteristics by Status by Gender (Apprentice Survey Data)**

	Women (N=87)			Men (N=89)		
	Complete (N=27)	Current (N=32)	Cancel (N=28)	Complete (N=33)	Current (N=42)	Cancel (N=14)
	Prop./Mean					
<b>Union Status</b>						
Union	0.81	0.75	0.67	0.64	0.62	0.64
Non-Union	0.19	0.25	0.33	0.36	0.38	0.36
<b>Region</b>						
Region One	0.59 *	0.47	0.32	0.45	0.41	0.29
Region Two	0.11	0.31	0.29	0.21	0.21	0.21
Region Three	0.00	0.03	0.04	0.03	0.10	0.14
Region Four	0.00	0.03	0.11	0.06	0.05	0.14
Region Five	0.04	0.00	0.04	0.00	0.02	0.07
Region Six (Out of State)	0.26	0.16	0.21	0.24	0.21	0.14
<b>Age at start</b>	31.52	33.00	31.75	28.06	29.00	31.29
<b>Marital Status</b>						
Married	0.22	0.16	0.18	0.42	0.45	0.21
Single	0.63	0.59	0.61	0.36 †	0.40	0.64
Cohabiting	0.15	0.25	0.21	0.18	0.14	0.14
<b>Highest Level of Education</b>						
High School	0.41	0.22	0.36	0.45	0.52	0.57
College	0.19	0.22	0.18	0.15	0.17	0.07
Currently Attending School	0.15	0.22	0.32	0.18	0.31	0.29
<b>Journeyworker in trade</b>	0.88 *	0.00	0.00	0.90 *	0.25	0.08
<b>Have children under 18</b>	0.38	0.47	0.50	0.61	0.62	0.43
<b>Have children under 5</b>	0.11 *	0.25	0.32	0.55 *	0.51 *	0.08
<b>Job Characteristics</b>						
Number of employers worked for	5.04 *	3.19	2.54	3.58	3.40	2.93
Number of job sites	13.38	10.54	10.00	19.32	15.90	10.58
<b>Out of Work Issues</b>						
Number of times out of work	2.48	2.19	2.67	2.24	2.62	2.71
Number of months out of work in an average year	1.92 *	2.27 *	2.83	1.65	2.16	2.69
Turned down a job	0.07	0.09	0.21	0.09	0.10	0.00
Job was undesirable	1.00	0.00	0.50	0.33	0.25	.
Problems paying for gas	0.00	0.33	0.40	0.00	0.25	.
Problems paying for food/lodging	0.00	1.00 *	0.17	0.33	0.25	.
Problems with childcare	0.00	0.33	0.33	0.00	0.00	.

Note: Reference group in all comparisons is "cancel" group; † Differences in proportions/means significant at  $p \leq .10$ ; \*differences in proportions/means at  $p \leq .05$

**Table 10, cont. Apprentice Characteristics by Status by Gender (Apprentice Survey Data)**

	Women (N=87)			Men (N=89)		
	Complete (N=27)	Current (N=32)	Cancel (N=28)	Complete (N=33)	Current (N=42)	Cancel (N=14)
Left a job before it was completed	0.41	0.50	0.48	0.36	0.17	0.29
Reduction in force	0.70	0.63	0.46	0.58	0.80	0.67
Performance	0.10	0.06	0.08	0.08	0.00	0.33
Undesirable	0.20 <sup>†</sup>	0.00	0.00	0.08	0.00	0.33
Gas	0.10	0.00	0.08	0.08	0.00	0.33
Food	0.00	0.00 <sup>†</sup>	0.15	0.00	0.00	0.00
Child care	0.00	0.00	0.00	0.08	0.00	0.00
Solicited work	0.30	0.38	0.32	0.39	0.33	0.50
Employer requested apprenticeship	0.26	0.13	0.22	0.23	0.30	0.29
Jobs were fairly assigned	0.74 <sup>*</sup>	0.52	0.48	0.74	0.63	0.50
Unfairly chosen to be let go	0.22	0.23	0.30	0.13 <sup>*</sup>	0.10 <sup>*</sup>	0.36
<b>Use of Childcare Among Those with Children (0/1)</b>						
Paid family/friends	0.20	0.29	0.36	0.30	0.23	0.33
Paid others	0.60	0.29	0.29	0.45	0.27	0.17
Unpaid family/friends	0.20	0.29	0.43	0.10	0.23	0.17
<b>Prior Exposure to trades (0/1)</b>						
Completed pre-apprentice program	0.42	0.44	0.36	0.26	0.33	0.29
Prior experience in construction	0.52	0.47	0.61	0.67	0.67	0.79
Family/friends in trades	0.70	0.69	0.68	0.64	0.71	0.71
<b>Challenges Faced in Apprenticeship (0/1)</b>						
Out of work too much	0.27 <sup>*</sup>	0.33 <sup>†</sup>	0.57	0.14 <sup>*</sup>	0.38	0.57
Doing repetitive/low-skill tasks	0.32	0.48	0.43	0.21	0.30	0.29
No opportunities to learn skills	0.50	0.59 <sup>*</sup>	0.29	0.28	0.57	0.29
No one to teach you new skills	0.23	0.33 <sup>†</sup>	0.14	0.14	0.16	0.14
No one to ask questions	0.09	0.19	0.07	0.07	0.08	0.14
No one to talk to about working in construction	0.23 <sup>*</sup>	0.07	0.04	0.03	0.05	0.07
Personal problems with other apprentices	0.09	0.15	0.07	0.03	0.05	0.14
Personal problems with journeyman	0.27	0.33	0.36	0.17	0.22	0.07
Problems with other workers	0.18 <sup>*</sup>	0.22 <sup>*</sup>	0.00	0.10	0.16	0.07
Problems with foreman/supervisor	0.32	0.22	0.18	0.03	0.03	0.14
Did not enjoy the work	0.09 <sup>*</sup>	0.04 <sup>*</sup>	0.32	0.07	0.08	0.21
Difficulty with transportation	0.09	0.11	0.11	0.00	0.00 <sup>†</sup>	0.07
Difficulty paying for gas	0.18	0.15	0.18	0.17	0.16	0.21
Difficulty paying for food/lodging	0.09	0.15	0.18	0.17	0.16	0.14

*Note:* Reference group in all comparisons is "cancel" group; <sup>†</sup> Differences in proportions/means significant at p <= .10; <sup>\*</sup> differences in proportions/means at p <= .05

**Table 10, cont. Apprentice Characteristics by Status by Gender (Apprentice Survey Data)**

	Women (N=87)			Men (N=89)		
	Complete (N=27)	Current (N=32)	Cancel (N=28)	Complete (N=33)	Current (N=42)	Cancel (N=14)
Difficulty paying for childcare	0.09	0.07	0.04	0.14	0.14	0.07
Problems finding childcare	0.05	0.11 *	0.00	0.10	0.05	0.00
Not working hard	0.05	0.04	0.00	0.00	0.03	0.00
Had a bad attitude	0.14 *	0.19 *	0.00	0.07	0.11	0.07
Difficulty attending classes	0.05	0.07	0.04	0.10	0.03	0.14
Difficulty passing required classes	0.09 *	0.19 *	0.00	0.00	0.05	0.07
Other	0.09	0.26	0.18	0.10 *	0.24 †	0.50
<b>Supports Received (0/1)</b>						
Fuel assistance	0.08	0.25	0.11	0.09	0.23 *	0.00
Overnight travel	0.04	0.19 †	0.04	0.13	0.13	0.08
Childcare subsidies	0.00	0.03	0.00	0.00	0.08	0.00
Tools, clothing, protective equipment	0.32	0.44	0.39	0.25	0.48 *	0.08
No supports	0.56	0.47	0.61	0.66	0.40 *	0.75
<b>Mentorship received (0/1)</b>						
On the job	0.60	0.53	0.43	0.78	0.66	0.58
Outside of the job	0.44	0.34	0.25	0.38	0.41	0.42
No mentoring	0.32	0.34	0.39	0.19	0.29	0.42
<b>How Helpful Supports Are/Were (1-5)</b>						
Fuel assistance	3.50	3.88	4.00	3.50	3.67	--
Overnight travel	3.00	4.00	5.00	4.00	3.80	5.00
Childcare subsidies (among parents)	--	5.00	--	--	3.67	--
Tools, clothing, protective equipment	4.00	3.93	3.80	3.40 †	4.11	5.00
Flexible work hours	3.11	3.00	2.67	3.22	3.54	4.33
Mentoring on site	4.36	4.13	4.10	3.59	4.40 *	3.40
Mentoring off site	4.27	4.20	3.57	3.70	4.13	3.50
<b>How Helpful Supports Would Be (1-5)</b>						
Fuel assistance	4.00	3.88	3.78	3.92	3.94	4.33
Overnight travel	3.81	4.08	4.00	4.28	4.00	4.00
Childcare subsidies (among parents)	2.64	3.69	3.00	3.92 *	3.46 *	2.00
Tools, clothing, protective equipment	3.74	4.07	4.08	3.78	4.20	3.75
Flexible work hours	3.14	3.22	3.45	3.52	3.60	4.14
Mentoring on site	4.08	4.26	4.29	4.00	4.11	3.80
Mentoring off site	3.96	4.21	4.09	3.74 *	3.87 *	2.60
<b>Experiences with Foreman (1-4)</b>						
Mostly positive	2.93	3.09	3.00	3.00	3.23 *	2.75
Mostly negative	1.81	1.58	1.54	1.47	1.61	1.73
<b>Discrimination on the Job (0/1)</b>						
Disadvantaged due to race/ethnicity	0.20	0.06	0.20	0.10	0.22	0.08
Disadvantaged due to sex/gender	0.46	0.43	0.42	0.10	0.09	0.09
Disadvantaged due to sexual orientation	0.12	0.28 *	0.04	0.00	0.06	0.00
Disadvantaged due to age	0.14	0.06	0.16	0.10	0.03	0.10
Disadvantaged due to physical size/strength	0.41	0.44	0.39	0.07	0.08	0.10

Note: Reference group in all comparisons is "cancel" group; † Differences in proportions/means significant at  $p <= .10$ ;

\*differences in proportions/means at  $p <= .05$

**Table 11. Apprentice Characteristics by Status by Race, Women (Apprentice Survey Data)**

	Women of Color (N=28)			NH White Women (N=59)		
	Complete (N=13)	Current (N=8)	Cancel (N=7)	Complete (N=14)	Current (N=24)	Cancel (N=21)
	Prop./Mean					
<b>Union Status</b>						
Union	0.85	0.43 †	0.86	0.79	0.83 †	0.60
Non-Union	0.19	0.25	0.33	0.21	0.17	0.40
<b>Region</b>						
Region One	0.77	0.57	0.57	0.43	0.42	0.24
Region Two	0.15	0.29	0.29	0.07	0.33	0.29
Region Three	0.00	0.14	0.00	0.00	0.00	0.05
Region Four	0.00	0.00	0.00	0.00	0.04	0.14
Region Five	0.00	0.00	0.00	0.07	0.00	0.05
Region Six (Out of State)	0.08	0.00	0.14	0.43	0.21	0.24
<b>Age at start</b>	33.85	38.00	31.29	29.36	31.42	31.90
<b>Marital Status</b>						
Married	0.15 *	0.14 †	0.57	0.29 *	0.17	0.05
Single	0.69	0.57	0.43	0.57	0.58	0.67
Cohabiting	0.15	0.29	0.00	0.14	0.25	0.29
<b>Highest Level of Education</b>						
High School	0.46	0.43	0.29	0.36	0.17 †	0.38
College	0.08	0.00	0.00	0.29	0.25	0.24
Currently Attending School	0.08 †	0.29	0.43	0.21	0.21	0.29
<b>Journeyworker in trade</b>	0.77 *	0.00	0.00	1.00 *	0.00	0.00
<b>Have children under 18</b>	0.46	0.57	0.71	0.31	0.42	0.43
<b>Have children under 5</b>	0.15 *	0.29	0.57	0.07	0.21	0.24
<b>Job Characteristics</b>						
Number of employers worked for	4.75	2.14	3.00	5.29 *	3.54 †	2.38
Number of job sites	9.82	6.83	7.00	17.30	11.65	11.05
<b>Out of Work Issues</b>						
Number of times out of work	2.62	1.71 †	3.00	2.36	2.33	2.57
Number of months out of work in an average year	2.15	2.60	2.83	1.69 *	2.20 *	2.83
Turned down a job	0.08	0.13	0.14	0.07	0.08	0.24
Job was undesirable	1.00	0.00	0.00	1.00	0.00	0.60
Problems paying for gas	0.00	0.00	0.00	0.00	0.50	0.50
Problems paying for food/lodging	0.00	1.00	0.00	0.00	1.00 *	0.20
Problems with childcare	0.00	0.00	0.00	0.00	0.50	0.40

Note: Reference group in all comparisons is "cancel" group; † Differences in proportions/means significant at  $p \leq .10$ ; \* differences in proportions/means at  $p \leq .05$

**Table 11, cont. Apprentice Characteristics by Status by Race, Women (Apprentice Survey Data)**

	Women of Color (N=28)			NH White Women (N=59)		
	Complete (N=13)	Current (N=8)	Cancel (N=7)	Complete (N=14)	Current (N=24)	Cancel (N=21)
Left a job before it was completed	0.23	0.50	0.50	0.57	0.50	0.48
Reduction in force	0.00	0.50	0.33	1.00 *	0.67	0.48
Performance	0.33	0.00	0.00	0.00	0.08	0.50
Undesirable	0.33	0.00	0.00	0.14	0.00	0.10
Gas	0.33	0.00	0.33	0.00	0.00	0.00
Food	0.00	0.00	0.33	0.00	0.00	0.00
Child care	0.00	0.00	0.00	0.00	0.00	0.00
Solicited work	0.23	0.25	0.14	0.36	0.42	0.38
Employer requested apprenticeship	0.38	0.38	0.14	0.14	0.05 *	0.25
Jobs were fairly assigned	0.62	0.71	0.43	0.86 *	0.48	0.50
Unfairly chosen to be let go	0.23	0.14	0.43	0.21	0.26	0.25
<b>Use of Childcare Among Those with Children (0/1)</b>						
Paid family/friends	0.33	0.25	0.20	0.00 †	0.33	0.44
Paid others	0.67	0.25	0.20	0.50	0.22	0.33
Unpaid family/friends	0.17	0.50	0.40	0.25	0.22	0.44
<b>Prior Exposure to trades (0/1)</b>						
Completed pre-apprentice program	0.33	0.43	0.14	0.50	0.42	0.43
Prior experience in construction	0.46	0.29	0.57	0.57	0.54	0.62
Family/friends in trades	0.77	1.00	0.71	0.64	0.58	0.67
<b>Challenges Faced in Apprenticeship (0/1)</b>						
Out of work too much	0.09	0.40	0.29	0.45	0.33 *	0.67
Doing repetitive/low-skill tasks	0.27	0.60	0.29	0.36	0.43	0.48
No opportunities to learn skills	0.45 *	0.40 †	0.00	0.55	0.62	0.38
No one to teach you new skills	0.18	0.40	0.14	0.27	0.29	0.14
No one to ask questions	0.18	0.20	0.00	0.00	0.14	0.10
No one to talk to about working in construction	0.18	0.00	0.00	0.27 †	0.10	0.05
Personal problems with other apprentices	0.00	0.00	0.00	0.18	0.14	0.10
Personal problems with journeyman	0.36	0.20	0.43	0.18	0.38	0.33
Problems with other workers	0.27	0.40 †	0.00	0.09	0.14 †	0.00
Problems with foreman/supervisor	0.27	0.00	0.29	0.36	0.24	0.14
Did not enjoy the work	0.09	0.00	0.29	0.09	0.05 *	0.33
Difficulty with transportation	0.09	0.20	0.29	0.09	0.10	0.05
Difficulty paying for gas	0.18	0.20	0.29	0.18	0.14	0.14
Difficulty paying for food/lodging	0.09	0.00	0.09	0.19	0.19	0.09

Note: Reference group in all comparisons is "cancel" group; † Differences in proportions/means significant at p <= .10; \*differences in proportions/means at p <= .05

**Table 11, cont. Apprentice Characteristics by Status by Race, Women (Apprentice Survey Data)**

	Women of Color (N=28)			NH White Women (N=59)		
	Complete (N=13)	Current (N=8)	Cancel (N=7)	Complete (N=14)	Current (N=24)	Cancel (N=21)
Difficulty paying for childcare	0.18	0.20	0.00	0.00	0.05	0.05
Problems finding childcare	0.09	0.20	0.00	0.00	0.05	0.00
Not working hard	0.00	0.00	0.00	0.09	0.05	0.00
Had a bad attitude	0.09	0.00	0.00	0.18 *	0.24 *	0.00
Difficulty attending classes	0.09	0.20	0.14	0.00	0.05	0.00
Difficulty passing required classes	0.09	0.20	0.00	0.09	0.14 †	0.00
Other	0.18	0.40 †	0.00	0.00 *	0.19	0.24
<b>Supports Received (0/1)</b>						
Fuel assistance	0.00 *	0.29	0.29	0.15	0.25 *	0.05
Overnight travel	0.00	0.29	0.00	0.08	0.17	0.05
Childcare subsidies	0.00	0.17	0.00	0.00	0.00	0.00
Tools, clothing, protective equipment	0.33	0.43	0.29	0.31	0.42	0.43
No supports	0.67	0.43	0.71	0.46	0.50	0.57
<b>Mentorship received (0/1)</b>						
On the job	0.33	0.43	0.43	0.85 *	0.54	0.43
Outside of the job	0.33	0.57 *	0.00	0.54	0.25	0.33
No mentoring	0.50	0.29	0.43	0.15	0.38	0.38
<b>How Helpful Supports Are/Were (1-5)</b>						
Fuel assistance	--	5.00	4.50	3.50	3.50	3.00
Overnight travel	--	4.00	--	3.00	4.00	5.00
Childcare subsidies	--	5.00	--	--	--	--
Tools, clothing, protective equipment	4.00	4.25	4.00	4.00	3.80	3.78
Flexible work hours	2.67	--	--	3.33	3.00	2.67
Mentoring on site	4.25	3.50	4.00	4.40	4.33	4.13
Mentoring off site	4.50	3.60	--	4.14	4.80 *	3.57
<b>How Helpful Supports Would Be (1-5)</b>						
Fuel assistance	4.00	4.14	4.20	4.00	3.88	3.67
Overnight travel	3.73	4.67	4.60	3.90	4.06	3.80
Childcare subsidies	2.44	4.33	3.50	3.00	3.11	2.82
Tools, clothing, protective equipment	3.64	4.29	4.33	3.83	3.95	4.00
Flexible work hours	2.55 *	3.71	4.20	3.73 †	3.16	3.20
Mentoring on site	4.00	4.00	4.17	4.14	4.32	4.33
Mentoring off site	4.00 †	4.00	4.20	3.92	4.25	4.06
<b>Experiences with Foreman (1-4)</b>						
Mostly positive	3.00	3.29	2.71	2.86	3.04	3.10
Mostly negative	1.58	1.67	1.57	2.00 *	1.54	1.53
<b>Discrimination on the Job (0/1)</b>						
Disadvantaged due to race/ethnicity	0.23	0.29	0.43	0.17	0.00 †	0.11
Disadvantaged due to sex/gender	0.54	0.50	0.43	0.36	0.38	0.42
Disadvantaged due to sexual orientation	0.13	0.50 †	0.00	0.11	0.23 †	0.05
Disadvantaged due to age	0.18	0.00	0.00	0.09	0.09	0.21
Disadvantaged due to physical size/strength	0.36	0.17	0.40	0.45	0.50	0.39

Note: Reference group in all comparisons is "cancel" group; † Differences in proportions/means significant at p <= .10; \*differences in proportions/means at p <= .05

**Table 12. Apprentice Characteristics by Status by Race, Men (Apprentice Survey Data)**

	Men of Color (N=47)			Non-Hispanic White Men (N=42)		
	Complete (N=15)	Current (N=25)	Cancel (N=7)	Complete (N=18)	Current (N=17)	Cancel (N=7)
	Prop./Mean					
<b>Union Status</b>						
Union	0.73	0.60	0.57	0.56	0.65	0.71
Non-Union	0.27	0.40	0.43	0.44	0.35	0.29
<b>Region</b>						
Region One	0.33	0.44	0.29	0.56	0.35	0.29
Region Two	0.40	0.12	0.14	0.06	0.35	0.29
Region Three	0.00	0.12	0.00	0.06	0.06	0.29
Region Four	0.07	0.04	0.14	0.06	0.06	0.14
Region Five	0.00	0.00*	0.14	0.00	0.06	0.00
Region Six (Out of State)	0.20	0.28	0.29	0.28 <sup>†</sup>	0.12	0.00
<b>Age at start</b>	29.53	30.64	34.14	26.83	26.59	28.43
<b>Marital Status</b>						
Married	0.53	0.48	0.29	0.33	0.41	0.14
Single	0.33 <sup>†</sup>	0.36 <sup>†</sup>	0.71	0.39	0.47	0.57
Cohabiting	0.13	0.16	0.00	0.22	0.12	0.29
<b>Highest Level of Education</b>						
High School	0.27*	0.48	0.71	0.61	0.59	0.43
College	0.13	0.16	0.00	0.17	0.18	0.14
Currently Attending School	0.27	0.32	0.14	0.11 <sup>†</sup>	0.29	0.43
<b>Journeyworker in trade</b>	0.92*	0.25	0.00	0.89*	0.00	0.14
<b>Have children under 18</b>	0.67	0.68	0.57	0.56	0.53	0.29
<b>Have children under 5</b>	0.60*	0.58*	0.00	0.50 <sup>†</sup>	0.41	0.14
<b>Job Characteristics</b>						
Number of employers worked for	4.20	3.96	3.57	3.06	2.59	2.29
Number of job sites	25.78*	19.22*	5.20	14.85	10.92	14.43
<b>Out of Work Issues</b>						
Number of times out of work	2.07	2.80	2.71	2.39	2.35	2.71
Number of months out of work in an average year	1.73	2.35	2.14	1.60*	1.86*	3.33
Turned down a job	0.13	0.12	0.00	0.06	0.06	0.00
Job was undesirable	0.50	0.33	--	0.00	0.00	--
Problems paying for gas	0.00	0.33	--	0.00	0.00	--
Problems paying for food/lodging	0.50	0.33	--	0.00	0.00	--
Problems with childcare	0.00	0.00	--	0.00	0.00	--

Note: Reference group in all comparisons is "cancel" group; † Differences in proportions/means significant at  $p \leq .10$ ; \*differences in proportions/means at  $p \leq .05$

**Table 12, cont. Apprentice Characteristics by Status by Race, Men (Apprentice Survey Data)**

	Men of Color (N=47)			Non-Hispanic White Men (N=42)		
	Complete (N=15)	Current (N=25)	Cancel (N=7)	Complete (N=18)	Current (N=17)	Cancel (N=7)
Left a job before it was completed	0.27	0.16	0.14	0.44	0.18	0.43
Reduction in force	0.75	0.67	1.00	0.50	1.00	0.50
Performance	0.25	0.00	0.00	0.00 *	0.00	0.50
Undesirable	0.25	0.00	0.00	0.00 *	0.00	0.50
Gas	0.25	0.00	0.00	0.00 *	0.00	0.50
Food	0.00	0.00	0.00	0.00	0.00	0.00
Child care	0.00	0.00	0.00	0.13	0.00	0.00
Solicited work	0.33	0.36	0.57	0.44	0.29	0.43
Employer requested apprenticeship	0.23	0.26	0.29	0.24	0.35	0.29
Jobs were fairly assigned	0.71	0.48	0.43	0.76	0.82	0.57
Unfairly chosen to be let go	0.14	0.14 †	0.43	0.12	0.06	0.29
<b>Use of Childcare Among Those with Children (0/1)</b>						
Paid family/friends	0.40	0.18	0.50	0.20	0.33	0.00
Paid others	0.60 *	0.35	0.00	0.30	0.11	0.50
Unpaid family/friends	0.00	0.29	0.00	0.20	0.11	0.50
<b>Prior Exposure to trades</b>						
Completed pre-apprentice program	0.31	0.44	0.57	0.22	0.18	0.00
Prior experience in construction	0.73	0.56	0.86	0.61	0.82	0.71
Family/friends in trades	0.73	0.60	0.43	0.56 *	0.88	1.00
<b>Challenges Faced in Apprenticeship (0/1)</b>						
Out of work too much	0.23	0.50	0.57	0.06 *	0.20 †	0.57
Doing repetitive/low-skill tasks	0.31	0.36	0.14	0.13	0.20	0.43
No opportunities to learn skills	0.31	0.45	0.14	0.25	0.73	0.43
No one to teach you new skills	0.08	0.18	0.14	0.19	0.13	0.14
No one to ask questions	0.00	0.09	0.14	0.13	0.07	0.14
No one to talk to about working in construction	0.08	0.05	0.00	0.00	0.07	0.14
Personal problems with other apprentices	0.00	0.09	0.00	0.06	0.00 *	0.29
Personal problems with journeyman	0.15	0.32 †	0.00	0.19	0.07	0.14
Problems with other workers	0.15	0.18	0.00	0.06	0.13	0.14
Problems with foreman/supervisor	0.00	0.05	0.00	0.06	0.00 *	0.29
Did not enjoy the work	0.08	0.14	0.14	0.06	0.00 *	0.29
Difficulty with transportation	0.00	0.00	0.00	0.00	0.00	0.14
Difficulty paying for gas	0.23	0.23	0.29	0.13	0.07	0.14
Difficulty paying for food/lodging	0.15	0.18	0.14	0.19	0.13	0.14

Note: Reference group in all comparisons is "cancel" group; † Differences in proportions/means significant at p <= .10; \*differences in proportions/means at p <= .05

**Table 12, cont. Apprentice Characteristics by Status by Race, Men (Apprentice Survey Data)**

	Men of Color (N=47)			Non-Hispanic White Men (N=42)		
	Complete (N=15)	Current (N=25)	Cancel (N=7)	Complete (N=18)	Current (N=17)	Cancel (N=7)
Difficulty paying for childcare	0.15	0.18	0.00	0.13	0.07	0.14
Problems finding childcare	0.15	0.05	0.00	0.06	0.07	0.00
Not working hard	0.00	0.00	0.00	0.00	0.07	0.00
Had a bad attitude	0.00	0.14	0.00	0.13	0.07	0.14
Difficulty attending classes	0.08	0.05	0.14	0.13	0.00	0.14
Difficulty passing required classes	0.00	0.05	0.14	0.00	0.07	0.00
Other	0.08 <sup>†</sup>	0.23	0.43	0.13 <sup>*</sup>	0.27	0.57
<b>Supports Received (0/1)</b>						
Fuel assistance	0.14	0.17	0.00	0.06	0.29 <sup>†</sup>	0.00
Overnight travel	0.21	0.13	0.00	0.06	0.12	0.14
Childcare subsidies	0.00	0.13	0.00	0.00	0.00	0.00
Tools, clothing, protective equipment	0.29	0.43 <sup>†</sup>	0.00	0.22	0.53 <sup>†</sup>	0.14
No supports	0.50	0.43	0.80	0.78	0.35 <sup>†</sup>	0.71
<b>Mentorship received (0/1)</b>						
On the job	0.71 <sup>*</sup>	0.63 <sup>†</sup>	0.20	0.83	0.71	0.86
Outside of the job	0.43 <sup>*</sup>	0.33	0.00	0.33 <sup>†</sup>	0.53	0.71
No mentoring	0.29 <sup>*</sup>	0.33 <sup>*</sup>	0.80	0.11	0.24	0.14
<b>How Helpful Supports Are/Were (1-5)</b>						
Fuel assistance	3.00	3.50	--	4.00	3.80	--
Overnight travel	4.00	3.67	--	4.00	4.00	5.00
Childcare subsidies	--	3.67	--	--	--	--
Tools, clothing, protective equipment	3.50	3.80	--	3.33 <sup>†</sup>	4.44	5.00
Flexible work hours	2.50	3.50	4.00	3.80	3.60	5.00
Mentoring on site	3.67 <sup>*</sup>	4.31 <sup>*</sup>	1.00	3.53	4.50	4.00
Mentoring off site	4.00	4.29	--	3.50	4.00	3.50
<b>How Helpful Supports Would Be (1-5)</b>						
Fuel assistance	4.10	4.00 <sup>*</sup>	4.67	3.81	3.85	4.00
Overnight travel	4.44	4.17	4.00	4.19	3.75	4.00
Childcare subsidies	4.10	3.81	3.00	3.81 <sup>†</sup>	2.75	1.67
Tools, clothing, protective equipment	3.70	4.25	3.75	3.82	4.13	3.75
Flexible work hours	2.89 <sup>*</sup>	3.72 <sup>†</sup>	4.67	3.93	3.42	3.75
Mentoring on site	4.00	4.05	5.00	4.00	4.21	3.50
Mentoring off site	3.82	3.89	1.00	3.69 <sup>*</sup>	3.85 <sup>*</sup>	3.00
<b>Experiences with Foreman (1-4)</b>						
Mostly positive	3.07	3.04	2.80	2.94	3.47 <sup>†</sup>	2.71
Mostly negative	1.38 <sup>†</sup>	1.91	2.75	1.53	1.13	1.14
<b>Discrimination on the Job (0/1)</b>						
Disadvantaged due to race/ethnicity	0.08	0.32	0.14	0.13	0.07	0.00
Disadvantaged due to sex/gender	0.07	0.14	0.00	0.13	0.00	0.17
Disadvantaged due to sexual orientation	0.00	0.10	0.00	0.00	0.00	0.00
Disadvantaged due to age	0.13	0.06	0.00	0.06	0.00 <sup>†</sup>	0.20
Disadvantaged due to physical size/strength	0.07	0.09	0.00	0.06	0.07	0.20

Note: Reference group in all comparisons is "cancel" group; † Differences in proportions/means significant at  $p \leq .10$ ;

\*differences in proportions/means at  $p \leq .05$

**Table 13. Status and Reported Challenges by Children in Home, by Gender**

	Total			Men			Women		
	Children <18 (N=91)	Children <5 (N=60)	No Children (N=84)	Children <18 (N=52)	Children <5 (N=40)	No Children (N=37)	Children <18 (N=39)	Children <5 (N=20)	No Children (N=47)
<b>Status</b>									
Completed most recent	0.33	0.35	0.35	0.38	0.45	0.35	0.26	0.15 <sup>b</sup>	0.34
Active in most recent	0.45	0.48	0.39	0.50	0.53	0.43	0.38	0.40	0.36
Cancelled most recent	0.22	0.17	0.26	0.12	0.03 <sup>b a</sup>	0.22	0.36	0.45	0.30
<b>Turned down job because</b>									
Gas	0.33 <sup>b</sup>	0.40 <sup>b</sup>	0.00	0.20	0.25	0.00	0.43	0.50 <sup>b</sup>	0.00
Food	0.33	0.40	0.33	0.20	0.25	0.33	0.43	0.50	0.25
Child care	0.25	0.30	0.00	0.00	0.00	0.00	0.43	0.50	n/a
<b>Left job because</b>									
Gas	0.06	0.05	0.07	0.08	0.10	0.10	0.06	0.00	0.05
Food	0.03	0.00	0.03	0.00	0.00	0.00	0.06	0.00	0.05
Child care	0.00	0.00		0.00	0.00	0.00	0.00	0.00	n/a
<b>Child care arrangements</b>									
Paid others	0.34	0.44 <sup>a</sup>	n/a	0.33	0.41 <sup>a</sup>	n/a	0.37	0.50 <sup>a</sup>	n/a
Paid family friends	0.28	0.31	n/a	0.27	0.26	n/a	0.29	0.40	n/a
Relied on unpaid family/friends	0.23	0.20	n/a	0.17	0.21	n/a	0.32	0.20 <sup>a</sup>	n/a
<b>Challenges</b>									
Transportation	0.06	0.06	0.05	0.02	0.03	0.00	0.11	0.11	0.10
Gas	0.24 <sup>b</sup>	0.25 <sup>b</sup>	0.10	0.27 <sup>b</sup>	0.26 <sup>b</sup>	0.11	0.20	0.22	0.14
Food/lodging	0.19	0.17	0.12	0.22 <sup>b</sup>	0.24	0.11	0.14	0.06	0.14
<b>Child care challenges</b>	0.21								
Finding consistent	0.05	0.08 <sup>a</sup>	n/a	0.07	0.09	n/a	0.03	0.06	n/a
Finding accommodating	0.10	0.16 <sup>a</sup>	n/a	0.09	0.12	n/a	0.11	0.22 <sup>a</sup>	n/a
Paying for	0.18	0.22	n/a	0.20	0.21	n/a	0.14	0.22	n/a

<sup>a</sup>Comparison between those with children <18 and those with children <5 (proportions significant at p <= .10)

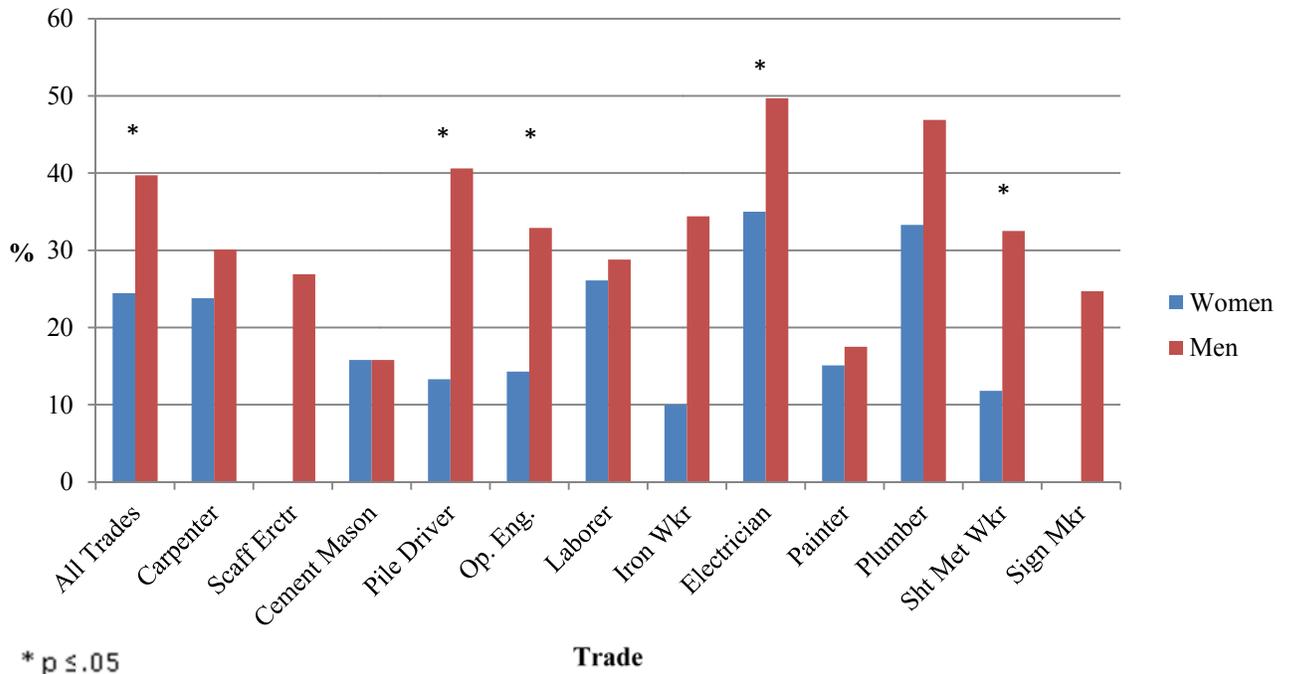
<sup>b</sup>Comparison is to those with no children (proportions significant at p<=.10)

**Table 14. Status and Reported Challenges by Union Status and Type of Work, by Gender**

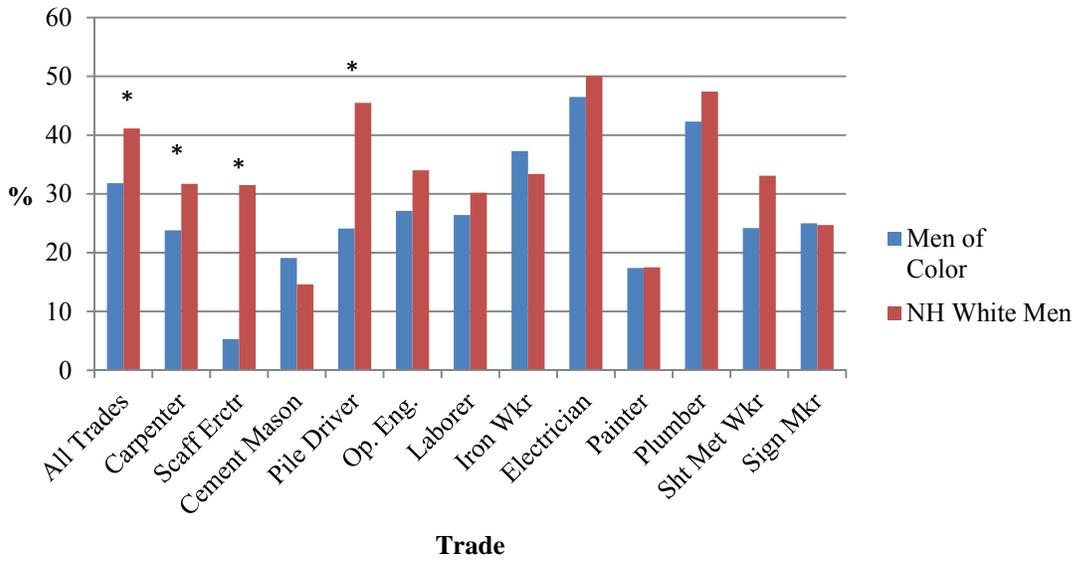
	Total				Men				Women			
	Union	Non-Union	Road/Hwy	Other Job	Union	Non-Union	Road/Hwy	Other Job	Union	Non-Union	Road/Hwy	Other Job
	(N=121)	(N=55)	(N=70)	(N=107)	(N=56)	(N=33)	(N=32)	(N=57)	(N=38)	(N=49)	(N=38)	(N=49)
<b>Status (most recent)</b>												
Completed	0.36	0.31	0.37	0.33	0.38	0.36	0.34	0.39	0.34	0.23	0.39	0.24
Active	0.41	0.44	0.46	0.39	0.46	0.48	0.59	0.40*	0.38	0.36	0.34	0.39
Cancelled	0.22	0.25	0.17	0.28*	0.16	0.15	0.06	0.21*	0.28	0.41	0.26	0.37
<b>Turned down job because</b>												
Gas	0.14	0.50	0.13	0.30	0.20	0.00	0.00	0.25	0.13	1.00*	0.20	0.40
Food	0.29	0.40	0.50	0.18	0.40	0.00	0.33	0.25	0.25	0.67	0.60	0.17
Child care	0.07	0.40*	0.25	0.09	0.00	0.00	0.00	0.00	0.13	0.67*	0.40	0.17
<b>Left job because</b>												
Gas	0.04	0.13	0.08	0.06	0.07	0.20	0.13	0.08	0.03	0.10	0.06	0.05
Food	0.04	0.00	0.00	0.06	0.00	0.00	0.00	0.00	0.07	0.00	0.00	0.09
Child care	0.02	0.00	0.04	0.00	0.07	0.00	0.13	0.00	0.00	0.00	0.00	0.00
<b>Challenges Reported</b>												
Transportation	0.20	0.02	0.03	0.08	0.02	0.00	0.00	0.02	0.13	0.05	0.06	0.14
Gas	0.17	0.10	0.15	0.18	0.24	0.07*	0.23	0.14	0.16	0.15	0.09	0.24*
Food/lodging	0.23	0.12	0.18	0.13	0.20	0.10	0.23	0.12	0.14	0.15	0.14	0.14
Child care	0.23	0.18*	0.18	0.24	0.30	0.11	0.24	0.21	0.16	0.30	0.12	0.28

\*Differences in proportions significant at  $p \leq .10$

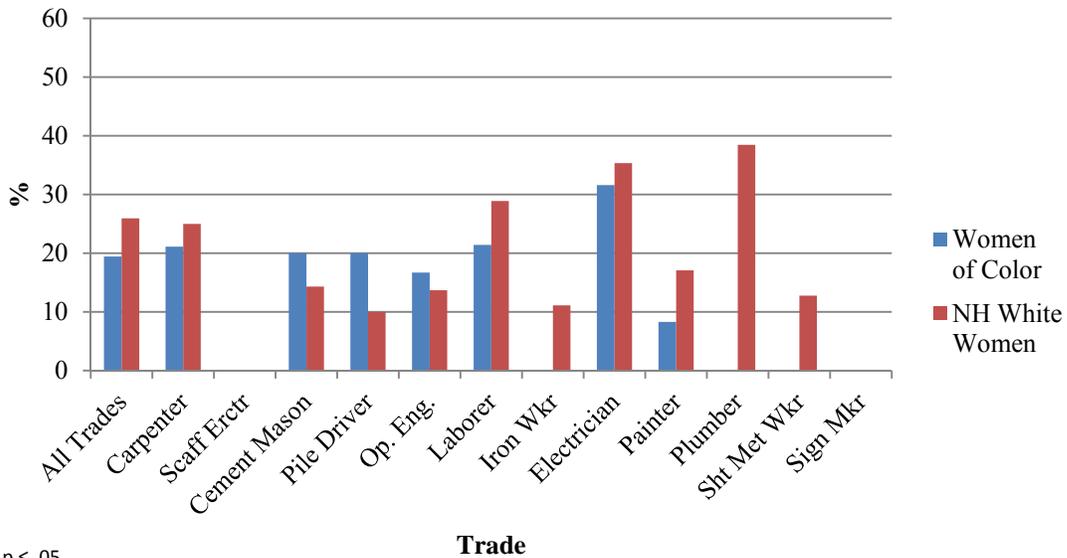
**Figure 1. Percentage of Agreements Completed by Gender, by Trade**  
(OAS Data)



**Figure 2. Percentage of Agreements Completed Among Men by Race/Ethnicity, by Trade**  
(OAS Data)

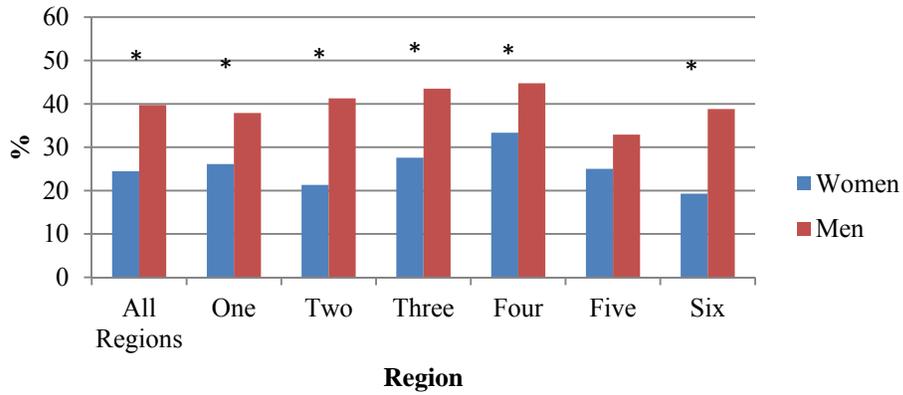


**Figure 3. Percentage of Agreements Completed Among Women by Race/Ethnicity, by Trade**  
(OAS Data)

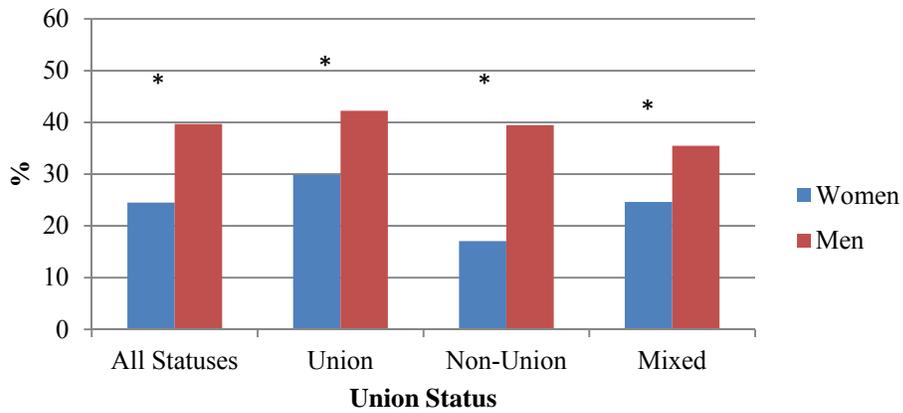


\* p ≤ .05

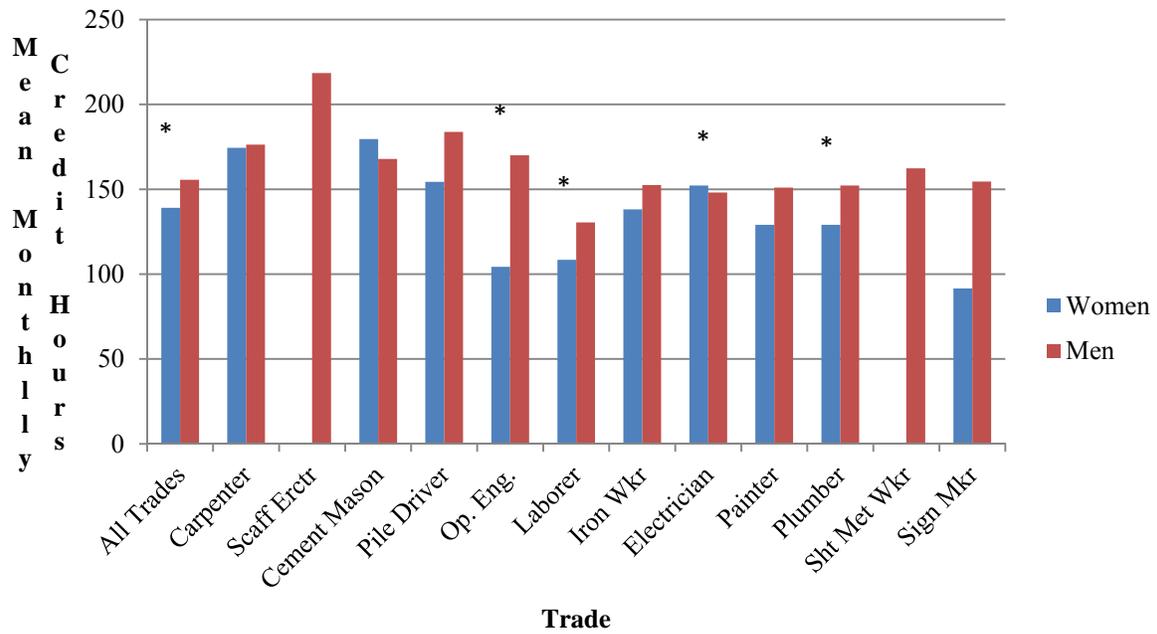
**Figure 4. Percentage of Agreements Completed by Gender, by Region (OAS Data)**



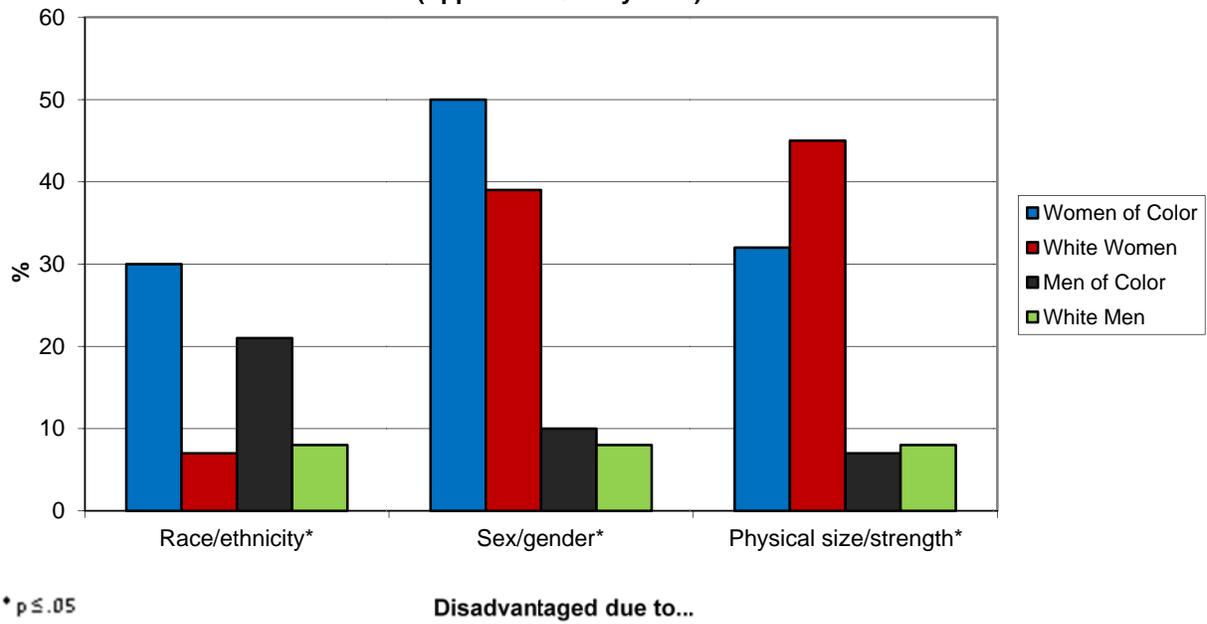
**Figure 5. Percentage of Agreements Completed by Gender, by Union Status (OAS Data)**



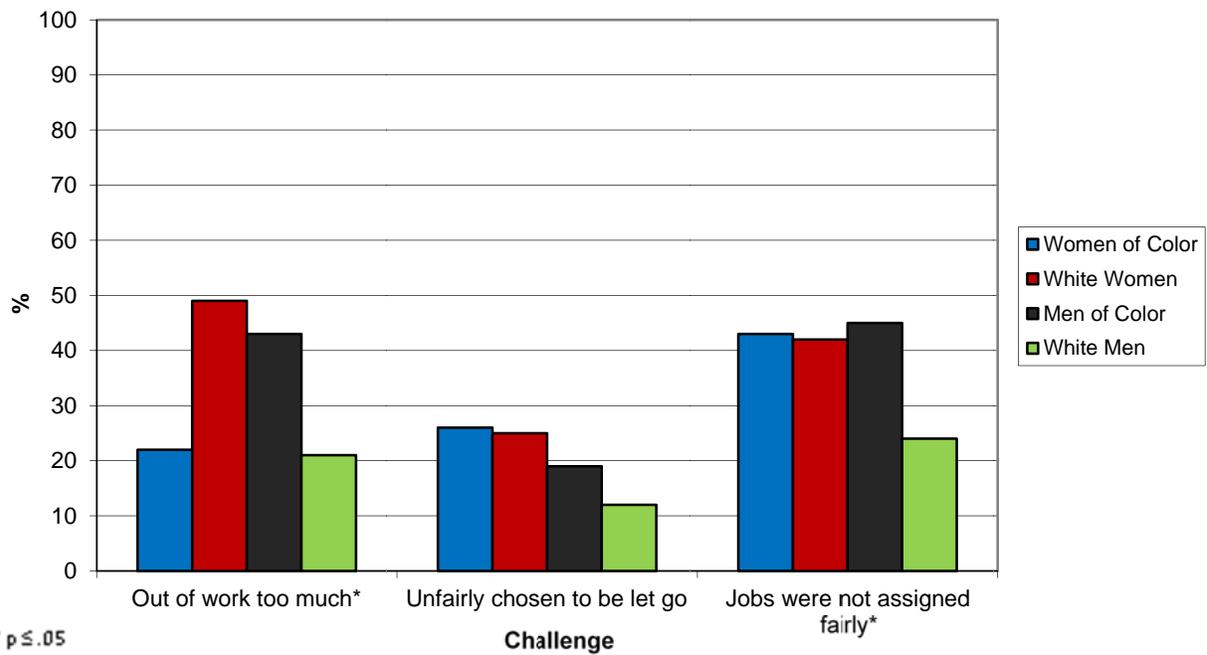
**Figure 6. Mean Credit Hours Completed per Month Among Completers, by Gender and Trade (OAS Data)**

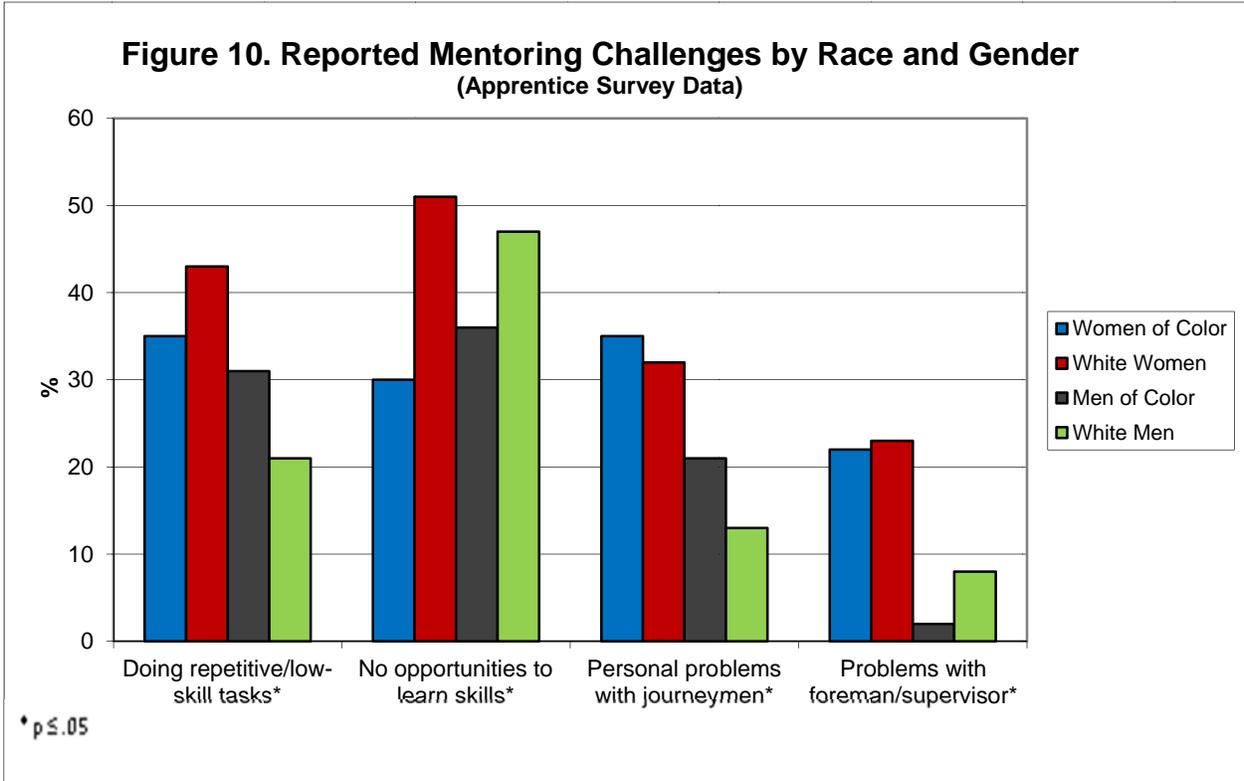
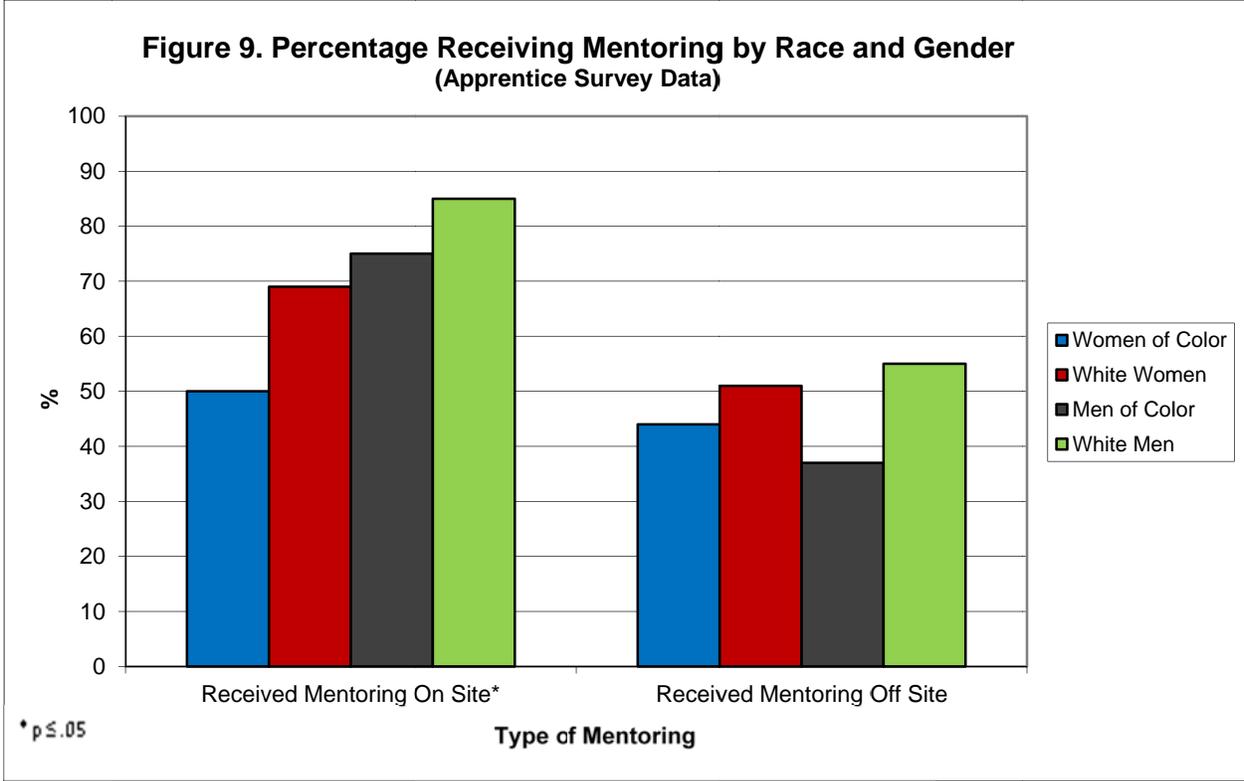


**Figure 7. Reported Disadvantage Due to Race, Gender, Sexual Orientation, Age and Physical Strength, by Race and Gender (Apprentice Survey Data)**

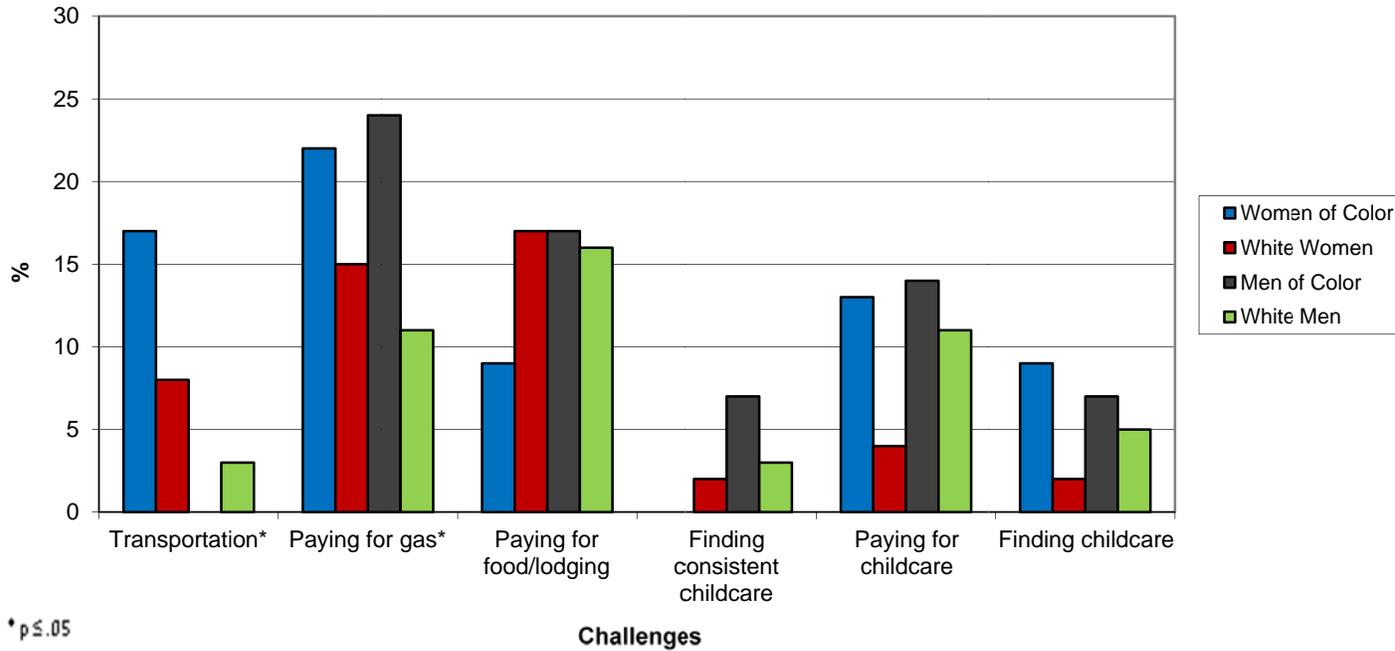


**Figure 8. Reported "Lack of Work" Challenges by Race and Gender (Apprentice Survey Data)**





**Figure 11. Reported Support Service Challenges by Race and Gender**  
(Apprentice Survey Data)



**Figure 12. Discrepancy Between Need and Receipt of Support Services**  
(Apprentice Survey Data)

