

Oregon Department of Transportation

Report on the Use of Federal Funds to Increase Diversity and Prepare those Entering the Highway Construction Workforce (ORS 184.866)

INTRODUCTION

Oregon Revised Statute 184.866 requires the Oregon Department of Transportation (ODOT) to expend one-half of one percent up to an amount of \$2,100,000 of the federal funds received each biennium by ODOT pursuant to 23 U.S.C. 140(b), to increase diversity in the highway construction workforce and prepare those interested in entering the highway construction workforce.

ORS 184.866 also requires ODOT to submit a report to the Legislative Assembly by December 1 of each even-numbered year with an analysis of the results of the agency's efforts; the amount available to the department from federal funds for on-the-job training supportive services activities and the amount expended by the department for those activities; and the performance outcomes achieved from each activity, including the numbers of persons receiving services, training, and employment.

BACKGROUND

ODOT's Highway Construction Workforce Development Program helps build a diverse, skilled construction workforce that will meet the needs of the Oregon heavy-highway construction industry now and in the future. The program provides support and services to individuals who are either preparing to enter or have entered a trade associated with highway construction. ODOT has partnered with the Oregon Bureau of Labor & Industries to provide services to expand diversity in employment, increase apprenticeship participation and increase training resources and opportunities for highway construction jobs throughout the State of Oregon.

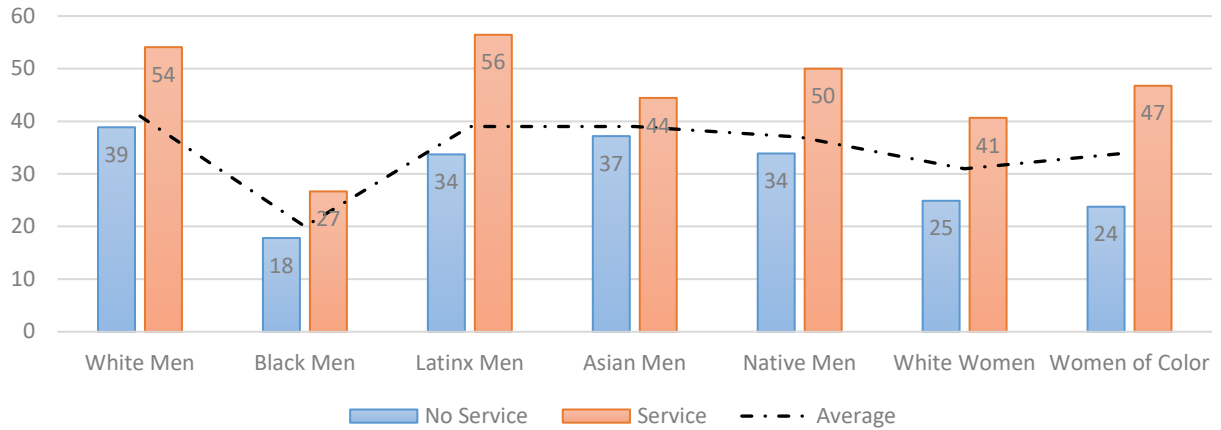
Services broadly cover outreach and recruitment, pre-apprenticeship classes, and case management for individuals preparing to enter a trade, as well as transportation (fuel), travel-related expenses (per diem for lodging and meals when traveling more than 60 miles from home and incurring an overnight stay), job readiness supplies (work tools, work boots, rain gear, and personal protective equipment not provided by employers), child care subsidies (for apprentice parents without a family member at home to care for young children), and one-time hardship assistance for apprentices who are in a trade associated with highway construction with a goal of covering each of the ten supportive services listed below and described in ORS 184.866:

- (a) Pre-apprenticeship programs;
- (b) Pre-employment counseling;
- (c) Orientations on the highway construction industry;
- (d) Basic skills improvement classes;
- (e) Career counseling;
- (f) Remedial training;
- (g) Entry requirements for training programs;
- (h) Supportive services and assistance with transportation;
- (i) Child care and other special needs; and
- (j) Job site mentoring and retention services.

To implement the Program, the ten focus areas listed in statute are grouped into a range of service types that fall along a continuum based on where individuals are in the process of being prepared to enter the highway construction workforce from first learning about the industry and its construction trades to becoming a journey worker in one of those trades. The service types are directed toward: providing career exploration (including career education with youth and reaching adults in career transitions); preparation of apprenticeship seekers (including technical assistance to Local Joint Committees on selection procedures and technical assistance to contractors {training agents} to develop career ladders); preparation of apprenticeship applicants and pre-apprentice graduates; and support for and retention of registered apprentices.

Portland State University recently evaluated the program using apprentice data maintained by BOLI as the registration agency, and data collected through structured interviews with completed and terminated apprentices who had received services to explore in greater detail both what is and is not working in the services currently offered. (See Kelly & Wilkinson, October 2020, in References). The research found that the program continues to improve completion rates for apprentices in eligible trades who receive services. Apprentices in eligible trades, in cohorts 2008-2019 and those active in 2018-2019, who received supportive services were more likely to complete an apprenticeship (Figures 1 & 2) and (in a new measure) to complete an apprenticeship on-time (Figure 3), relative to those who did not receive services.

Figure 1. Percent of Apprentices in Highway Trades Completing by Service Receipt and Race/Ethnicity and Gender, 2008-2019 Cohorts



Figures 2. Percent of Apprentices in Highway Trades Completing by Service Receipt and Race/Ethnicity and Gender, Active in 2018-2019

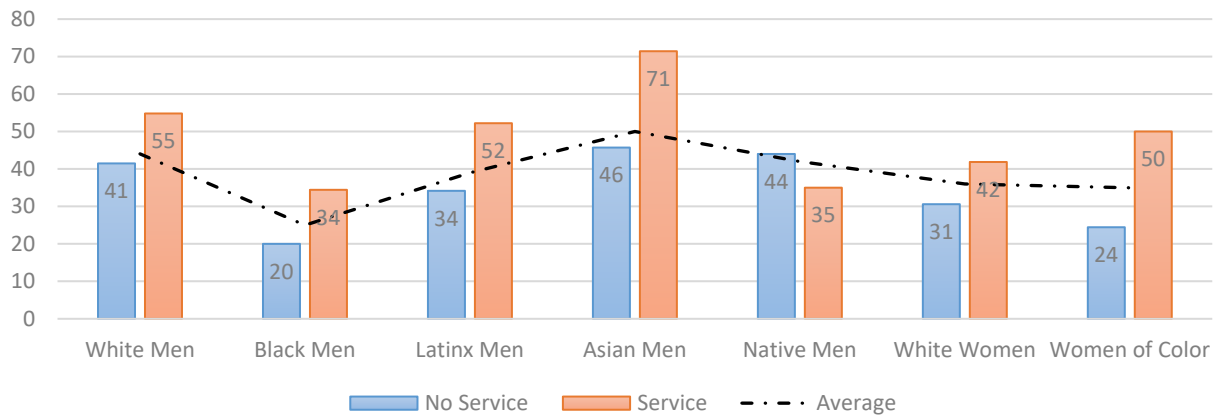
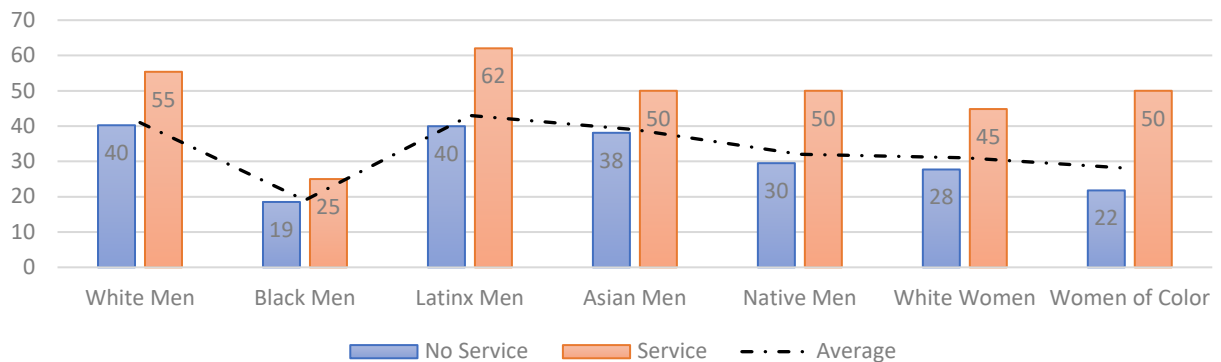


Figure 3. Percent of Apprentices in Highway Trades Completing On Time, by Race/Ethnicity and Gender and Service Receipt, Cohorts 2008-2013

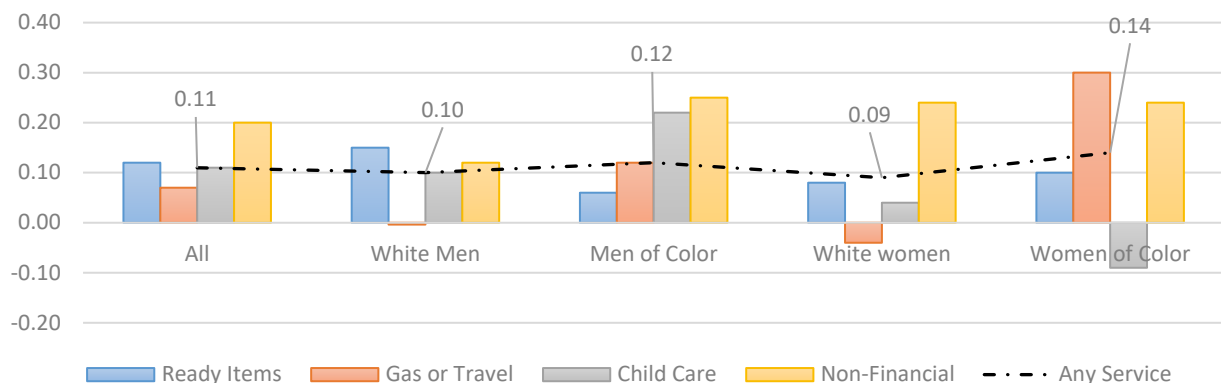


Importantly, the positive effects of receiving services remain after accounting for factors associated with both receiving services and completion, such as race/ethnicity, gender, age, trade and union status, prior credit, region, cohort, and whether or not an apprentice applied for services. Among highway trades apprentices in the 2008-2019 cohorts, on average, those receiving services were 11% (+/- 3%) more likely to complete their apprenticeship than those who did not receive services (Figure 4). This average estimated effect did not vary, at a statistically significant level, across race/ethnicity and gender groups.

Among apprentices in the 2008-2013 cohorts, the marginal effect of receiving support services on completing an apprenticeship on time was 0.14 (+/- 6%): apprentices receiving services were 14% more likely to complete an apprenticeship on time, relative to those not receiving services, even after accounting for other factors associated with service receipt and on-time completion. This average estimated effect did not vary, at a statistically significant level, across race/ethnicity and gender groups or across trade.

Among all apprentices in the 2008-2019 cohorts, the independent effect of non-financial services on completion, adjusted for other types of services and factors associated with receiving services and completion, is larger than the estimated effects of receiving ready items, gas/travel, or child care (Figure 4). **Apprentices receiving non-financial services are 20% (+/- 8%) more likely to complete rather than cancel, relative to those not receiving services. Those receiving ready items are 12% (+/- 4%) more likely, those receiving gas/travel support are 7% (+/- 6%) more likely, and those receiving child care support are 11% (+/- 10%) more likely to complete.** Several differences in estimated effects of services across race/ethnicity and gender are statistically significant in adjusted models: the effect of ready items is smaller among men of color, relative to white men, while the effect of gas or travel is larger among men of color and women of color, relative to white men. The estimated effect of child care or non-financial services does not vary across race/ethnicity and gender groups.

Figure 4. Estimated Adjusted Marginal Effects of Receiving Services on Completion by Race/Ethnicity and Gender, 2008-2019 Cohorts



1. **An analysis of the results** of the department’s activities to:

- a) **increase diversity** (measure results by comparing the rate of remaining active and completing training based on sex and race/ethnicity) in the highway construction workforce;

Analysis of Improvements in Retention to Increase Diversity

Women and some racial/ethnic minority groups are less likely than white men to complete their apprenticeship on time, yet progress continues to be made. For example, among all women of color in the 2005-2013 cohorts, 28% completed on time (Figure 5). This is compared to 37% of women of color in 2010-2013 cohorts completing on time (Figure 6). Among Black men in the 2005-2013 cohorts, 19% completed on time, while 24% of Black men in the 2010-2013 cohorts completed on time. On-time completion rates are higher for all women and people of color in 2010-2013 cohorts, relative to those in the 2005-2013 cohorts. Among race/ethnic and gender groups, on-time completion rates vary across trade. For example, while the majority of apprentices in the union carpenter trade have above average on-time completion rates, Black men and women of color in the union carpenter trade have lower than average on-time completion rates. In contrast, Black men and women of color in the union laborer trade have higher than average on-time completion rates. Perhaps these trends are related to the percentage of same-race and same-gender peers in each trade: for example, Black men and women of color are underrepresented in the union carpenter trade. Alternatively, perhaps Black men and women of color, who have been historically underrepresented in the construction trades, are being better prepared for completion in the laborer trade, relative to non-laborer trades, which require additional skills and familiarity with more construction tools.

Figure 5. Percent of Apprentices in Highway Trades Completing On Time by Race/Ethnicity and Gender and Trade, 2005-2013 Cohorts

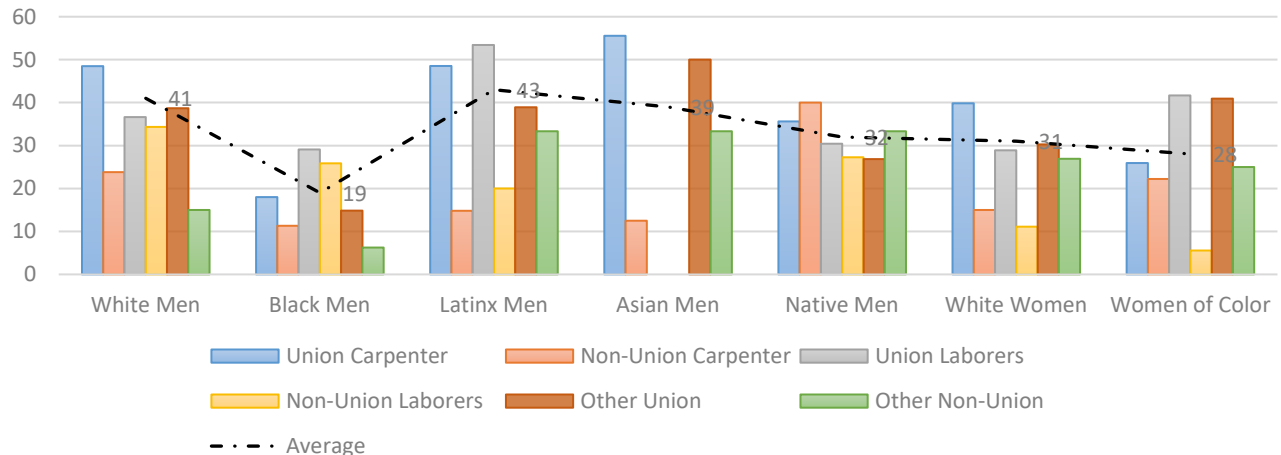
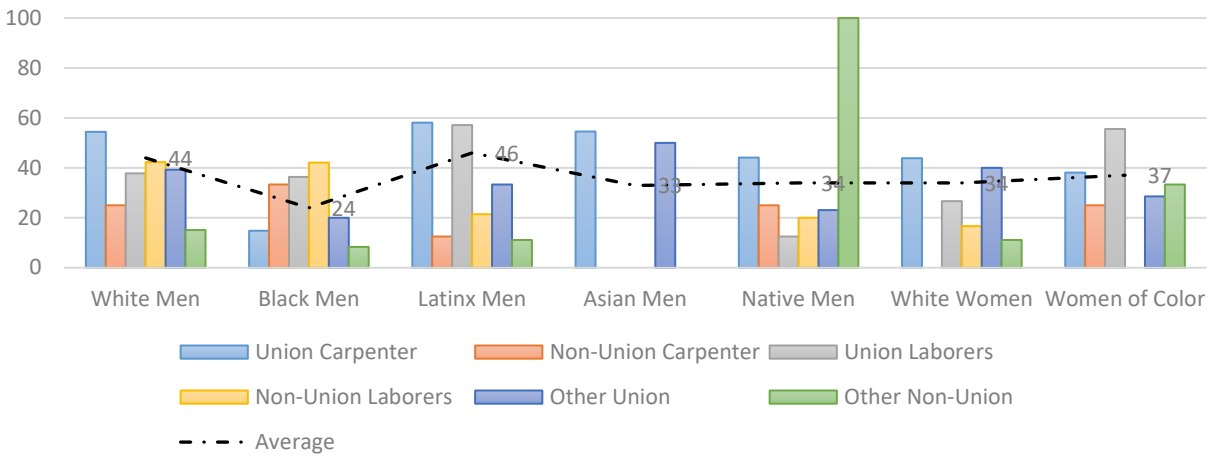


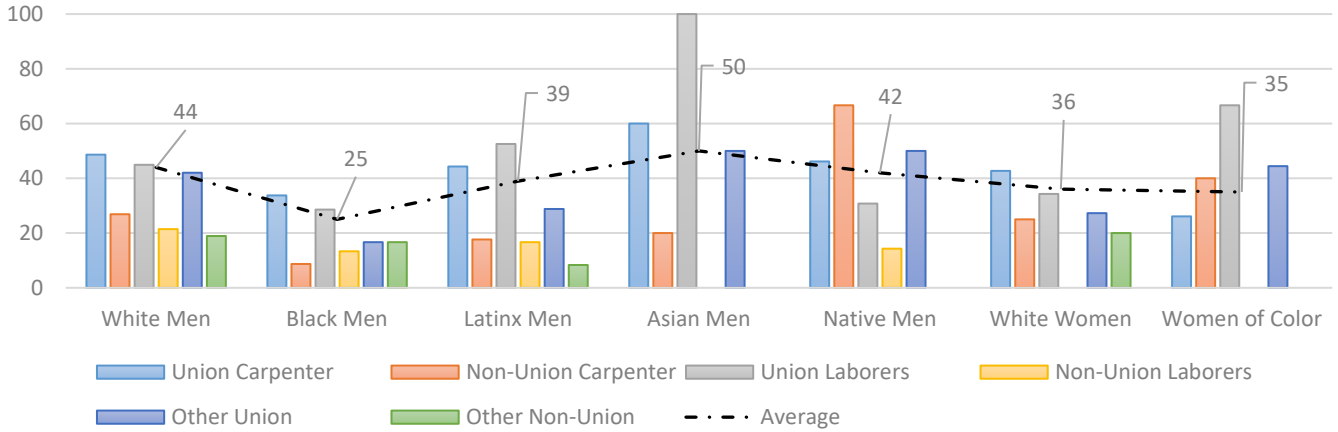
Figure 6. Percent of Apprentices in Highway Trades Completing On Time by Race/Ethnicity and Gender and Trade, 2010-2013 Cohorts



Among apprentices who completed or were cancelled, women and racial/ethnic minority apprentices (with the exception of Asian men) also have lower completion rates (Figure 7). This gap, however, varies by race/ethnicity. Black men had the lowest completion rate (25%) among apprentices active in 2018-2019 (Figure 7). Asian identified men had a higher completion rate (50%) than White men (44%), and the completion rate of Native identified men was similar (42%) to that of White men. Latino apprentices active in 2018-2019 had a completion rate of 39%, which was somewhat lower than that of White men. While the overall completion rate among apprentices active in 2018-2019 was lower than the overall completion rate of apprentices active in 2016-2017, there was greater parity in completion rates between gender and racial minorities and White men in 2018-2019.

Given the positive impact of service receipt on completion, the strategy taken by the union laborers is likely effective at increasing the retention and completion of apprentices, especially women and apprentices of color. Research on persistence emphasizes the importance of feeling supported by and cared for by one's institution (Bergman et al. 2014; Mantz and Thomas 2003; Valansuela 1999; for citations see references in Kelly and Wilkinson, October 2020). Connecting with apprentices by asking (and providing) what they need is one way to be responsive to apprentices' needs and to generate a culture that emphasizes care.

Figure 7. Percent of Apprentices in Highway Trades Completing by Race/Ethnicity and Gender and Trade, Apprentices Active 2018-2019



Reaching Targeted Populations to Increase Diversity

The Highway Construction Workforce Development Program reaches a diverse group of apprentices, although the majority of program participants are white men. While race/ethnicity and gender are not criteria for receiving services, the program has been successful in reaching disadvantaged apprentices, as shown in Figures 8 and 9. Among highway construction trades apprentices in the 2008-2019 cohorts, 505 men of color, 116 women of color, and 223 white women have received services. More than 40% of women have received services, compared to 16% of white men. Importantly, among racial/ethnic minority men, Black men received services at the highest rate, with 27% of Black men receiving services, mostly through ready items (Figure 9). Across all race/ethnic and gender groups, the most commonly received service is ready items, followed by, with an exception among women, funds for gas or travel. Women, both white women and women of color, receive non-financial support services at higher rates than men.

Figure 8. Percent and Number of Apprentices in Highway Construction Trades Receiving Services by Race/Ethnicity and Gender, 2008-2019 Cohorts

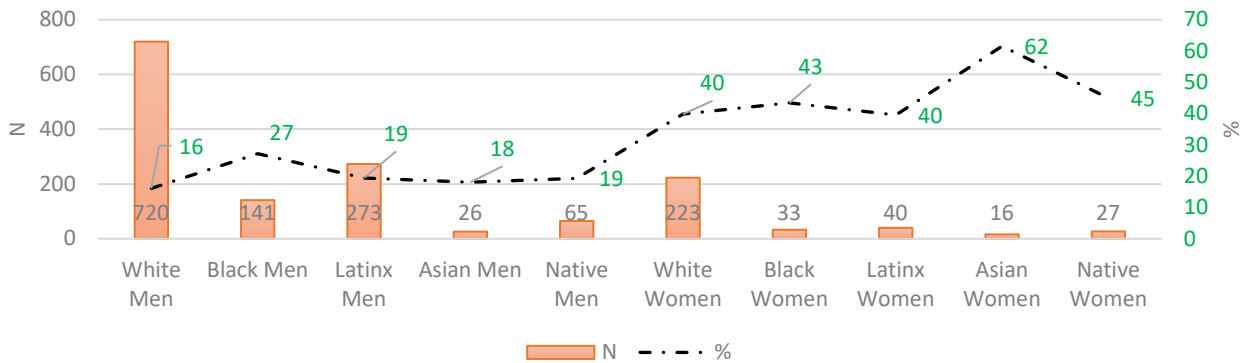
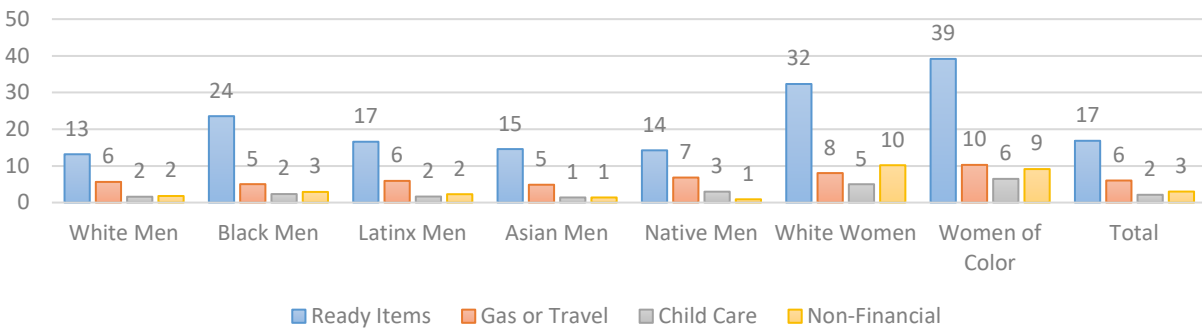


Figure 9. Percent of Apprentices in Highway Trades Receiving Workforce Development Program Services, by Race/Ethnicity and Gender and Service Type, 2008-2019 Cohorts



Most common Financial Supportive Services Provided by the Program

Trends in service receipt across race/ethnicity and gender groups were similar among apprentices active in 2018-2019 (Figure 11), with slightly higher rates of ready item receipt and slightly higher rates of gas/travel and child care receipt among White women among recently active apprentices. While women and people of color continue to receive services at higher rates than White men, the number of apprentices receiving services continues to be highest among White men: among apprentices active in 2018-2019, 413 White men received services, compared to 98 Black men, 180 Latinx men, 15 Asian men, 41 Native men, 152 White women, 18 Black women, 29 Latina women, 8 Asian women, and 18 Native women.

Financial services have a positive impact on completion and should be continued. Those receiving ready items are 12% more likely to complete rather than cancel, relative to those not receiving services, those receiving child care support are 11% more likely, and those receiving gas/travel support are 7% more likely to complete. The findings of this evaluation demonstrate that these financial services are even more effective when paired with non-financial services. Receiving ready items is a particularly important service because it has the largest impact on completion of all financial services types and it connects apprentices with the Program early on in apprenticeship, which creates opportunities for Program staff to also provide non-financial support throughout the apprenticeship. Gas and travel support is the least effective service; funds might be more effectively used to provide non-financial support.

PNCI apprenticeship administrator Azadeh Ryan describes how the supports with finding and paying for child care opened new opportunities to one of their women apprentices from a rural area. The single mother had had a hard time maintaining consistent work because she could not travel very far; the child care support from the

ODOT/BOLI program allowed her the opportunity to travel and to maintain employment. As she points out, “A lot of the time if you are a single parent, you only look for work within your small little radius so that if something happens, you can be there quickly. Having a reliable child care service affords the opportunity to [take more jobs] and the more you’re working, the quicker you progress through the apprenticeship- that is huge.” – Hegewisch, page 11.

Non-Financial Supportive Services Provided by the Program

As non-financial services have the biggest impact on completion, researchers recommend more funding should be directed towards this type of service. Among all apprentices in the 2008-2019 cohorts, those receiving non-financial services are 20% more likely to complete rather than cancel, relative to those not receiving services. In the 2020 interviews, we identified unmet needs that could potentially be addressed through non-financial supportive services (see Box 1). However, many of these issues are better addressed at a structural level (see Box 2).

Box 1. Non-financial supportive services to support retention

- How to stay consistently employed
- How to budget, apply for unemployment, and access other financial supports within and outside the trades.
- How to respond to harassment and discrimination and/or advice about how to communicate with employers and/or apprenticeship programs about the challenges of their current job assignment
- How to access mentorship and on-the-job training and/or advice about how to communicate with their employers and/or apprenticeship programs about the challenges of their current job assignment and ask for a rotation if needed
- How to communicate with their employers and/or apprenticeship programs about the challenges of working out of town and ask for a rotation

These findings suggest that many apprentices would benefit from “wrap-around” services that connect apprentices with financial and non-financial support available through the Highway Construction Workforce Development Program as well as additional support available within the trades and in broader communities.

The lost investment in cancelled apprentices is considerable. As an example, the union carpenters estimate the lost investment is \$55,000 for apprentices who terminate in the first year and \$100,000 for those who terminate in the second year (personal communication). Ultimately, a relatively small additional investment in financial and non-financial supportive services to promote retention will result in overall savings for the industry.

Interviews conducted for the 2020 evaluation also provide some additional insight into how the retention of apprentices might be better supported through structural changes to the apprenticeship system (see Box 2).

The Program completed a pilot project for the Green Dot Bystander Intervention approach to job site training for respectful workplaces and encouraged Oregon Tradeswomen to get staff training to become affiliated with the RISE-Up model from Seattle's ANEW.

During the [Green Dot] pilot study, reported levels of harassing behavior slightly decreased and reported bystander interventions (when workers perceived they were in a situation to intervene) increased. Thus, Green Dot for the Trades shows promise as a tool that can support efforts to decrease harassment on construction job sites. – Kelly & Wilkinson, August 2020, page 4.

The Committee felt that the RISE Up model achieved the most desired elements: It is scalable, clearly outlines the costs to participate, is open to tailoring and customization, covered more breadth of subjects and resources beyond the training, was created by a community partner invested in diversifying the trades, is specific for construction and is already being used in Seattle, includes clear policy influence, and was originally developed by those most impacted by jobsite culture. – Haines, et al., page 9

Box 2. Structural changes to support retention

- Revise current processes for assigning work to ensure equal access to on-the-job hours for women and people of color.
- Promote respectful workplaces through employer policies and worker training.
- Create a system for reporting harassment and discrimination across job sites.
- Promote teaching and mentorship through employer policies and worker training.
- Provide opportunities for apprentices to rotate out of jobs where they are not learning the skills of the trade.
- Provide opportunities for apprentices to rotate out of jobs that require long hours, are far from home, not ideal schedules, or are otherwise not a good fit.
- Require employers to pay for apprentices' travel expenses for out of town work.

- b) **prepare individuals** (measure results by remaining active and completing an apprenticeship program) interested in entering the highway construction workforce by providing:
- i) *Pre-apprenticeship programs; (preparation of apprenticeship seekers)*
 - ii) *Pre-employment counseling; (preparation of apprenticeship applicants and pre-apprentice graduates)*
 - iii) *Orientations on the highway construction industry; (career exploration)*
 - iv) *Basic skills improvement classes; (preparation of apprenticeship seekers)*
 - v) *Career counseling; (preparation of apprenticeship seekers)*
 - vi) *Remedial training; (preparation of apprenticeship seekers)*
 - vii) *Entry requirements for training programs; (preparation of apprenticeship seekers)*

viii) Supportive services and assistance with transportation; (support for registered apprentices)

ix) Child care and other special needs; (support for registered apprentices) and

x) Job site mentoring and retention services (support for registered apprentices).

Analysis of Improvements in Recruitment and Preparing Individuals

The Oregon highway construction workforce is continuing to become more diverse, with increased integration of women and people of color in apprenticeships. As shown in Figure 10, in 2018/2019 the percentage of new apprentices in the highway construction trades who were white men dropped to 52%, a decline of 16 percentage points since 2007/2008, and a decline of five percentage points since 2017/2018 (panel A). Notably, the percentage of new apprentices who are white men is lower in the highway construction trades than in all trades combined (panel B).

As a result of increased recruitment, women and people of color comprise a growing proportion of those completing apprenticeships (Figure 11). In the highway construction trades (panel A), 34% of apprentices completing in 2017/2018 and in 2018/2019 were women or people of color, compared to only 24% in 2010/2011. Women and people of color comprise a larger percentage of apprentices completing in the highway construction trades than in all trades combined (panel B).

Figure 10. New Apprentices in Construction Trades in Oregon by Race/Ethnicity and Gender, 2005-2019 Cohorts (OAS Data)

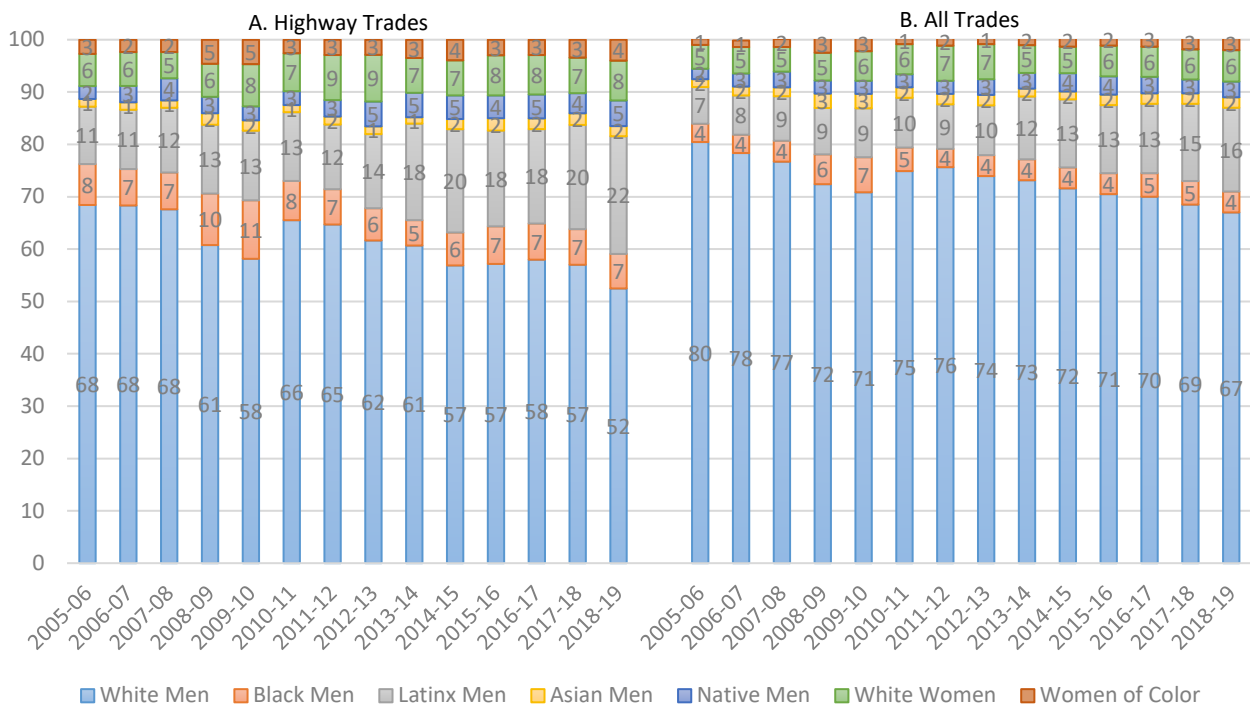
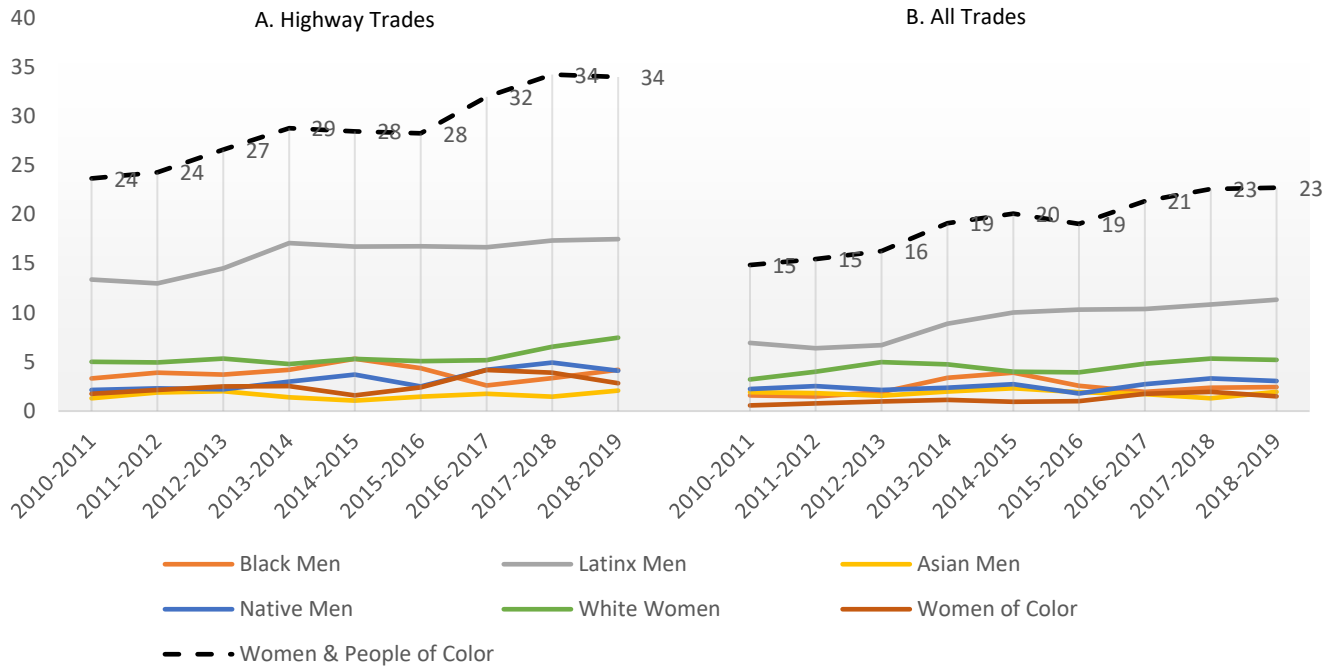
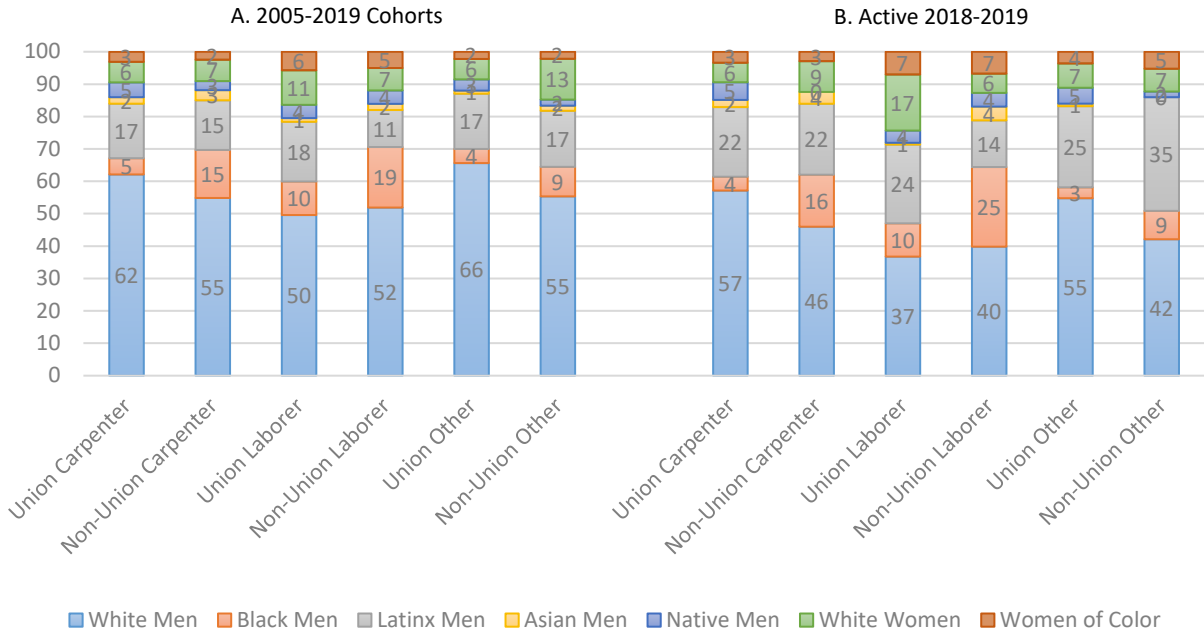


Figure 11. Percentage of Apprentices Completing Who are Women or People of Color, 2010-2019 (OAS Data)



Importantly, as seen in Figure 12, the percentage of new apprentices in the highway construction trades who are women or people of color varies across trade. The laborer trade, both union and non-union, has the lowest percentage of white men among 2005-2019 cohorts (panel A) and among apprentices active in 2018-2019 (panel B). The percentage of white men is highest in the carpenter (union) trade and other (union) trades. This is significant given differences in compensation across trades, with laborers receiving the lowest hourly pay. There are also important differences across race/ethnicity, with Black men over-represented in the laborer (non-union) trade and women active in 2018-2019 (panel B) also over-represented in the laborer trade.

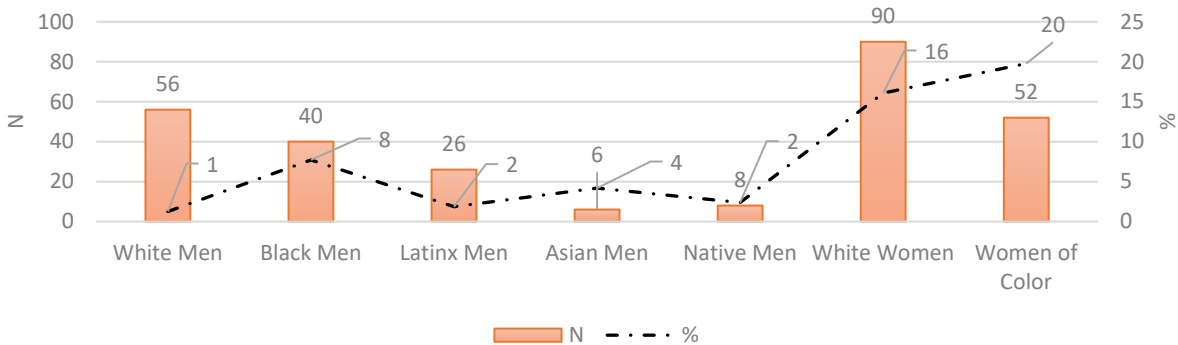
Figure 12. New Apprentices in Highway Trades by Race/Ethnicity and Gender by Trade, 2005-2019 Cohorts and Active 2018-2019 (OAS Data)



Recruitment through pre-apprenticeship

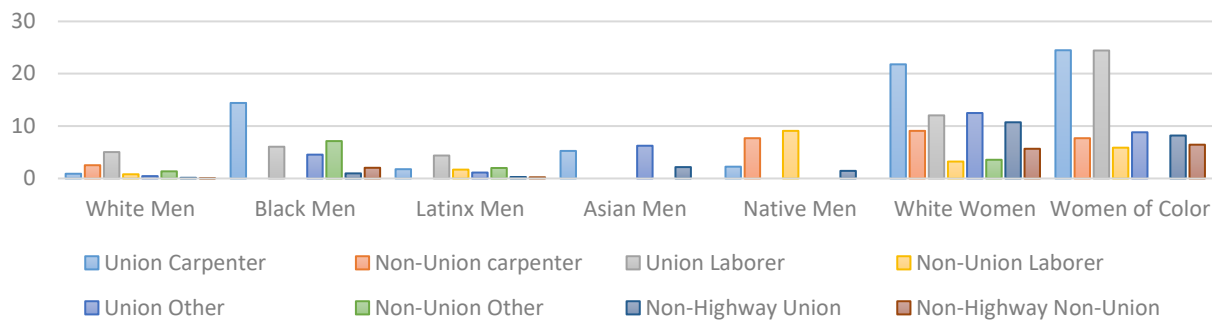
Pre-apprenticeship programs funded through the Highway Construction Workforce Development Program have contributed to the increased numbers of women in the highway construction trades. In the 2008-2019 cohorts of new apprentices, 90 white women and 52 women of color entered a highway a construction apprenticeship after completing a pre-apprenticeship, representing 16% of all white women and 20% of all women of color apprentices in the 2008-2019 cohorts.

Figure 13. Percent and Number of Apprentices in Highway Construction Trades Completing a Pre-Apprenticeship by Race/Ethnicity and Gender, 2008-2019 Cohorts



Pre-apprenticeship classes are also helping to channel more women and more Black men into non-laborer trades, especially into the carpenter (union) trade (see Figure 14).

Figure 14. Percent of Apprentices in Highway Trades Completing Pre-Apprenticeship by Race/Ethnicity and Gender, 2008-2019 Cohorts (OAS Data)



The Program has been working with the office of Continuing and Professional Education at Oregon State University to build online training modules from the classroom components of pre-apprenticeship training. We hope by doing so we will be able to reach a greater number of pre-apprentices, including more Oregonians who are living in rural communities.

2. **A description of:**

- a) The **amount available** to the department from federal funds for the activities and the **amount expended** by the department for those activities;

Program Funding

Oregon law requires ODOT to expend one-half of one percent up to \$2.1 million of the federal funds ODOT receives under 23 U.S.C. 140(b) to increase diversity in the highway construction workforce and prepare individuals interested in entering the highway construction workforce.

2017-2019 Biennium:

Total Federal Funds Available for Activities: \$2,100,000

Total Amount Expended (July 1, 2017 – June 30, 2019): \$2,049,435.14

2019-2021 Biennium:

Total Federal Funds Available for Activities: \$2,100,000

Total Amount Expended July 1, 2019 through September 30, 2020: \$759,152.99

and

b) The **performance outcomes** achieved from each activity **including the numbers of persons receiving services, training and employment.**

i) *Pre-apprenticeship programs;(preparation of apprenticeship seekers)*

Persons Receiving Service

October 1, 2018 – September 30, 2019: 90

October 1, 2019 – September 30, 2020: 55

ii) *Pre-employment counseling;(preparation of apprenticeship applicants and pre-apprentice graduates)*

Persons Receiving Service

October 1, 2018 – September 30, 2019: 90

October 1, 2019 – September 30, 2020: 55

iii) *Orientations on the highway construction industry;(career exploration)*

Persons Receiving Service

October 1, 2018 – September 30, 2019: 90

October 1, 2019 – September 30, 2020: 55

iv) *Basic skills improvement classes; (preparation of apprenticeship seekers)*

Persons Receiving Service

October 1, 2018 – September 30, 2019: 90

October 1, 2019 – September 30, 2020: 55

v) *Career counseling; (preparation of apprenticeship seekers)*

Persons Receiving Service

October 1, 2018 – September 30, 2019: 90

October 1, 2019 – September 30, 2020: 55

vi) *Remedial training; (preparation of apprenticeship seekers)*

Persons Receiving Service

October 1, 2018 – September 30, 2019: 90

October 1, 2019 – September 30, 2020: 55

vii) *Entry requirements for training programs; (preparation of apprenticeship seekers)*

Persons Receiving Service

October 1, 2018 – September 30, 2019: 90

October 1, 2019 – September 30, 2020: 55

viii) *Supportive services and assistance with transportation; (support for registered apprentices)*

Persons Receiving Service

October 1, 2018 – September 30, 2019: 42

October 1, 2019 – September 30, 2020: 29

ix) *Child care and other special needs; (support for registered apprentices) and*
Persons Receiving Service
October 1, 2018 – September 30, 2019: 41
October 1, 2019 – September 30, 2020: 40

x) *Job site mentoring and retention services (support for registered apprentices).*
Persons Receiving Service
October 1, 2018 – September 30, 2019: 200
October 1, 2019 – September 30, 2020: 149

3. The “activities” are arranged into a range of *service types* that fall along a continuum based on where individuals are in the process of being prepared to enter the highway construction workforce as journey workers. The service types are directed toward providing (A) outreach, recruitment, and pre-apprenticeship training; and (B) apprentice retention.

Summary

The Program continues to show progress in recruiting, training, and retaining diverse workers in highway construction trades as measured by the third party evaluation of researchers at Portland State University. Areas of concern include the continued low completion rate for Black men, the continued reporting of harassment and discrimination and failure to provide adequate training opportunities and supervision on the job for women apprentices and apprentices of color. The Program is working to address this by increasing the capacity of respectful workplace training available in the highway construction trades.

References

Haines, Kelly, et al., October 2020, *Regional Respectful Workplace Model Review Committee Recommendations: Tools to Address Jobsite Culture in Construction*, Final Report.

Hegewisch, Ariane, May 2020, *Child Care Supports for the Construction Trades: Building and Sustaining Diversity in Oregon*, Final Report.

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