

Evaluation of Pre-Apprenticeship and Retention Services in the Construction Trades in Oregon

Maura Kelly and Lindsey Wilkinson
Department of Sociology
Portland State University

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Portland State
UNIVERSITY

REPORT AUTHORS

Maura Kelly holds the position of Associate Professor of Sociology at Portland State University. She has a PhD in Sociology from the University of Connecticut. Dr. Kelly's research interests focus on gender, sexualities, race/ethnicity, and work and occupations. For more information about Dr. Kelly, including access to reports on her prior research projects on the highway construction workforce, see www.pdx.edu/sociology/maura-kelly.

Lindsey Wilkinson is an Associate Professor of Sociology at Portland State University. He earned a PhD in Sociology from the University of Texas, Austin. Dr. Wilkinson's research interests include educational stratification, gender and sexuality, race/ethnicity, and transition to adulthood.

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EXECUTIVE SUMMARY

In order to assess the impact of pre-apprenticeship programs on the career trajectories of women and people of color in Portland, Oregon, PSU researchers designed a longitudinal study of individuals attending pre-apprenticeship programs at two sites: Oregon Tradeswomen, Inc. (OTI) and Constructing Hope (CH). The study assessed participants' perceptions of the trades before and after completion of the program as well as objective outcomes such as completion of pre-apprenticeship and entrance into a registered apprenticeship.

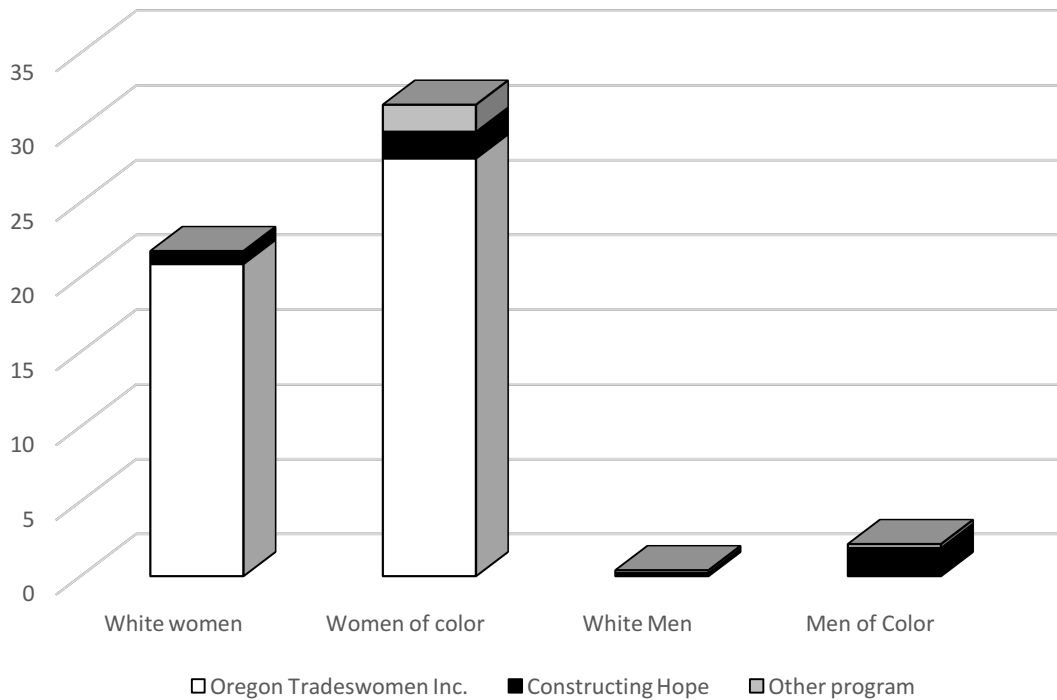
This evaluation focused on four classes of pre-apprenticeship students at Oregon Tradeswomen, Inc (OTI) and Constructing Hope (CH), including two classes at each site. Wave I of the study was administered on the first day of the pre-apprenticeship class, Wave II was administered at the end of the pre-apprenticeship class, and Wave III was administered one year after the completion of the pre-apprenticeship class to determine whether or not participants pursued a career in the trades after their pre-apprenticeship program. Survey data was supplemented with data collected through BOLI's Oregon Apprenticeship System (OAS) that tracks all registered apprentices in the state of Oregon. A total of 94 individuals were enrolled in the four classes; 77 individuals completed one of the four classes; 76 individuals completed both Wave I and Wave II surveys; 15 individuals completed Wave I, II, and III.

The following are the key findings from this report:

Pre-apprenticeship program enrollment, completion, and placement in apprenticeship are all increasing: An increasing proportion of those completing pre-apprenticeships through OTI and CH are entering apprenticeships. Pre-apprenticeship graduates are making up an increasingly larger percentage of current apprentices.

Pre-apprenticeships play a significant role in recruiting marginalized workers, particularly women, into apprenticeships: Among white women apprentices active in 2014-15, 21.7% completed a pre-apprenticeship. Similarly, among women of color who were active apprentices in 2014-2015, 31.5% completed a pre-apprenticeship (Figure 1).

Figure 1. Percentage of 14-15 Active Apprentices Completing a Pre-Apprenticeship, by Gender and Race/Ethnicity



Source: BOLI Oregon Apprenticeship System (OAS) Data

Socio-demographic characteristics of participants: The two pre-apprenticeship programs studied here, OTI and CH, primarily serve women and people of color. In our study period, OTI students were 100% female and 17% racial/ethnic minority (the two cohorts in our study period had an atypically small number of women of color). CH students were 11% female and 54% racial/ethnic minority. Pre-apprentices serve students who have other disadvantages: In our study period, 77% of CH participants had a criminal record; 64% of CH participants and 37% of OTI participants received public assistance; and 28% of CH participants reported not having access to permanent housing.

Pre-apprenticeship program completion rates: The completion rate for OTI students in our study was 87%; the completion rate for CH students in our study was 76%. Among OTI participants, those who were partnered, had children in the household, or were disadvantaged in terms of educational attainment, public assistance, or criminal history, were less likely to complete; among CH participants, those who were female, not partnered, and disadvantaged in terms of educational attainment, public assistance, criminal background, and housing, were less likely to complete

Impact of pre-apprenticeship program on entry into apprenticeship or construction workforce: Of those completing a pre-apprenticeship through OTI during our study period, 20% had entered an apprenticeship by Wave III; of CH graduates, 27% had entered an apprenticeship by Wave III; of OTI graduates completing all three waves of the study, 83% were in a construction job at Wave

III; among CH graduates completing all three waves of the study, 100% were in a construction job by Wave III.

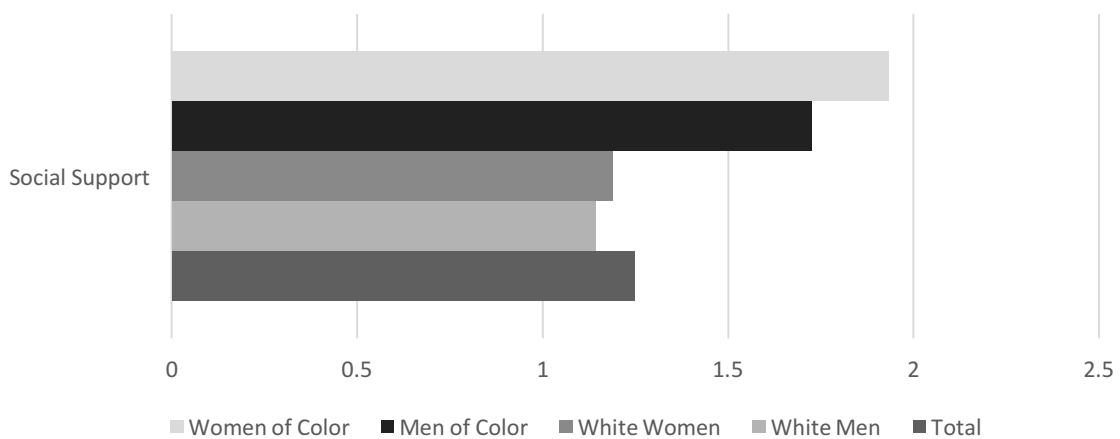
“My program really prepared us to mentally understand and take in working in a male-dominated field. It also gave me the confidence I needed to trust that I can do construction despite my gender.” (OTI Student)

“[Through Constructing Hope, I received] the hands-on training to get a better job and to have a brighter future” (CH Student)

Among those completing a pre-apprenticeship program through OTI, those in a registered apprenticeship by Wave III were more likely than those not in an apprenticeship to be non-Hispanic white, partnered, to have children in their household, and to be disadvantaged in terms of educational attainment, public assistance, criminal history, and employment. This suggests that disadvantaged women with families may see apprenticeships as an opportunity that other women completing pre-apprenticeships do not. Those completing a pre-apprenticeship through CH and in an apprenticeship by Wave III were also more disadvantaged than their peers not in an apprenticeship. This has important implications for the challenges apprentices entering via pre-apprenticeships may face.

Receiving ongoing support during apprenticeship promoted retention of apprentices: Findings from the OAS database demonstrate that receiving non-financial support (from pre-apprenticeships and other organizations) had a positive impact on retention to completion (Figure 2). In our Wave III survey, five participants had entered in apprenticeship and all five noted they had ongoing support from their pre-apprenticeship.

Figure 2. Change in Log Odds of Completing an Apprenticeship when Receiving ODOT-BOLI Supportive Services, by Race and Gender (2005-2015 Cohorts of Apprentices in Eligible Trades, OAS Data)



Source: Wilkinson and Kelly 2016

Students' plans for working in the trades in the future: Between Wave I and Wave II, students in both programs became slightly more optimistic about their likelihood of working in the trades in the future. Among OTI students, greater optimism towards working in the trades in the future at Wave I was negatively associated with completing the pre-apprenticeship, although this association was positive among CH students. CH students completing their pre-apprenticeship had more optimistic plans for working in the trades relative to those who did not complete their pre-apprenticeship. Among OTI and CH students completing the pre-apprenticeship, plans for working in the trades at Waves I and II were positively associated with entering an apprenticeship.

Students' perceived strengths in skills: Between Wave I and Wave II, students in both programs reported higher perceptions of their skill level on items related to tools and skills needed for the construction trades, knowledge about working on construction job sites, and knowledge about trades careers. In an open-ended question at Wave II, students identified the most important things they learned in their pre-apprenticeship program; responses included tools and skills needed for the construction trades, "soft skills" (e.g. confidence, communication, attitude), knowledge about working on construction job sites, and knowledge about trades careers. In an open-ended question asked at Wave II, students suggested that pre-apprenticeship programs include more hands-on training and practice with specific skills.

Among OTI students, there was not a positive association between perceived strengths at Wave I and completing the pre-apprenticeship: OTI students who completed the pre-apprenticeship reported lower perceptions of skill level than those not completing the pre-apprenticeship. This finding was similar among CH students, yet differences in Wave I perceived skill level were much smaller among CH students completing and not completing a pre-apprenticeship. Among OTI and CH students completing the pre-apprenticeship, perceived strengths at Waves I and II were positively associated with entering an apprenticeship.

Students' attitudes towards working in the trades: Between Wave I and Wave II, students in both programs reported more positive attitudes on items about working in the trades (e.g. "In the construction trades, I will have a career, not just a job."). In open-ended questions at Wave I, students reported both financial and non-financial reasons for pursuing a career in the trades.

Among OTI students, positive attitudes towards working in the trades at Wave I were not, however, associated with completion of the pre-apprenticeship program. Among CH students, this association was positive, as CH students who completed the pre-apprenticeship had more positive attitudes towards working in the trades compared to those who did not complete the pre-apprenticeship. Among OTI and CH students completing the pre-apprenticeship, attitudes towards working in the trades at Waves I and II were positively associated with entering an apprenticeship.

Students' perceived challenges of working in the trades: In an open-ended question at Wave I, students reported their perceptions of the challenges of working in the construction trades; the most common responses related to a hostile workplace, physical ability and skill level, and other issues

related to the job (e.g. safety, long hours, being out of work). Between Wave I and Wave II, students in both programs became more aware of the challenges of working in the trades (e.g. being out of work, financial challenges).

Among OTI and CH students, perceived challenges at Wave I were positively associated with completion of the pre-apprenticeship. Students who completed the pre-apprenticeship reported a greater perception of challenges working in the trades than those who did not complete. Among OTI students who completed the pre-apprenticeship, those who entered an apprenticeship reported fewer perceived challenges at Waves I and II, relative to those not entering an apprenticeship. Among CH students completing the pre-apprenticeship, however, those entering an apprenticeship reported more perceived challenges in Waves I and II relative to those not entering an apprenticeship.

The report concludes with recommendations to BOLI/ODOT for building on the success of pre-apprenticeships and retention services to continue to promote a more diverse workforce in the highway trades. These recommendations include:

- Support Pre-Apprenticeship Programs to Increase Recruitment of a Diverse Construction Workforce
- Support Retention Services Provided by Pre-Apprenticeship Programs to Increase Retention of a Diverse Construction Workforce
- Use Funding from The Oregon Construction Workforce Development Program to Address Other Issues Impacting Recruitment and Retention

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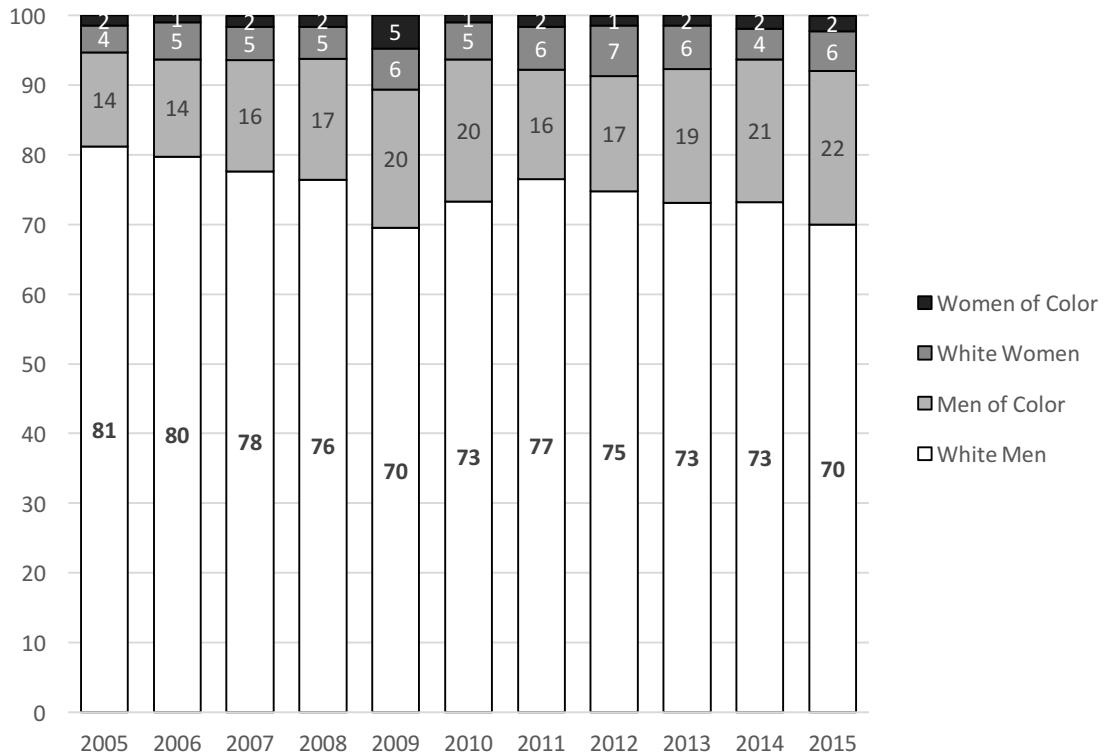
Maura Kelly and Lindsey Wilkinson
Department of Sociology
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INTRODUCTION

While white men have historically dominated the highway construction trades in Oregon, this trend is changing: of those enrolled in apprenticeships in the highway construction trades in 2005, 81% were white men; in 2015, this number was 70% (Figure 1). These changes are due in part to recruitment efforts and training offered by pre-apprenticeship programs, which are designed to help individuals build the necessary skills to meet the minimum entry qualifications to enter a trade or apprenticeship program. Pre-apprenticeships can reach not only women and people of color, but also people without family or friends in the trades, which is a common conduit for employment in this sector. Pre-apprenticeship programs also offer ongoing mentoring and support for graduates, through apprenticeship and beyond. Two such pre-apprenticeship programs in Portland are Oregon Tradeswomen Inc. (OTI), which targets women, and Constructing Hope (CH), which primarily serves people of color and those previously incarcerated, providing a second chance in the workforce. These programs work to diversify the pipeline of potential applicants entering registered apprenticeships in Oregon. Pre-apprenticeships are supported in part by funds from the Oregon Department of Transportation (ODOT) and the Bureau of Labor Industries (BOLI) initiative to diversify the skilled highway construction workforce, the Highway Construction Workforce Development Program.

This report assesses the effectiveness of pre-apprenticeship programs in 1) preparing pre-apprentices for entry into the trades or an apprenticeship in the trades; 2) increasing the entry of women and minorities into highway construction trades apprenticeships and 3) increasing the likelihood that women and minority apprentices will complete apprenticeships in the highway construction trades. In order to assess the impact of pre-apprenticeship programs on the skills, perceptions, and career outcomes of women and minorities, PSU researchers designed a longitudinal study of individuals participating in a pre-apprenticeship program through Oregon Tradeswomen Inc. (OTI) or Constructing Hope (CH). PSU also relied on aggregate data from the Oregon Apprenticeship System (OAS) data base to identify OTI or CH graduates entering a registered apprenticeship. This report reflects the findings from three waves of survey data collection (2016-2017) and OAS data from the 2005-2017 cohorts of new apprentices in the state of Oregon.

Figure 1. New Apprentices in Oregon Heavy Highway Construction Trades by Race and Gender, 2005-2015 Cohorts



Source: BOLI Oregon Apprenticeship System (OAS) Data

THE PRE-APPRENTICESHIP PROGRAMS

This evaluation focuses on two pre-apprenticeship programs in Oregon: Oregon Tradeswomen, Inc (OTI) and Constructing Hope (CH). Both programs are free to participants and are funded through grants and donations. These programs are similar in their focus on preparing disadvantaged workers for careers in the trades by teaching them basic skills and knowledge about working in the construction trades. They differ in the populations served: OTI serves only women, while CH serves both men and women. Both programs serve racial/ethnic minorities, low income individuals, and members of other disadvantaged groups. Box 1 provides additional information about the two pre-apprenticeship programs, with text from the program’s websites.

Box 1: The Pre-Apprenticeship Programs

Oregon Tradeswomen, Inc (Information from: <http://www.tradeswomen.net/pathways-to-success>)

With a focus on apprenticeship, Oregon Tradeswomen, Inc.'s (OTI's) Pathways to Success program offers the Trades and Apprenticeship Career Class (TACC); a 7-week, pre-apprenticeship training class that helps women prepare for a high skill, high wage career in construction. The class is offered at no charge to participants thanks to generous funding from foundations, industry, and individual donors.

Key benefits of attending TACC Class:

- Learn basic trades math and measurement
- Receive an introduction to green building
- Explore topics such as job site safety and construction culture
- Learn to use hand and power tools
- Gain 30 hours of hands-on experience working alongside skilled female instructors on real job sites
- Go on field trips to apprenticeship training centers and active construction sites
- Improve physical fitness with strength training taught by a certified fitness trainer
- Upon graduation, OTI career counselors assist TACC graduates with their job search and application to apprenticeship training programs. OTI career counselors also provide individualized employment

Constructing Hope (Information from: <http://www.constructinghope.org/about>)

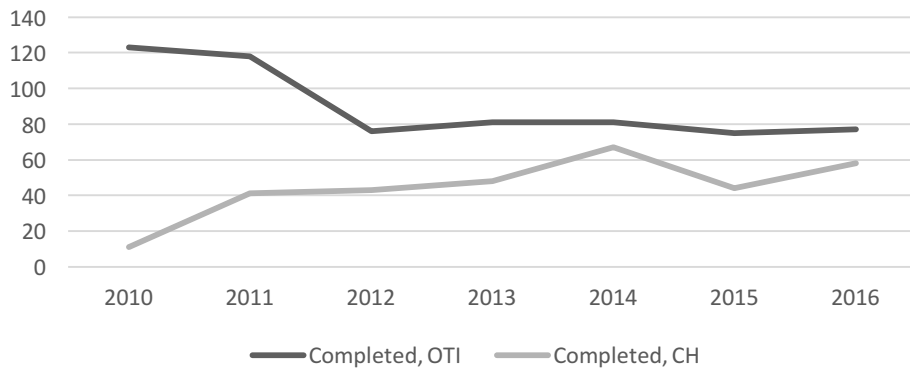
The purpose of the Constructing Hope Pre-Apprenticeship Training Program is to help participants develop an understanding of apprenticeship opportunities, which are available in the construction trades. Each participant will gain knowledge of various career opportunities within the trades, basic entry-level skills, plus familiarity with trade tools, terminology and basic principles.

Constructing Hope offers a 9 week pre-apprenticeship training program with 180 hours of classes and hands-on training. Located at 405 NE Church St., Portland, Oregon 97211, classes are taught by program instructors, as well as, retired construction workers, which we call Elder Craftsmen. Students follow a Monday through Friday training schedule from 8:00am until noon. Upon graduations, participants have assistance with permanent job placement and will have gained the following certifications: Flagging, Fork-lift and OSHA 10.

PARTICIPATION IN PRE-APPRENTICESHIP PROGRAMS OVER TIME

Between 2010 and 2016, the number of individuals completing Constructing Hope's pre-apprenticeship program increased from 11 individuals to 58 individuals. The number completing OTI's pre-apprenticeship class has leveled off following the Great Recession: since 2012, between 75 and 80 women have completed a pre-apprenticeship program through OTI every year (Figure 2).

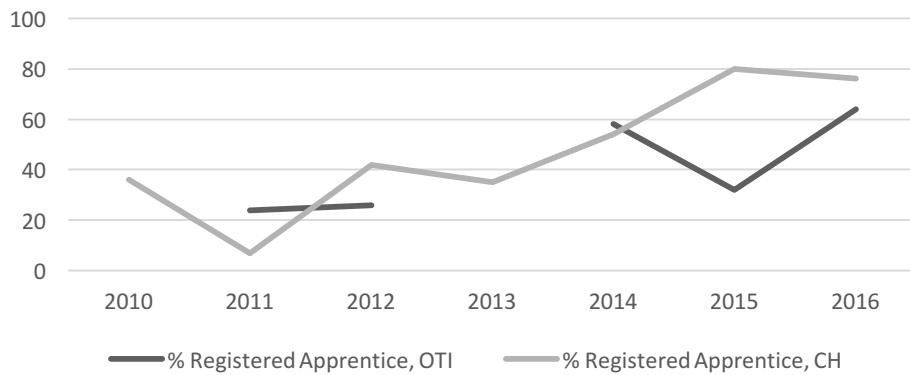
Figure 2. Pre-Apprenticeship Completion, 2010-2016, OTI/CH



Source: OTI and CH program staff

During this same period, the percentage of pre-apprenticeship program graduates entering a registered apprenticeship has also increased (Figure 3). By 2015, nearly 80% of Constructing Hope’s pre-apprenticeship graduates were entering apprenticeships.

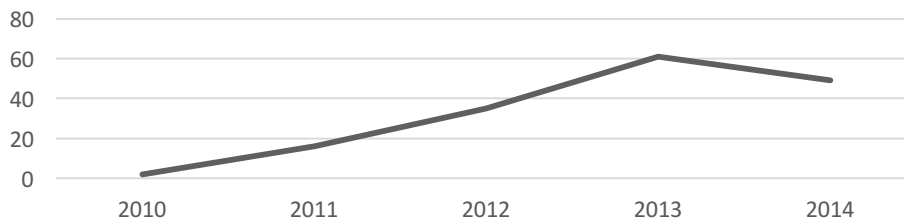
Figure 3. Percentage of OTI/CH Pre-Apprenticeship Graduates Entering Registered Apprenticeship, 2010-2016



Source: OTI and CH program staff (OTI data not available for certain years)

Given the important role of pre-apprenticeship programs, it is still relatively rare for registered apprentices in Oregon to have completed a pre-apprenticeship before beginning an apprenticeship. This trend is increasing, however. Figure 4 illustrates the number of apprenticeships initiated in Oregon by individuals who completed a pre-apprenticeship (2010-2014 cohorts of new apprentices). While the total number is small, there has been an exponential increase: in 2010 two (.35%) newly registered apprentices had completed a pre-apprenticeship with OTI, CH, or PYB before entering an apprenticeship in Oregon. By 2014, this number was up to 49, or 3.03% of all newly registered apprentices in Oregon.

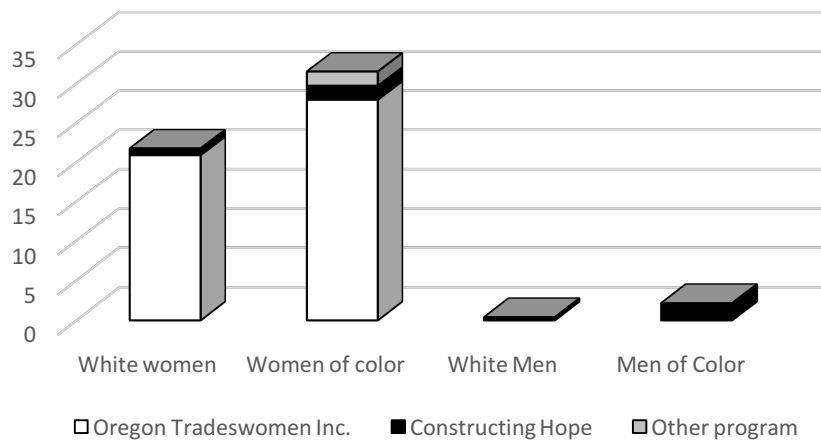
Figure 4. Number of Oregon Apprentices Completing a Pre-Apprenticeship, 2010-2014 Cohorts



Source: BOLI Oregon Apprenticeship System (OAS) Data

Figure 5 illustrates the percentage of apprentices in Oregon active in 2014-15 who completed a pre-apprenticeship, by gender, race-ethnicity, and apprenticeship program (i.e., OTI, CH, PYB). Among this population, women are disproportionately represented among those who completed a pre-apprenticeship. Among white women apprentices active in 2014-15, 21.7% completed a pre-apprenticeship, with the majority (96%) completing a pre-apprenticeship through OTI. Similarly, among women of color, 31.5% completed a pre-apprenticeship. This is compared to only 2.1% of minority men and less than 1% of white men who were active apprentices in Oregon in 2014-15. As shown in Figure 5, the vast majority of white women and women of color apprentices who were pre-apprentice graduates were associated with OTI.

Figure 5. Percentage of 14-15 Active Apprentices Completing a Pre-Apprenticeship, by Gender and Race/Ethnicity



Source: BOLI OAS Data

CHARACTERISTICS OF INDIVIDUALS PARTICIPATING IN PRE-APPRENTICESHIP PROGRAMS

Table 1 describes the socio-demographic characteristics of participants enrolled in OTI and CH pre-apprenticeship programs in January and April 2016 who completed our survey, separately by

OTI and CH participants. Given the specific target populations of OTI and CH, differences in participant socio-demographic characteristics are not surprising and should be considered when evaluating the outcomes of each program as well as the outcome of apprentices who do and do not participate in a pre-apprenticeship. While 100% of OTI participants are women, only 11% of CH participants are women. CH is, however, more racially diverse than OTI: 65% of CH participants are racial-ethnic minorities, while only 17% of OTI participants in our study period are racial-ethnic minorities. This was an atypically small number of women of color (e.g. the OTI July 2016 class was 33% women of color and October 2016 class was 32% women of color). OTI now reserves 8 out of 24 seats in each cohort for women of color. OTI and CH participants are equally likely to be married or in cohabiting relationships, yet CH participants are slightly more likely than OTI participants to be living with children. Importantly, CH participants are much more likely than OTI participants to receive public assistance (64% vs. 37%), are less likely to have a high school degree (56% vs. 76%), are more likely than OTI participants to report previous involvement with the criminal justice system (77% vs. 22%), and are less likely to have access to permanent housing (96% vs. 72%). Participants are an average of 31 years of age, with CH participants slightly older than OTI participants

Table 1. Socio-Demographic Characteristics of Participants by Program

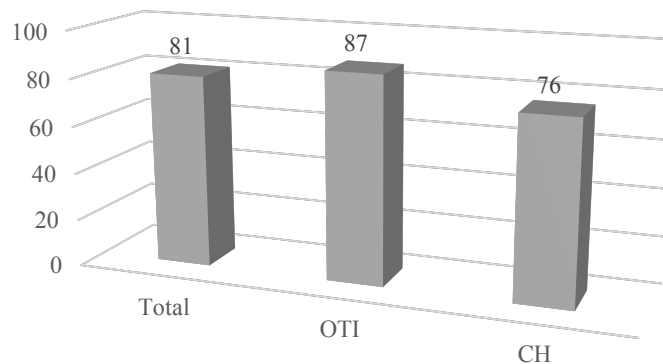
Variables	Total	OTI	CH
Age	31	29	32
% Female	56	100	11
% Male	44	0	89
% Non-Hispanic White	57	83	33
% Race-Ethnic Minority	41	17	65
% White Women	41	83	2
% Women of Color	13	17	8
% White Men	16	0	31
% Men of Color	26	0	50
% Partnered (married or cohabiting)	36	36	36
% With Children	24	22	26
% With Children Under 5	15	13	17
% With Public Assistance	51	37	64
% With High School Degree	66	76	56
% With Legal History/Criminal Record	46	13	77
% Employed	47	59	35
% w/ Permanent Housing	84	96	72
N	94	46	48

COMPLETION OF PRE-APPRENTICESHIP PROGRAMS

In our study, the overall completion rate for pre-apprenticeship participants was 81%. The OTI completion rate was higher (87%) than the CH completion rate (76%) (Figure 6). However, as noted in Table 1, CH participants, on average, show more disadvantages prior to beginning the pre-apprenticeship program (i.e. more likely to receive public assistance, more likely to have a criminal record, less likely to have permanent housing). Thus, CH students may face additional challenges during their pre-apprenticeship program, relative to OTI students.

Both CH and OTI offer students who drop out or are dismissed from the class the opportunity to re-enroll in a subsequent class session. During our study period, two participants in CH dropped out of the January class but re-enrolled and completed the program with the April class and are considered to have completed for the purposes of this study.

Figure 6. Percentage of Participants Completing Pre-Apprenticeship, OTI and CH



Source: Wave I and II Surveys; N=94

A total of 13 students across the two classes of CH students dropped out or were dismissed from the program (including two from the January class who later enrolled and completed the April class). The reasons for not completing (as reported by CH staff) were: Dismissed due to attendance and/or tardiness (6); Family responsibilities (2); Injury/health issues (1); Missed or failed drug test (2); Needed paid employment (2).

A total of six students across the two classes of OTI students dropped out or were dismissed from the program. The reasons for not completing (as reported by OTI staff) were: Dismissed due to attendance and/or tardiness (2); Family responsibilities (1); Injury/health issues (1); Transportation issues (1); Missed or failed drug test (1).

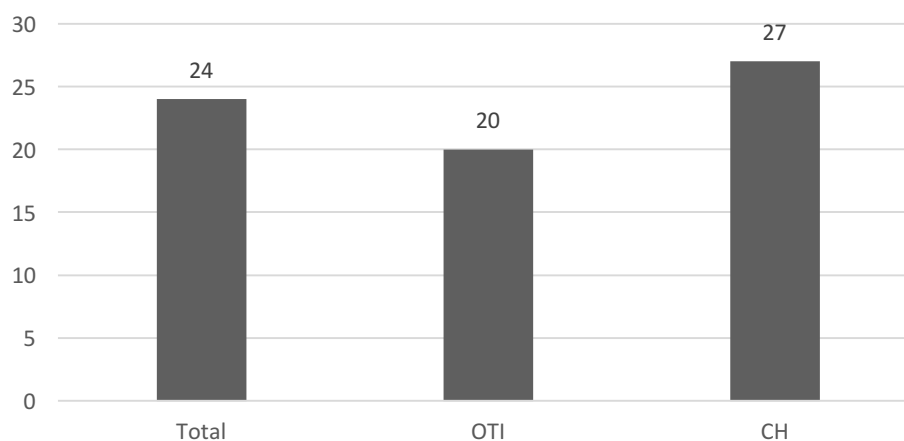
Tables 2 and 3 identify socio-demographic characteristics of those who completed their pre-apprenticeship and those who did not, separately by program (OTI and CH). Among OTI participants, those who did not complete a pre-apprenticeship class were, relative to those who did complete, older (32 vs. 29), less likely to be partnered (33% vs. 36%), much more likely to have

children in their household (60% vs. 18%), more likely to receive public assistance (50% vs. 35%), more likely to have a criminal record (33% vs. 10%), and less likely to have a high school diploma (50% vs. 80%). Women not completing their pre-apprenticeship program through OTI were thus, on average, more disadvantaged than women who completed. Similarly, CH pre-apprentices who did not complete their program faced more challenges than those who completed: those who did not complete were, relative to those who did complete, older (34 vs. 31), more likely to be female (18% vs. 9%), less likely to be partnered (27% vs. 39%), more likely to be receiving public assistance (80% vs. 59%), less likely to have a high school diploma (27% vs. 65%), more likely to have a criminal background (91% vs. 73%), and less likely to have permanent housing (50% vs. 78%). CH pre-apprentices not completing their pre-apprenticeship class were also more likely than those who did complete to be employed (64% vs. 27%); given their employment, they may have had less incentive to complete the program.

PRE-APPRENTICESHIPS AND ENTRY INTO APPRENTICESHIP OR CONSTRUCTION WORKFORCE

As of June 2017, 18 of the 77 (24%) participants who completed a pre-apprenticeship with OTI or CH in January or April of 2016 had entered a registered apprenticeship by June 2017. In our study period, the rate at which those completing entered an apprenticeship was slightly higher among CH graduates: 27% of CH graduates had entered an apprenticeship by June, 2017, while 20% of recent OTI graduates had done so (Figure 7).

Figure 7. Percentage of Those Completing Pre-Apprenticeship Entering Apprenticeship



Source: Waves I and III Survey Data and BOLI OAS Data

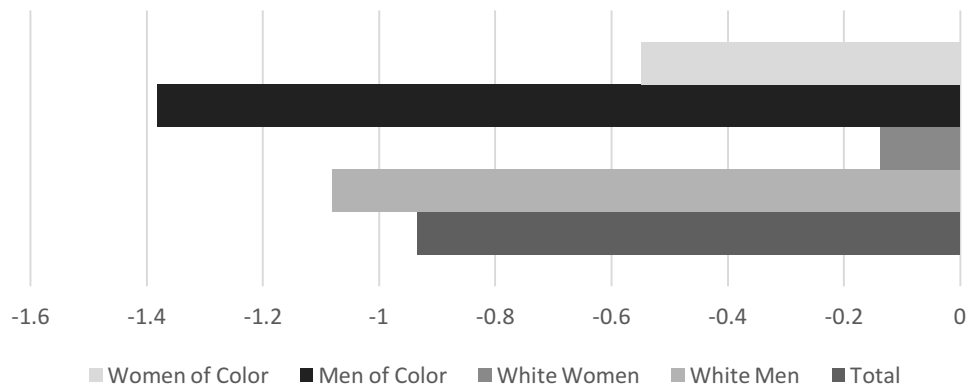
To understand the pathways to apprenticeship and entry into the construction workforce among pre-apprentices, it is important to examine the socio-demographic characteristics of pre-apprentices who do and do not enter the construction trades, either via a registered apprenticeship or through jobs in the construction workforce.

Among those who enrolled in and completed their OTI pre-apprenticeship program, those who entered an apprenticeship by June 2017 were, relative to those who did not enter an apprenticeship, more likely to be non-Hispanic white (100% vs. 78%), to be partnered (50% vs. 32%), to have children in their household (25% vs. 16%), to be receiving public assistance (63% vs. 28%), and to have a criminal record (13% vs. 9%). Those entering an apprenticeship were also less likely to have a high school diploma (75% vs. 81%) and less likely to be employed (50% vs. 63%), and among those employed, those entering an apprenticeship had a lower hourly wage (\$10.75 vs. \$12.30). Among those completing a pre-apprenticeship through OTI, having fewer opportunities for employment, being more disadvantaged, and having children in the household may be factors leading women to choose apprenticeships as a path to employment.

Similarly, among those completing a pre-apprenticeship through CH, those entering an apprenticeship were more economically disadvantaged, relative to their peers not entering an apprenticeship: those entering an apprenticeship were less likely to have a high school diploma (50% vs. 70%) and more likely to have a criminal record (80% vs. 70%). However, among those completing a pre-apprenticeship through CH, those continuing on into an apprenticeship, unlike their OTI counterparts, were less likely to be partnered, less likely to have children at home, and more likely to be employed. Perhaps the route from pre-apprenticeship to apprenticeship is different for OTI and CH participants, a difference that may be due to gender given OTI reaches only women. More work is needed to explore how pathways into apprenticeships are experienced differently by men and women and how additional factors such as family formation and limited economic opportunities influences these pathways.

It is also important to note that many of those who completed a pre-apprenticeship may not immediately or ever enter a registered apprenticeship. Many, instead, choose to enter a job in the construction workforce without apprenticeship. Among those completing our Wave III survey (n=15), by June 2017, 33% had entered a registered apprenticeship in Oregon, 53% were employed in the construction trades, and 13% were neither registered as an apprentice or employed in the construction trades. In sum, among OTI graduates completing all three waves of the study, 83% were in an apprenticeship or another construction job at Wave III; among CH graduates completing all three waves of the study, 100% were in an apprenticeship or another construction job by Wave III.

Figure 8. Change in Log Odds of Completing an Apprenticeship when Completing Pre-Apprenticeship, by Race and Gender (2005-2015 Cohorts of Apprentices in Eligible Trades, OAS Data)



Source: Wilkinson and Kelly 2016

In a previous study (Wilkinson and Kelly 2016), we evaluated the effect of completing a pre-apprenticeship on completing an apprenticeship. We found pre-apprenticeship graduates are less likely to complete than those who did not complete a pre-apprenticeship (Figure 8). While this may initially seem surprising, it does make sense as pre-apprenticeships generally serve disadvantaged workers who have a variety of ongoing challenges during apprenticeship. Apprentices who enter into apprenticeship through more traditional pathways (e.g. by having family and friends in the trades) are less likely to have significant challenges going into apprenticeship (i.e. being a woman, being a racial/ethnic minority, having a criminal record, having a history of poverty or low-income).

ONGOING SUPPORT FOR PRE-APPRENTICESHIP GRADUATES DURING APPRENTICESHIP

Both OTI and CH offer ongoing support for graduates of their pre-apprenticeship programs after students enter an apprenticeship. This can take the form of one-on-one contact with OTI or CH staff as well as support in group settings, such as OTI’s social hours and CH’s mentor groups. Pre-apprenticeship programs also connect graduates with financial supports or provide these supports directly.

At Wave III, one year after the completion of the pre-apprenticeship program, we asked participants, “What kinds of ongoing support have you received from your pre-apprenticeship program?” All participants’ responses are presented in Appendix L. A selection of responses from participants is shown in Box 2.

Box 2. Student comments about ongoing support from their pre-apprenticeship program (Wave III)

OTI does social hours, tool swaps, interviews, check-ins, job updates and placements etc. (OTI student)

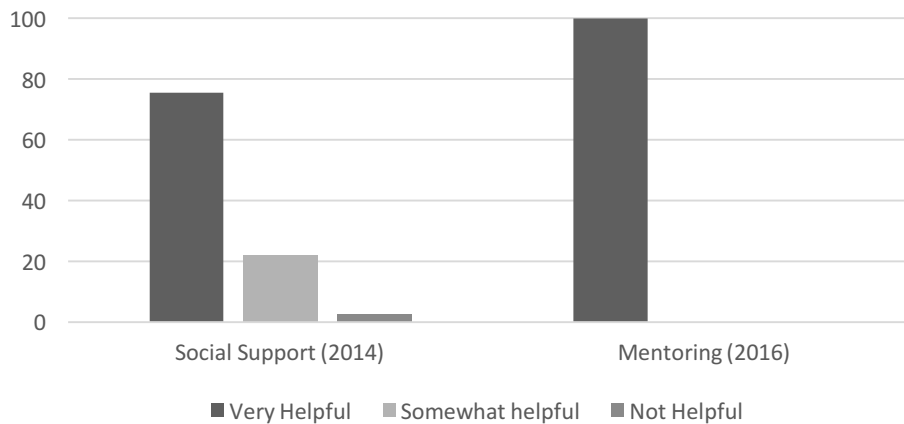
They have been my ongoing cheerleaders. I have received job placement assistance, tools, clothing, boots, safety gear, and rain gear. (OTI student)

OTI is amazing. I'm currently reaching out to them for other job ideas as mine isn't as fulfilling as I had hoped and they are quick to help me out and give suggestions. They truly want everyone who goes through their program to succeed. (OTI student)

I attended a post-graduate "mentor group", where students met together in a group setting with the pre-apprenticeship instructor. We updated one another on what we have been doing since graduation. Shared successes and struggles. Received advice. I also frequently receive emails that the instructor sends out. Most of the emails are leads for a potential job. (CH student)

Similarly, in our surveys of apprentices in 2014 and 2016 we found that apprentices viewed non-financial social support (from Oregon Tradeswomen Inc. and Constructing Hope as well as Cooper Zeitz, Akana, and Oregon and Southern Idaho Laborers) positively, see Figure 9 (as reported in Wilkinson and Kelly 2016).

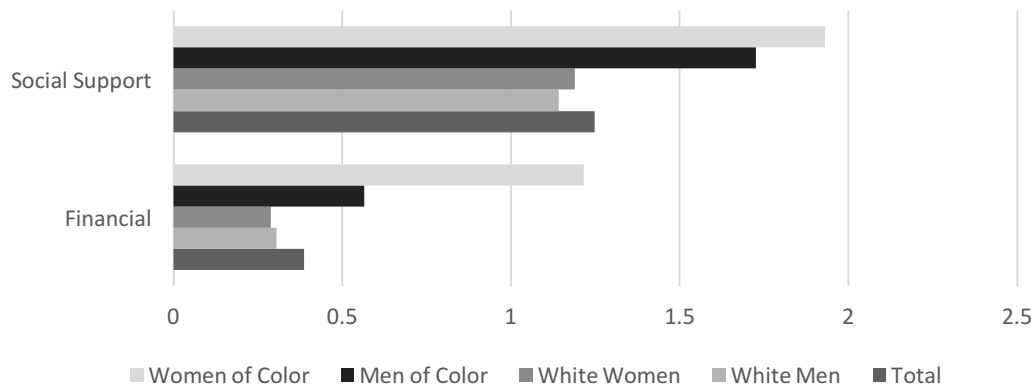
Figure 9. Apprentice Evaluation of BOLI-ODOT Non-Financial Supportive Services, 2014 and 2016



Source: Wilkinson and Kelly 2016

Further, our analysis demonstrated that receiving social support had a positive effect on the odds of an apprentice completing their apprenticeship program; in fact, the effect of social support was even larger than the effect of financial supportive services evaluated (Figure 10).

Figure 10. Change in Log Odds of Completing an Apprenticeship when Receiving ODOT-BOLI Supportive Services, by Race and Gender (2005-2015 Cohorts of Apprentices in Eligible Trades, OAS Data)



Source: Wilkson and Kelly 2016

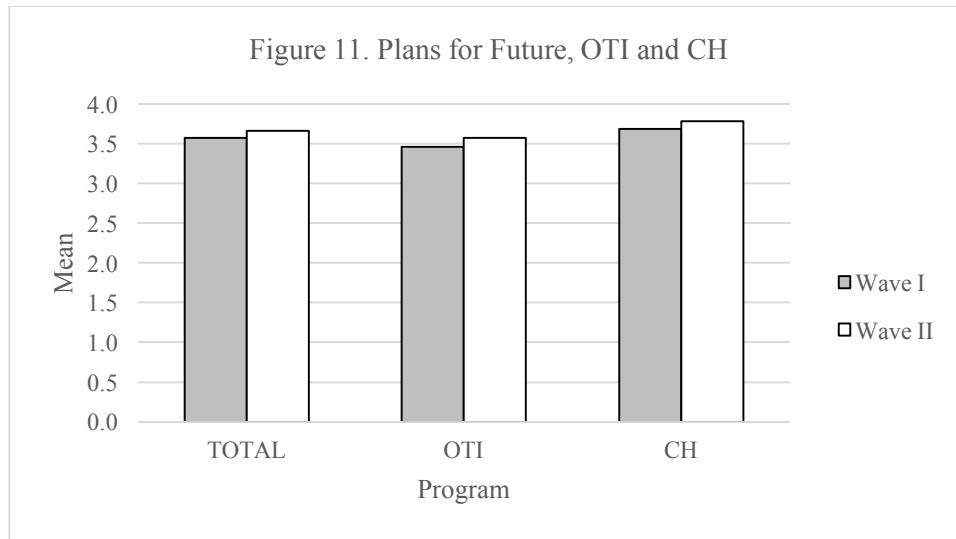
PERCEPTIONS AMONG PRE-APPRENTICESHIP STUDENTS

In the Wave I and Wave II surveys, which were completed at the beginning and end of the January and April 2016 pre-apprenticeship classes, we assessed pre-apprentices’ attitudes and perceptions regarding working in the trades to assess changes in attitudes over the course of the pre-apprenticeship and how attitudes may or may not be associated with entrance into apprenticeships and the construction workforce. We asked about participants’ plans for working in construction trades in the future, perceived strengths in a variety of skills important for success in the construction trades, attitudes toward working in the trades, and perceived challenges working in the trades. Below we summarize attitudes of OTI and CH pre-apprentices surveyed at Waves I and II as well as changes in attitudes between the two waves. In the following sections we discuss how attitudes and changes in attitudes were associated with pre-apprenticeship completion and workforce entry at Wave III.

Plans for Working in the Trades in the Future

We assessed participants’ plans for the future in construction trades at the beginning and end of the pre-apprenticeship program. In Wave I and Wave II, participants were asked, on a scale of 1-4, how likely it is that they will 1) be enrolled in an apprenticeship within the next year, 2) complete an apprenticeship program, 3) work in a construction trade five years from now, 4) work in a construction trade ten years from now, and 5) hold a leadership position in the trades in the future. We constructed a scale representing “plans for the future” by averaging responses to these five items ($\alpha = .85$). Figure 11 presents mean scores for the “plans for future” scale by study wave and pre-apprenticeship program. Overall, plans for working in the construction trades in the future increased slightly between the Wave I and Wave II surveys (beginning and end of pre-

apprenticeship program) for both OTI and CH participants. Constructing Hope participants have slightly higher means for plans for the future than do OTI participants in both Waves I and II.



The increase in mean plans for working in the constructions trades is not uniform across the scale items, however. While there is an increase across waves in the likelihood of working in construction in five years and in ten years among both OTI (Figure 12) and CH (Figure 13) participants, and the likelihood of holding a leadership position in the trades among OTI participants, there is not an increase in perceived likelihood of enrolling in an apprenticeship or completing an apprenticeship among OTI or CH participants.

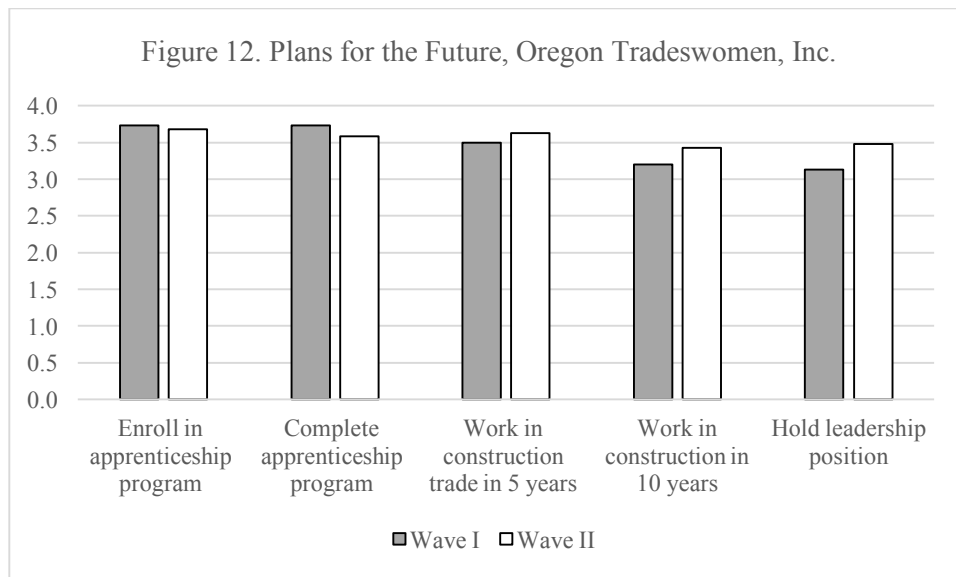
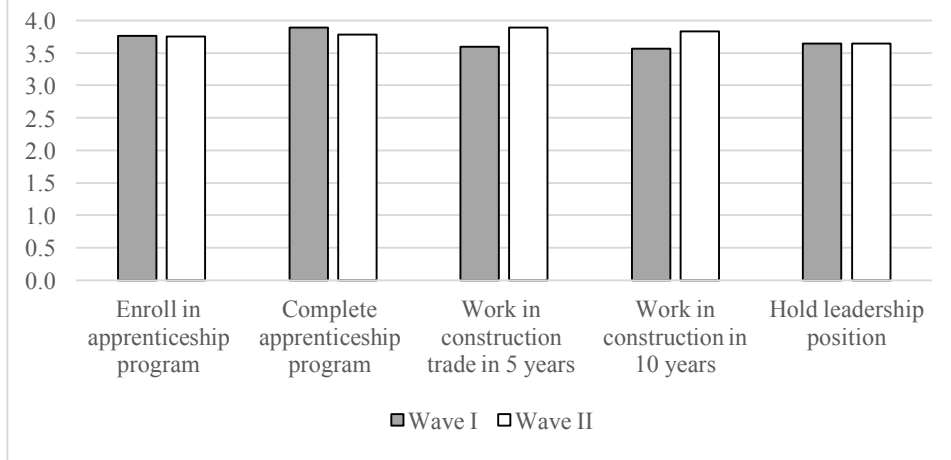


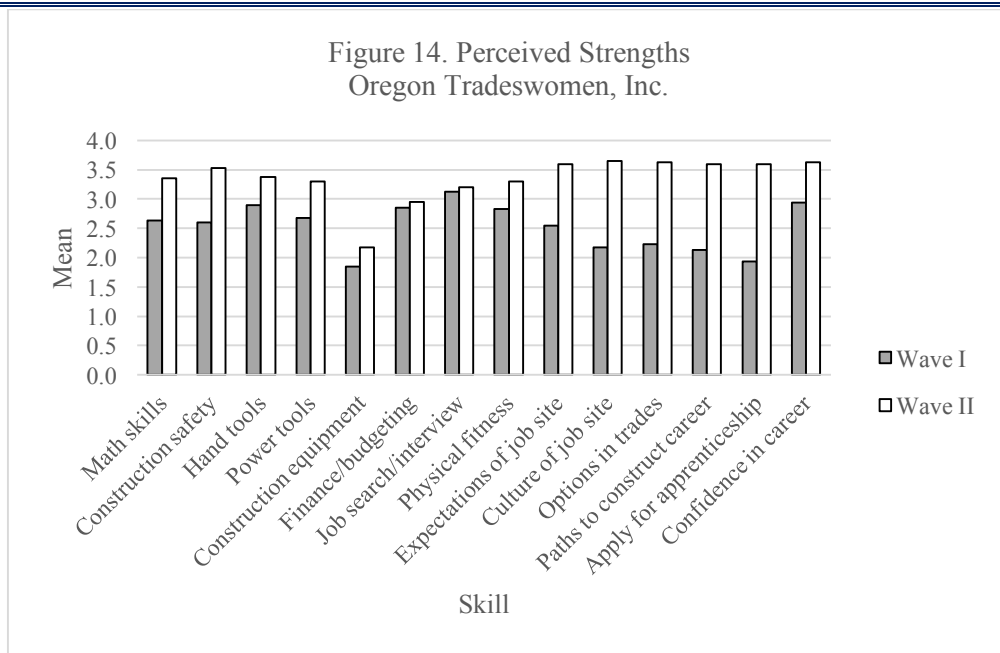
Figure 13. Plans for Future,
Constructing Hope



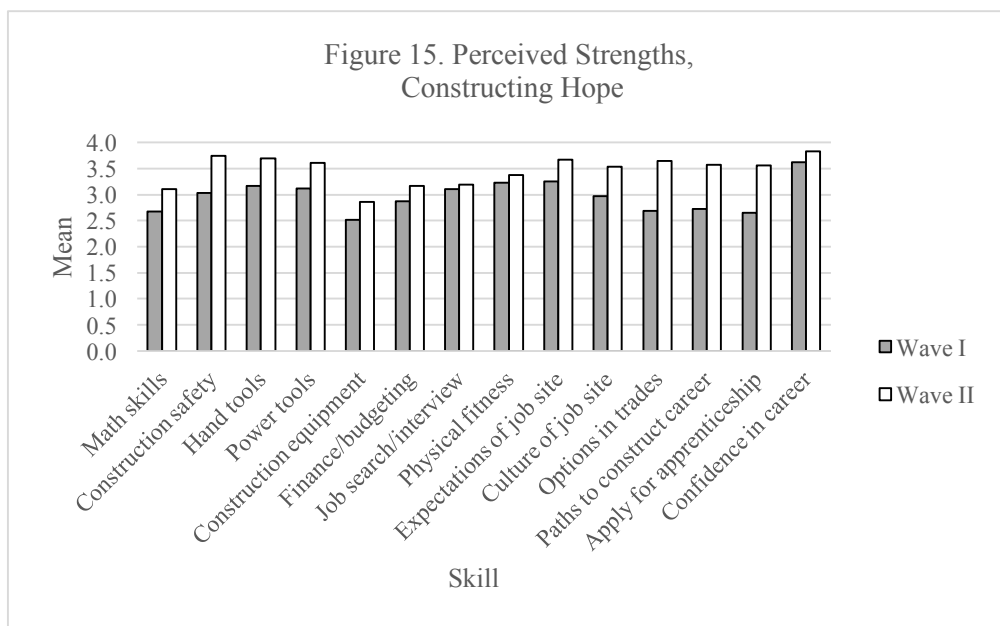
Perceived Strengths in Skills

We assessed participants' perceived strengths in a variety of skills important for success in the construction trades. At Wave 1 and Wave II, participants were asked to evaluate their current strengths, on a scale from one to four (very weak to very strong), in the following skill areas: 1) math; 2) construction safety; 3) use of hand tools; 4) use of power tools; 5) ability to drive construction equipment; 6) financial and budgeting skills; 7) job search and interview skills; 8) physical fitness; 9) understanding the expectations for working on job sites; 10) knowledge of the culture of construction job sites; 11) knowledge of the options for working in the trades; 12) understanding the pathways in a construction career; 13) knowledge of how to apply for an apprenticeship program; and 14) confidence in starting a career in the trades. We created a scale incorporating all 14 skill items ($\alpha=.86$) and also examined changes in each skill item separately for OTI and CH participants. Combining OTI and CH participants, perceptions of strength in all skills increased between Wave I and Wave II. Overall, change in perceptions of strength in individual skill items are statistically significant for all skills except finance/budgeting and job interview skills.

For OTI and CH participants, perceptions of strengths in all skill items increased between Wave I and Wave II. For OTI participants (Figure 14), increases in perceived skill strength were largest in "knowledge of the culture of construction job sites," "knowledge of options for working in the trades," "understanding the pathways into a construction career," and "knowledge of how to apply for an apprenticeship program." Increase in perceived strength was smallest for "financial and budgeting skills" and "job search and interview skills."



In general, CH participants had higher perceptions of skill strength at Wave I than did OTI participants, and we saw smaller increases in perceptions of skill strength among CH participants between Waves I and II (Figure 15), relative to OTI participants. The largest gains in perceived skill strength for CH participants were in “knowledge of the options for working in the trades,” “understanding the pathways into a construction career,” and “knowledge of how to apply for an apprenticeship program.” The smallest gains in perceived skill strength among CH participants were in “job search and interview skills” and “physical fitness.”



Additionally, at the end of the pre-apprenticeship program in the Wave II survey, participants were asked the open-ended question: “What do you see as the three *most important things you learned* from your pre-apprenticeship program?” For both programs, participants’ responses largely fell into four broad categories:

- Tools/skills: How to work with hand tools, power tools, and other construction skills, including safety and math
- “Soft skills”: confidence, communication, having a good attitude, working in teams
- Knowledge about working on construction job sites: including “construction culture” and punctuality
- Knowledge about trades careers: how to apply for apprenticeship programs and resources available to them.

All participants’ responses from Wave II are presented in Appendix G. A selection of responses from participants is shown in Box 3.

Box 3: Student comments about the most important things they learned in their pre-apprenticeship program (Wave II)

“Learning how to apply for apprenticeship in different trades” (CH student)

“The hands on training to get a better job and to have a brighter future” (CH student)

“Basic carpentry skills, [which] made me more confident about walking into a construction site.” (OTI student)

“Patience working with different kinds of people” (CH student)

“Be on time” (CH student)

“Empowerment of seeing women in the trades” (OTI student)

“Seeing that career support, counseling, and connections are out there. AKA people are rooting for me! (OTI student)

“The benefit of sisterhood” (OTI student)

When following up with participants in the Wave III survey one year after completing the program, we asked pre-apprenticeship graduates who were currently working in the trades “What do you see as the most important things you learned from your pre-apprenticeship program that have helped you in the trades?” All participants’ responses from Wave III are presented in Appendix J. A selection of response from participants is shown in Box 4.

Box 4: Student comments about the most important things they learned in their pre-apprenticeship program (Wave III)

What the field is really like, how the industry is for women and minorities, and how to actually use the tools!

Honestly, it was all so important. I really appreciate the hands-on experience with tools, practice with measuring, and the expectations of an apprentice in a construction trade. It set the bar for my apprenticeship and has made me a much more effective apprentice than I would have been otherwise. My journeyman is a 61 year old man who has been in the trades his whole life. He told me I'm the best apprentice he's ever had, because I ask questions, I anticipate what's coming next and make sure we're prepared, and I'm not standing around. These are all things that my pre-apprentice program taught me to do. (OTI student)

My program really prepared us to mentally understand and take in working in a male-dominated field. It also gave me the confidence I needed to trust that I can do construction despite my gender. (OTI student)

Show up to work on-time and early; competence to learn to use tools; learn to carry a 3/4" piece of plywood; have a good attitude and show it. (OTI student)

1. Safety - taking protective safety measures, identifying potential hazards, taking safety seriously for both oneself and for coworkers/others 2. General construction knowledge. (Familiarity with various tools - identifying the tools and having practice using them. Framing experience.) 3. Building habit of showing up to work on time / early, with tools ready and wearing PPE 4. Interviewing practice and advice (CH student)

Participants were also asked at Wave II, “What are three things you *wanted to learn (or learn more about) but didn’t* in your pre-apprenticeship program?” Students offered a variety of responses, all of which appear in Appendix H. Across both programs, the most common type of response was related to having more hands-on training and practice with specific skills. Other responses included: more information or skills related to specific trades, more information about construction culture, more information about green building, more information about union and open shop, and more information on budgeting and financial planning. We asked at Wave III “What information would have been helpful to know about the trades that you did not learn in your pre-apprenticeship program?” All responses appear in Appendix K. The limited number of responses we received at Wave III were similar to the responses at Wave II.

Attitudes Towards Working in the Trades

The Wave I and Wave II surveys also asked specific closed-ended questions about participants’ attitudes towards working in the construction trades. We created an “attitudes towards working in the trades” scale based on responses to questions asking respondents whether they agreed or disagreed (1-5, strongly disagree to strongly agree) with the following six items: 1) I will have opportunities for good paying jobs in the construction trades; 2) I will have opportunities for leadership positions in the construction trades; 3) I plan to make working in the trades my career; 4) I will feel pride in my work in the construction trades; 5) my work will be an important contribution to society; 6) in the construction trades I will have a career, not just a job (alpha=.74).

Figure 16 displays values for the Wave I and Wave II “attitudes towards trades” scales, by pre-apprenticeship program (OTI and CH). On average, attitudes towards working in the trades increased between Wave I and Wave II among both OTI and CH participants, and the overall

change is statistically significant. OTI participants had slightly higher attitudes towards working in the trades than did CH participants, although change in attitudes between Wave I and Wave II was greater among CH participants than among OTI participants.

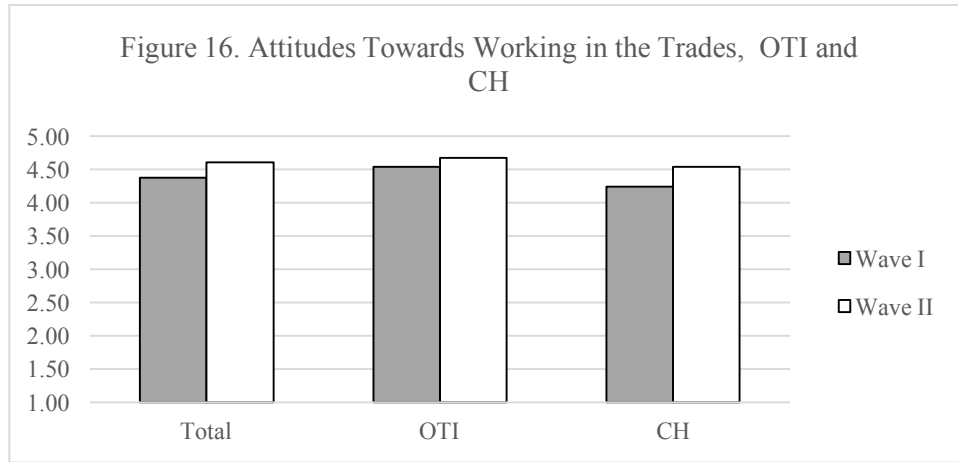


Figure 17 shows means for the specific attitudes towards working in the trades among OTI participants. Among OTI participants, there were more positive attitudes towards working in the trades by the end of the pre-apprenticeship program except for the “my work will be an important contribution to society” item. By Wave II, OTI participants agreed most with the statement that working in the trades will provide opportunities for good paying jobs.

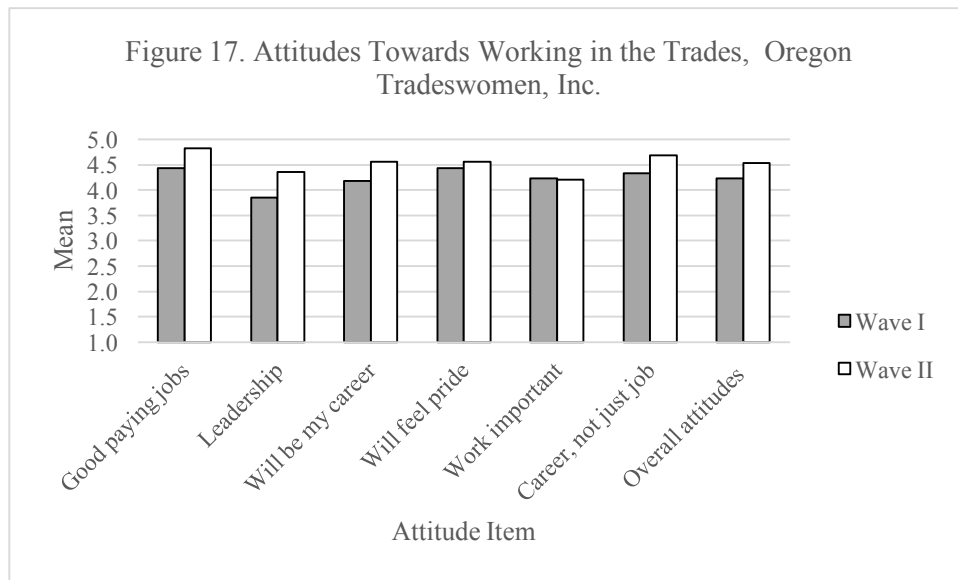
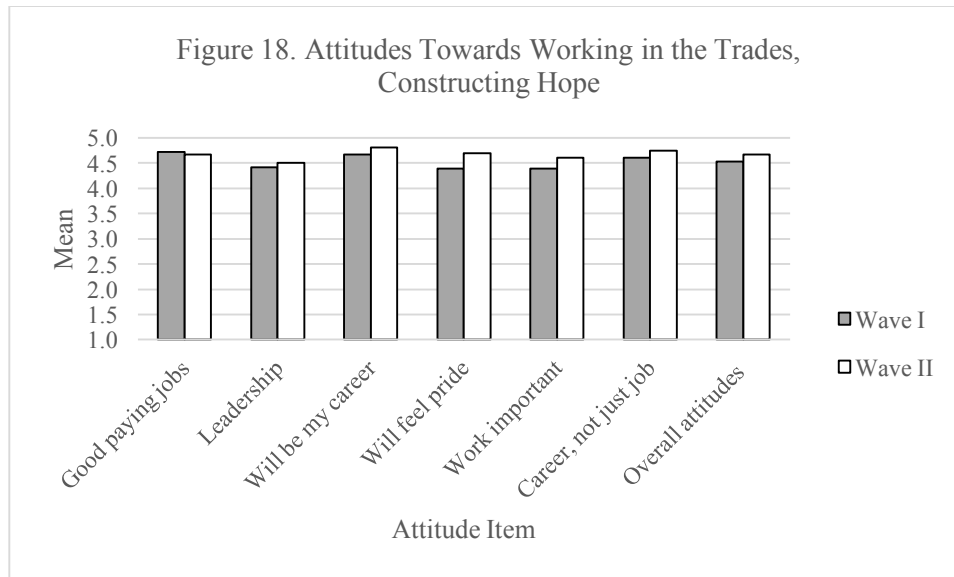


Figure 18 shows corresponding values for the attitudes towards trade items for CH participants. There was an increase in agreement to all items by Wave II except for the “I will have opportunities for good paying jobs in the construction trades” item, yet there were still high levels of agreement with this statement at both Wave I and Wave II. Unlike OTI participants, by Wave II CH

participants reported highest levels of agreement with the “I plan to make working in the trades my career.”



In addition to these closed-ended questions, at Wave I participants were asked an open-ended question about their perceptions of working in the trades: “What do you see as the three biggest benefits of working in the construction trades?” Participants’ responses fell into two broad categories:

- Financial: Wages, benefits, retirement, financial stability
- Non-financial: Benefits of working in the trades not directly tied to finances, including being physically active, valuing being skilled in a trade or learning specific skills

Examples of student comments are presented in Box 5, below.

Box 5: Student comments about the biggest benefits of working in the construction trades

“A livable wage” (OTI Student)

“Being able to make a decent wage with a criminal background” (CH student)

“It’s what I love to do” (CH student)

“Diversifies the work crew. Will help empower our women and hopefully eliminate sexism” (OTI student)

“Hands on, hard work = pride and accomplishment” (OTI student)

Perceived Challenges of Working in the Trades

While participants were optimistic about the many benefits of the trades at the start of the pre-apprenticeship program, they also were aware that they would face some challenges. At Wave I, participants were asked the following open-ended question: “What do you see as the three biggest

challenges you will experience working in the construction trades?” The responses grouped into three themes:

- Hostile workplaces: Concerns about men or sexism, concerns about experiencing discrimination or harassment
- Ability: Concerns about physical ability or skill level
- Job: Other issues related to the job, including safety, long hours, travel, being out of work

OTI students (all women) were more likely to mention sexism and concerns about their physical ability. Examples of student comments are presented in Box 6, below..

Box 6: Student comments about the biggest challenges of working in the construction trades

“Sexism, sexual harassment innuendos, men” (OTI student)

“Becoming physically fit enough to really do heavy work” (OTI student)

“Being able to perform tasks up to job standards” (CH student)

“Long hours, working weekends” (CH student)

“Higher risk of injury on the job” (CH student)

Using closed-ended questions from Wave I and Wave II surveys, we create a “perceived challenges working in the trades” scale based on responses to questions asking respondents whether they agreed or disagreed (1-5, strongly disagree to strongly agree) with the following eight items: 1) having a job in the trades will make it difficult for me to spend enough time with my family; 2) responsibilities to my family may require that I turn down jobs or refuse to work extra hours; 3) finding transportation to and from work will be a challenge; 4) paying for gas to get to and from work will be a challenge; 5) paying for overnight travel will be a challenge; 6) paying for tools, work, clothing, or protective equipment will be a challenge; 7) attending or passing the required classes for my apprenticeship program will be a challenge; 8) I will be out of work too much when I am working in the trades ($\alpha=.78$). We excluded questions about challenges finding and paying for childcare from the scale given they were only relevant for participants who were parents. We include these questions in subsequent analyses.

Figure 19 shows means for the perceived challenges scale for Wave I and Wave II for OTI and CH participants. On average, perceived challenges increased between Wave I and Wave II for both CH and OTI participants, although the change is not statistically significant. This suggests that as students learn more about the construction trades through the pre-apprenticeship programs, they have a more realistic understanding of the challenges they may experience.

Figure 19. Perceived Challenges Working in the Trades, OTI and CH

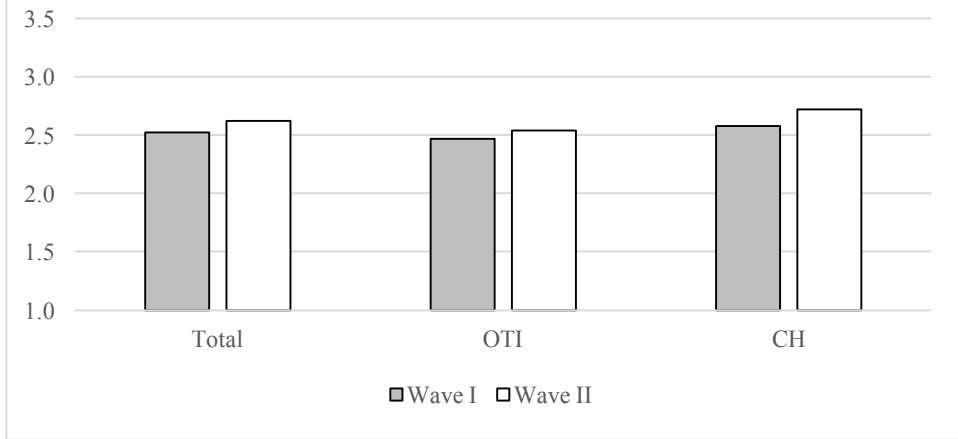


Figure 20 displays means for specific challenges in Wave I and Wave II among OTI participants. Perceived challenges increased between Wave I and II for the majority of items except for “finding transportation to and from work,” “paying for overnight travel,” and “attending or passing the required classes for my apprenticeship program.” By Wave II the items most commonly reported as challenges were “having a job in the trades will make it difficult for me to spend time with my family,” “responsibilities to my family may require that I turn down jobs or refuse to work extra hours,” and “paying for tools, work clothing, or protective equipment will be a challenge.” Participants at OTI seemed least challenged by finding transportation, paying for gas, and passing apprenticeship classes.

Figure 20. Perceived Challenges of Working in the Trades, Oregon Tradeswomen, Inc.

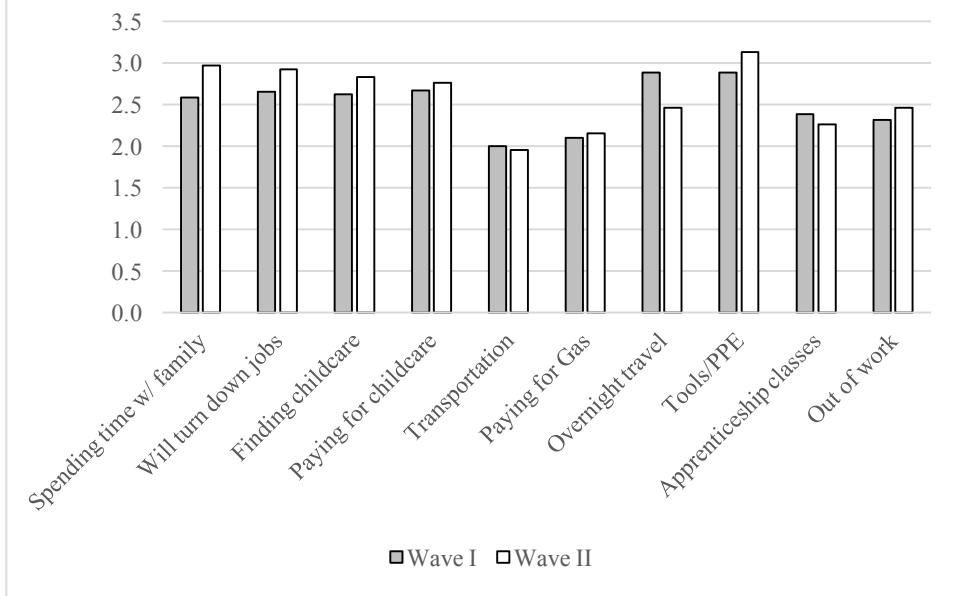
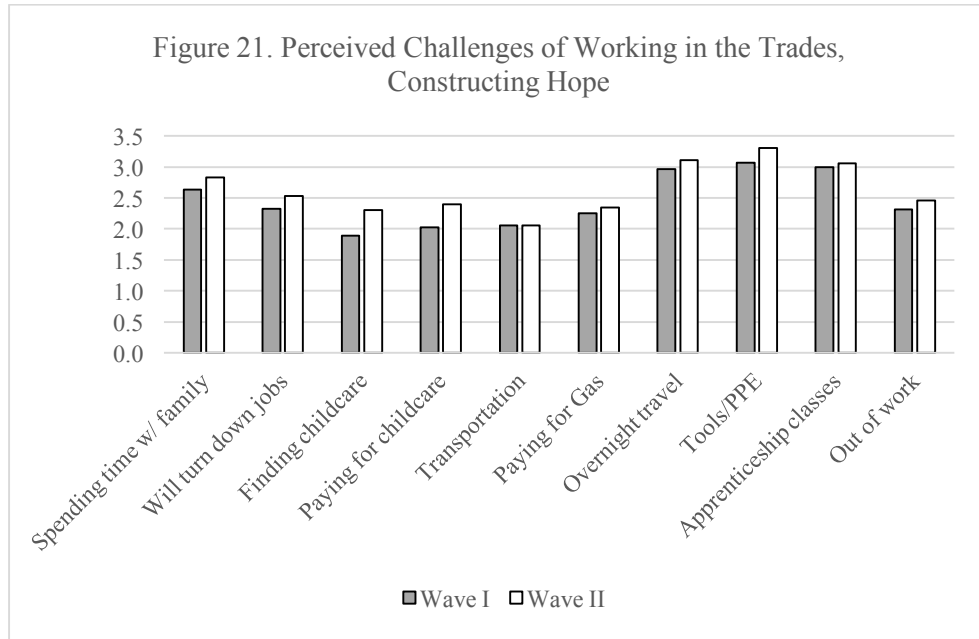
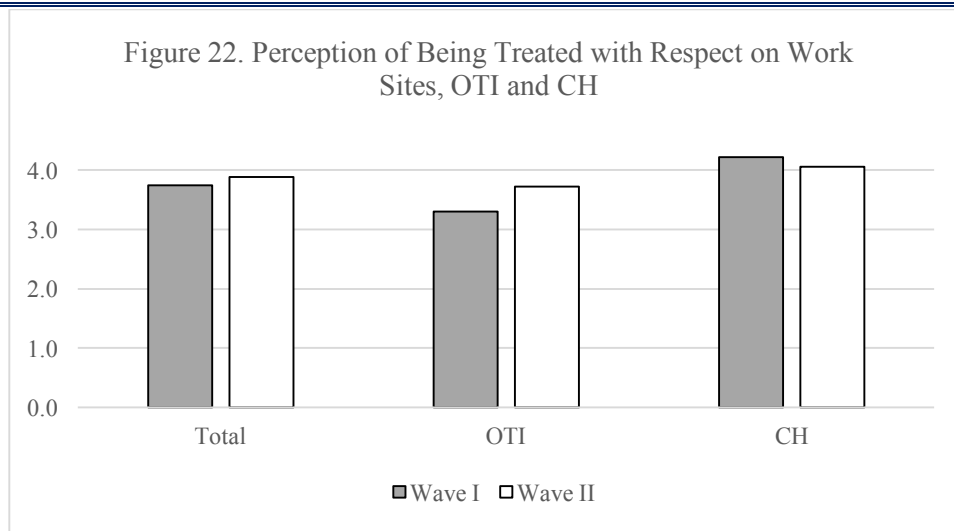


Figure 21 shows corresponding means for CH participants. Perceived challenges increased between Wave I and II for all items except “finding transportation to and from work.” By Wave II the items most commonly reported as challenges by CH participants were “having a job in the trades will make it difficult for me to spend time with my family,” “paying for overnight travel,” and “paying for tools, work clothing, or protective equipment.” Participants at CH seemed least concerned with finding transportation, finding and paying for childcare, and paying for gas.



Finally, we examined changes in the survey question that asks how much respondents agree they will be treated with respect on construction worksites. Figure 22 shows means of this variable for Wave I and Wave II, separately for OTI and CH participants. Overall, respondents were more likely to agree that they will be treated with respect at Wave II than they were at Wave I, although this increase was seen only among OTI participants. As noted above, at Wave 1, many OTI students reported in an open-ended question that experiencing sexism was likely to be a challenge in the trades. Perhaps after learning about construction culture at OTI, students become slightly more optimistic about being treated with respect on jobs sites. On average, CH participants were more likely than OTI participants to agree they will be treated with respect on construction worksites.



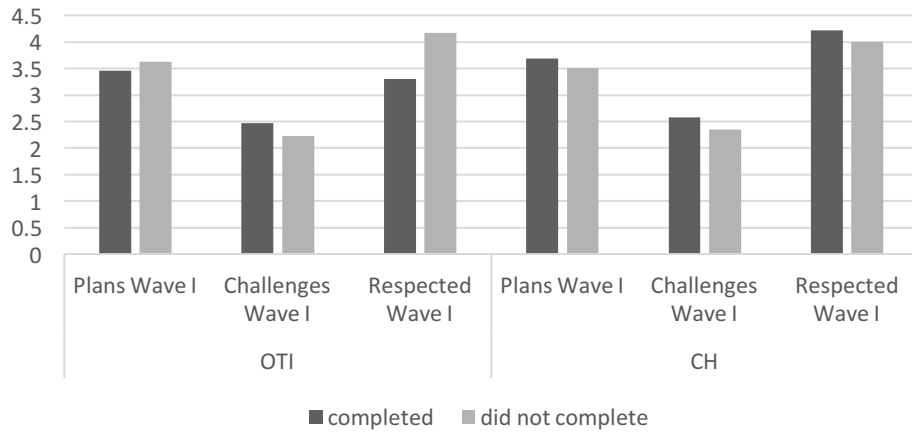
CHANGES IN PERCEPTIONS AND PRE-APPRENTICESHIP COMPLETION AND WORKFORCE ENTRY

After collecting Wave III data on pathways into the construction workforce among those enrolling in a pre-apprenticeship program, we examined whether perceptions and changes in perceptions over the pre-apprenticeship experience were associated with program completion and pathways into the construction trade workforce. We compared the Wave I perceptions of those who did and did not complete the pre-apprenticeship program to see if any differences emerged. Among those completing a pre-apprenticeship program, we then examined differences in Wave I and Wave II attitudes by apprenticeship registration—did those completing a pre-apprenticeship who entered an apprenticeship have different perceptions at Waves I and II relative to those who did not enter an apprenticeship? Finally, among those participants completing Wave III, for whom we have workforce entry data, we examined differences in perceptions at Wave III by type of workforce entry. Below we organize findings by type of perceptions measured: plans for working in the trades in the future, perceived strengths in skills, attitudes towards working in the trades, and perceived challenges working in the trades. Results are presented in Appendices D-F.

Plans for Working in the Trades in the Future

Among OTI students, the small percentage who did *not* complete the pre-apprenticeship program scored *higher* on the plans for future scale, relative to those who *did* complete, suggesting a negative association between plans for working in the trades in the future and completing a pre-apprenticeship program through OTI. This was an unexpected finding. CH participants who did not complete, however, scored lower on the plans for future index, as we expected (Figure 23).

Figure 23. Mean Perceptions by Pre-Apprenticeship Completion, OTI/CH



Source: Wave I Survey Data

Among those completing an OTI pre-apprenticeship program, those who were in an apprenticeship by Wave III had higher plans for the future at both Waves I and II relative to those not in an apprenticeship. This was also the case among CH pre-apprenticeship participants, although differences were larger among OTI students (Figure 24).

Figure 24. Mean Perceptions by Apprenticeship at Wave III, OTI/CH



Source: Waves I and III Survey Data; OAS Data

While representing only two respondents, those who completed an OTI pre-apprenticeship but were not in a construction trade job (either via apprenticeship or not) at Wave III reported similar Wave I attitudes regarding plans for the future in the trades. It might be significant, however, that

those completing a pre-apprenticeship through OTI but not working in the construction trades at Wave III experienced a negative *change* in plans for the future between Waves I and II. Perhaps having more information about the trades helped these individuals decide that working in the trades was not part of their future plans.

Overall, for OTI students, there appears to be a negative association between plans for a future in the trades at Wave I and pre-apprenticeship program completion yet a positive association between plans for the future and entry into an apprenticeship among those completing their pre-apprenticeship. Among CH students, plans for a future in the trades is positively associated with both pre-apprenticeship completion and entry into an apprenticeship among those completing a pre-apprenticeship.

In multivariate models predicting apprenticeship registration among those completing a pre-apprenticeship, the biggest predictor of apprenticeship registration by Wave III among both OTI and CH students was future plans for working in the trades: those with more positive plans for working in the trades in the future were more likely to be apprentices at Wave III.

Perceived Strengths in Skills

Among OTI students, those who did *not* complete the pre-apprenticeship class scored slightly higher on Wave I perceived strengths, and we found a similar negative association between perceived strengths at Wave I and pre-apprenticeship completion among CH respondents, although differences between the two groups were small. However, among OTI and CH students who completed a pre-apprenticeship, those who entered an apprenticeship scored slightly *higher* on both Wave I and Wave II perceived strengths, and their perceived strengths score increased between Waves I and II (although it increased by similar amounts among those not entering apprenticeship by Wave III).

Attitudes Towards Working in the Trades

Among OTI students, those who did *not* complete a pre-apprenticeship also had higher (more positive) attitudes towards working in the trades at Wave I, relative to those who completed the pre-apprenticeship class. This was, again, unexpected, as we would expect those who completed the pre-apprenticeship to have more positive attitudes towards the trades. We did find this positive association among CH students, however. We also found that, among students completing OTI, those entering an apprenticeship by Wave III reported more positive attitudes towards working in the trades at both Waves I and II, relative to those not entering an apprenticeship. Among CH students completing, those entering an apprenticeship had more positive attitudes towards working in trades at Wave II but not a Wave I, yet they also had a greater positive change in attitudes towards working in the trades between Waves I and II.

Perceived Challenges of Working in the Trades

Among OTI students, those who completed the pre-apprenticeship program reported *more* perceived challenges related to working in the trades at Wave I, relative to those who did not complete. Again, this was somewhat contrary to our expectations: we would expect those who completed the pre-apprenticeship to perceive fewer challenges working in the trades at Wave I. However, among those completing an OTI pre-apprenticeship, those who entered an apprenticeship did perceive fewer challenges working in the trades at Waves I and II, relative to those completing but not entering an apprenticeship. Among those who entered an apprenticeship after completing an OTI pre-apprenticeship, the average score on the perceived challenges index declined by .25 points between Waves I and II. For those who did not enter an apprenticeship, however, average perceived challenges increased between the two waves.

We saw a similar pattern among CH participants: those who did *not* complete the pre-apprenticeship program reported fewer perceived challenges related to working in the trades compared to those who *did* complete. Among CH students, the largest predictor of pre-apprenticeship completion was perceived challenges: those reporting more perceived challenges were more likely to complete. Similarly, those completing a pre-apprenticeship through CH who were in apprenticeship by Wave III reported more perceived challenges working in the trades at both Waves I and II, relative to those not in an apprenticeship by Wave III. Perhaps an accurate perception of potential challenges is an important predictor of pre-apprenticeship program completion and apprenticeship registration among this population.

While only two OTI respondents at Wave III reported not working in the construction trades, either via apprenticeship or non-apprenticeship, these two respondents reported dramatically higher perceived challenges than those working in the construction trades at Wave III (more than a one point difference on a 1-5 point scale), suggesting that while accurately perceiving challenges working in the trades may be a positive predictor of entering an apprenticeship, perceiving work in the trades as too challenging may lead to exit from the construction workforce pipeline.

We included the survey question asking whether participants would be treated with respect on jobsites as a separate measure of perceived challenges in the construction trades. Interestingly, for OTI students, we see a similar pattern as we did for perceptions of strengths and attitudes towards the trades: those who did *not* complete the pre-apprenticeship class had more positive perceptions of being respected on construction job sites, relative to those who completed the class. Thus among OTI students, positive perceptions of the trades, including perceiving they would be respected on the jobsite, did not seem to predict completion of pre-apprenticeship program. In multivariate models predicting pre-apprenticeship completion (not shown), we found the biggest predictor of pre-apprenticeship completion for OTI participants was perceptions of being treated fairly on jobsites: those reporting higher perceptions of being treated fairly on the jobsite were *less* likely to complete. Among CH students, however, those who completed the pre-apprenticeship program reported stronger agreement with question asking if they would be respected on the worksite

relative to those not completing the program. Thus, while pre-apprenticeship programs may work to improve perceptions and skills of those interested in working in the construction trades, pre-apprenticeships also appear to alert students to challenges in the trades; those who are unaware of challenges may be less likely to persist through the pre-apprenticeship or to continue into jobs in the construction workforce via registered apprenticeships. This negative association between positive perceptions of trades and pre-apprenticeship completion appears to be stronger among OTI participants.

A different story, however, emerged for the impact of perceptions of the trades on the likelihood of entering an apprenticeship among those completing a pre-apprenticeship: for perceptions of respect on the jobsite, those completing a pre-apprenticeship either through OTI or CH and entering an apprenticeship had higher scores on perception of being respected on the jobsite at both Waves I (OTI) and II (OTI and CH) relative to those not entering an apprenticeship. This is similar to findings for other perceptions, including attitudes towards the trades, having a future in the trades, and perceived strengths required for success in the trades, although differences are relatively small. Future work should explore the impact of perceptions of the trades on pre-apprenticeship completion and entry into apprenticeships to ensure those in the construction workforce pipeline have accurate information regarding working in the trades as they make decisions about their futures.

POLICY RECOMMENDATIONS

1. Support Pre-Apprenticeship Programs to Increase Recruitment of a Diverse Construction Workforce

Our findings demonstrate that the OTI and CH pre-apprenticeship programs serve marginalized workers who would likely not find an alternate pathway into construction. Groups served by OTI and CH include: women, racial/ethnic minorities, low income individuals, and individuals with a history of criminal justice involvement.

Pre-apprenticeships have been successful in placing graduates in apprenticeships as well as in other jobs in construction. In our analysis of OAS data of all registered apprentices active in 2014-2015, we found that 21.7% of white women had completed a pre-apprenticeship and 31.5% of women of color had completed a pre-apprenticeship (in comparison to 2.1% of men of color and less than 1% of white men). Thus, pre-apprenticeships are an important mechanism for increasing diversity in the construction workforce in Oregon, particularly regarding the recruitment of female apprentices. Expanding pre-apprenticeships (particularly those with an emphasis on serving marginalized workers) will continue to promote the diversity of the construction trades.

Pre-apprenticeships in Oregon are concentrated in the Portland Metro area. In order to serve disadvantaged workers across the state, additional sites in other locations in the state are needed.

2. Support Retention Services Provided by Pre-Apprenticeship Programs to Increase Retention of a Diverse Construction Workforce

In addition to contributing to recruitment of a diverse construction workforce, pre-apprenticeships also promote retention by offering social support services, such as individual and group mentoring. Open ended questions from Wave III participants who were graduates of pre-apprenticeship currently working as apprentices or in other jobs in construction noted that they found ongoing support from OTI and CH helpful in navigating their current jobs. Analysis of OAS data shows that receiving non-financial supportive services has a positive effect on completion rates.

Our data notes that pre-apprenticeship graduates have significant challenges that will impact their ability to persist in an apprenticeship (e.g. being a woman, being a racial/ethnic minority, having a criminal record, having a history of poverty or low-income). This likely explains why pre-apprenticeship graduates are less likely to complete an apprenticeship than those who enter into apprenticeship through alternate pathways. Additional retention services would be helpful in promoting the retention of these workers.

These findings suggest that further investment in social supports for apprentices will help to improve the retention rates for apprentices. These services are currently being funded in part by The Oregon Construction Workforce Development Program and administered by Oregon Tradeswomen Inc. and Constructing Hope as well as Cooper Zeitz, Akana, and Oregon and Southern Idaho Laborers.

3. Use Funding from The BOLI/ODOT Oregon Construction Workforce Development Program to Continue to address Recruitment and Retention

Oregon's efforts to improve recruitment and retention of a diverse workforce into apprenticeships in the trades have been working and should be continued; however, there are ongoing issues with both recruitment and retention.

While pre-apprenticeships are an important mechanism for recruitment of a diverse workforce, other recruitment efforts are needed. In Oregon, recruitment efforts include job fairs, workshops and classes, and engagement with youth (some of these are funded by The BOLI/ODOT Oregon Construction Workforce Development Program). These efforts should continue and be expanded.

In order to promote the long-term employment of disadvantaged workers in the trades, the issues impacting retention must also be addressed. Research has documented a range of challenges that apprentices face and that disproportionately impact female and racial/ethnic minority apprentices. These include harassment on the job site, a lack of access to mentoring and training, a lack of access to networks, being out of work too much, and other financial challenges (Kelly et al 2015; Wilkinson and Kelly 2016).

The BOLI/ODOT Oregon Construction Workforce Development Program has provided financial services to alleviate some of the financial challenges faced by apprentices. These services include:

Fuel assistance for travel to and from job sites and required classes; lodging and per diem for jobs that are more than 60 miles from home; job readiness supplies (work tools, work clothing, personal protective equipment); and child care subsidies. Previous research has demonstrated that these financial services increase completion rates of apprentices (Wilkinson and Kelly 2016).

BOLI/ODOT have also used funds from The Oregon Construction Workforce Development Program to fund a program to promote respectful workplaces in the trades. This ongoing project is a partnership between Oregon Tradeswomen Inc, Constructing Hope, Green Dot Etcetera, and PSU researchers. The first phase of the project began in 2015 with focus groups with industry stakeholders to determine the feasibility of adapting the Green Dot bystander intervention program for the construction trades in Oregon (see Kelly and Bassett 2015). In 2017, the Green Dot program will be implemented on a pilot job site and evaluated by PSU researchers. If this program is effective in reducing harassment and discrimination on the pilot job site, the use of the program should be promoted throughout Oregon.

APPENDIX A: Research Design for Waves I, II, and III

PSU researchers received copies of application and intake forms from the pre-apprenticeship programs that included demographic information about the participants. Pre-apprenticeship program staff also provided information to PSU researchers about why participants did not complete the pre-apprenticeship program.

PSU researchers administered Wave I of the survey face-to-face using paper surveys at the beginning of the first day of the pre-apprenticeship classes. See Appendix B for full text of the Wave I survey. Wave I assessed participants' perception about their ability to persist in the trades (i.e. complete the pre-apprenticeship program, enter into an apprenticeship program, complete an apprenticeship program, be working in the trades in 5 year and in 10 years), their perceptions of their current competence in areas covered in the pre-apprenticeship programs (e.g. knowledge of construction safety, use of hand tools), their attitudes towards the benefits and challenges of working in the trades, and demographic data not included on the pre-apprenticeship application or intake form. Open-ended questions included "What do you see as the three biggest benefits of working in the construction trades?" and "What do you see as the three biggest challenges you will experience working in the construction trades?"

Wave II of the survey was conducted at the end of the pre-apprenticeship program (approximately two months after the baseline survey, which varied by pre-apprenticeship program). See Appendix C for full text of the Wave II survey. PSU researchers administered Wave II of the survey face-to-face using paper surveys at the end of the last day of the pre-apprenticeship program. PSU researchers also administered Wave II of the survey via telephone to the participants who completed the pre-apprenticeship programs but were not present on the final day of the program. The Wave II telephone surveys were conducted by Dr. Kelly. The second wave of the survey reassessed participants' perception about their ability to persist in the trades, their perceptions of their competence in areas covered in the pre-apprenticeship programs, and their attitudes towards the benefits and challenges of working in the trades. Open-ended questions included "What do you see as the three most important things you learned from your pre-apprenticeship program?" and "What are three things you wanted to learn (or learn more about) but didn't in your pre-apprenticeship program?" Data collected from Waves I and II of the survey was analyzed by Dr. Kelly and Dr. Wilkinson.

Wave III of the survey was conducted one year after students completed their pre-apprenticeship program. See Appendix D for full text of the Wave III survey. We attempted to contact the 76 participants who completed pre-apprenticeships during the study period. Participants were contacted via email, text, and phone. Given the low response rate of the Wave III survey (we received surveys from 15 participants), we supplemented Wave III data on apprenticeship enrollment using BOLI's Oregon Apprenticeship System (OAS) database. OAS includes the names and contact information of all registered apprentices in the state of Oregon as well as information on pre-apprenticeship completion. BOLI provided us with a list of all individuals completing a pre-apprenticeship through OTI or CH who registered in a highway construction trade apprenticeship between January 2016 and June 2017. We used this data and our list of OTI/CH pre-apprenticeship study participants to identify study participants enrolled in a highway

construction trades apprenticeship since January 2016 (the date of the first pre-apprenticeship class used for study purposes). We thus have information on apprenticeship registration on all Wave I study participants, not just those asked their apprenticeship status in Wave III. We also used OAS data to examine the proportion of registered apprentices completing pre-apprenticeships in Oregon. Data collected from Wave III of the survey was analyzed by Dr. Kelly and Dr. Wilkinson. Data obtained from BOLI program staff was analyzed by Dr. Wilkinson.

Program Participants by Survey Retention

	Completed Wave I	Completed Wave I and Wave II	Completed Wave I, II, and III
OTI January 2016 cohort	22	18	8
CH January 2016 cohort	22	15	2
OTI April 2016 cohort	24	22	4
CH April 2016 cohort	26	21	1
Total	94	76	15

APPENDIX B: Characteristics of Participants by Pre-Apprenticeship Completion, OTI and CH

Characteristics of Participants by Program Completion, OTI

	Enrolled in Program	Completed Program	Did Not Complete Program
Age	29	29	32
% Non-Hispanic White	83	83	83
% Race-Ethnic Minority	17	18	17
% Partnered (married or cohabiting)	36	36	33
% With Children	22	18	60
% With Children Under 5	13	10	40
% With Public Assistance	37	35	50
% With High School Degree	76	80	50
% With Legal History/Criminal Record	13	10	33
% Employed	59	60	50
Hourly Income	12.5	12	17.5
% Permanent Housing	96	95	100
Total	46	40	6

Characteristics of Participants by Program Completion, CH

	Enrolled in Program	Completed Program	Did Not Complete Program
Age	32	31	34
% Female	11	9	18
% Male	89	91	82
% Non-Hispanic White	33	24	64
% Race-Ethnic Minority	65	73	36
% Partnered (married or cohabiting)	36	39	27
% With Children	26	25	27
% With Children Under 5	17	17	18
% With Public Assistance	64	59	80
% With High School Degree	56	65	27
% With Legal History/Criminal Record	77	73	91
% Employed	35	27	64
Hourly Income	10.70	11.00	10.30
% Permanent Housing	72	78	50
Total	48	37	11

APPENDIX C: Characteristics of Participants by Apprenticeship Registration, OTI and CH

Characteristics of Participants by Apprenticeship Registration, OTI

	Completed Program		
	Total	Entered Registered Apprenticeship	Did Not Enter Registered Apprenticeship
Age	29	30	29
% Non-Hispanic White	83	100	78
% Race-Ethnic Minority	18	0	22
% Partnered (married or cohabiting)	36	50	32
% With Children	18	25	16
% With Children Under 5	10	13	9
% With Public Assistance	35	63	28
% With High School Degree	80	75	81
% With Legal History/Criminal Record	10	13	9
% Employed	60	50	63
Hourly Income	12	10.75	12.3
% Permanent Housing	95	100	94
Total	40	8	32

Characteristics of Participants by Apprenticeship Registration, CH

	Completed Program		
	Total	Entered Registered Apprenticeship	Did Not Enter Registered Apprenticeship
% Female	9	11	8
% Male	91	89	92
% Non-Hispanic White	24	40	19
% Race-Ethnic Minority	73	60	78
% Partnered (married or cohabiting)	39	30	42
% With Children	25	10	31
% With Children Under 5	17	10	19
% With Public Assistance	59	60	59
% With High School Degree	65	50	70
% With Legal History/Criminal Record	73	80	70
% Employed	27	50	19
Hourly Income	11.00	11.10	10.80
% Permanent Housing	78	100	70
Total	37	10	27

APPENDIX D: Wave I Perceptions by Program Completion, OTI and CH

Wave I Perceptions by Pre-Apprenticeship Program Completion, OTI

	Enrolled in Program	Completed Program	Did Not Complete Program
Plans for future scale Wave I (1-4)	3.48	3.46	3.63
Strengths scale Wave I (1-4)	2.55	2.53	2.68
Attitudes towards trades Wave I (1-5)	4.25	4.23	4.33
Perceived challenges Wave I (1-5)	2.44	2.47	2.23
Respected on job site Wave I (1-5)	3.41	3.30	4.17
Total	46	40	6

Wave I Perceptions by Pre-Apprenticeship Program Completion, CH

	Enrolled in Program	Completed Program	Did Not Complete Program
Plans for future scale Wave I	3.65	3.69	3.51
Strengths scale Wave I	2.98	2.97	3.00
Attitudes towards trades Wave I	4.51	4.53	4.44
Perceived challenges Wave I	2.52	2.58	2.35
Respected on job site Wave I	4.17	4.22	4.00
Total	48	37	11

APPENDIX E: Waves I and II Perceptions by Apprenticeship Registration, OTI and CH

Waves I and II Perceptions by Apprenticeship Registration, OTI

	Completed Pre-Apprenticeship	
	Entered Apprenticeship	Did Not Enter Apprenticeship
Plans for future scale Wave I	3.80	3.37
Strengths scale Wave I	2.56	2.52
Attitudes towards trades Wave I	4.42	4.19
Perceived challenges Wave I	2.38	2.49
Respected on job site Wave I	3.63	3.22
Plans for future scale Wave II	3.95	3.46
Strengths scale Wave II	3.43	3.33
Attitudes towards trades wave II	4.76	4.48
Perceived challenges Wave II	2.27	2.60
Respected on job site Wave II	4.00	3.66
Change in plans for future scale (II-I)	0.15	0.09
Change in strengths scale	0.87	0.81
Change in attitudes scale	0.38	0.30
Change in challenges scale	-0.25	0.11
Change in respected measure	0.57	0.44
Total	8	32

Waves I and II Perceptions by Apprenticeship Registration, CH

	Completed Pre-Apprenticeship	
	Entered Apprenticeship	Did Not Enter Apprenticeship
Plans for future scale Wave I	3.79	3.65
Strengths scale Wave I	3.06	2.94
Attitudes towards trades Wave I	4.50	4.54
Perceived challenges Wave I	2.75	2.51
Respected on job site Wave I	4.20	4.23
Plans for future scale Wave II	3.82	3.76
Strengths scale Wave II	3.54	3.44
Attitudes towards trades wave II	4.73	4.65
Perceived challenges Wave II	2.77	2.70
Respected on job site Wave II	4.40	3.92
Change in plans for future scale (II-I)	0.03	0.09
Change in strengths scale	0.48	0.46
Change in attitudes scale	0.23	0.11
Change in challenges scale	0.02	0.21
Change in respected measure	0.20	-0.24
Total	10	27

APPENDIX F: Wave III Perceptions by Workforce Entry, OTI and CH

Wave III Perceptions by Workforce Entry, OTI

	Not in Trades	Construction Trades	Entered Apprentice ship	Construction Job
Plans for future scale Wave I	3.30	3.24	3.80	3.00
Strengths scale Wave I	2.57	2.38	2.36	2.38
Attitudes towards trades Wave I	4.00	3.95	4.06	3.90
Perceived challenges Wave I	3.56	2.54	2.38	2.61
Respected on job site Wave I	2.00	2.90	3.33	2.71
Plans for future scale Wave II	3.20	3.54	4.00	3.34
Strengths scale Wave II	3.32	3.36	3.40	3.34
Attitudes towards trades wave II	4.00	4.42	4.89	4.21
Perceived challenges Wave II	3.06	2.78	2.42	2.93
Respected on job site Wave II	2.00	3.90	4.33	3.71
Change in plans for future scale	-0.10	0.30	0.20	0.34
Change in strengths scale	0.75	0.98	1.05	0.95
Change in attitudes scale	0.00	0.47	0.83	0.31
Change in challenges scale	-0.50	0.24	0.04	0.32
Change in respected measure	0.00	1.00	1.00	1.00
Plans for the future scale Wave III		3.20	3.58	3.04
Attitudes towards trades Wave III		4.13	4.39	4.01
Perceived challenges Wave III		2.67	2.69	2.66
Respected on job site Wave III		4.30	4.33	4.29
Total	2	10	3	7

Wave III Perceptions by Workforce Entry, CH

	Construction Trades	Apprenticeship	Other Construction Job
Plans for future scale Wave I	3.78	3.85	3.60
Strengths scale Wave I	2.93	2.96	2.89
Attitudes towards trades Wave I	4.58	4.58	
Perceived challenges Wave I	2.97	2.97	
Respected on job site Wave I	3.50	3.50	
Plans for future scale Wave II	3.80	3.80	3.80
Strengths scale Wave II	3.33	3.67	2.64
Attitudes towards trades wave II	4.78	4.92	4.50
Perceived challenges Wave II	2.93	3.25	2.29
Respected on job site Wave II	4.00	5.00	2.00
Change in plans for future scale	0.03	-0.05	0.20
Change in strengths scale	0.40	0.71	-0.21
Change in attitudes scale	0.33	0.33	
Change in challenges scale	0.28	0.28	
Change in respected measure	1.50	1.50	
Plans for the future scale Wave III	3.75	3.75	3.75
Attitudes towards trades Wave III	4.44	4.33	4.67
Perceived challenges Wave III	2.33	2.07	2.86
Respected on job site Wave III	3.67	3.50	4.00
Total	3	2	1

APPENDIX G. Open-ended responses to Wave II “What do you see as the three *most important things you learned* from your pre-apprenticeship program?”

OTI students’ responses to “What do you see as the three *most important things you learned* from your pre-apprenticeship program?”

a diverse education about all trades, as well as union apprenticeship	how to use tools
actual job descriptions, expectations, activities...	how to walk with diff leadership styles. Some will teach you, some will leave you to figure it out on your own
arrive at least 30 min early	how to work on a site
attitude	how to work with a crew
attitude	I am capable of construction work
basic carpentry skills - made me more confident	I can (and other women) can do this
about walking into a construction site	I can and do now better advocate for myself/what I think is right/wrong
believing in yourself	I can face challenge
communication	I have learned about and gained confidence! Which is super important to me
communication	I have learned about many different trades and what they do and their programs
confidence	I have learned how to use power tools and importance of safety and body awareness
confidence	importance of sticking together as women in trades dominated by men
confidence	industry standards
confidence	knowledge and the support structures available to succeed
confidence and how to survive in the trades	learn how to frame a wall
confidence in my ability to do the work	learn how to use certain power tools
construction culture	learned how to enter any trade I'm interested in - toured union and training centers
construction culture	learned how to measure right
construction culture	learning how to operate power tools
construction culture - e.g. timeline, work ethic	math
construction culture, communication, etc.	math skills
construction math	math skills
dependability	mentality - strength outside of physical ability
direction in which trade is the best fit	need more women in the trades
empowerment	on the job training
empowerment of seeing women in the trades	opportunities available
empowerment through job skills and community	pathways to careers
experience and basic skills needed to start	perseverance
experience with tools	physical strength
exposed to all the trades - learned what they do, so I could make the best choice for my career	proper (safe) use of tools
exposure to different trades/jobs	punctuality
familiarity with construction culture and work ethic	punctuality
general carpentry skills	resources
general overview of construction tools and concepts	resources available
grit	resources/networking capabilities
how hard it is	safety
how to accept criticism	safety
How to achieve my goals in the trades/what it takes/they will support me for my entire trades life	safety
how to apply	safety
how to build, use tools and maintain industry-appropriate work place	
how to get into an apprenticeship	
how to get my foot in the door with an apprenticeship	
how to interact on a construction site	
how to use power tools	

seeing that career support, counseling, and connections are out there AKA people are rooting for me!
self-thinking/problem-solving
skills to take with me to workplace
skills, even if elementary ones
skills-based knowledge
stay healthy
structure
take constructive criticism well
that I can do the work
that I can do the work if I get over my apprehension and doubt
that I have a fear of saws
the benefit of sisterhood
they work at a fast pace
to have tough skin
to persevere as times get hard and people are rude
tool knowledge

tool safety
tool safety - knowledge/ exposure to tools
tool skills
tools
trades culture / etiquette
union trades apprenticeship not for me
using a tape measure
variety of trades. There are so many career choices I can have that I never knew existed or that I could do
what it is like to work in this industry
what opportunities are out there (so many!)
what options are out there for me
what to expect and also which field I want to go into
what to expect on the first day
what trade I want to go into
work ethic
work hard it pays off
working with a group

CH students' responses to "What do you see as the three *most important things you learned* from your pre-apprenticeship program?"

about alternative programs
about safety
about the unions
always have a positive mindset
always something to learn
attitude
be on time
being on time
being on time
being on time and ready for work
blueprints
commitment
construction diagrams
dedication and follow through
discipline
discipline
doing things the right way step by step
don't force yourself to be somewhere you don't want to
don't judge a book by its cover
education
exposure to the various trades and tours/guest speakers
focus
foundation lay out
foundation layout
fundamental of construction
future plans retirement
general maturity
good attitude
good job habits
good leadership

hands on projects and how things are constructed and deconstructed
hands on training
hands-on experience with construction
tools/equipment/vocabulary/supplies
hard work
hard work benefits all
help other people (giving back to the community)
how construction works and math
how to be a leader
how to be successful in life
how to build a house
how to build a portfolio
how to build and frame homes
how to follow rules/be on time
how to make a portfolio
how to recognize tools
how to use power tools
I learned about construction through the education given here and constructing hope
I learned how to work as a team with my peers
I learned problem solving
information
information about apprenticeship programs
information and pay of various trades
integrity
just been happier with my life and proud of myself
knowledge of building
lay out
leadership
leadership
leadership
learned about trades

learned how to use power tools
learned self-control
learning code and equipment
learning how to apply for apprenticeship in different trades
learning how to use tools
listen to what you're being told, follow the rules because safety is first
math
math skills
networking
open minded to others opinion
option
punctuality
patience
patience working with different kinds of people
places of education
Pythagorean theorem
positive self-worth
power tool usage
preparation
presentation
punctuality
respect one another on and off the jobsite

responsibility
responsibility
roof wall floor building
roofing calculations
roofing lay out
safety
safety
safety
safety
self esteem
self-motivation
set goals
show up on time
stair building
team work
team work
teamwork, being on time
the hands on training to get a better job and to have a brighter future
try your best and always try to grow
wall building/building a house
what it takes to succeed
working as a team

APPENDIX H: Open-ended questions to Wave II “What are three things you wanted to learn (or learn more about) but didn’t in your pre-apprenticeship program?”

OTI students’ responses to “What are three *things you wanted to learn (or learn more about) but didn’t* in your pre-apprenticeship program?”

"comebacks" to use against dudes
a wider variety of hands on work
activity
algebra
basic skills from other trades, not just carpentry
building something start to finish
chance to drive heavy equipment
doing other physical trades on jobsites besides
carpentry
down time and planning financial layoffs
electrical work
exercise
explore linesmen trade
field experience
financial planning
framing (discussed, offered but I was not in that
group)
got more than expected
green building
green building/green collar jobs
hands on training
heavy machinery operating
how to operate and drive construction equipment
how to/want to
I didn't know what to expect so I had no ideas of
what I wanted to learn
learn more about body mechanic (how to lift) more in
depth
Learn more about working with guys on a site, or
more experience working with them
Learning more what trades/jobs are like once you
journey out
more about my specific trade interest, which is a
specialty trade (plaster or earthen plaster)
more about open shop/unions
more about wiring stuff
more advanced skills from any trade
more carpentry skills
more construction math
more fitness
more focus time on learning to read blueprints

more framing/carpentry skills
more hands on
more hands on
more hands on experience
more hands on training
more hands-on experience
more hands-on learning: wanted to gain more real
world construction skills
more in-depth explanation of union/nonunion debate
more jobsite work experience
more math
more math skills
more one on one interview skills
more onsite training
more technical studying on various trades
natural building
more about building houses and alternative building
techniques
operate a scissor lift
planning
plumbers
pros/cons to going union/nonunion - more emphasis
on that
solar, renewable energy
technical training
the job route to moving ahead in trades - without
doing a registered apprenticeship
There are some trades we didn't learn about quite as
much as others
to get over my fear of saws
to use an angle grinder and sander
tough question - no hands on training
use of all tools
wanted to learn more about the culture
wanted to learn more about the expectations of
difference apprenticeships
wanted to learn more specifics of welding
we didn't finish any of the projects
working with men on a jobsite to see how it will
actually be in the workforce

CH students' responses to "What are three *things you wanted to learn (or learn more about) but didn't* in your pre-apprenticeship program?"

blue print understandability
carpentry
cement work
cost
crane
electrical theory
electricity
electric
electrical
electrical
electrical
electrical theory
electrical training
electrical work
fence building
financial goals
financial management income when you start
forklifting
green energy solar wind grey water systems
hands on
hands on with other trades (even if it meant going to
a different facility)
heavy equipment
how to build a complete house
how to run a business
how to start up a business in the construction field
hvac
I feel that we need more hands on
I wanted to learn a little more math
I wanted to learn more math
IBEW trip
machine operator's studies
mason work
math
more blueprints
more building work
more experience building stuff
more foundation time spent on what I already learned
more hands on
more hands on training
more hands on with equipment
more hands on (site) habitat for humanity
more hands-on
more hours learning
more tech skills for the trade and hands on
more trips to live site
no subjects specifically, just more hands on
on site experience
operating engineers
pick up a little more knowledge in the HVAC
apprenticeship program
plumbers work
plumbing

plumbing
plumbing
reading blue prints
real estate side of the business
roofing
scissor lift/forklift certification
siding
site visit to IBEW
stair building and roofing
welding
well I would like to have been a little more on the job
site training
would have been nice to have more guest speakers
speak of their trade

APPENDIX I: Open-ended questions to Wave III “In what ways did you find the pre-apprenticeship program beneficial?”

OTI students’ responses to “In what ways did you find the pre-apprenticeship program beneficial?”

I loved my pre-apprenticeship program. If the job hadn't opened up with [a trades advocacy organization], then I would have stayed in the trades.

Gained confidence in my ability to build a career.

APPENDIX J: Open-ended questions to Wave III “What do you see as the most important things you learned from your pre-apprenticeship program that have helped you in the trades?”

OTI students’ responses to “What do you see as the most important things you learned from your pre-apprenticeship program that have helped you in the trades?”

What the field is really like, how the industry is for women and minorities, and how to actually use the tools!

Honestly, it was all so important. I really appreciate the hands-on experience with tools, practice with measuring, and the expectations of an apprentice in a construction trade. It set the bar for my apprenticeship and has made me a much more effective apprentice than I would have been otherwise. My journeyman is a 61 year old man who has been in the trades his whole life. He told me I'm the best apprentice he's ever had, because I ask questions, I anticipate what's coming next and make sure we're prepared, and I'm not standing around. These are all things that my pre-apprentice program taught me to do.

An idea of the kind of stuff you do and experience doing it what to expect

Confidence. Community

That an apprenticeship was more intense than what I want in my life.

Leadership and a push start back into the field

Construction skill Knowledge of realities of work environment Confidence in my ability to excel

Confidence

Mentality. My program really prepared us to mentally understand and take in working in a male-dominated field. It also gave me the confidence I needed to trust that I can do construction despite my gender.

Show up to work on-time and early; competence to learn to use tools; learn to carry a 3/4" piece of plywood; have a good attitude and show it.

CH students’ responses to “What do you see as the most important things you learned from your pre-apprenticeship program that have helped you in the trades?”

1. Safety - taking protective safety measures, identifying potential hazards, taking safety seriously for both oneself and for coworkers/others 2. General construction knowledge. (Familiarity with various tools - identifying the tools and having practice using them. Framing experience.) 3. Building habit of showing up to work on time / early, with tools ready and wearing PPE 4. Interviewing practice and advice

APPENDIX K: Open-ended questions to Wave III “What information would have been helpful to know about the trades that you did not learn in your pre-apprenticeship program?”

OTI students’ responses to “What do you see as the most important things you learned from your pre-apprenticeship program that have helped you in the trades?”

They taught me everything I needed to know.

We didn't really have time to discuss the ins and outs of companies and how the union functions. It would have been helpful to understand the exact path of how to sign up for a union, but I understand that there's wasn't time for that information.

Nothing

Not hard, teenage boys can do it.

How to emotionally handle such intense work or jobsite dynamics,

That i wasnt gonna get to do clean slate program over again

Getting over my fear of saws

Inexperience. I've found that men do as our culture taught them, which is to fake it until you make. I honestly feel I have more mental prep for jobs but because men throw themselves into work acting like they know what they're doing, they get the paycheck, insight, and connections.

APPENDIX L: Open-ended questions to Wave III “What kinds of ongoing support have you received from your pre-apprenticeship program?”

OTI students’ responses to ““What kinds of ongoing support have you received from your pre-apprenticeship program?””

They have been my ongoing cheerleaders. I have received job placement assistance, tools, clothing, boots, safety gear, and rain gear.

Invitations to events, such as social hours or tool trades. I haven't needed much support since I left the program though. The most supportive aspect of it for me now is being connected to a network of women in the trades, because if it were just me and a bunch of men all the time for my career without a support group of women, I probably wouldn't be in this trade. I like my work, but being a part of a group of women is very important to me as well. OTI helps satisfy that aspect.

Tutoring help with dues support from peers

Community building events

Made a good friend in class.

Enough they are there for me. I just been busy working

None needed so far

Emotional, resource list for tools, and support from like minded women.

OTI is amazing. I'm currently reaching out to them for other job ideas as mine isn't as fulfilling as I had hoped and they are quick to help me out and give suggestions. They truly want everyone who goes through their program to succeed.

OTI does social hours, tool swaps, interviews, check-ins, job updates and placements etc.

CH students’ responses to “What do you see as the most important things you learned from your pre-apprenticeship program that have helped you in the trades?”

I attended a post-graduate "mentor group", where students met together in a group setting with the pre-apprenticeship instructor. We updated one another on what we have been doing since graduation. Shared successes and struggles. Received advice. I also frequently receive emails that the instructor sends out. Most of the emails are leads for a potential job.

APPENDIX M: Open-ended questions to Wave III “Do you have any additional comments about your experiences in your pre-apprenticeship program or about this study?”

OTI students’ responses to “Do you have any additional comments about your experiences in your pre-apprenticeship program or about this study?”

I believe that OTI should explicitly include trans women. Trans women are at high risk for unemployment, therefore many would benefit from a program like this. Even though I did not end up pursuing a career in the trades, the skills and confidence the program gave me have made it so I am able to.

OTI changed my life, and support so many women!

The experience was valuable because our teacher was really good at teaching. Amy James Neel is a very smart and effective teacher who is able to communicate concepts clearly. Without a solid teacher, it wouldn't have been the same.

Woman rock

OTI is great support network!

Survey longer than 5 mins. TACC- I do recommend it but it was kind of a negative atmosphere, encouraging us to fit into the current man dominated mold.

I highly recommend oti

I feel so fortunate to have have this program in my home state and there is nothing like it around.

CH students’ responses to “Do you have any additional comments about your experiences in your pre-apprenticeship program or about this study?”

It was great i learned alot and it was a honorable program with honorable people i am grateful and we need more programs like construction hope

APPENDIX N: Wave I Survey



Thank you for your participation in the evaluation of pre-apprenticeship programs

Portland State University researchers are conducting an evaluation of pre-apprenticeship programs. The objective of the study is to learn more about people’s experiences in pre-apprenticeship programs. The study is sponsored by Oregon Tradeswomen, Inc. and Constructing Hope in collaboration with Portland State researchers.

You will be asked to complete the short survey below, which will take about 5 minutes. Your participation is voluntary. You don’t have to answer any questions you don’t want to answer and you can stop at any time. Your answers to this survey will be kept completely confidential. Only the Portland State researchers conducting the project will have access to your survey. The information you provide will be kept confidential and your responses will not be shared with pre-apprenticeship staff. In reports from this study, your name and identifying information will not be included. The risks to participating in the study are minimal (e.g. thinking about negative past or future experiences working in the construction trades). Benefits of the study include contributing to research that will potentially improve the experiences of future workers in the construction trades. You will receive a copy of the above information, along with contact information for the Portland State Human Subjects Research Review Committee and the Portland State researcher conducting this project.

We will conduct a follow up survey at the end of your program and another follow up after one year. Today we are interested in your views prior to starting your pre-apprenticeship program.

Yes, I give my consent to participate in the study:

Name (print)

Signature

1. Please think about your plans for the future in the trades. How likely is it that...

	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely
You will complete this pre-apprenticeship program?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will be enrolled in an apprenticeship program within the next year?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will complete an apprenticeship program?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will be working in a construction trade 5 years from now?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will be working in a construction trade 10 years from now?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will hold a leadership position in the trades (e.g. foreman, supervisor, superintendent, business owner) in the future?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. What do you see as the three biggest benefits of working in the construction trades?

- 1.
- 2.
- 3.

3. What do you see as the three biggest challenges you will experience working in the construction trades?

- 1.
- 2.
- 3.

4. Please evaluate your current strength in the following areas:

	Very strong	Somewhat strong	Somewhat weak	Very weak
Math skills needed for the construction trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of construction safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of hand tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of power tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to drive construction equipment (e.g. forklift)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial and budgeting skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Job search and interview skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical fitness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understanding the expectations for working on job sites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the culture of construction job sites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the options for working in the trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understanding the pathways into a construction career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of how to apply for an apprenticeship program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Confidence to start a career in the trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Below are some statements about working in the trades. Please identify whether you strongly agree, agree, neither agree nor disagree (neutral), disagree, or strongly disagree with the following statements.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I will have opportunities for good paying jobs in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will have opportunities for leadership positions in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a job in the trades will make it difficult for me to spend enough time with my family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Responsibilities to my family may require that I turn down jobs or refuse to work extra hours.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[If a parent] I will have a hard time finding consistent childcare.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[If a parent] Paying for childcare will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finding transportation to and from work will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for gas to get to and from work will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for overnight travel (transportation, hotel, and food expenses) will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for tools, work clothing, or protective equipment will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel confident starting a career in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I plan to make working in the trades my career.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will enjoy doing physical work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will enjoy working outside	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will be treated with respect on construction work sites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attending or passing the required classes for my apprenticeship program will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will be out of work too much when I am working in the trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will feel pride in my work in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My work will be an important contribution to society.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the construction trades, I will have a career, not just a job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Including yourself, how many adults 18 years of age or older live in your household? ____

7. Are you currently living with a spouse or partner?

- No, I'm not living with a spouse or partner
- Yes, I'm married and living with my spouse
- Yes, I'm cohabiting, that is, living with my partner

Answer questions 8-9 if you are currently living with a spouse or partner

8. Does your spouse or partner work?

- No, my spouse or partner does not work
- Yes, part time
- Yes, full time

9. Does your spouse or partner usually work days (like 9 to 5) or non-standard hours (like nights or weekends)?

- Days (like 9 to 5)
- Non-standard hours (like nights or weekends)
- Other (please specify) _____

10. Are there currently any children under 18 in your household (only include your children and children for whom you are a primary caregiver)? *These include biological or adopted children, stepchildren, or children of a cohabitating partner, or other children for whom you are a primary caregiver (e.g. grandchildren or foster children). Do not include other children in your home, such as younger siblings or children of roommates, unless you are a primary caregiver.*

- Yes
- No

Answer questions 12-15 if there are children in your household

11. How many children under 18 are living in your household? Please only include your children and children for whom you are a primary caregiver. ____

12. How many children 5 years of age or younger are living in your household? Again, please only include your children and children for whom you are a primary caregiver. ____

13. Do your children live with you full time or part time?

- Part time
- Full time

14. In the next year, what will be the childcare arrangement you will use the most while you are at work or in your apprenticeship classes?

- Your spouse or partner will care for them
- Your friend or family member will care for them without pay
- You will take them to a paid childcare provider
- You will have a paid childcare provider in your home
- Your children are old enough to care for themselves
- Other (please specify) _____

The PSU researcher will collect these forms. Thank you!

APPENDIX O: Wave II Survey



Thank you for your participation in the evaluation of pre-apprenticeship programs

Portland State University researchers are conducting an evaluation of pre-apprenticeship programs. The objective of the study is to learn more about people’s experiences in pre-apprenticeship programs. The study is sponsored by Oregon Tradeswomen, Inc. and Constructing Hope in collaboration with Portland State researchers.

You will be asked to complete the short survey below, which will take about 10 minutes. Your participation is voluntary. You don’t have to answer any questions you don’t want to answer and you can stop at any time. Your answers to this survey will be kept completely confidential. Only the Portland State researchers conducting the project will have access to your survey. The information you provide will be kept confidential and your responses will not be shared with pre-apprenticeship staff. In reports from this study, your name and identifying information will not be included. The risks to participating in the study are minimal (e.g. thinking about negative past or future experiences working in the construction trades). Benefits of the study include contributing to research that will potentially improve the experiences of future workers in the construction trades. You will receive a copy of the above information, along with contact information for the Portland State Human Subjects Research Review Committee and the Portland State researcher conducting this project.

We will conduct a follow up survey at after one year. Today we are interested in your views at the end of your pre-apprenticeship program.

Yes, I give my consent to participate in the study:

Contact information to follow up after one year:

1. Please think about your plans for the future in the trades. How likely is it that...

	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely
You will be enrolled in an apprenticeship program within the next year?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will complete an apprenticeship program?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will be working in a construction trade 5 years from now?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will be working in a construction trade 10 years from now?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will hold a leadership position in the trades (e.g. foreman, supervisor, superintendent, business owner) in the future?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. What do you see as the three *most important things you learned* from your pre-apprenticeship program?

- 1.
- 2.
- 3.

3. What are three things you *wanted to learn (or learn more about) but didn't* in your pre-apprenticeship program?

- 1.
- 2.
- 3.

4. Please evaluate your current strength in the following areas:

	Very strong	Somewhat strong	Somewhat weak	Very weak
Math skills needed for the construction trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of construction safety	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of hand tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use of power tools	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to drive construction equipment (e.g. forklift)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial and budgeting skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Job search and interview skills	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical fitness	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understanding the expectations for working on job sites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the culture of construction job sites	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of the options for working in the trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Understanding the pathways into a construction career	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Knowledge of how to apply for an apprenticeship program	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Confidence to start a career in the trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Below are some statements about working in the trades. Please identify whether you strongly agree, agree, neither agree nor disagree (neutral), disagree, or strongly disagree with the following statements.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I will have opportunities for good paying jobs in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will have opportunities for leadership positions in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a job in the trades will make it difficult for me to spend enough time with my family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Responsibilities to my family may require that I turn down jobs or refuse to work extra hours.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[If a parent] I will have a hard time finding consistent childcare.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[If a parent] Paying for childcare will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finding transportation to and from work will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for gas to get to and from work will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for overnight travel (transportation, hotel, and food expenses) will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for tools, work clothing, or protective equipment will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel confident starting a career in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I plan to make working in the trades my career.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will enjoy doing physical work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will enjoy working outside	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will be treated with respect on construction work sites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attending or passing the required classes for my apprenticeship program will be a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will be out of work too much when I am working in the trades	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I will feel pride in my work in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My work will be an important contribution to society.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the construction trades, I will have a career, not just a job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The PSU researcher will collect these forms. Thank you!

APPENDIX P: Wave III Survey (Web based survey)

Thank you for your participation in the evaluation of pre-apprenticeship programs

Portland State University researchers are conducting an evaluation of pre-apprenticeship programs. The objective of the study is to learn more about people's experiences in pre-apprenticeship programs. The study is sponsored by Oregon Tradeswomen, Inc. and Constructing Hope in collaboration with Portland State researchers and in partnership with the Oregon Department of Transportation and Bureau of Labor and Industries.

You will be asked to complete the following short survey, which will take about 10 minutes. Your participation is voluntary. You don't have to answer any questions you don't want to answer and you can stop at any time. Your answers to this survey will be kept completely confidential. Only the Portland State researchers conducting the project will have access to your survey. The information you provide will be kept confidential and your responses will not be shared with pre-apprenticeship staff. In reports from this study, your name and identifying information will not be included. The risks to participating in the study are minimal (e.g. thinking about negative past or future experiences working in the construction trades). Benefits of the study include contributing to research that will potentially improve the experiences of future workers in the construction trades. You will receive a copy of the above information, along with contact information for the Portland State Human Subjects Research Review Committee and the Portland State researcher conducting this project.

If you choose to participate, you will receive a \$10 gift certificate to Amazon.com. This gift certificate will be emailed to you after you complete the survey. If you do not have an email address, we can mail the gift certificate to your home address.

Yes, I give my consent to participate in the study:

Name

Contact information for receiving gift certificate:

Email address (or home address if none)

Are you currently pursuing a career in the construction trades?

- No, I'm not pursuing a career in the construction trades
- Yes, I'm in a registered apprenticeship program
- Yes, I'm pursuing a career in the construction trades but I'm not currently in a registered apprenticeship program

If no—Version A

If yes, apprenticeship—Version B

If yes, other—Version C

Version A: Not working in the trades

Are you currently employed?

- Yes
- No

If yes, what is your current job title?

Why did you decide *not* to pursue a career in the construction trades after completing your pre-apprenticeship?

Is there anything your pre-apprenticeship program could have done differently to help you pursue a career in the trades?

- Yes
- No

If yes, what could your pre-apprenticeship program have done differently to help you pursue a career in the construction trades?

In what ways did you find the pre-apprenticeship program beneficial?

Do you have any additional comments about your experiences in your pre-apprenticeship program or about this study?

Version B: Enrolled in an apprenticeship

What trade is your apprenticeship in?

Are you currently enrolled in a...

- Union apprenticeship program
- Open shop (non-union) apprenticeship program

When did you start your apprenticeship program? Month _____ Year _____

Please think about your plans for the future in the trades. How likely is it that...

	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely
You will complete an apprenticeship program?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will be working in a construction trade 5 years from now?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will be working in a construction trade 10 years from now?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will hold a leadership position in the trades (e.g. foreman, supervisor, superintendent, business owner) in the future?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Below are some statements about working in the trades. Please identify whether you strongly agree, agree, neither agree nor disagree (neutral), disagree, or strongly disagree with the following statements.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I have opportunities for good paying jobs in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have opportunities for leadership positions in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a job in the trades makes it difficult for me to spend enough time with my family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Responsibilities to my family require that I turn down jobs or refuse to work extra hours.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[If a parent] I have a hard time finding consistent childcare.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[If a parent] Paying for childcare is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Finding transportation to and from work is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for gas to get to and from work is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for overnight travel (transportation, hotel, and food expenses) is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for tools, work clothing, or protective equipment is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel confident starting a career in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I plan to make working in the trades my career.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I enjoy doing physical work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I enjoy working outside	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am treated with respect on construction work sites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Attending or passing the required classes for my apprenticeship program is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am out of work too much.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel pride in my work in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My work is an important contribution to society.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the construction trades, I have a career, not just a job	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What do you see as the most important things you learned from your pre-apprenticeship program that have helped you in the trades?

What information would have been helpful to know about the trades that you did *not* learn in your pre-apprenticeship program?

Are you still in contact with your pre-apprenticeship program?

- Yes
- No

What kinds of ongoing support have you received from your pre-apprenticeship program?

Do you have any additional comments about your experiences in your pre-apprenticeship program or about this study?

Version C: Pursuing a career in the trades

Are you currently employed?

- Yes
- No

If yes, what is your current job title?

Have you attempted (or will you attempt) to enter a registered apprenticeship program?

- Yes
- No

Why/why not?

Please think about your plans for the future in the trades. How likely is it that...

	Very likely	Somewhat likely	Somewhat unlikely	Very unlikely
You will be enrolled in an apprenticeship program within the next year?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will complete an apprenticeship program?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
You will be working in a construction trade 5 years from now?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

You will be working in a construction trade 10 years from now?

You will hold a leadership position in the trades (e.g. foreman, supervisor, superintendent, business owner) in the future?

Below are some statements about working in the trades. Please identify whether you strongly agree, agree, neither agree nor disagree (neutral), disagree, or strongly disagree with the following statements.

	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
I have opportunities for good paying jobs in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have opportunities for leadership positions in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Having a job in the trades makes it difficult for me to spend enough time with my family.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Responsibilities to my family require that I turn down jobs or refuse to work extra hours.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[If a parent] I have a hard time finding consistent childcare.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
[If a parent] Paying for childcare is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Finding transportation to and from work is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for gas to get to and from work is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for overnight travel (transportation, hotel, and food expenses) is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Paying for tools, work clothing, or protective equipment is a challenge.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel confident starting a career in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I plan to make working in the trades my career.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I enjoy doing physical work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I enjoy working outside	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am treated with respect on construction work sites.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am out of work too much.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel pride in my work in the construction trades.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My work is an important contribution to society.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In the construction trades, I have a career,
not just a job

What do you see as the most important things you learned from your pre-apprenticeship program that have helped you in the trades?

What information would have been helpful to know about the trades that you did *not* learn in your pre-apprenticeship program?

Are you still in contact with your pre-apprenticeship program?

- Yes
- No

What kinds of ongoing support have you received from your pre-apprenticeship program?

Do you have any additional comments about your experiences in your pre-apprenticeship program or about this study?

REFERENCES

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