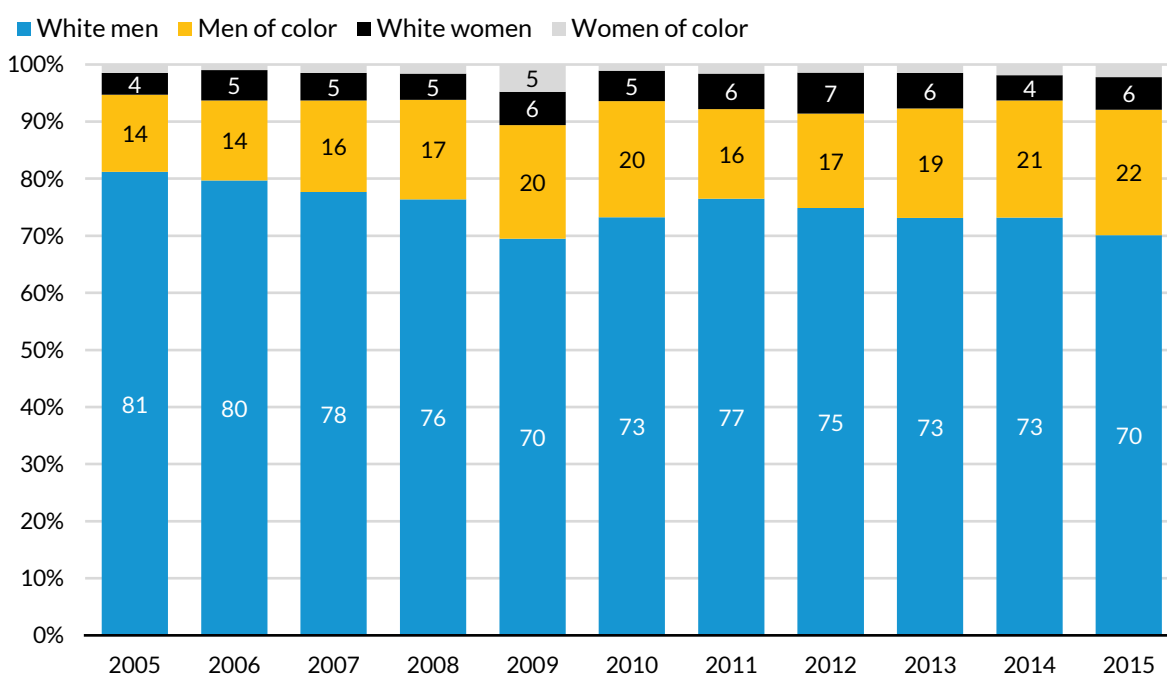


Evaluating Preapprenticeships in the Construction Trades in Oregon

Maura Kelly, Lindsey Wilkinson, and Luis Nuñez

White men have historically dominated the highway construction trades in Oregon, but this trend is changing. Of new apprentices in the highway construction trades in 2015, 70 percent were white men, down from 81 percent in 2005 (figure 1). Oregon public agencies, contractors, and nonprofit advocacy organizations have been working on various initiatives to recruit and retain apprentices, with a focus on diversifying Oregon’s construction workforce (Wilkinson and Kelly 2018; Worksystems et al. 2018).

FIGURE 1
New Apprentices in Oregon Heavy Highway Construction Trades, by Race and Gender, 2005–2015 Cohorts



Source: Bureau of Labor and Industries Oregon Apprenticeship System data.

These efforts include supporting preapprenticeship programs, which help people develop the necessary skills to meet the minimum entry qualifications to enter a construction apprenticeship program. Preapprenticeship programs also offer ongoing mentoring and support for graduates, through apprenticeship and beyond. Preapprenticeships serve people who cannot access traditional pathways into the trades. They serve women, people of color, people with a criminal justice background, and those

without family or friends in the trades (a common pathway into employment in this sector). Research has found that preapprenticeship programs can increase the recruitment and retention of diverse workers into the construction trades (Martin and Smith 2011; Worthen and Haynes 2003, 2009).

The two Oregon preapprenticeship programs included in this evaluation are Oregon Tradeswomen, which serves women through a seven-week program, and Constructing Hope, which primarily serves people of color and those previously incarcerated through a nine-week program. Oregon Tradeswomen and Constructing Hope serve the most students, but there are other registered preapprenticeship programs in Oregon, including those focusing on specific trades.¹ Oregon Tradeswomen and Constructing Hope provide students the knowledge and skills they need to enter into an apprenticeship, including construction math, green building, jobsite safety, tool skills, and construction culture. Programs include classroom training and visits to apprenticeship training centers and active construction sites. Both programs provide career counseling, help students apply to apprenticeships, and provide financial and social support. Funding for these programs comes from foundations, industry, and individual donors. These programs are also supported by the Oregon Department of Transportation (ODOT) and the Bureau of Labor Industries (BOLI) Highway Construction Workforce Development Program, which is an initiative to diversify the skilled highway construction workforce by increasing the recruitment and retention of diverse workers.²

This chapter assesses how preapprenticeship programs prepare people for entry into the trades, the impact of preapprenticeships on the recruitment of women and people of color into apprenticeships, and how financial and social support (provided by preapprenticeships and other organizations) increase the retention of women and apprentices of color through to apprenticeship completion.

Our Approach to Evaluating Preapprenticeship Programs in Oregon

To assess how preapprenticeship programs affect the skills, perceptions, and career outcomes of women and people of color, Portland State University researchers designed a longitudinal study of people participating in Oregon Tradeswomen and Constructing Hope. We developed the surveys in collaboration with Oregon Tradeswomen and Constructing Hope staff members. We also relied on data from the Oregon Apprenticeship System (OAS) database to identify program graduates who entered a registered apprenticeship. The evaluation was conducted in a collaboration between Portland State University, Oregon Tradeswomen, Constructing Hope, BOLI, and ODOT.

This evaluation focuses on two cohorts of preapprenticeship students at Oregon Tradeswomen and two cohorts at Constructing Hope. We collected data in 2016 and 2017. For each cohort, we

administered the study's first wave of the survey on the first day of the preapprenticeship class, the second wave at the end of the preapprenticeship class, and the third wave one year later. We supplemented survey data with data collected through BOLI's Oregon Apprenticeship System, which tracks all registered apprentices in Oregon. Across all four cohorts of preapprenticeship students, 94 completed wave I surveys on the first day of class (of 94 students enrolled), 76 completed the wave II surveys on the last day of class (of the 77 who completed the programs), and 15 completed wave III surveys online or over the phone one year after completing the program.

In our study period, Oregon Tradeswomen students were 100 percent female and 17 percent women of color (staff members reported that the two cohorts in our study had an atypically low number of women of color). Constructing Hope students were 11 percent female and 54 percent people of color. These preapprenticeship programs serve students who have other disadvantages. In our study period, 77 percent of Constructing Hope participants had a criminal record, 28 percent of Constructing Hope participants did not have access to permanent housing, and 64 percent of Constructing Hope participants and 37 percent of Oregon Tradeswomen participants received public assistance.

Preapprenticeship Programs Improved Students' Perceived Strengths in Job-Related Skills

Between the first and second waves, students in both programs reported higher perceptions of their ability on survey items related to tools and skills needed for the construction trades, knowledge about working on construction jobsites, and knowledge about careers in the trades. We assessed participants' perceived strengths in various skills important for success in the construction trades. For the wave I and wave II surveys, we asked participants to evaluate their strengths, on a scale from 1 (very weak) to 4 (very strong), in the following 14 areas:

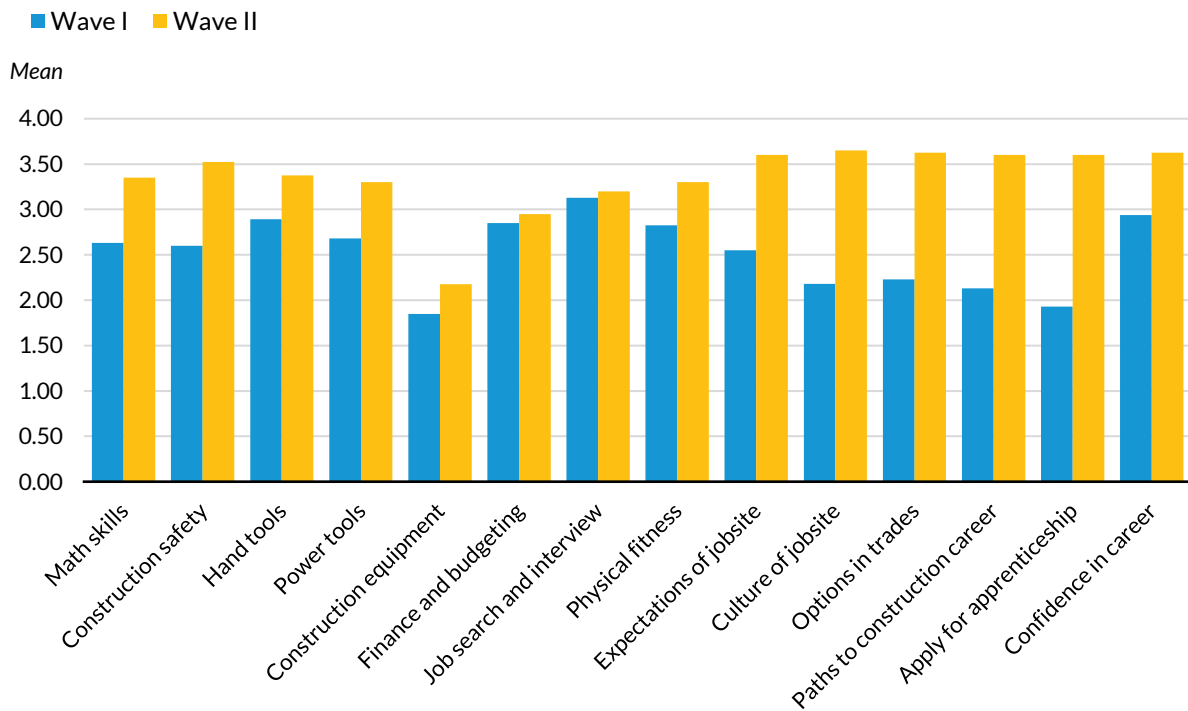
- math
- construction safety
- use of hand tools
- use of power tools
- ability to drive construction equipment
- financial and budgeting skills
- job search and interview skills
- physical fitness
- understanding the expectations for working on jobsites

- knowledge of the culture of construction jobsites
- knowledge of the options for working in the trades
- understanding the pathways in a construction career
- knowledge of how to apply for an apprenticeship program
- confidence in starting a career in the trades

We created a scale incorporating all 14 skill items ($\alpha = 0.86$) and examined changes in each item separately for Oregon Tradeswomen and Constructing Hope participants. Combining participants from both programs, perceptions of strength in all skills increased between the first and second waves. Overall, changes in perceptions of strength are statistically significant for all skills except finance and budgeting skills and job interview skills.

For Oregon Tradeswomen participants, increases in perceived skill strength were largest in knowledge of the culture of construction jobsites, 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. Increases in perceived strength were smallest for financial and budgeting skills and job search and interview skills (figure 2).

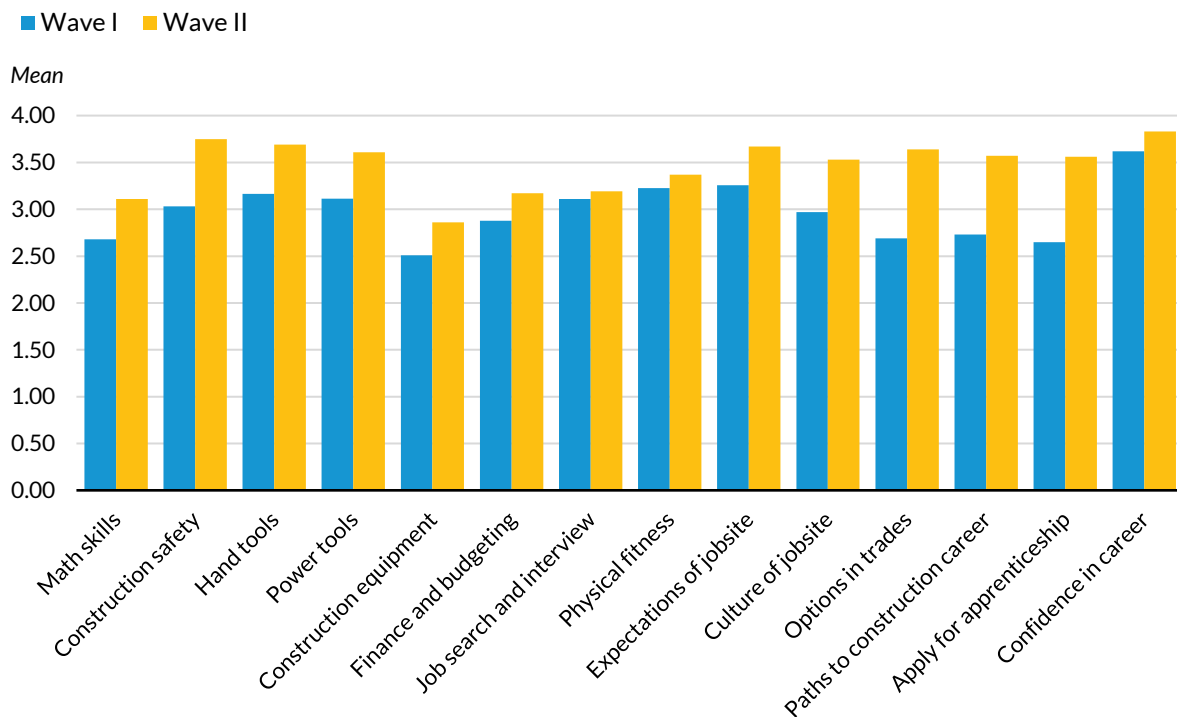
FIGURE 2
Perceived Strengths, Oregon Tradeswomen



Source: Portland State University survey data.

In general, Constructing Hope participants had higher perceptions of skill strength at wave I than did Oregon Tradeswomen participants, and we saw smaller increases in perceptions of skill strength among Constructing Hope participants between the first and second waves (figure 3). The largest gains for Constructing Hope 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 among Constructing Hope participants were in job search and interview skills and in physical fitness.

FIGURE 3
Perceived Strengths, Constructing Hope



Source: Portland State University survey data.

In the wave II survey, at the end of the preapprenticeship program, we asked participants this open-ended question: “What do you see as the three *most important things you learned* from your preapprenticeship program?” For both programs, participants’ responses largely fell into four broad categories:

- **Tools and skills.** Knowing how to work with hand tools or power tools and other construction skills, including safety and math
- **Soft skills.** Having confidence, strong communication skills, a good attitude, and the ability to work in teams
- **Knowledge about working on construction jobsites.** Understanding construction culture and punctuality
- **Knowledge about trade careers.** Knowing how to apply for apprenticeship programs and what resources are available

Below is a selection of responses from the open-ended question about the most important things students learned:

Learning how to apply for apprenticeship in different trades (Constructing Hope student)

The hands-on training to get a better job and to have a brighter future (Constructing Hope student)

Basic carpentry skills, [which] made me more confident about walking into a construction site (Oregon Tradeswomen student)

Patience working with different kinds of people (Constructing Hope student)

Be on time (Constructing Hope student)

Seeing that career support, counseling, and connections are out there (aka people are rooting for me!) (Oregon Tradeswomen student)

Empowerment of seeing women in the trades (Oregon Tradeswomen student)

The benefit of sisterhood (Oregon Tradeswomen student)

Some Students Had Barriers to Completing Preapprenticeship Programs and Entering Apprenticeship Programs

The completion rate for the two cohorts of Oregon Tradeswomen preapprenticeship students in our study was 87 percent, and the completion rate for Constructing Hope was 76 percent. In both programs, students who drop out or are dismissed can reenroll in a later session. During our study period, two participants in Constructing Hope dropped out of the January class but reenrolled and completed the program with the April class and are considered to have completed the program for our study purposes.

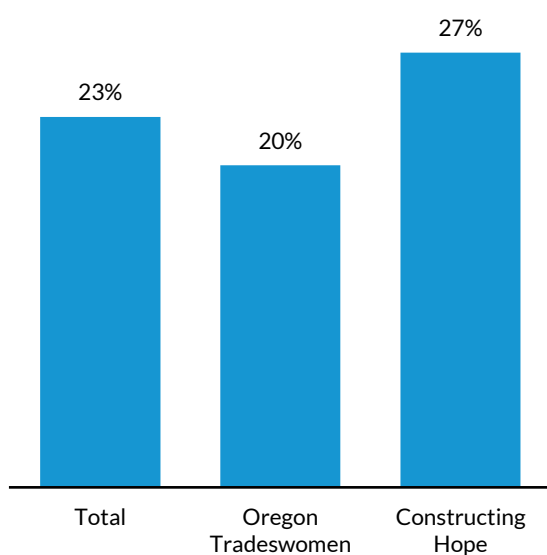
Perhaps surprisingly, among Oregon Tradeswomen students, there was no positive association between perceived strengths at wave I and preapprenticeship completion: Oregon Tradeswomen students who completed the preapprenticeship reported lower perceptions of skill level than those who did not complete the preapprenticeship. This finding was similar among Constructing Hope students, yet differences in first-wave perceived skill levels were smaller among Constructing Hope students completing and not completing a preapprenticeship.

On further analysis, we found that completion of the preapprenticeship program was correlated with other characteristics. In both programs, students with low educational attainment, those receiving public assistance, and those with a criminal history were less likely to complete. Additionally, for Constructing Hope students, women (compared with men) and people with unstable housing were less likely to complete. We also found that among Oregon Tradeswomen participants (all women), those who were partnered or had children in the household were less likely to complete. In contrast, Constructing Hope participants (primarily men) who were *not* partnered were less likely to complete.

Preapprenticeship Programs Provide a Pathway to Enter into Apprenticeship or the Construction Workforce

Eighteen of the 77 participants (24 percent) who completed a preapprenticeship with Oregon Tradeswomen or Constructing Hope in January or April 2016 entered a registered apprenticeship by June 2017. The rate at which those completing entered an apprenticeship was slightly higher among Constructing Hope graduates: 27 percent of Constructing Hope graduates had entered an apprenticeship by June 2017 versus 20 percent of recent Oregon Tradeswomen graduates (figure 4).

FIGURE 4
Share of Preapprenticeship Completers Entering Apprenticeship



Source: Portland State University survey data and Bureau of Labor and Industries Oregon Apprenticeship System data.

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

Similarly, those entering an apprenticeship who completed the Constructing Hope preapprenticeship 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 versus 70 percent) and more likely to have a criminal record (80 versus 70 percent). But among those completing a preapprenticeship through Constructing Hope, those continuing on into an apprenticeship, unlike their Oregon Tradeswomen counterparts, were less likely to be partnered, less likely to have children at home, and more likely to be employed. Perhaps the route from preapprenticeship to apprenticeship is different for Oregon Tradeswomen and Constructing Hope participants, a difference possibly attributable to gender, given that Oregon Tradeswomen reaches only women. More work is needed to explore how men and women experience different pathways into apprenticeships and how additional factors, such as family formation and limited economic opportunities, influence these pathways.

Many of those who completed a preapprenticeship might not immediately or ever enter a registered apprenticeship. Many, instead, enter a job in the construction workforce without completing an apprenticeship. By June 2017, 5 of the 15 wave III survey respondents had entered a registered apprenticeship in Oregon, 8 were employed in the construction trades (not as an apprentice), and 2 were neither registered as an apprentice nor employed in the construction trades.

In the wave III survey, given one year after program completion, we asked preapprenticeship graduates who were currently working in the trades, “What do you see as the most important things you learned from your preapprenticeship program that have helped you in the trades?” Below are representative responses:

What the field is really like, how the industry is for women and minorities, and how to actually use the tools! (Oregon Tradeswomen student)

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 preapprentice program taught me to do. (Oregon Tradeswomen 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. (Oregon Tradeswomen student)

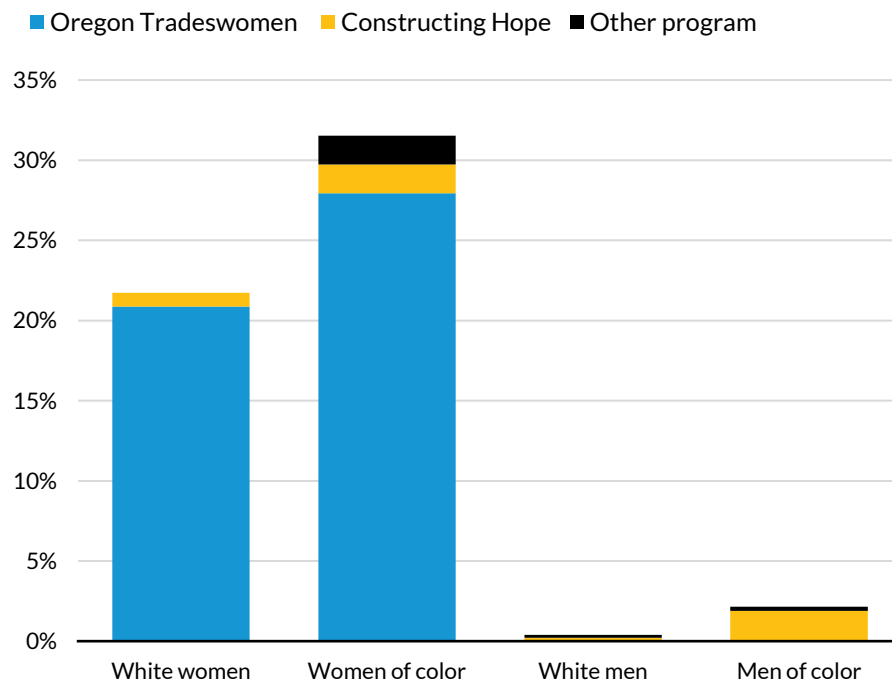
Show up to work on time and early, competence to learn to use tools, learn to carry a 3/4” piece of plywood, have a good attitude and show it. (Oregon Tradeswomen student)

(1) Safety—taking protective safety measures, identifying potential hazards, taking safety seriously for both oneself and for coworkers and 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 or early, with tools ready and

wearing [personal protective equipment]. (4) Interviewing practice and advice. (Constructing Hope student)

The OAS data, which include all registered apprentices in Oregon, show that preapprenticeship has been an important pathway into the trades for women (and to a lesser degree, men of color). Figure 5 illustrates the share of apprentices in Oregon active in 2014–15 who completed a preapprenticeship, by gender and race or ethnicity. Among white women apprentices, 21.7 percent had completed a preapprenticeship, and 96 percent of them had completed a preapprenticeship through Oregon Tradeswomen. Similarly, among women of color, 31.5 percent had completed a preapprenticeship. This is compared with only 2.1 percent of men of color and less than 1 percent of white men who were active apprentices in Oregon in 2014–15.

FIGURE 5
Share of Active Apprentices Completing a Preapprenticeship, by Gender and Race, 2014–15



Source: Bureau of Labor and Industries Oregon Apprenticeship System data.

Ongoing Support Promoted Retention among Apprentices

Both programs we evaluated offer ongoing support for graduates. This can take the form of one-on-one contact with Oregon Tradeswomen or Constructing Hope staff members or support in group settings, such as Oregon Tradeswomen’s social hours and Constructing Hope’s mentor groups. In the wave III

survey, we asked, “What kinds of ongoing support have you received from your preapprenticeship program?” A selection of responses is shown below:

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

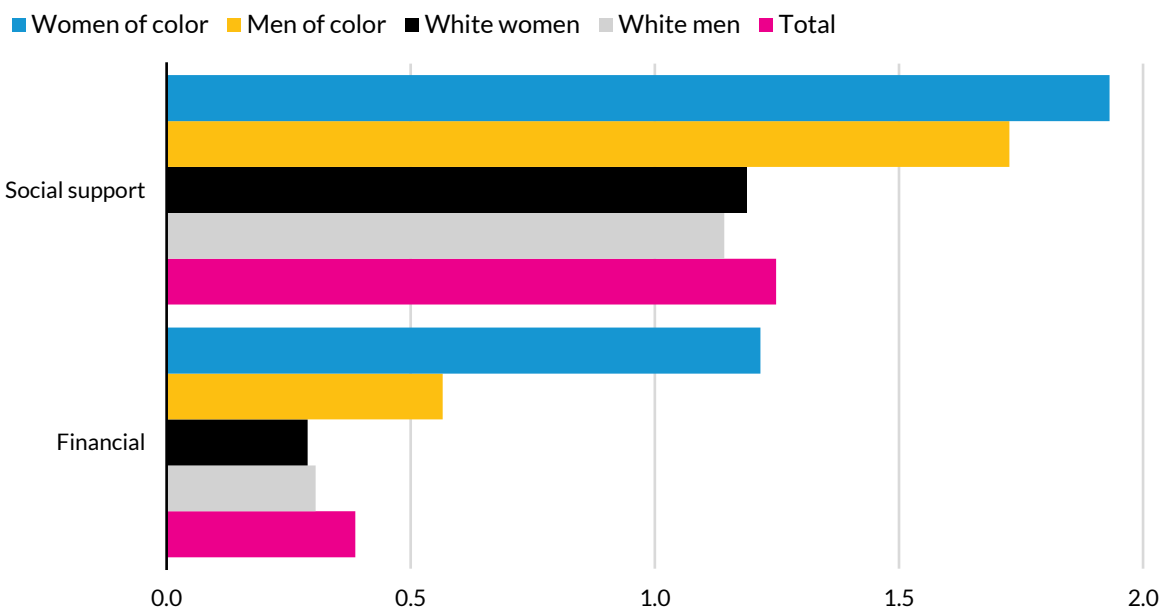
They have been my ongoing cheerleaders. I have received job placement assistance, tools, clothing, boots, safety gear, and rain gear. (Oregon Tradeswomen student)

Oregon Tradeswomen 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. (Oregon Tradeswomen student)

I attended a postgraduate “mentor group,” where students met together in a group setting with the preapprenticeship 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. (Constructing Hope student)

Our analysis of OAS data demonstrated that receiving social support had a positive effect on the odds of apprentices completing their program. In fact, the effect of social support was even larger than the effect of financial supportive services we evaluated (figure 6).

FIGURE 6
Change in Log Odds of Completing an Apprenticeship When Receiving Oregon Department of Transportation—Bureau of Labor and Industries Supportive Services, by Race and Gender
2005–15 cohorts of apprentices in eligible trades



Source: Bureau of Labor and Industries Oregon Apprenticeship System data.

Discussion

Preapprenticeships diversify the pipeline of potential applicants entering registered apprenticeships in Oregon and offer support to retain workers through apprenticeship and beyond. Preapprenticeships provide skills and knowledge to help students succeed in the construction trades. But some students have disadvantages that affect their ability to complete a preapprenticeship or enter into apprenticeship. Many who complete a preapprenticeship go on to a registered apprenticeship or another position in the construction trades. Overall, preapprenticeships have had a significant effect on diversifying the construction workforce, especially for recruiting women. We found that 21.7 percent of white women and 31.5 percent of women of color apprentices had gained entry into construction via a preapprenticeship. Finally, we find that receiving ongoing support from preapprenticeship programs promotes retention.

Notes

- ¹ For more information on preapprenticeship in Oregon, see “Preapprenticeship,” Oregon Apprenticeship and Training Division, accessed August 27, 2019, www.oregon.gov/boli/ATD/Pages/A_AG_PreApprentice.aspx.
- ² For more information, see the Oregon Tradeswomen website (www.tradeswomen.net) and the Constructing Hope website (www.constructinghope.org).

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Kelly, Maura, and Lindsey Wilkinson. 2017. *Evaluation of Preapprenticeship and Retention Services in the Trades*. Final report submitted to Oregon Tradeswomen and Constructing Hope.

Wilkinson, Lindsey, and Maura Kelly. 2016. *(Still) Building A More Diverse Workforce in the Highway Trades: 2016 Evaluation of the ODOT/BOLI Highway Construction Workforce Development Program*. Final report submitted to the Oregon Bureau of Labor and Industries and Oregon Department of Transportation.

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