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Data Bulletin

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Trends of Apprenticeships in the Construction Trades

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OVERVIEW

For decades, *registered apprenticeship programs*–career pathways where construction employers prepare the industry's workers through training and paid experience--have helped produce skilled and experienced workers. Overseen by the U.S. Department of Labor or a State Apprenticeship Agency, these programs are intended to reflect the communities where they operate to ensure access, equity, and inclusion. According to the report "*The State of Registered Apprenticeship Training in the Construction Trades*" from the Institute for Construction Employment Research (ICERES), the number of people registering for an apprenticeship (*new registrations*) in a construction trade increased 17% from 2015 to 2021.

This Data Bulletin provides information on apprenticeship registrations in construction from 2015 to 2021 (calendar years) as well as recent *apprentice status* (i.e., *complete*, *cancellation*) of those who started between 2010 and 2016. Apprenticeships were examined by *program sponsor* (i.e., *joint, non-joint*), demographics (i.e., gender, ethnicity, race, age), *trade*, apprentice status, and *training model* (i.e., *time-based*, *hybrid*, *competency-based*). Given the importance of recruiting, training, and retaining workers from diverse backgrounds to the industry, this Data Bulletin places special emphasis on women and Hispanic apprentices, two of the growing demographic groups in construction. The findings here build upon those in the ICERES report. Data are from (1) the U.S. Department of Labor Employment and Training Administration's Complete Data Extract through the second quarter of Fiscal year 2022, (2) the Washington State Department of Labor and Industries' L&I Apprenticeship Apprentice Details, and (3) the Oregon Bureau of Labor and Industries. Due to rounding or reasons specified in chart footnotes, totals may not align with apprenticeship totals in chart 1 and percentages may not sum to 100%. States represented in each chart vary based on data availability and are listed in Chart Notes.

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[2]Institute for Construction Employment Research (ICERES).

THIS ISSUE

This issue examines apprenticeships in construction by program sponsor, training model, median wage, and demographics, including a deeper look at women and Hispanic apprentices.

KEY FINDINGS

From 2015 to 2021, there were 742.4 thousand (K) new apprenticeship registrations in the construction trades.
Chart 1

Approximately 40% of new apprentices were 25 to 34 years old when they started their program.
Chart 3

From 2015 to 2021, women accounted for 4.1% of new apprentice registrations.
Chart 4

Hispanics accounted for over a quarter of new apprenticeship registrations (28.7%), and drywall workers had the highest percentage of Hispanic apprentices (65.9%).
Chart 7

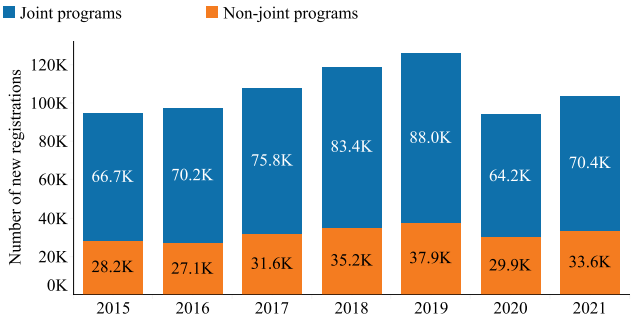
From 2015 to 2021, Hispanic female apprentices increased 193.2%.
Chart 8

NEXT DATA BULLETIN

Falls in Construction

First, new apprenticeship registrations were examined by program sponsor (chart 1), including joint (sponsored jointly by union and employer) and non-joint (sponsored by employer). From 2015 to 2021, there were 742.4 thousand (K) new joint and non-joint apprenticeship registrations in the construction trades, of which 104.0K were in 2021. In 2021, the majority of these registrations (67.7%; n=70.4K) were in joint programs. Over this six-year period, non-joint program registrations increased 19.2% (28.2K to 33.6K), while joint program registrations increased 5.4% (66.7K to 70.4K). *Mixed programs* accounted for 270 registrations from 2015 to 2021 (not shown in chart).

1. New apprenticeship registrations in construction trades by program type*, 2015-2021



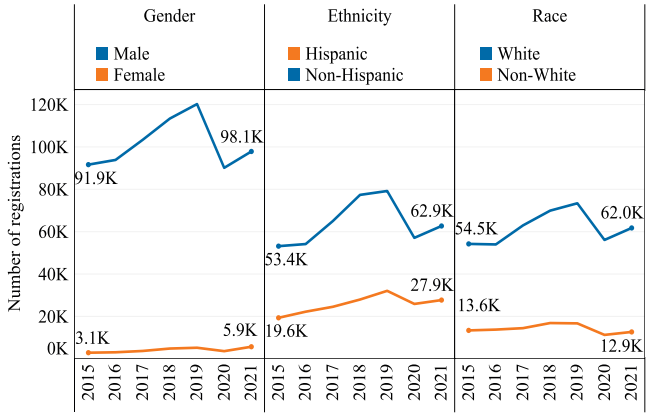
Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2, (2) Washington State Department of Labor and Industries, L&I Apprenticeship Apprentice Details, and (3) Oregon Bureau of Labor and Industries.*

**Mixed-Programs excluded due to small size.*

Note: See Chart Notes (page 7) for a list of states excluded.

Next, demographics of registered apprentices were evaluated over time (chart 2). Most registrations with reported demographics were for male (95.9%; n=712.1K), non-Hispanic (71.3%; n=450.3K), and white (81.2%; n=433.9K) apprentices (data not shown). From 2015 to 2021, there were increases in the number of female (+91.2%; 3.1K to 5.9K) and Hispanic (+42.8%; 19.6K to 27.9K) apprenticeship registrations. However, there was a 5.3% decrease in registrations among non-white apprentices (13.6K to 12.9K).

2. Apprenticeship registrations* by demographics, 2015-2021



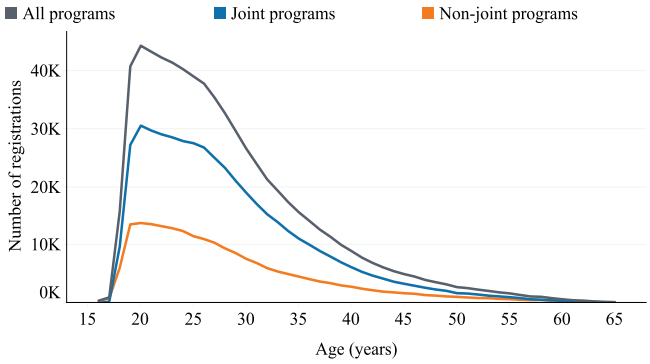
Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2, (2) Washington State Department of Labor and Industries, L&I Apprenticeship Apprentice Details, and (3) Oregon Bureau of Labor and Industries.*

**Values may not sum to totals shown in chart 1 due to unreported or missing values, as well as differences in states that reported gender, ethnicity, and race data.*

Note: See Chart Notes (page 7) for a list of states excluded.

Reported age at start of apprenticeship was examined from 2015 to 2021 (chart 3). Across all programs and joint programs, over 40% of apprentices were 25 to 34 years old at start (40.9% and 42.1%, respectively). In contrast, 18 to 24 year olds accounted for the largest percentage (40.1%) of apprentices starting in non-joint programs.

3. Apprentice age at registration, 2015-2021

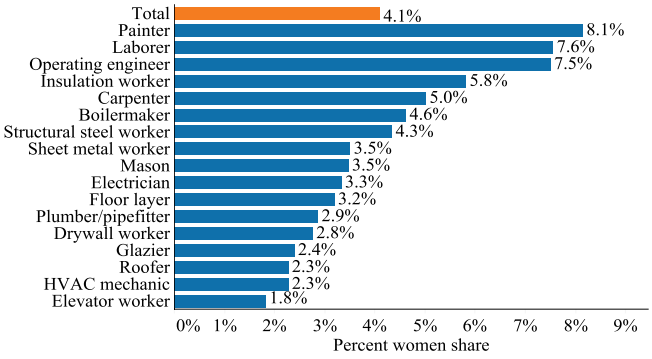


Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2, (2) Washington State Department of Labor and Industries, L&I Apprenticeship Apprentice Details, and (3) Oregon Bureau of Labor and Industries.*

Note: See Chart Notes (page 7) for a list of states excluded.

Next, the share of women in new apprentice registrations by trade was assessed (chart 4). Overall, women accounted for 4.1% of apprentices. Painters had the highest percentage of women at 8.1%, nearly double the overall figure.

4. Women's share in new apprentice registrations by trade*, 2015-2021



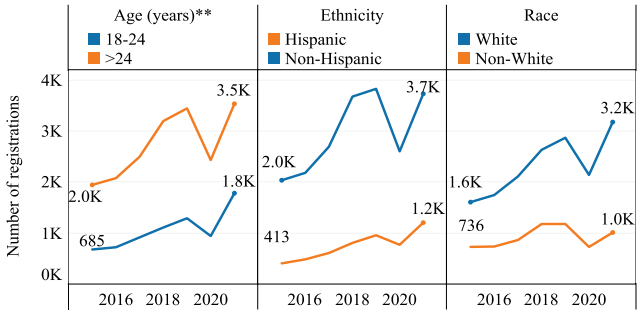
Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2, (2) Washington State Department of Labor and Industries, L&I Apprenticeship Apprentice Details, and (3) Oregon Bureau of Labor and Industries.*

** Excludes other trades.*

Note: See Chart Notes (page 7) for a list of states excluded.

The demographics of women apprentices were then evaluated (chart 5). From 2015 to 2021, apprenticeship registrations increased fastest among women who were 18 to 24 years (+161.0%, 685 to 1.8K), Hispanic (+193.2%, 413 to 1.2K), and white (+97.3%, 1.6K to 3.2K).

5. Apprenticeship registrations among women by demographics*, 2015-2021



Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2, (2) Washington State Department of Labor and Industries, L&I Apprenticeship Apprentice Details, and (3) Oregon Bureau of Labor and Industries.*

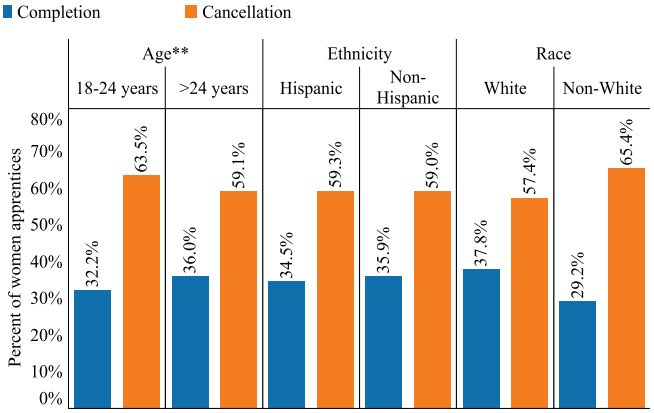
** Values may not sum to totals shown in chart 2 due to differences in states that reported gender, ethnicity, and race data.*

*** Apprentices under 18 years old were excluded from chart due to small size.*

Note: See Chart Notes (page 7) for a list of states excluded.

Women apprentices who registered between 2010 and 2016 were examined by apprenticeship status (chart 6). The ICERES report found women had lower completion rates than men (joint program 37.6% versus 45.0%; non-joint program 23.4% versus 34.2%). Among women, those over 24 years of age had a higher completion percentage than those 18 to 24 years old (36.0% versus 32.2%, respectively) by year 2022. Similarly, white apprentices had a higher completion rate in 2022 than non-whites (37.8% versus 29.2%).

6. Women apprentices by apprentice status and demographics, 2022*^



Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2, (2) Washington State Department of Labor and Industries, L&I Apprenticeship Apprentice Details, and (3) Oregon Bureau of Labor and Industries.*

** Apprentice status recorded in 2022 for apprentices who started between 2010 and 2016.*

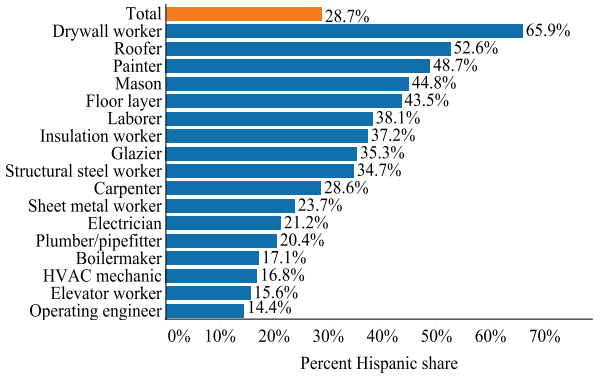
^ Values may not sum to 100% due to the exclusion of still active, other exit, and not known.

*** Apprentices under 18 years old were excluded from chart due to small size.*

Note: See Chart Notes (page 7) for a list of states excluded.

Hispanic apprentices' share of new apprentice registrations by trade were analyzed next (chart 7). While Hispanics accounted for 28.7% of all new registrations, they comprised 65.9% of new drywall registrations, the highest of any trade.

7. Hispanic apprentices' share in new registrations by trade*, 2015-2021



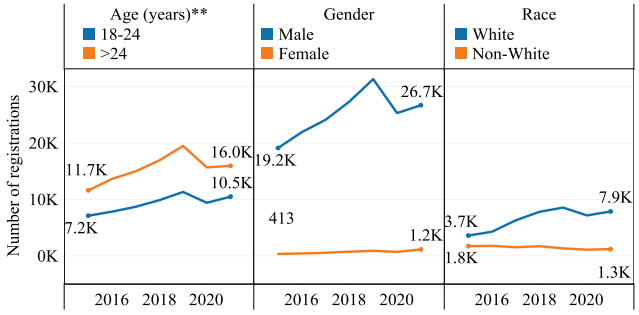
Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2, (2) Washington State Department of Labor and Industries, L&I Apprenticeship Apprentice Details, and (3) Oregon Bureau of Labor and Industries.*

** Excludes other trades.*

Note: See Chart Notes (page 7) for a list of states excluded.

Demographics of Hispanic apprentices were then assessed (chart 8). Of these apprentices, the fastest increases from 2015 to 2021 were among those who were female (193.2%, 413 to 1.2K), and white (116.6%, 3.7K to 7.9K).

8. Hispanic apprenticeship registrations by demographics*, 2015-2021



Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2, (2) Washington State Department of Labor and Industries, L&I Apprenticeship Apprentice Details, and (3) Oregon Bureau of Labor and Industries.*

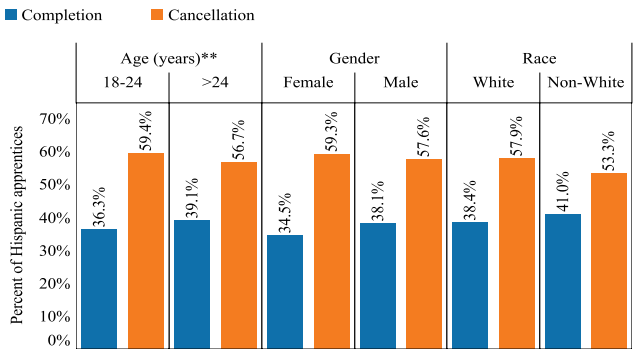
** Values may not sum to totals shown in chart 2 due to differences in states that reported gender, ethnicity, and race data.*

*** Apprentices under 18 years old were excluded from chart due to small size.*

Note: See Chart Notes (page 7) for a list of states excluded.

From 2010 to 2016, the ICERES report found Hispanic apprentices had a lower completion rate than non-Hispanic apprentices (38.0% versus 43.5%). To explore this finding, the demographics of Hispanic apprentices who registered between 2010 and 2016 were evaluated by apprenticeship status (chart 9). In 2022, Hispanic apprentices who were over 24 years old (39.1%), male (38.1%), and non-white (41.0%) had higher completion rates than those who were 18-24 years old (36.3%), female (34.5%), and white (38.4%).

9. Hispanic apprentices by apprentice status and demographics, 2022*^



Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2, (2) Washington State Department of Labor and Industries, L&I Apprenticeship Apprentice Details, and (3) Oregon Bureau of Labor and Industries.*

** Apprentice status recorded in 2022 for apprentices who started between 2010 and 2016.*

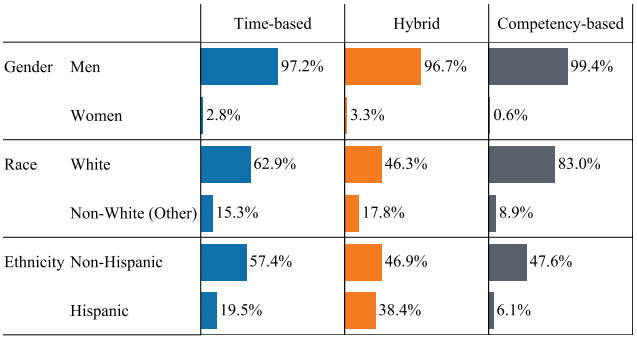
^ Values may not sum to 100% due to the exclusion of still active, other exit, and not known.

*** Apprentices under 18 years old were excluded from chart due to small size.*

Note: See Chart Notes (page 7) for a list of states excluded.

Apprentice demographics were then examined by training model (chart 10). Apprentices in competency-based training models (those based on skill acquisition) were more likely to be male (99.4% of participants) and white (83.0%) than those in time-based (based on completion of hours) or hybrid (based on skill and completion of hours) models. However, this finding should be interpreted with caution due to the small number of registrations in competency-based apprenticeships. Conversely, the hybrid training model had the lowest percentage of male (96.7%), white (46.3%), and non-Hispanic (46.9%) apprentices across the three models.

10. Training model by demographics*, 2015-2022



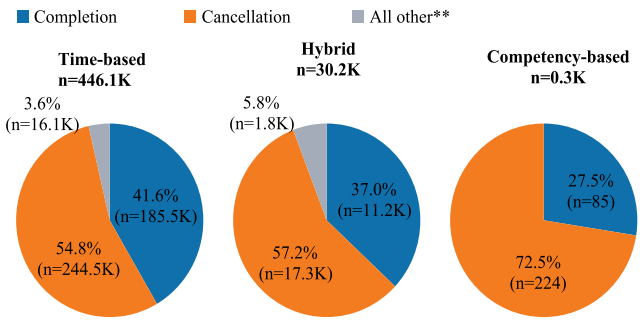
Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2.*

**Percentages may not sum to 100%, as repondents who did not report gender, race or ethnicity were excluded from this chart.*

Note: See Chart Notes (page 7) for a list of states excluded.

There were differences in the completion percentage between the training models (chart 11). Time-based models had the highest percentage of completions at 41.6% (n=185.5K), followed by hybrid (37.0%; n=11.2K) and competency-based (27.5%; n=85).

11. Apprentice status by training model*, 2022^



Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2.*

** Not Known excluded due to small size.*

^ Apprentice status recorded in 2022 for apprentices who started between 2010 and 2016.

***Category includes still active, other exit, and not known.*

Note: See Chart Notes (page 7) for a list of states excluded.

Overall, apprentices completing joint programs had a higher median hourly wage than those completing non-joint programs ($34.15 versus $20.70; chart 12). Among women apprentices, those who completed joint apprenticeships earned an average $12.07 more an hour than their non-joint counterparts ($31.75 versus $19.68, respectively).

12. Median hourly wage at exit by demographics and program type, 2022*

		Joint program	Non-joint program
Total	All Construction	$34.15	$20.70
Gender	Female	$31.75	$19.68
	Male	$34.20	$20.70
Age group**	18-24 years	$33.83	$20.08
	>24 years	$34.24	$21.00
Race	White	$33.67	$20.14
	Non-White	$33.22	$20.00
Ethnicity	Hispanic	$36.29	$21.00
	Non-Hispanic	$33.40	$20.14
Education	Less than HS	$31.60	$19.00
	HS or Equivalent	$34.20	$20.25
	Some College^	$35.41	$22.44
	Bachelor's Degree or Higher	$22.00	$22.50

Source: *(1) U.S. Department of Labor, Employment and Training Administration, Complete Data Extract through Fiscal year 2022Q2.*

** Recorded 2022 wage for apprentices who started from 2010-2016 and completed programs.*

***Apprentices under 18 years old were excluded from chart due to small size.*

^ Includes an Associate's degree.

Note: See Chart Notes (page 7) for a list of states excluded.

Given the labor shortage in construction and the 2021 passage of the Infrastructure Investment and Jobs Act (IIJA), recruiting and retaining skilled workers remains a top priority in the industry. Aside from a sharp pandemic-related decrease in 2020, new apprenticeship registrations in construction have steadily increased from 2015 to 2021.

While men and non-Hispanics accounted for most apprenticeship registrations in construction from 2015 to 2021, registrations among women and Hispanics grew. The increases observed among these two groups may be indicators of successful outreach, as the industry has been making efforts to diversify the workforce.

Painters accounted for the largest share of new apprentice registrations among women, while drywall workers had the largest share of new apprentice registrations among Hispanics. Elevator and HVAC workers were among the lowest share of new apprentices among both women and Hispanics highlighting an opportunity for apprentice recruitment in these trades.

Registered apprentice completion rates among women were higher among older (>24 years old) and white apprentices. Completion rates among Hispanic apprentices were higher among those who were older, male, and non-white. Observing completion rates by demographics allows employers and registered apprentice programs to improve and develop new strategies for reaching and retaining apprentices with lower completion rates.

Of the three registered apprentice training models, the hybrid model had the highest percentage of women, non-whites, and Hispanics, while the time-based model had the highest completion rate. These insights may help improve recruitment and retainment strategies among those currently underrepresented in construction.

It remains essential for construction employers to hire skilled workers to catch up with the growing demand in the industry. To improve safety on the job site, CPWR, NIOSH, and OSHA have developed materials to address persistent and emerging concerns in the industry. In addition, CPWR has prepared a webpage that compiles our Spanish language resources.

ACCESS THE CHARTS & MORE

View the charts in PowerPoint and the data underlying the charts in Excel. Downloading will start when you click on each link. These files can also be found under the Data Bulletin at: https://www.cpwr.com/research/data-center/data-reports/. See our updated Construction Fatality Map and Severe Injury dashboards.

DEFINITIONS

- ***Apprentice status*** *– reported as of Q2 of fiscal year 2022.*
  - ***Active*** *– registrants still in training.*
  - ***All other*** *– other forms of exit, almost exclusively representing suspensions and transfers.*
  - ***Cancellation*** *– left training before the completion of all on-the-job and in-class requirements.*
  - ***Completion*** *– finished all on-the-job and in-class requirements and have received certification.*
- ***New registrations*** *– the number of people registering for an apprenticeship.*
- ***Occupation/Trade*** *– were categorized by ICERES in the most recent "The State of Registered Apprenticeship Training in the Construction Trades" report. Occupation categories with more than one occupation are listed below:*
  - ***Carpenter*** *– includes assembler-installers, cabinet makers, carpenters, carpenters (heavy/highway), carpenters (commercial/residential, form builder carpenters, millwrights, pile drivers, and scaffold erectors.*
  - ***Drywall worker*** *– includes acoustical specialist, drywall applicator/finishers, exterior/interior specialists, lathing specialist, and tapers.*
  - ***Electrician*** *– includes electricians, electricians/wireman inside/outside, electricians/wireman residential/commercial, limited energy electricians/technicians, linemen, line erectors/installers, maintainers, powerline electricians/wiremen, substation*

electricians/wiremen, and telecommunications technician.

- ***Elevator worker*** *– includes elevator constructors/mechanics/repairers and elevator/escalator constructors/mechanics.*
- ***Floor layer*** *– includes floor coverers/layers and linoleum/carpet/resilient tile layers.*
- ***HVAC*** *– includes environmental control system installers/servicers, heating and air conditioning installers/servicers/mechanics, HVAC technicians/servicers/mechanics, oil burner installers/servicers, and refrigeration and air conditioning mechanics/repairers.*
- ***Insulation worker*** *– includes asbestos workers, composite plastic fabricators, firestop containment workers, heat and frost insulators, insultation applicators/workers, and pipe coverers and insulators.*
- ***Laborer*** *– includes construction craft laborers, home performance laborers, laborers, and maintenance technician municipal, and traffic control laborers.*
- ***Mason*** *– includes bricklayers, cement masons/finishers, marble setters/finishers, plasterers, stonemason, terrazzo workers, tile setters/finishers, and tuckpointers, cleaners, and caulkers.*
- ***Operating engineer*** *– includes construction/universal equipment operators/mechanics, crane operators, drilling machine operators, grading and paving operators, hoisting engineers, and operating engineers.*
- ***Painter*** *– includes decorators, displayer/tradeshow workers, painters, paperhangers, pavement stripers, sign makers/erectors, and tradeshow workers.*
- ***Plumber/pipefitter*** *– includes fitters, gas-main fitters, landscape technicians, pipefitters, plumbers, sprinkler fitters, steam fitters, and water/sewer service mechanics.*
- ***Structural steel worker*** *– includes iron workers, ornamental iron workers, and reinforcing metal workers.*

- ***Program sponsor*** *– describes who sponsors the apprenticeship program which includes administering and running. Definitions come from the "The State of Registered Apprenticeship Training in the Construction Trades" ICERES report.*
  - ***Joint*** *– sponsored jointly by trade unions and employers that are signatory to collective bargaining agreements (or in much fewer numbers a single signatory employer).*
  - ***Mixed*** *– Include joint and non-joint stakeholders only occurring in Oregon.*
  - ***Non-joint*** *– unilaterally sponsored without the participation of a union.*
- ***Registered apprenticeship program*** *– a career pathway where employers develop and prepare their future workforce through training and paid work experience. Find more information at: https://www.apprenticeship.gov/employers/registered-apprenticeship-program.*
- ***Training models*** *– three commonly used program delivery methods for how the apprentice obtains their skills. More information can be found: https://www.apprenticeship.gov/sites/default/files/dol-teacher-registered-apprenticeship-terms-factsheet-v03.pdf.*
  - ***Competency-based*** *– measures skill acquisition through the individual apprentice's successful demonstration of acquired skills and knowledge, as verified by the program sponsor.*
  - ***Hybrid*** *– measures the individual apprentice's skill acquisition through a combination of specified minimum number of hours of on-the-job learning and the successful demonstration of competency as described in a work process schedule.*
  - ***Time-based*** *– measures skill acquisition through the individual apprentice's completion of at least 2,000 hours of on-the-job learning as described in a work process schedule.*

DATA SOURCES

Oregon Bureau of Labor and Industries.

U.S. Department of Labor Employment and Training Administration's Complete Data Extract through the second quarter of Fiscal year 2022.

Washington State Department of Labor and Industries' L&I Apprenticeship Apprentice Details.

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CHART NOTES

- Charts 1, 3, 4, and 7 include data from all states except:
  - DC, DE, KS, ME, MN, MT, NY, VA, and VT.
  - Chart 3 is also missing data from WA.
- Data in Charts 2, 5, 6, 8, 9, and 10 varied by demographic category.
  - Gender/Ethnicity include data from all states except.
    - DC, DE, KS, ME, MN, MT, NY, VA, and VT.
      - Chart 10 also missing OR and WA.
  - Age includes data from all states except:
    - DC, DE, KS, ME, MN, MT, NY, VA, VT, and WA.
  - Race includes data from all states except:
    - CT, DC, DE, KS, MA, ME, MN, MT, NC, NY, VA, and VT.
      - Chart 10 also missing OR and WA.
- Chart 11 includes data from all states except:
  - DC, DE, KS, ME, MN, MT, NY, OR, VA, VT, and WA.
- Chart 12 includes data from all states except:
  - CT, DC, DE, KS, MA, ME, MN, MT, NY, OR, VA, VT, and WA.

ACKNOWLEDGEMENTS

We would like to thank ICERES for collaborating with us on this Data Bulletin building on their "*The State of Registered Apprenticeship Training in the Construction Trades*" report. Click here for their report.

ABOUT THE CPWR DATA CENTER

The CPWR Data Center is part of CPWR–The Center for Construction Research and Training. CPWR is a 501(c)(3) nonprofit research and training institution created by NABTU, and serves as its research arm. CPWR has focused on construction safety and health research since 1990. The Data Bulletin, a series of publications analyzing construction-related data, is part of our ongoing surveillance project funded by the National Institute for Occupational Safety and Health (NIOSH).

Besides cpwr.com, visit CPWR's other online resources to help reduce construction safety and health hazards:

- Choose Hand Safety
  https://choosehandsafety.org/
- Construction Safety and Health Network
  https://safeconstructionnetwork.org/
- Construction Solutions
  https://www.cpwrconstructionsolutions.org/
- Construction Solutions ROI Calculator
  https://www.safecalc.org/
- COVID-19 Construction Clearinghouse
  https://covid.elcosh.org/index.php
- COVID-19 Exposure Control Planning Tool
  https://www.covidcpwr.org
- Electronic Library of Construction Occupational Safety and Health
  https://www.elcosh.org/index.php
- eLCOSH Nano
  https://nano.elcosh.org/
- Exposure Control Database
  https://ecd.cpwrconstructionsolutions.org/
- Nano Safety Data Sheet Improvement Tool
  https://nanosds.elcosh.org/
- Safety Climate - Safety Management Information System (SC-SMIS)
  www.scsmis.com
- Stop Construction Falls
  https://stopconstructionfalls.com/
- Work Safely with Silica
  https://www.silica-safe.org/

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