

Demographic Analysis of the Healthcare, Manufacturing and Skilled Trades Industries

Produced for Partners in Diversity



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EXECUTIVE SUMMARY

While the American economy has been characterized by increasing labor-market polarization over the past decade, recent growth in mid-wage, mid-skill jobs holds promise for workers looking for an opportunity to earn a self-sufficient wage.

By July of this year, the economy had added over 900,000 middle-income positions, matching the pace of growth in high-wage fields, and outpacing growth in low-wage occupations (Chandra and Stilwell, 2014). Many of these mid-wage and mid-skill jobs can be found in healthcare, production, and the skilled trades, specifically construction and extraction, and installation, maintenance, and repair.

Many of these jobs offer an opportunity to earn higher wages than low-skill jobs but don't require a significant investment in education. Some might require a post-secondary credential or an associate degree, but many require only a high school diploma. These jobs can therefore offer a path to self-sufficiency that may be overlooked by some workers, particularly people of color and English language learners (ELL) who may face barriers to formal higher education.

The purpose of this report is to investigate the extent to which these occupations might offer opportunity for people of color and English language learners. The key questions of the study are:

- What is the percentage of people of color in the manufacturing, skilled trades, and health care fields compared to the total employed workforce?
- Which occupations in these fields most commonly employ people of color and noncitizens?
- What is the wage profile within these fields?
- How common are English language learners among these occupations?

To answer these questions, we use several data sources, including the U.S. Census Bureau's Equal Employment Opportunity (EEO) file, a special tabulation of the American Community Survey (ACS), to identify and describe people working in over 200 occupations within these four sectors.

The most recent EEO data file compiles ACS data from the years 2006 to 2010. The occupations we

include are only those that require no more than two years of formal post-secondary education. We also use several other data sources to obtain information about occupations and English language learners. For more information about the methodology and data sources used in this study, see the Methodology section of the main report.

MAIN FINDINGS – CHARACTERISTICS OF THE REGION’S EMPLOYED WORKFORCE

Twenty percent of the region’s employed workforce is either Hispanic or a race other than white alone. Hispanics are the largest racial/ethnic group in the region’s workforce other than white/non-Hispanic.

Noncitizens comprise about ten percent of the region’s employed workforce. Fifty-three percent of employed Hispanic workers were noncitizens. Among employed Asians, about twenty-five percent are noncitizens.

People of color are overrepresented among workers who have not graduated from high school. Among the employed workforce, nine percent do not have a high school diploma, but forty percent of Hispanic workers do not have a high school diploma or equivalent credential.

Thirty-five percent of the employed workforce has some college or an associate degree as their highest level of educational attainment. Several racial/ethnic groups are overrepresented in this category, including Native Hawaiian or Pacific Islanders (43%) and American Indian or Alaskan Natives (46%).

Among employed workers of color, Asians are most likely to have a bachelor’s or advanced degree. Nearly fifty percent of Asian workers had a bachelor’s (29%) or ad-

vanced degree (19%) compared to forty percent and thirteen percent for whites.

Just over eight percent of the region’s workforce is at or near retirement age—sixty or older, and another twenty-one percent is fifty to fifty-nine and will likely retire within the next fifteen years. Installation, maintenance, and repair is the sector with the greatest percentage of older workers.

English language learners comprise eight percent of the employed workforce. Fifty percent of the employed ELL workforce is Hispanic, and more than half (55%) speak Spanish at home. Twenty seven percent of the employed ELL workforce is Asian, and ten percent speak Vietnamese—the second most common language among the ELL. Employed ELL workers have much lower educational attainment than does the rest of the workforce—only fifty-seven percent have a high school diploma or equivalent. They are also younger than non-ELL workers.

MAIN FINDINGS BY SECTOR

Construction and Extraction

Forty-one construction and extraction occupations require two or fewer years of post-high school education. Compared to the region's total employed workforce, workers in construction and extraction are less likely to have a high school diploma, bachelor's, or advanced degree.

Compared to the region's total employed workforce, Hispanics are overrepresented in construction and extraction occupations (Figure 1). While Hispanics comprise just over nine percent of the region's total employed workforce, they hold more than eighteen percent of construction and extraction jobs. With the exception of Asians, other racial groups are employed in construction and extraction jobs in numbers that reflect their total workforce participation. Asians, however, are underrepresented in this group. More than six percent of the region's total workforce is Asian but Asians hold just one and a half percent of construction and extraction jobs.

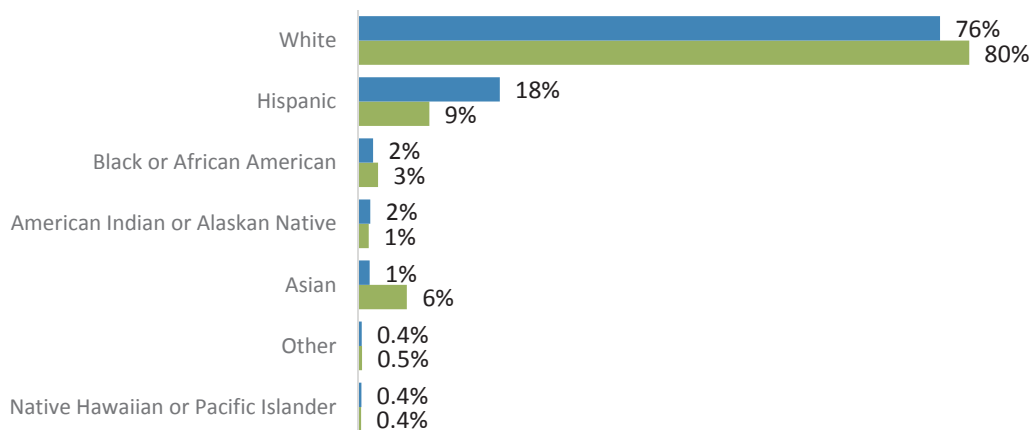
Workers without American citizenship were overrepresented in construction and extraction. The employed construction

and extraction workforce is younger than the region's total employed workforce.

Of the thirty-six construction and extraction occupations for which data are available, twenty-five pay an annual median wage that is higher than the annual median wage for the region as a whole. Figure 2 shows the distribution of jobs between high-wage and low-wage occupations and by race and Hispanic origin. Slightly more than thirty percent of construction and extraction jobs are low-wage. Of those employed in construction and extraction, white and Asian workers were the most likely to work in jobs where the annual median wage is higher than that of the region as a whole. Hispanic, Native Hawaiian or Pacific Islander, and black or African American construction and extraction workers were the most likely to work in low-wage occupations.

Of the thirty-nine construction and extraction occupations for which data are available, thirty-eight are expected to experience growth in the number of jobs during the next

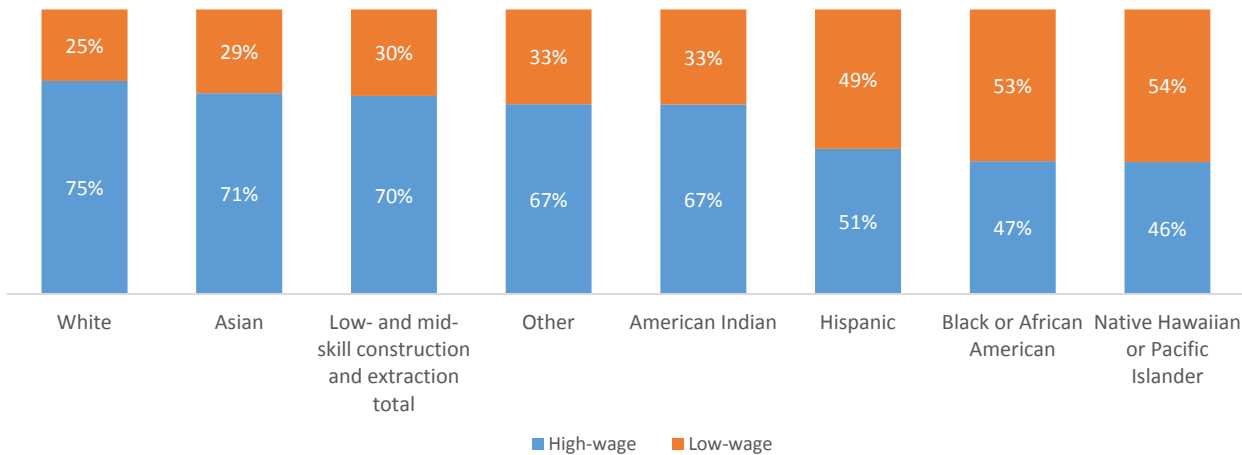
Figure 1: Employed low- and mid-skill construction and extraction workforce by race or Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



■ Low- and mid-skill construction and extraction total ■ Total employed workforce, Portland MSA

Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W

Figure 2: Percentage of employed low- and mid-skill construction and extraction workforce in low- and high-wage occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

ten years. Six construction and extraction occupation are expected to add between 500 and 2,000 new jobs during the next ten years.

HEALTHCARE

Thirty-eight healthcare occupations require two or fewer years of post-high school education. Compared to the region's total workforce, these healthcare workers are more likely to have graduated high school and more likely to have some college or an associate degree.

Compared to the region's total workforce, whites are overrepresented in healthcare occupations (Figure 3). While whites comprise less than eighty percent of the total workforce, they hold more than eighty-two percent of healthcare jobs. With the exception of Hispanics, other groups are employed in healthcare in numbers that reflect their total workforce participation. Hispanics, however, are underrepresented in this group. More than nine percent of the MSA's total workforce is Hispanic but they hold just over five percent of healthcare jobs.

Workers with American citizenship are overrepresented in the healthcare field.

Of those employed in healthcare, white and Asian workers were the most likely to work in jobs where the annual median wage is higher than that of the region as a whole. Hispanic, Native Hawaiian or Pacific Islander, and black or African American healthcare workers were the most likely to work in low-wage occupations.

Of the forty-one healthcare occupations for which data are available, thirty-nine are expected to experience growth in the number of jobs during the next ten years. Three occupations are expected to grow by more than a third. Five healthcare occupations are expected to add between 500 and 3,500 new jobs during the next ten years.

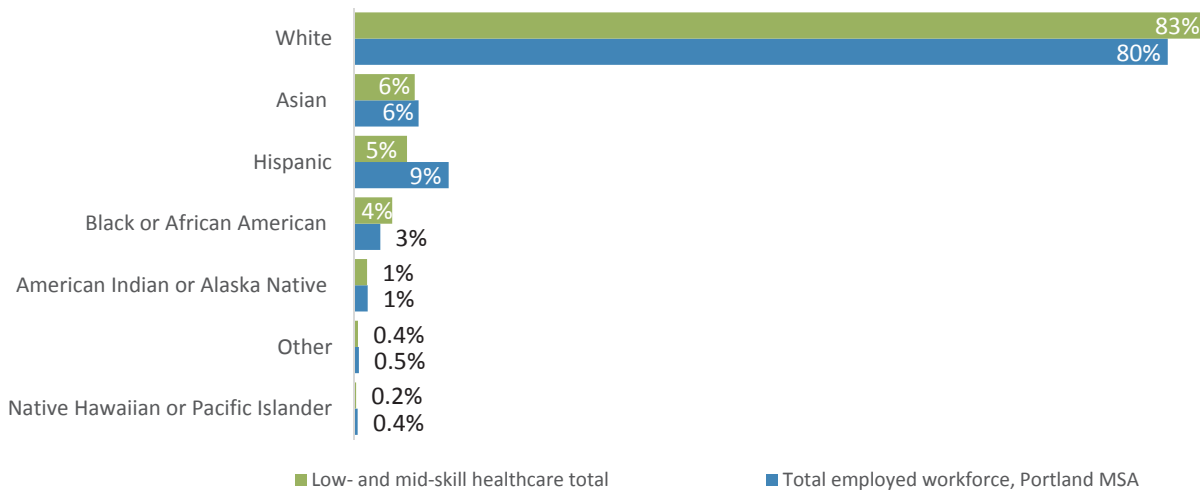
Of the thirty-eight occupations for which data are available, twenty-three pay a median annual wage that is higher than the median annual wage for the region as a whole. Figure 4 shows the distribution of jobs between high-wage and low-wage occupations and by race and Hispanic origin.

Thirty-one percent of healthcare jobs are in low-wage occupations. Of those employed in healthcare, white and Asian workers were the most likely to work in jobs where the annual median wage is higher than that of the region as a whole. Hispanic, Native Hawaiian or Pacific Islander, and black or African American healthcare workers were the most likely to work in low-wage occupations.

INSTALLATION, MAINTENANCE, AND REPAIR

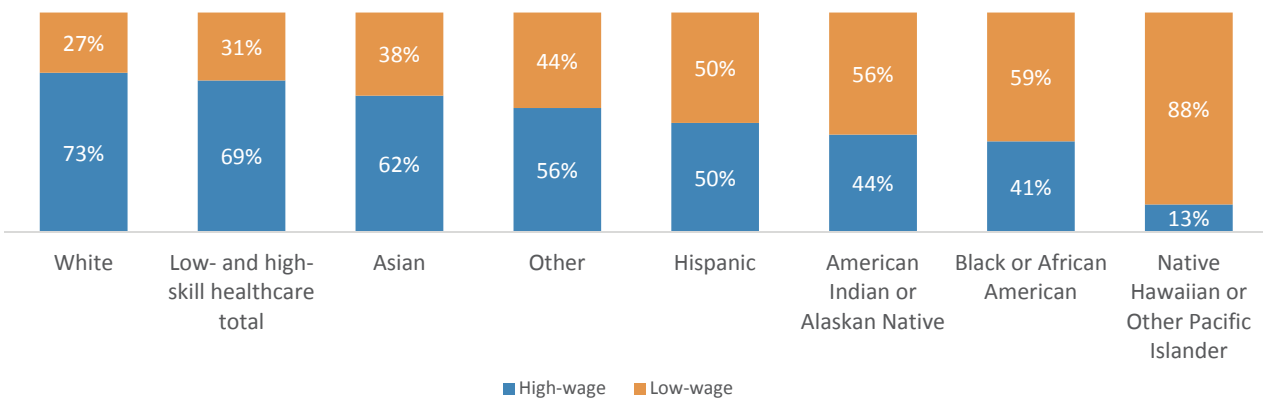
Forty-six installation, maintenance, and repair occupations require two or fewer years of post-high school education. When compared to the region's total employed workforce, installation, maintenance, and repair workers were more likely to have completed high school, and less likely to have a bachelor's or advanced degree.

Figure 3: Employed low- and mid-skill healthcare workforce, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W

Figure 4: Percentage of employed low- and mid-skill healthcare workforce in low and high wage occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

With the exception of Asians, other racial groups are employed in numbers that reflect their total workforce participation (Figure 5). Asians, however, are underrepresented in this group. More than six percent of the region's total workforce is Asian but Asians hold just fewer than five percent of installation, maintenance, and repair jobs.

Workers without American citizenship were underrepresented in installation, maintenance, and repair. Workers age forty to fifty-nine are overrepresented in installation, maintenance, and repair occupations. Younger workers, age sixteen to twenty-nine years are underrepresented.

Of the forty-two occupations for which data are available, twenty-six pay an annual median wage that is higher than the annual median wage for the region as a whole. Figure 6 shows the distribution of jobs between high-wage and low-wage occupations and by race and Hispanic origin. Sixteen percent of jobs in this sector are in low-wage occupations.

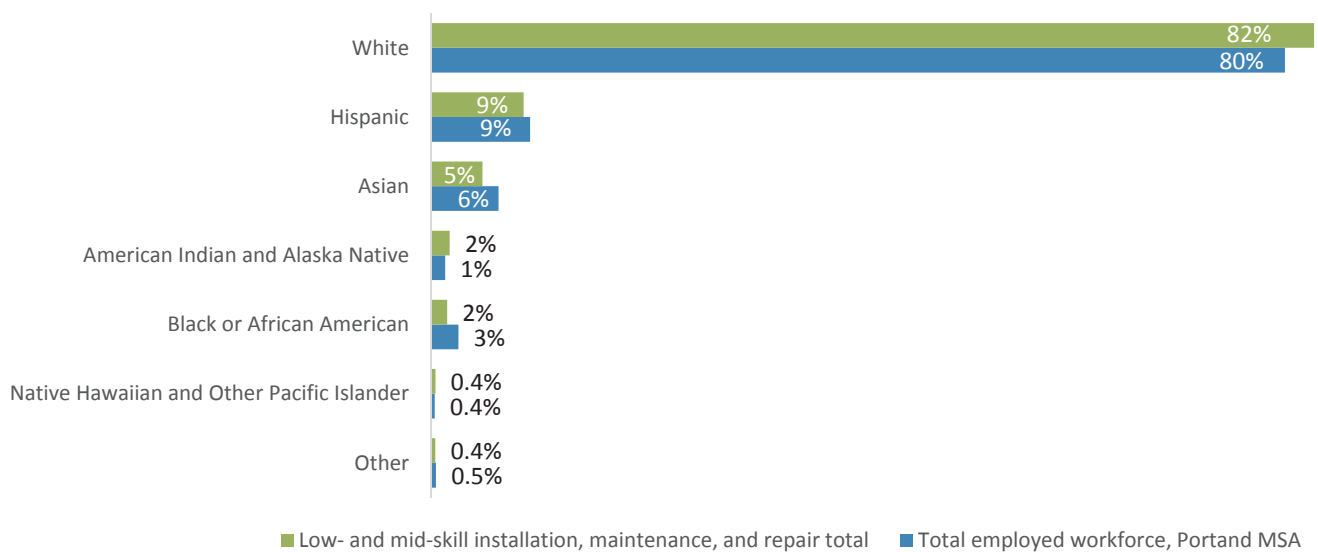
American Indian or Alaskan Native and Asian workers were the most likely to work in jobs where the annual median wage is higher than the regional median wage for all occupations. Native Hawaiian or Other Pacific Islanders were the most likely to work in low-wage occupations.

Of the forty-seven installation, maintenance, and repair occupations for which data are available, forty-five are expected to experience growth in the number of jobs during the next ten years. Two installation, maintenance, and repair occupations are expected to add between 500 and 1,000 new jobs during the next ten years.

PRODUCTION

Ninety-four production occupations require two or fewer years of post-high school education. Fourteen do not require a high school diploma, seventy-six require a high school diploma or equivalent, and four require a post-secondary credential. Compared to the region's total employed

Figure 5: Employed low- and mid-skill installation, maintenance, and repair workforce by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W

workforce, production workers are less likely to have a high school diploma, bachelor's, or advanced degree.

Compared to the region's total workforce, Hispanics and Asians are overrepresented in production occupations (Figure 7). While Hispanics comprise just over nine percent of the region's total workforce, they hold more than sixteen percent of production jobs. Asians comprise just over six percent of the total workforce but are nearly twelve percent of the production workforce. With the exception of whites, other racial groups are employed in construction and extraction jobs in numbers that reflect their total workforce participation. Whites, however, are underrepresented in this group. Almost eighty percent of the region's total workforce is white, but whites hold just over sixty-seven percent of production jobs.

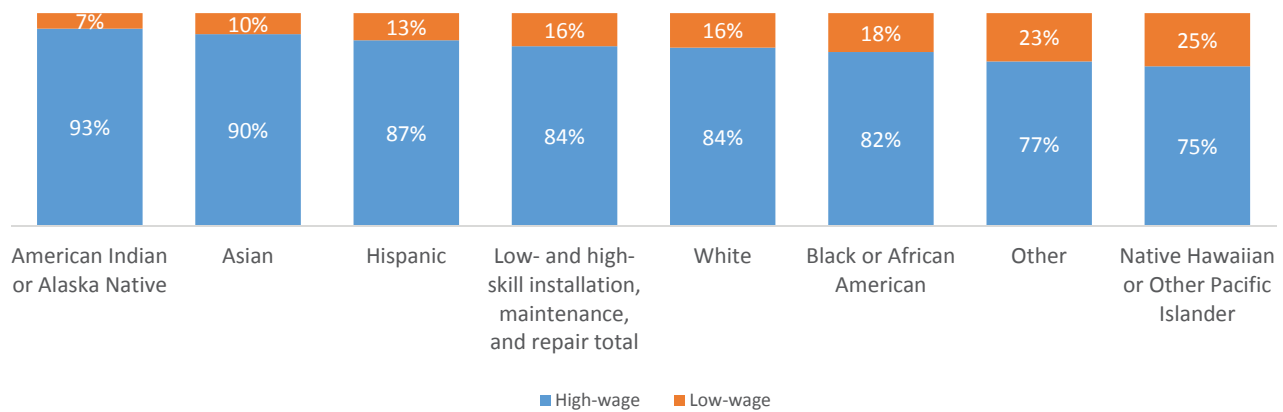
Workers without American citizenship are overrepresented in production. The distribution of workers by age in the production field is very similar to that of the workforce as a

whole.

Of the ninety-one production occupations for which data are available, thirty pay an annual median wage that is higher than the annual median wage for the region as a whole. Figure 8 shows the distribution of production jobs between high-wage and low-wage occupations and by race and Hispanic origin. Sixty-eight percent of production jobs are low-wage. Of those employed in production, white and black or African American workers were the most likely to work in jobs where the annual median wage is higher than that of a region as a whole. Hispanic and Asian workers were the most likely to work in low-wage occupations.

Of the ninety-four production occupations for which data are available, eighty-two are expected to experience growth in the number of jobs during the next ten years. Five production occupations are expected to add between 500 and 1,000 new jobs during the next ten years.

Figure 6: Percentage of employed low- and high-skill installation, maintenance, and repair low- and mid-skill workforce in low and high wage occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



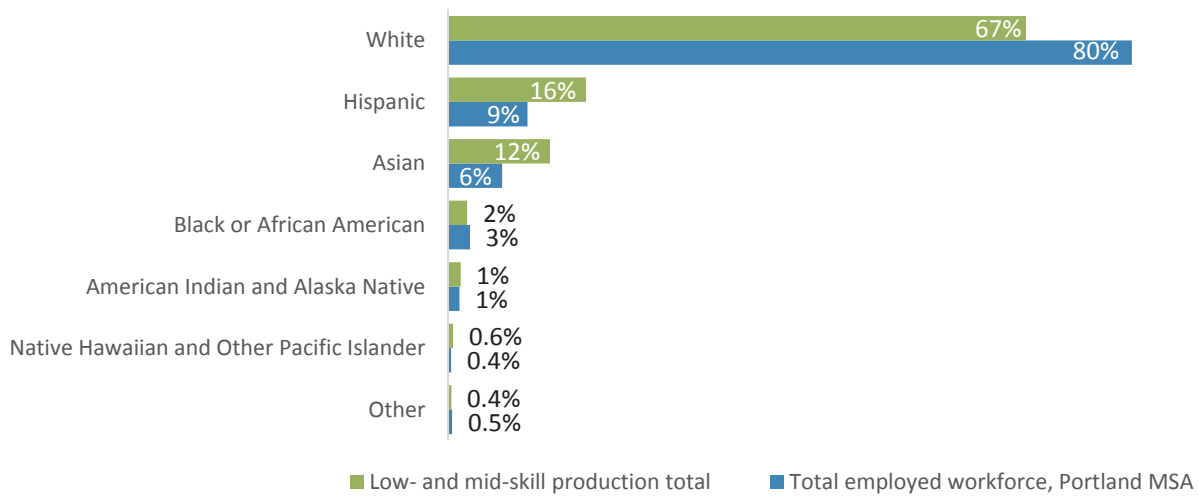
Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

RACE AND HISPANIC ORIGIN

Compared with their presence in each sector, white workers are over represented in high opportunity occupations, while workers of color are underrepresented. Table 2 compares workers in high opportunity occupations with all low- and mid-skill occupations in each sector. In both healthcare and installation, maintenance, and repair, white workers are

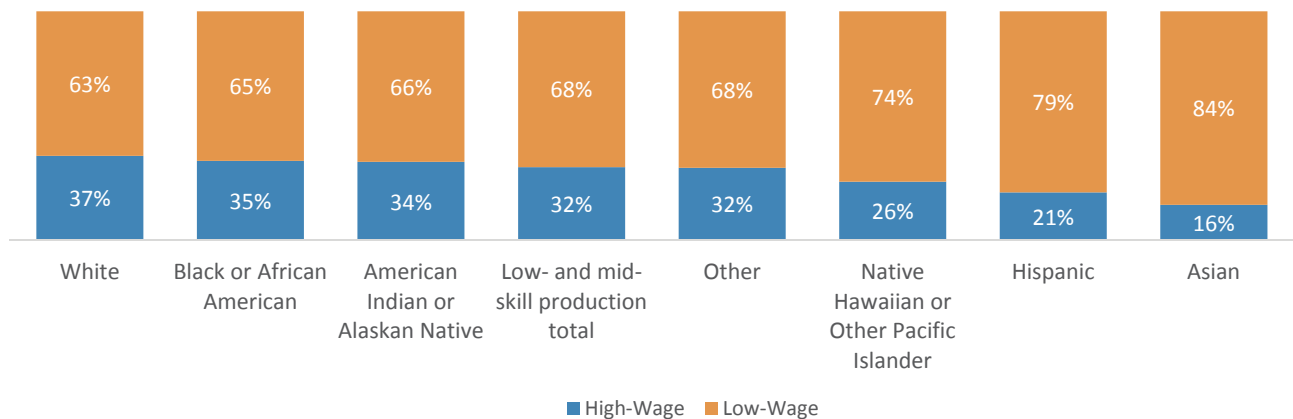
eighty-three percent of the total workforce but hold eighty-eight percent of jobs in high opportunity occupations. Sixty-nine percent of production workers are white, but they hold seventy-eight percent of jobs in high opportunity occupations. Asians are the most underrepresented workers of color in production. While they hold eleven percent of all production jobs, Asian workers have just five percent of the

Figure 7: Employed low- and mid-skill production workforce by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W

Figure 8: Percentage of employed low- and mid-skill production workforce in low- and high-wage occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

HIGH OPPORTUNITY OCCUPATIONS

Within the four sectors examined in this report, some occupations offer better opportunities for economic advancement. High opportunity occupations are those that require two or fewer years of post-high school education, pay an annual median wage of at least \$48,303, one hundred twenty-five percent of the region's annual median wage for all occupations, and have anticipated growth of one hundred or

more new openings within the next ten years. Twenty-eight occupations meet these criteria: ten in construction and extraction, nine in healthcare, seven in installation, maintenance, and repair, and two in production (Table 1). Within the next ten years, more than twelve thousand new jobs are projected in occupations that pay between 126% and 221% of the region's annual median wage.

Table 1: High opportunity occupations, Portland-Vancouver-Hillsboro MSA

<i>Occupation</i>	<i>Sector</i>	<i>Projected openings</i>	<i>Annual median wage</i>
<i>Electricians</i>	Construction & Extraction	1,125	\$76,920
<i>Plumbers, Pipefitters, and Steamfitters</i>	Construction & Extraction	702	\$71,850
<i>Construction and Building Inspectors</i>	Construction & Extraction	122	\$65,910
<i>Brickmasons and Blockmasons</i>	Construction & Extraction	170	\$64,610
<i>First-Line Supervisors of Construction Trades and Extraction Workers</i>	Construction & Extraction	1,044	\$64,250
<i>Structural Iron and Steel Workers</i>	Construction & Extraction	107	\$61,970
<i>Operating Engineers/Other Construction Equipment Operators</i>	Construction & Extraction	346	\$60,210
<i>Tapers</i>	Construction & Extraction	138	\$59,250
<i>Sheet Metal Workers</i>	Construction & Extraction	472	\$50,590
<i>Cement Masons and Concrete Finishers</i>	Construction & Extraction	276	\$48,660
<i>Diagnostic Medical Sonographers</i>	Healthcare	125	\$85,300
<i>Registered Nurses</i>	Healthcare	3,254	\$83,750
<i>Dental Hygienists</i>	Healthcare	473	\$83,100
<i>Radiologic Technologists</i>	Healthcare	188	\$66,610
<i>Respiratory Therapists</i>	Healthcare	108	\$65,510
<i>Healthcare Practitioners and Technical Workers, All Other</i>	Healthcare	143	\$57,970
<i>Massage Therapists</i>	Healthcare	371	\$52,910
<i>Licensed Practical and Licensed Vocational Nurses</i>	Healthcare	304	\$51,090
<i>Surgical Technologists</i>	Healthcare	109	\$49,280
<i>Electrical/Electronics Repairers, Commercial/Industrial</i>	Installation, Maintenance & Repair	135	\$65,860
<i>Telecommunications Equipment Installers and Repairers, Except Line Installers</i>	Installation, Maintenance & Repair	201	\$65,090
<i>First-Line Supervisors of Mechanics, Installers, and Repairers</i>	Installation, Maintenance & Repair	302	\$62,870
<i>Industrial Machinery Mechanics</i>	Installation, Maintenance & Repair	710	\$56,170
<i>Heating, Air Conditioning, Refrigeration Mechanics and Installers</i>	Installation, Maintenance & Repair	401	\$50,720
<i>Mobile Heavy Equipment Mechanics, Except Engines</i>	Installation, Maintenance & Repair	186	\$50,220
<i>Bus and Truck Mechanics and Diesel Engine Specialists</i>	Installation, Maintenance & Repair	254	\$49,850
<i>First-Line Supervisors of Production and Operating Workers</i>	Production	460	\$57,260
<i>Computer Numerically Controlled Machine Tool Programmers</i>	Production	104	\$53,720

Source: Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*; Oregon Employment Department; Washington Department of Employment Security

jobs in high opportunity occupations. The largest disparity is in construction and extraction. Seventy-six percent of workers in construction and extraction are white, but whites hold ninety percent of jobs in high opportunity occupations.

Hispanic workers, who are eighteen percent of the construction and extraction workforce, hold just five percent of jobs in high opportunity occupations.

Table 2: Employed workforce in high opportunity occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010 five-year estimates

<i>Race and Hispanic origin, 2006-2010</i>	<i>White</i>	<i>Hispanic</i>	<i>Native Hawaiian and other pacific islander</i>	<i>Other</i>	<i>Black or African American</i>	<i>American Indian</i>	<i>Asian</i>
<i>Construction and extraction – low- and mid-skill high opportunity occupations</i>	90%	5%	0%	0%	1%	2%	2%
<i>Construction and extraction – all low- and mid-skill workers</i>	76%	18%	0%	1%	2%	2%	2%
<i>Healthcare – low- and mid-skill high opportunity occupations</i>	88%	3%	0%	0%	2%	1%	6%
<i>Healthcare – all low- and mid-skill workers</i>	83%	5%	0%	0%	4%	1%	6%
<i>Installation, repair, and maintenance – low- and mid-skill high opportunity occupations</i>	88%	6%	0%	1%	1%	2%	2%
<i>Installation, repair, and maintenance - all low- and mid-skill workers</i>	83%	9%	0%	0%	1%	2%	4%
<i>Production – low- and mid-skill high opportunity occupations</i>	78%	12%	0%	1%	3%	1%	5%
<i>Production – all low- and mid-skill workers</i>	69%	16%	1%	0%	2%	1%	11%
<i>Employed workforce, Portland MSA</i>	80%	9%	0%	1%	3%	1%	6%

Source: US Census, *Equal Employment Opportunity Tabulation*¹

CITIZENSHIP STATUS

Like workers of color, noncitizen workers are underrepresented in high opportunity occupations. Noncitizen workers are nine percent of the region's total workforce, and hold between five and eighteen percent of the jobs examined in this report, by sector. However, they hold between three and eleven percent of high opportunity occupations, by sector. The largest disparity is in construction and extraction. Non-citizen workers are eighteen percent of the construction and extraction workforce but hold just four percent of jobs in high opportunity occupations.

Table 3: Employed workforce in high opportunity occupations, by citizenship status, Portland-Vancouver-Hillsboro MSA, 2006-2010 five-year estimates

<i>Citizenship Status, 2006-2010</i>	Citizen	Noncitizen
<i>Construction and extraction – low- and mid-skill high opportunity occupations</i>	96%	4%
<i>Construction and extraction – all low- and mid-skill workers</i>	82%	18%
<i>Healthcare – low- and mid-skill high opportunity occupations</i>	97%	3%
<i>Healthcare – all low- and mid-skill workers</i>	95%	5%
<i>Installation, repair, and maintenance – low- and mid-skill high opportunity occupations</i>	95%	5%
<i>Installation, repair, and maintenance - all low- and mid-skill workers</i>	92%	8%
<i>Production – low- and mid-skill high opportunity occupations</i>	89%	11%
<i>Production – all low- and mid-skill workers</i>	83%	17%
<i>Employed workforce, Portland MSA</i>	91%	9%

Source: American Community Survey, *Equal Employment Opportunity Tabulation*²

ENGLISH LANGUAGE LEARNERS

Like workers of color and noncitizens, English language learners are also underrepresented in high opportunity occupations. ELL workers are eight percent of the region’s total workforce, and between four and fifteen percent of the

workforce depending on the sector. In production, twenty-three percent of all low- and mid-skill workers are ELL, but they hold just five percent of jobs in high opportunity occupations.

Table 4: Employed English language learners, high opportunity occupations, Portland-Vancouver-Hillsboro MSA, 2006-2010 five-year estimates

<i>English language learners, 2006-2010</i>	<i>English language learners</i>
<i>Construction and extraction – low- and mid-skill high opportunity occupations</i>	4%
<i>Construction and extraction – all low- and mid-skill workers</i>	15%
<i>Healthcare – low- and mid-skill high opportunity occupations</i>	2%
<i>Healthcare – all low- and mid-skill workers</i>	4%
<i>Installation, repair, and maintenance – low- and mid-skill high opportunity occupations</i>	3%
<i>Installation, repair, and maintenance - all low- and mid-skill workers</i>	6%
<i>Production – low- and mid-skill high opportunity occupations</i>	5%
<i>Production – all low- and mid-skill workers</i>	23%
<i>Employed workforce, Portland MSA</i>	8%

Source: American Community Survey, *PUMS data 2006-2010*³

INTRODUCTION

Low and mid--skill jobs that pay well but require no more than two years of post-high school education can provide a path to economic success for individuals and their families. Many of these jobs can be found in healthcare, production (occupations that work in manufacturing), and the skilled trades occupations, specifically construction and extraction, and installation, maintenance, and repair.

These occupations are central to the region's economy and require a steady supply of talent. In a well-balanced system, a local supply of talent would be available to meet the needs of employers, and the benefits of employment would be equally felt in communities across the region.

Employers and workforce policy leaders are interested in understanding the dynamics of the labor market in these low- and mid-skill occupations in the MSA. For example,

- What is the percentage of people of color in the manufacturing, skilled trades, and health care fields compared to the workforce overall?
- Which occupations in these fields most commonly employ people of color and noncitizens?
- What is the wage profile within these fields?
- How common are English language learners among these occupations?

Figure 9: Portland-Vancouver-Hillsboro MSA



The first step in understanding these issues is to construct a demographic profile of the employed workforce in these industries and compare it to the demographics of the employed workforce overall. This report will answer these questions for the Portland-Vancouver-Hillsboro metropolitan statistical area (MSA), a seven county region that includes Clackamas, Columbia, Multnomah, Washington, and Yamhill counties in Oregon and Clark and Skamania counties in Washington (Figure 9).

METHODOLOGY

This report relies on four primary data sets. The first is the US Census Equal Employment Opportunity (EEO) data which provides MSA-level data about the region's workforce by race, Hispanic origin, and sex. These data are a special tabulation of the American Community Survey designed specifically to help employers develop and update their affirmative action plans.

The most recent tabulation of the EEO was developed from 5-year American Community Survey data from 2006-2010. It contains 488 detailed Census occupation categories based on the 2010 Standard Occupational Classification (SOC). This tabulation includes estimates and percentages of the labor force for sex, race and Hispanic origin, cross tabulated by occupation, industry, age, educational attainment, earnings, citizenship, and employment status.

This report uses the EEO's worksite geography, which presents data according to where people worked at the time of the survey. Thus, the report reflects people who were employed by businesses and organizations within the Portland-Vancouver-Hillsboro MSA, but may not necessarily live within the region's seven counties. For example, a person who lived in Marion County and worked in Yamhill County would be included in the data, as would a person living and

working in Washington County. However, a person living in Clackamas County and working in Hood River County would not be represented in the data. The file does not include people who were unemployed at the time of the survey.

Because the EEO file is derived from the American Community Survey, it is subject to sampling error that is not reported by the Census Bureau for this specific tabulation. In addition, because the data tables are provided at a very detailed level, the Census Bureau uses rounding techniques to reduce the risk of disclosure of personal information. This combination of sampling and rounding error means that the information provided in these tables, although it is the best available, should be considered imprecise, and comparisons among groups should be undertaken with this understanding.⁴

The second data source used in this report is the Occupational Employment Statistics (OES). Produced by the Bureau of Labor Statistics (BLS), OES includes employment and wage estimates for more than 800 occupations. The number of jobs by occupation and wage profiles for each occupation is available at the MSA level. The data are gathered by a survey created by the BLS and delivered to establishments derived from the list of establishments maintained by State Workforce Agencies (SWAs) for unemployment insurance purposes.

The third is the employment projections produced by the Oregon Employment Department and the Washington Department of Employment Security.⁵ Information about educational requirements for occupations is from the Oregon Employment Department and the Bureau of Labor Statistics.

The occupations included in this report are identified and defined by the Standard Occupational Classification (SOC) System. The system is used by state and federal agencies to classify workers into occupational categories for the purposes of collecting, calculating, and disseminating data; thus, as shown in Figure 10, the SOC system allows us to join these four data sets together for this study. Three of the sectors examined in this report are consistent with and entirely inclusive of a major SOC group: construction and extraction (47-0000), installation, maintenance, and repair (49-0000), and production (51-0000). The healthcare occupations examined in this report are taken from two major SOC groups. Healthcare, as it is discussed in this report, is entirely inclusive of healthcare support occupations (31-0000) and includes some, but not all of the occupations in healthcare practitioners and technical occupations (29-0000). This was done to ensure that all healthcare occupations requiring two or fewer years of post high school education were included but healthcare occupation requiring more advanced levels of education were not.

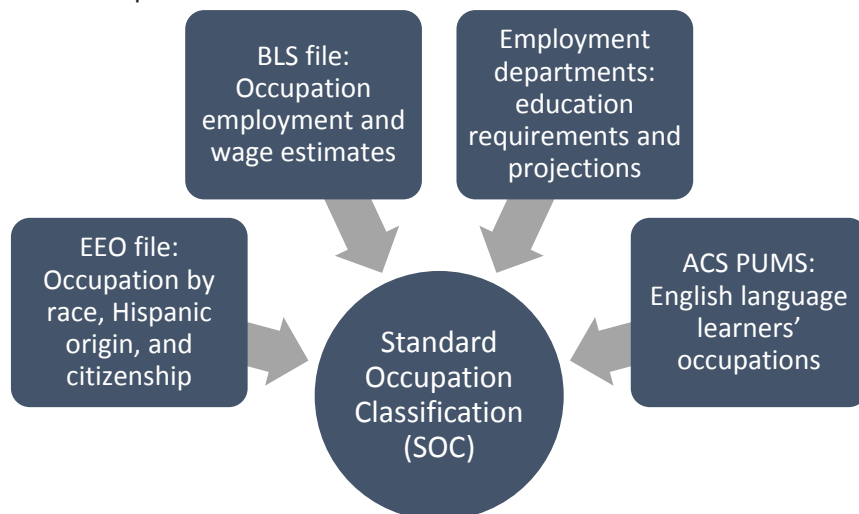
The fourth primary data sets used in this report is the Public Use Microdata Sample (PUMS) from the 2006-2010 American Community Survey (ACS). The PUMS is a more

detailed data set than the EEO; it provides data for English Language Learners (ELL) and their occupations. These data are not available on the EEO file. Because the PUMS is a sample of the ACS, the data sets are slightly different; therefore, we present data on ELL population in a separate chapter of the report. The 2006-2010 ACS 5-year dataset is based on data collected between January 2006 and December 2010. The 5-year ACS data are grouped into geographic units known as Public Use Microsample Areas (PUMAs). Each PUMA contains a minimum population threshold of 20,000. Compared to the 1-year and 3-year datasets, the 5-year dataset has a larger sample size and a smaller geographic unit in terms of population (the minimum geographic unit in the ACS 1-year dataset has a population of 65,000).

REPORT STRUCTURE

The report begins with a demographic profile of the region's total civilian workforce age 16 years and over. Using EEO data from the US Census, we explore workforce characteristics including race and Hispanic origin, citizenship status, age, and educational attainment. Data from the Bureau of Labor Statistics provides information about wages, including the wage distribution and the annual median wage for all

Figure 10: Standard Occupation Classification Codes



jobs within the MSA.

Our Region is followed by sector profiles of construction and extraction, healthcare, installation, maintenance, and repair, and production. Each profile includes information about the occupations within the sector and information about the workers employed in these occupations. Each profile starts with a description of the sector and its role in the region's economy.

The next section looks at the racial and ethnic composition of the employed workforce and the citizenship status of workers. Are workers who don't have American citizenship over or underrepresented in the sector? In certain occupations within the sector? What is the racial and ethnic breakdown of the workforce that does not have American citizenship? How does that breakdown compare to the overall racial and ethnic breakdown of the region?

This is followed by an age profile of workers in each sector to identify occupations where older or younger workers are over or underrepresented. Are these occupations where growth is anticipated within the next ten years?

Then we compare the education requirements for each occupation within the field and the educational credentials of the field's employed workforce. The annual median wage for each occupation is compared to the annual median wage for the region's total workforce. Then we look at the representation of racial and ethnic groups in low and high wage occupations. Are workers from some racial or ethnic groups over or underrepresented in occupations in below median wage occupations?

This is followed by employment projections for the occupations within each field. The employment projections are

for ten year periods, and include anticipated growth in the number of jobs and percent growth. The employment projections draw particular attention to occupations expected to add 500 or more jobs over ten years.

The following section looks at English language learners, or workers who report they speak English less than "very well." The questions posed in the introduction are addressed in the findings section. The report also includes a detailed profile of occupations within the field.

Appendices I-IV contain detailed sector profiles for occupations in the constructions and extraction, healthcare, installation, maintenance, and repair, and production fields. The profiles are built with data from four sources used throughout the report.

The profiles are organized and identified using the Standard Occupational Classification (SOC) system. SOC codes are hierarchical, including both major and minor codes. In some cases, the level of occupational detail differs by data source.

The data sets cover slightly different time periods. The EEO data and the PUMS data, which provide demographic data about the workforce, covers a period from 2006-2010. The BLS data, which looks at wage data, is from 2013. The geography for the data from these sources is the seven county Portland-Vancouver-Hillsboro MSA. While the data reflect slightly different time periods, together the data provide a reasonable picture of each sector.

Both Washington and Oregon do employment projections by region and occupation but their time periods are slightly different and their regions are different from the MSA. For Clackamas, Multnomah, and Washington Counties in Ore-

gon, the projects are for 2012-2022 and for Clark, Wahkiakum, and Cowlitz Counties in Washington, the projects are for 2011-2021.

KEY TERMS AND DEFINITIONS

Region: The Portland-Vancouver-Hillsboro MSA includes seven counties: Clackamas, Columbia, Multnomah, Washington, and Yamhill Counties in Oregon and Clark and Skamania Counties in Washington.

Labor force and workforce: The Bureau of Labor Statistics defines the labor force as the sum of employed and unemployed persons. Those not in the labor force include people who are neither employed nor unemployed, including retired persons, students, those taking care of children or other family members, and others who are neither working nor seeking work.

For the purposes of this study, we have used the “workplace geography” file for the Portland MSA, which includes all people who were actively working during the time the American Community Survey was administered. Thus we use the term “employed workforce” to describe these workers.

Standard Occupational Classification (SOC) system is used by Federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into one of 840 detailed occupations according to their occupational definition. To facilitate classification, detailed occupations are combined to form 461 broad occupations, 97 minor groups, and 23 major groups. Detailed occupations in the SOC with similar job duties, and in some cases skills, education, and/or training, are grouped together.

Low-Wage Occupation: Occupations with a median annual wage that is below the median annual wage for all occupations in the Portland-Vancouver-Hillsboro MSA as reported by the Bureau of Labor Statistics.

High-Wage Occupation: Occupations with a median annual wage that is above the median annual wage for all occupations in the Portland-Vancouver-Hillsboro MSA as reported by the Bureau of Labor Statistics.

Race and Ethnicity: For this study, workers are divided into seven mutually exclusive race/ethnicity groups based on their response to the EEO Tabulation ACS survey.⁶

- **Hispanic** - Hispanic or Latino of all races
- **White** - white alone, non-Hispanic
- **Native Hawaiian or Pacific Islander** - Native Hawaiian or Other Pacific Islander alone, non-Hispanic
- **Other** - Other, non-Hispanic
- **Black or African American** - Black or African American alone or in combination with other races, non-Hispanic
- **American Indian or Alaskan Native** - American Indian or Alaskan Native alone or in combination with other races, non-Hispanic
- **Asian** - Asian alone or in combination with other races, non-Hispanic

English Language Learners (ELL): Workers who responded to the U.S. Census that they speak English less than “very well.”

OUR REGION'S LABOR FORCE

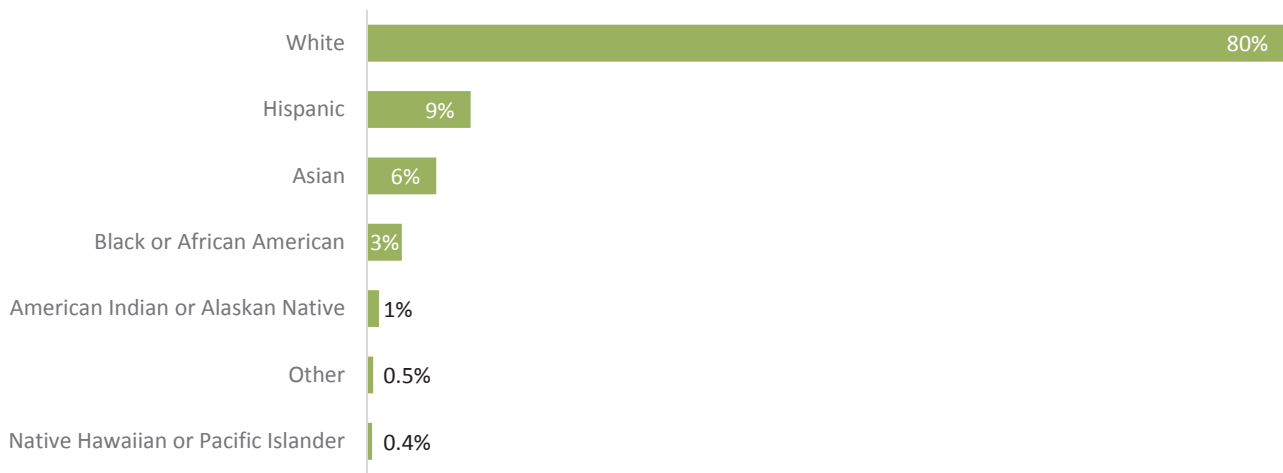
Between 2006 and 2010, there were just over one million people in the civilian workforce in the seven county Portland-Vancouver-Hillsboro MSA.

Race and Hispanic Origin

Between 2006 and 2010, nearly eighty percent of the workforce in the Portland-Vancouver-Hillsboro MSA identified

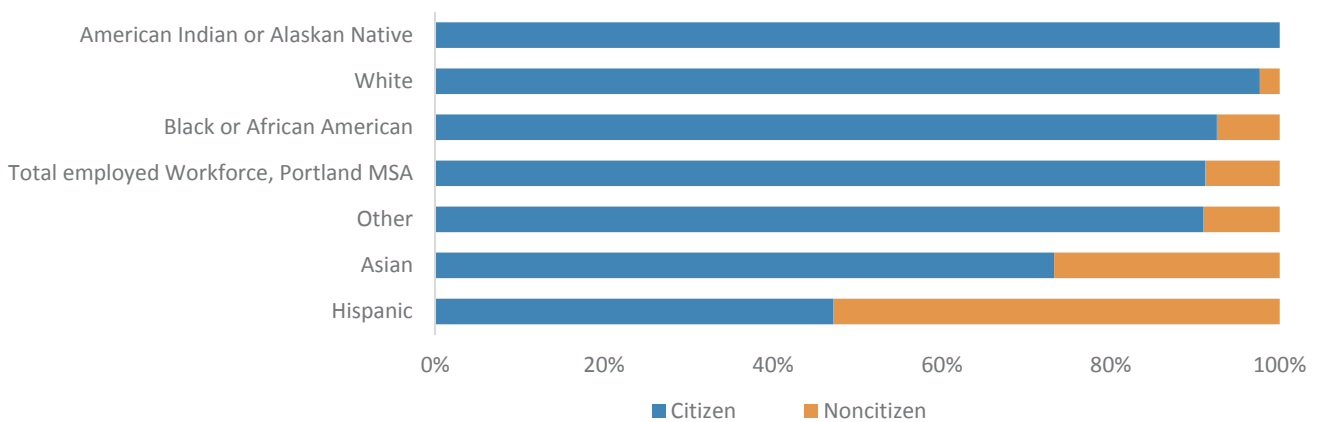
as white (Figure 11). Hispanic workers were just over nine percent of the region's workforce. Asian workers were more than six percent of the region's workforce. The remaining five percent of workers were: black or African American (3%), American Indian or Alaskan Native (1%), Native Hawaiian or Pacific Islander (0.4%), and other (0.5%).

Figure 11: Total employed workforce, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W

Figure 12: Citizenship status of total employed workforce, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-NCIT02W

Citizen Status

Between 2006 and 2010, just over ninety percent of employed workers in the Portland-Vancouver-Hillsboro MSA were American citizens (Figure 12). The percentage of workers who did not have American citizenship varied across racial and ethnic groups. Fifty-three percent of employed Hispanic workers were noncitizens, as were twenty-seven percent of employed Asian workers. Whites had the smallest percentage of employed noncitizen workers, at just over two percent.

Age

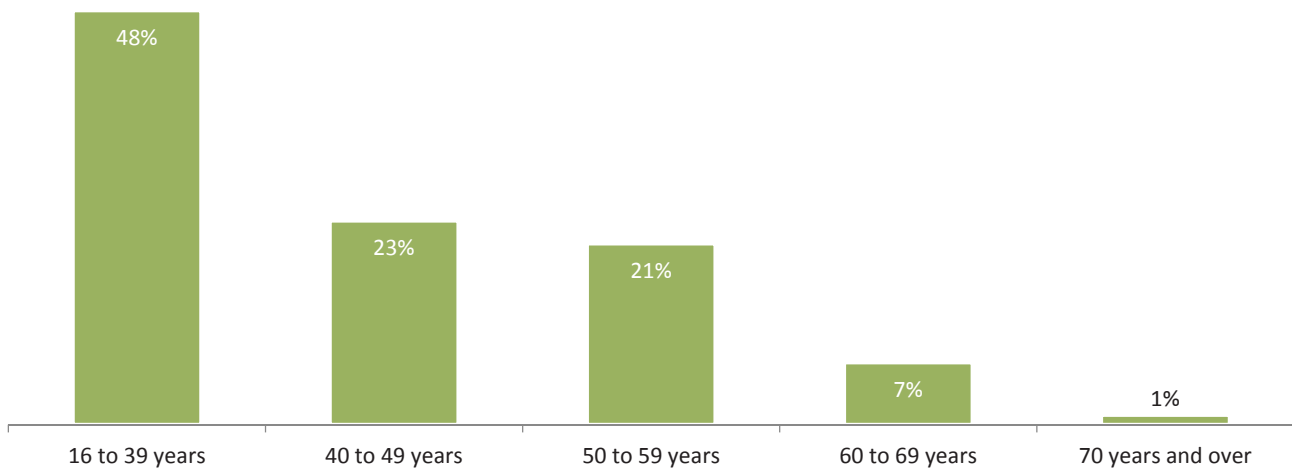
Between 2006 and 2010, nearly half (48%) of the region's employed workforce was age sixteen to thirty-nine years (Figure 13). Another forty-five percent of the employed workforce included workers between the ages of forty to forty-nine years (23%) and workers age fifty to fifty-nine years (21%). Just over seven percent of the employed workforce was between the ages of sixty and sixty-nine years. The remaining one percent of the employed workforce was seventy years old or over.

Educational Attainment

Between 2006 and 2010, nine percent of the Portland-Vancouver-Hillsboro MSA's employed workforce did not have a high school diploma (Figure 14). Twenty-one percent had a high school diploma or equivalency. More than half of the employed workforce had progressed past high school. Thirty-five percent of the workforce had some college or an associate's degree. Thirty-five percent had a bachelor's or advanced degree.

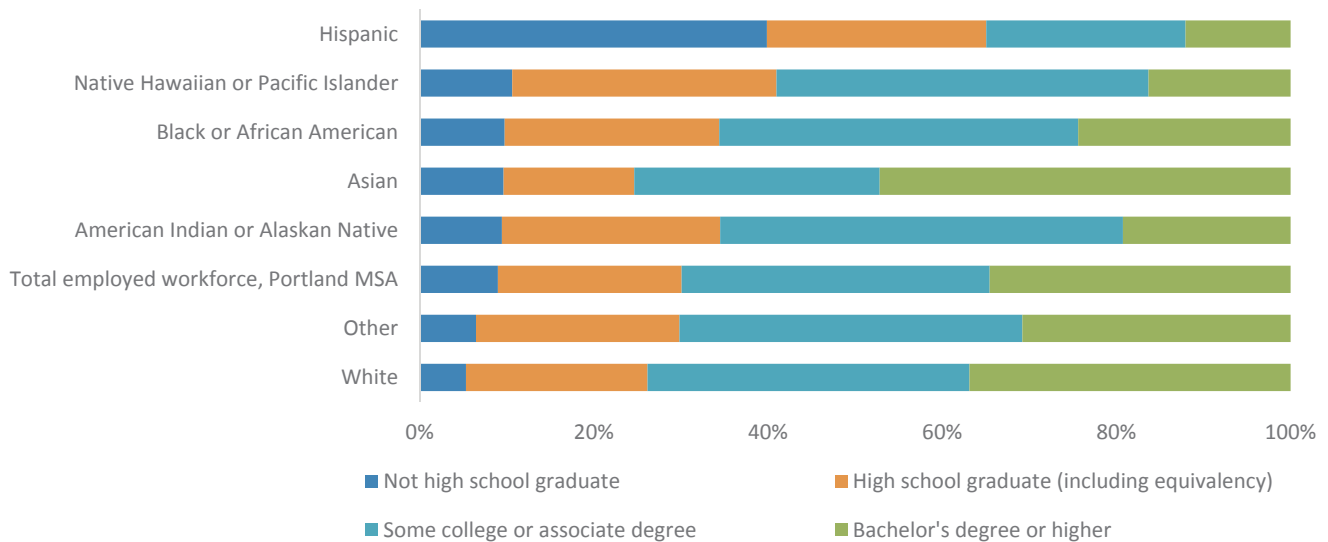
Educational attainment varied across racial and ethnic groups. Hispanic workers had the lowest rates of high school completion. Forty percent of Hispanic workers did not have a high school diploma or equivalency and just twelve percent of Hispanic workers had either a bachelor's degree (8%) or graduate or professional degree (4%). Whites and Asians had the highest levels of educational attainment. Forty percent of workers identifying as white had a bachelor's (24%) or advanced degree (13%). Nearly fifty percent of Asian workers had a bachelor's (29%) or advanced degree (19%). Native Hawaiian or Pacific Islander and American Indian or Alaskan Native workers were the most likely to

Figure 13: Total employed workforce, by age, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL12W

Figure 14: Educational attainment, by race and Hispanic origin, total employed workforce, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



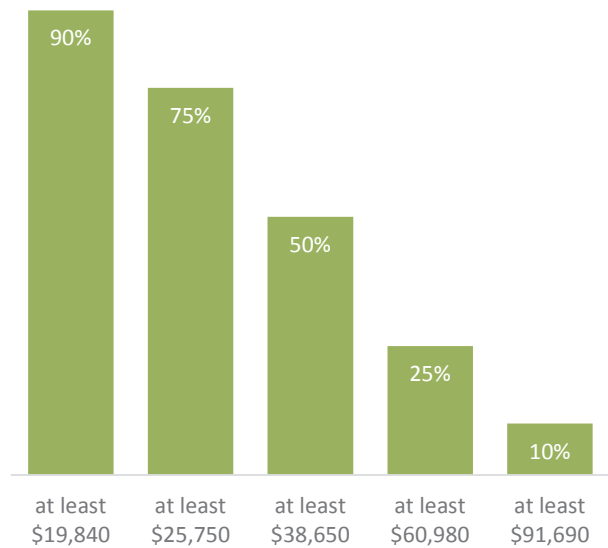
Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL08W

have some college or an associate degree as their highest level of educational attainment: forty-three percent for Native Hawaiian or Pacific Islanders and forty-six percent for American Indian or Alaskan Natives.

Wages

In 2013, ten percent of the jobs in the Portland-Vancouver-Hillsboro Metropolitan Statistical Area (MSA) paid an annual wage of \$19,840 or less (Figure 15). This is just slightly higher than the federal poverty level of \$19,530 for a family of three. Twenty-five percent of jobs in the region paid \$25,750 or less, which is lower than the poverty level for a family of five (\$27,570). In 2013, the median wage for the Portland MSA was \$38,650. Half the jobs paid \$38,649 or less and half the jobs paid \$38,650 or more. Seventy-five percent of jobs paid \$60,980 or less. Just ten percent of jobs in the MSA paid an annual average wage of \$91,690 or more.

Figure 15: Percentage of jobs by wage, Portland-Vancouver-Hillsboro MSA, 2013



Source: U.S. Department of Labor, *Occupational Employment Statistics*

SECTOR PROFILES

CONSTRUCTION AND EXTRACTION

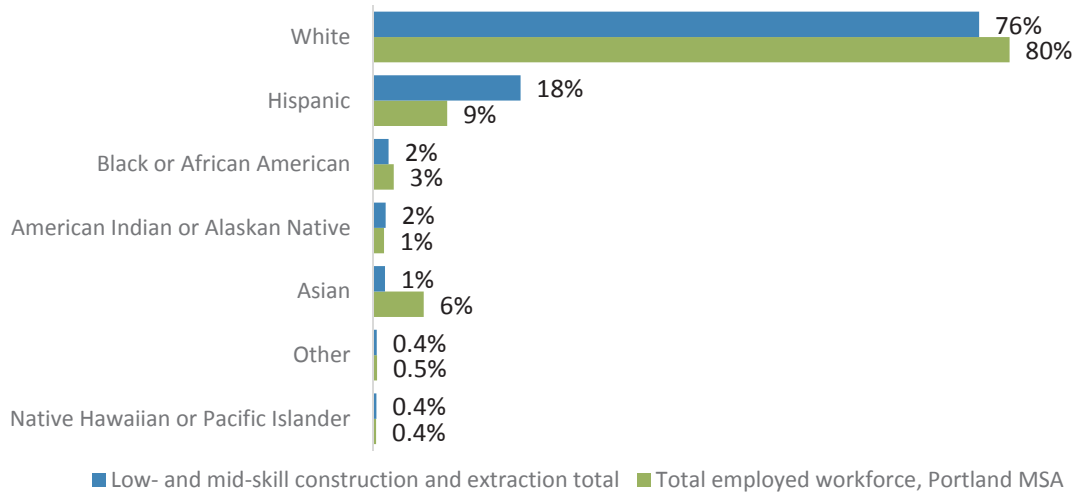
The construction and extraction field includes occupations related to the carpentry, construction, extraction, electrical, and building industries. In the Portland-Vancouver-Hillsboro MSA, the field is dominated by construction, as there is little mining or drilling in the area. Construction was hard hit during the recession, with as many as one in three jobs lost. In the last few years, the industry has begun to rebound, and is currently growing more rapidly than the region's economy as a whole. Between 2010 and 2020, construction occupations are expected to experience 32% growth in Clackamas, Multnomah, and Washington

Counties. Even with the anticipated growth, employment in construction is not expected to return to pre-recession rates during the next decade. In 2013, nearly four percent of jobs in the Portland-Vancouver-Hillsboro MSA were in construction and extraction.

Forty-one construction and extractions occupations require two or fewer years of post-high school education (see Table 5). Fourteen do not require a high school diploma, eighteen require a high school diploma or equivalent, and nine require a high school diploma and an apprenticeship.

TABLE 5: CONSTRUCTION AND EXTRACTION OCCUPATIONS REQUIRING TWO OR FEWER YEARS OF POST-HIGH SCHOOL EDUCATION		
LESS THAN HIGH SCHOOL		
CARPET INSTALLERS	HELPERS - CARPENTERS	ROOFERS
CEMENT MASONS AND CONCRETE FINISHERS	HELPERS – CONSTRUCTION TRADES, ALL OTHER	SEPTIC TANK SERVICERS AND PIPE CLEANERS
CONSTRUCTION LABORERS	HELPERS – PAINTERS, PAPERHANGERS, PLASTERERS, AND STUCCO MASONS	TAPERS
DRYWALL AND CEILING TILE INSTALLERS	INSULATION WORKERS, FLOOR, CEILING, AND WALL	TILE AND MARBLE SETTERS
HELPERS – BRICKMASONS, BLOCKMASONS, STONEMASONS, AND TILE AND MARBLE SETTERS	PLASTERERS AND STUCCO MASONS	
HIGH SCHOOL DIPLOMA		
CONSTRUCTION AND BUILDING INSPECTORS	FLOOR LAYERS, EXCEPT CARPET, WOOD, AND HARD TILES	PAINTERS, CONSTRUCTION AND MAINTENANCE
CONSTRUCTION AND RELATED WORKERS, ALL OTHER	HAZARDOUS MATERIALS REMOVAL WORKERS	PAVING, SURFACING, AND TAMPING EQUIPMENT OPERATORS
EARTH DRILLERS, EXCEPT OIL AND GAS	HELPERS - ELECTRICIANS	
EXTRACTION WORKERS, ALL OTHER	HIGHWAY MAINTENANCE WORKERS	PILE-DRIVER OPERATORS
FIRST-LINE SUPERVISORS	INSULATION WORKERS, MECHANICAL	PIPELAYERS
FENCE ERECTORS	OPERATING ENGINEERS AND OTHER CONSTRUCTION EQUIPMENT OPERATORS	RAIL-TRACK LAYING AND MAINTENANCE EQUIPMENT OPERATORS
HIGH SCHOOL DIPLOMA + APPRENTICESHIP		
BOILERMAKERS	ELECTRICIANS	SHEET METAL WORKERS
BRICKMASONS AND BLOCKMASONS	GLAZIERS	STONEMASONS
CARPENTERS	PLUMBERS, PIPEFITTERS, AND STEAMFITTERS	STRUCTURAL IRON AND STEEL WORKERS
SOURCE: OREGON EMPLOYMENT DEPARTMENT; BUREAU OF LABOR STATISTICS		
NOTE: FOR A DETAILED DESCRIPTION OF EACH OCCUPATION, INCLUDING A JOB DESCRIPTION AND TRAINING REQUIREMENTS, SEE APPENDIX I.		

Figure 16: Employed low- and mid-skill construction and extraction workforce by race or Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W

Race and Hispanic Origin

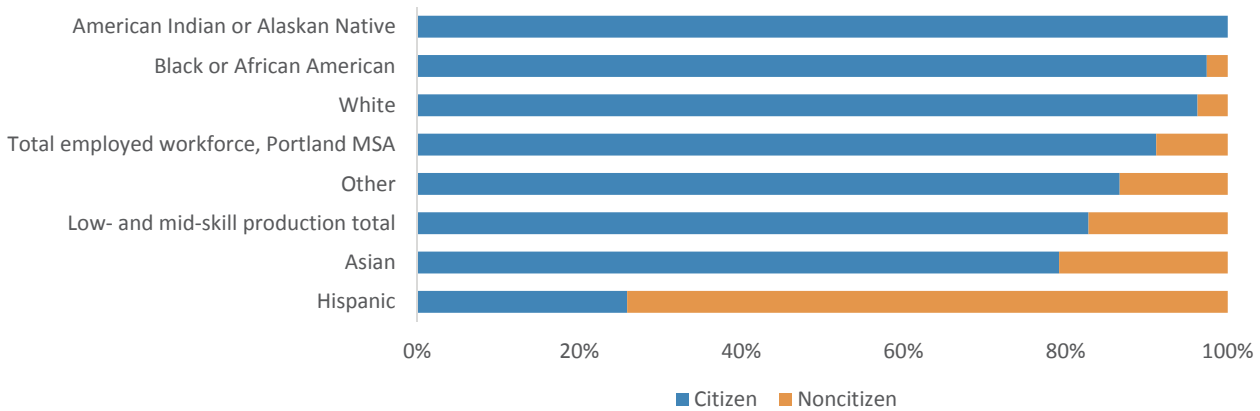
Compared to the region’s total employed workforce, Hispanics are overrepresented in construction and extraction occupations. Figure 16 shows that while Hispanics comprise just over nine percent of the region’s total employed workforce, they hold more than eighteen percent of construction and extraction jobs. With the exception of Asians, other racial groups are employed in construction and extraction jobs in numbers that reflect their total workforce participation.

Asians, however, are underrepresented in this group. More than six percent of the region’s total workforce is Asian but Asians hold just one and a half percent of construction and extraction jobs.

Citizenship Status

Between 2006 and 2010, workers without American citizenship were overrepresented in construction and extraction

Figure 17: Citizenship status by race and Hispanic origin of employed low- and mid-skill construction and extraction workforce, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-NCIT02W7

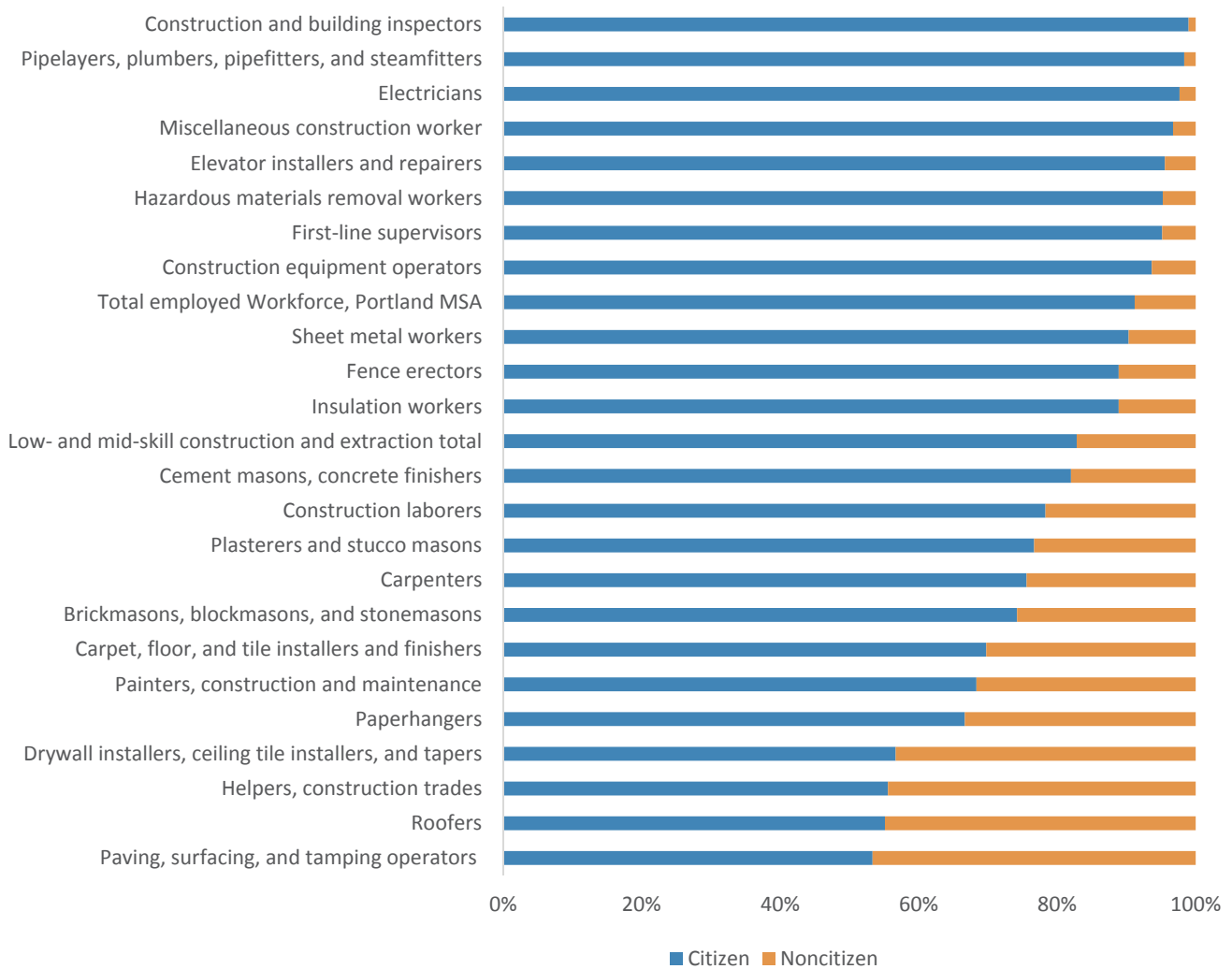
compared to the workforce as a whole. Figure 17 shows eighty-three percent of workers in construction and extraction were US citizens, compared to more than ninety-one percent of the region's total employed workforce. As Figure 18 shows, the construction and extraction occupation with the highest percentage of noncitizen workers was paving, surfacing, and tamping equipment operations. Nearly forty-seven percent of workers in that occupation were noncitizens. Electricians, pipelayers, plumbers, plumbers,

pipefitters, and steamfitters, and construction and building inspectors had the lowest percentage of noncitizen workers, less than three percent by occupation. These are also the three occupations in the field with the highest median wages.

Age

The construction and extraction field is younger than the region's total employed workforce. More than fifty-five per-

Figure 18: Citizenship status of employed low- and mid-skill construction and extraction workforce, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-NCIT02W8

cent of workers in construction and extraction occupations are ages sixteen to thirty-nine years, compared to forty-eight percent of the total workforce. Older workers, those age fifty and over, are underrepresented.

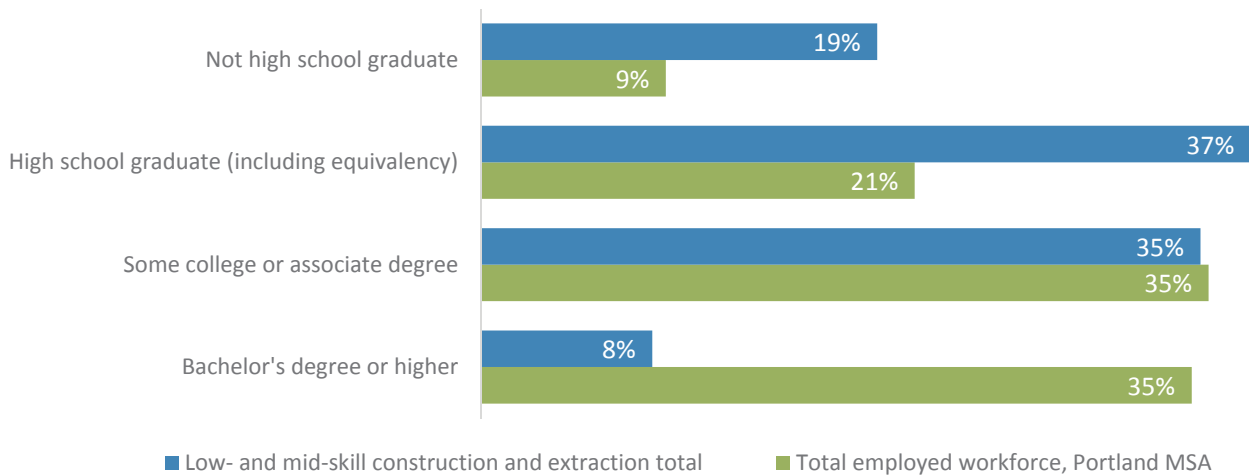
Educational Attainment

Although none of the construction and extraction occupations examined in this report require a post-secondary credential, more than eight percent of workers in this field have a bachelor's or advanced degree. As Figure 19 shows, nearly forty percent of workers have an associate degree or some college. It is not clear, however, how many workers completed the associate degree and how many had taken one or more college courses but did not complete a degree. Compared to the region's total workforce, workers in con-

struction and extraction are less likely to have a high school diploma (81% compared to 91% of the region's total workforce) or a bachelor's or advanced degree (8% compared to 35% of the region's total workforce).

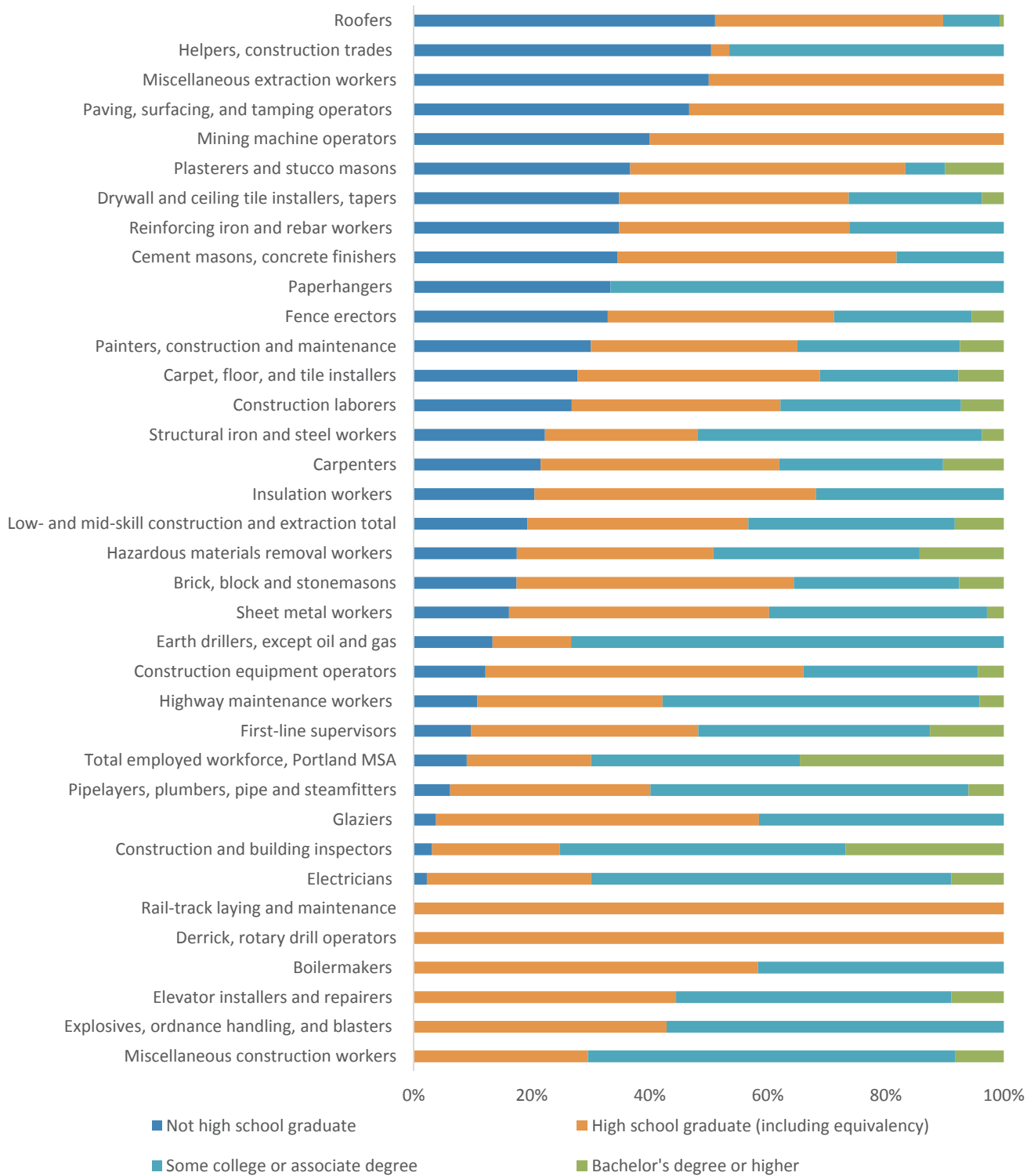
As Figure 20 shows, within construction and extraction, the occupation with the highest percentage of workers who hold a bachelor's degree is construction and building inspectors. Although the job requires a high school diploma, twenty-seven percent of workers have a bachelor's or advanced degree. Fifteen percent of hazardous materials removal workers have a bachelor's degree, as do thirteen percent of plasterers and stucco masons, and ten percent of carpenters.

Figure 19: Employed low- and mid-skill construction and extraction workforce by educational attainment, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL08W

Figure 20: Employed low- and mid-skill construction and extraction workforce, by educational attainment, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL08W

Wages

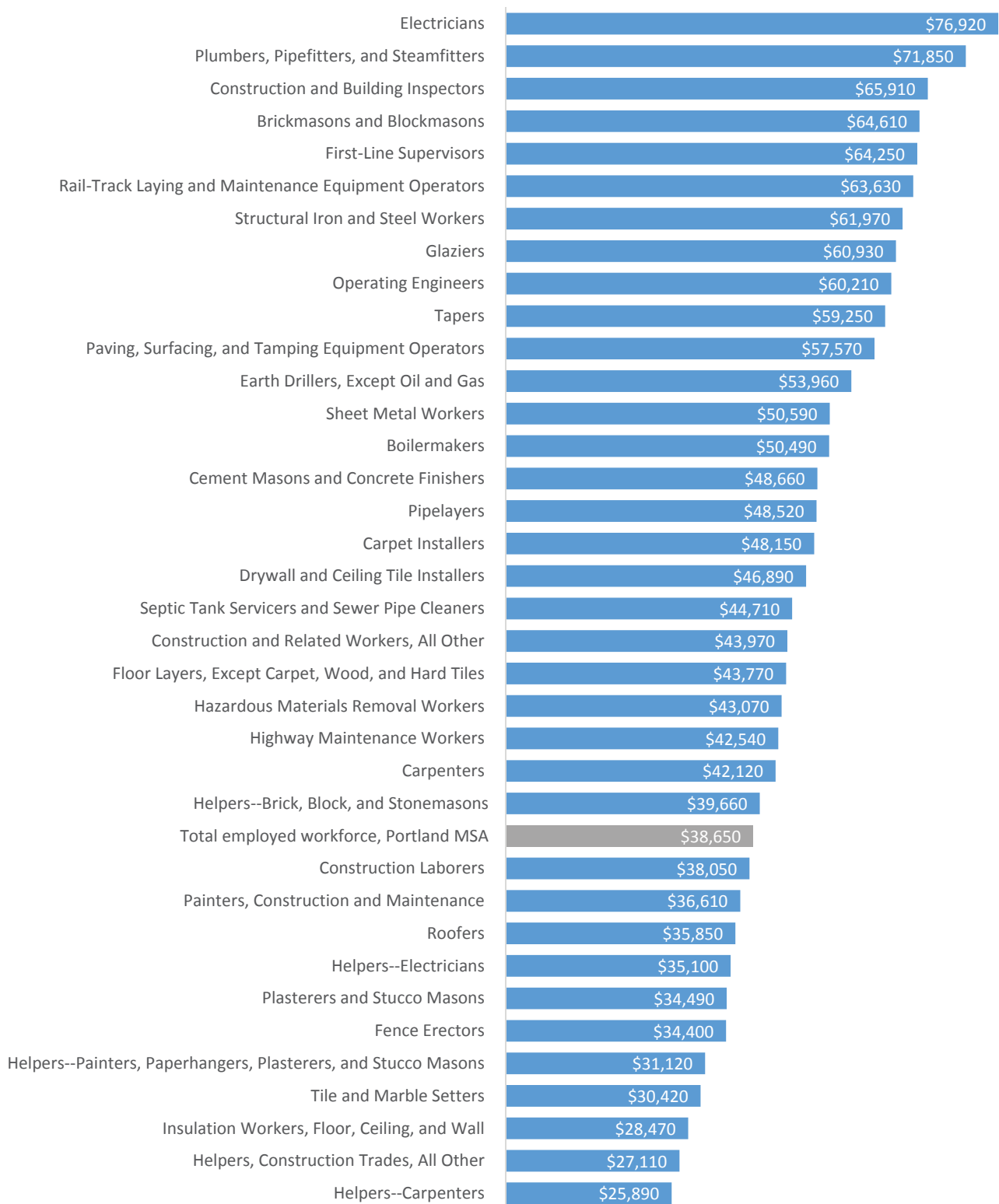
There isn't a strong correlation between occupations with high rates of educational attainment and higher wages.

While construction and building inspectors have an annual average wage that is 171% of the regional average wage for all occupations, the average wage for hazardous materials removal workers and carpenters are just slightly higher than the regional average (111% and 109% respectively), and the average annual wage for plasterers and stucco masons is just 89% of the region's annual average wage.

Figure 21 shows the median wage for each of the occupations in construction and extraction. Of the thirty-six occupations for which data are available, twenty-five pay an annual median wage that is higher than the annual median wage for the region as a whole (\$38,650 in 2013). Seven occupations are in the top twenty five percentage for wages in the region (\$60,980 or more). Slightly more than thirty percent of construction and extraction jobs are low-wage.

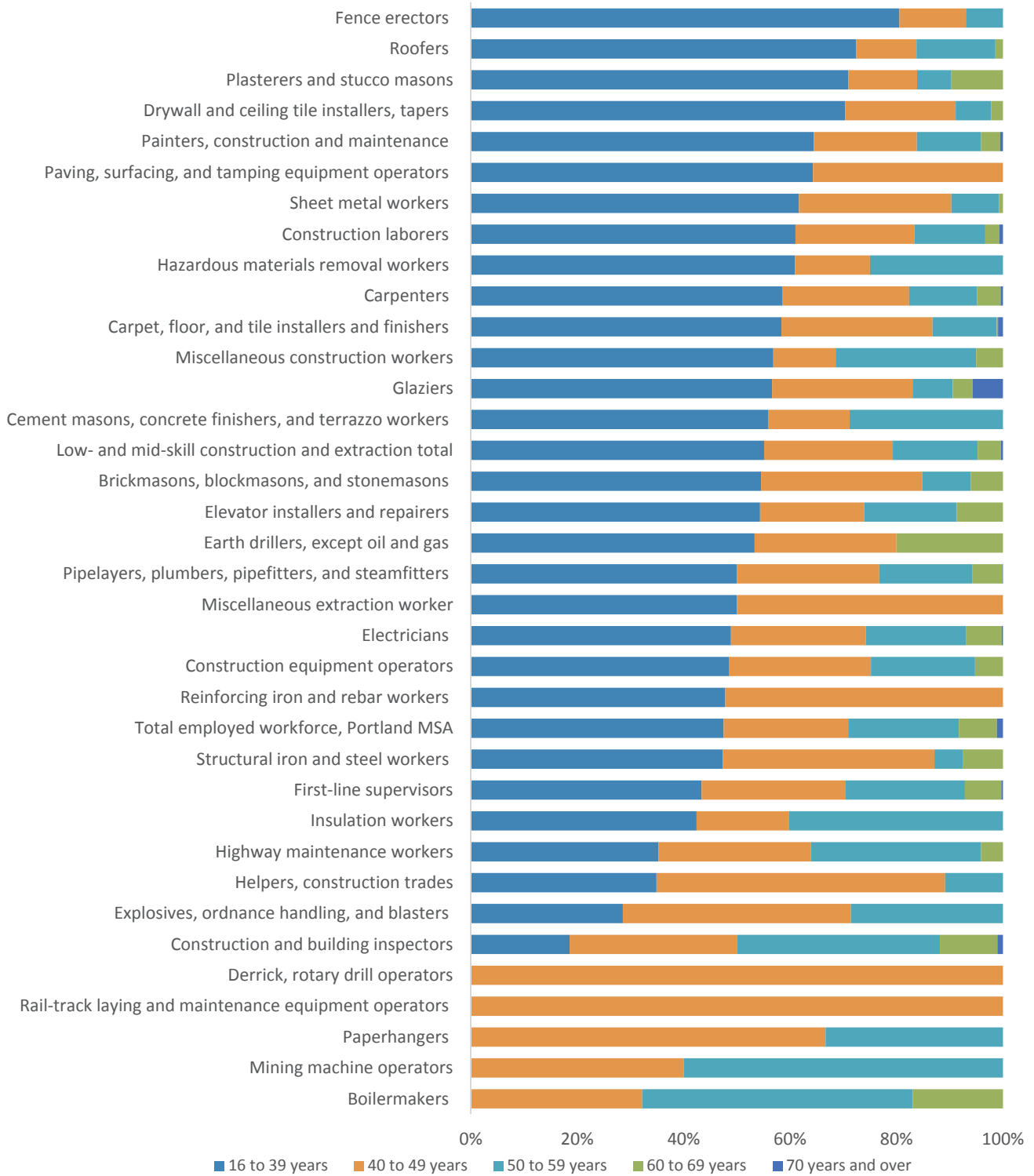
As shown in Figure 22, there does not appear to be a clear pattern between occupations where younger workers are overrepresented and wages. The four occupations with the highest concentration of workers age sixteen to thirty-nine pay an annual average wage between eighty-nine and 121 percent of the region's annual average wage for all occupations: fence erectors (89% of region's annual average wage), plasterers and stucco masons (89% of region's annual average wage), roofers (93% of region's annual average wage), and drywall and ceiling tile installers (121% of region's annual average wage).

Figure 21: Annual median wage, low- and mid-skill construction and extraction occupations, Portland-Vancouver-Hillsboro MSA, 2013



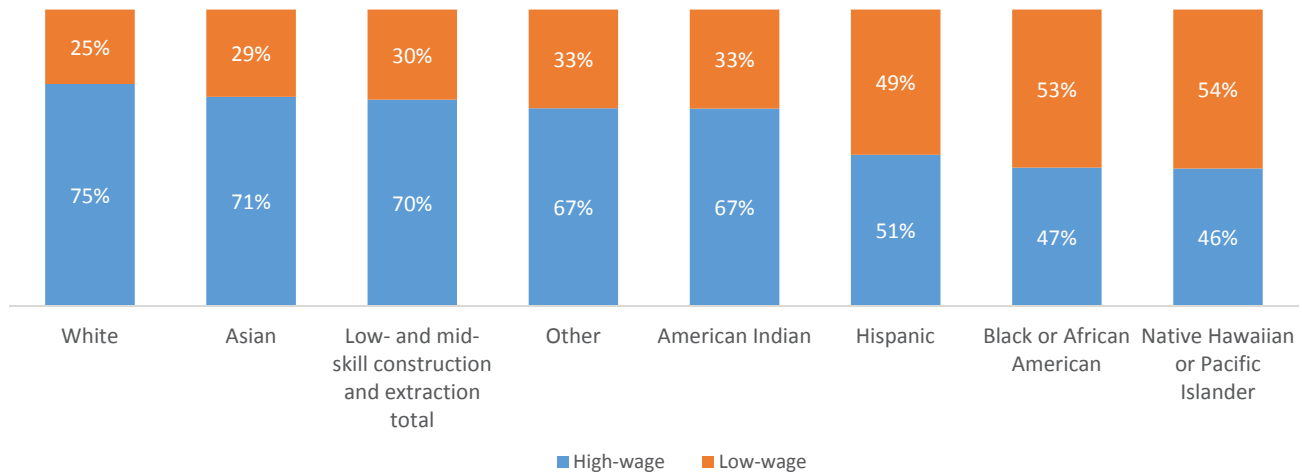
Source: Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

Figure 22: Employed low- and mid-skill construction and extraction workforce, by age and occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL12W

Figure 23: Percentage of employed low- and mid-skill construction and extraction workforce in low- and high-wage occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

Figure 23 shows the distribution of high-wage and low-wage jobs and across race and Hispanic origin. Slightly more than thirty percent of construction and extraction jobs are low-wage. Of those employed in construction and extraction, white and Asian workers were the most likely to work in jobs where the annual median wage is higher than that of the region as a whole. Hispanic, Native Hawaiian or Pacific Islander, and black or African American construction and extraction workers were the most likely to work in low-wage occupations.

Regional Employment Projections

We report expected growth in job openings by both percentage (Figure 24) and number (Figure 25). Of the thirty-nine construction and extraction occupations for which data are available, thirty-eight are expected to experience positive growth in the number of jobs during the next ten years. Twelve occupations are expected to grow by more than a third: tile and marble setters (33%), painters, construction and maintenance (34%), glaziers (34%), brickmasons and blockmasons (35%), structural iron and steel workers

(37%), insulation workers, floor, ceiling, and wall (39%), fence erectors (39%), cement masons and concrete finishers (39%), floor layers, except carpet, wood, and hard tiles (43%), pile-driver operators (43%), insulation workers, mechanical (52%), and stonemasons (52%). The occupations with the smallest rates of anticipated positive job growth are rail-track laying and maintenance equipment operators (9%), and highway maintenance workers (5%).⁵

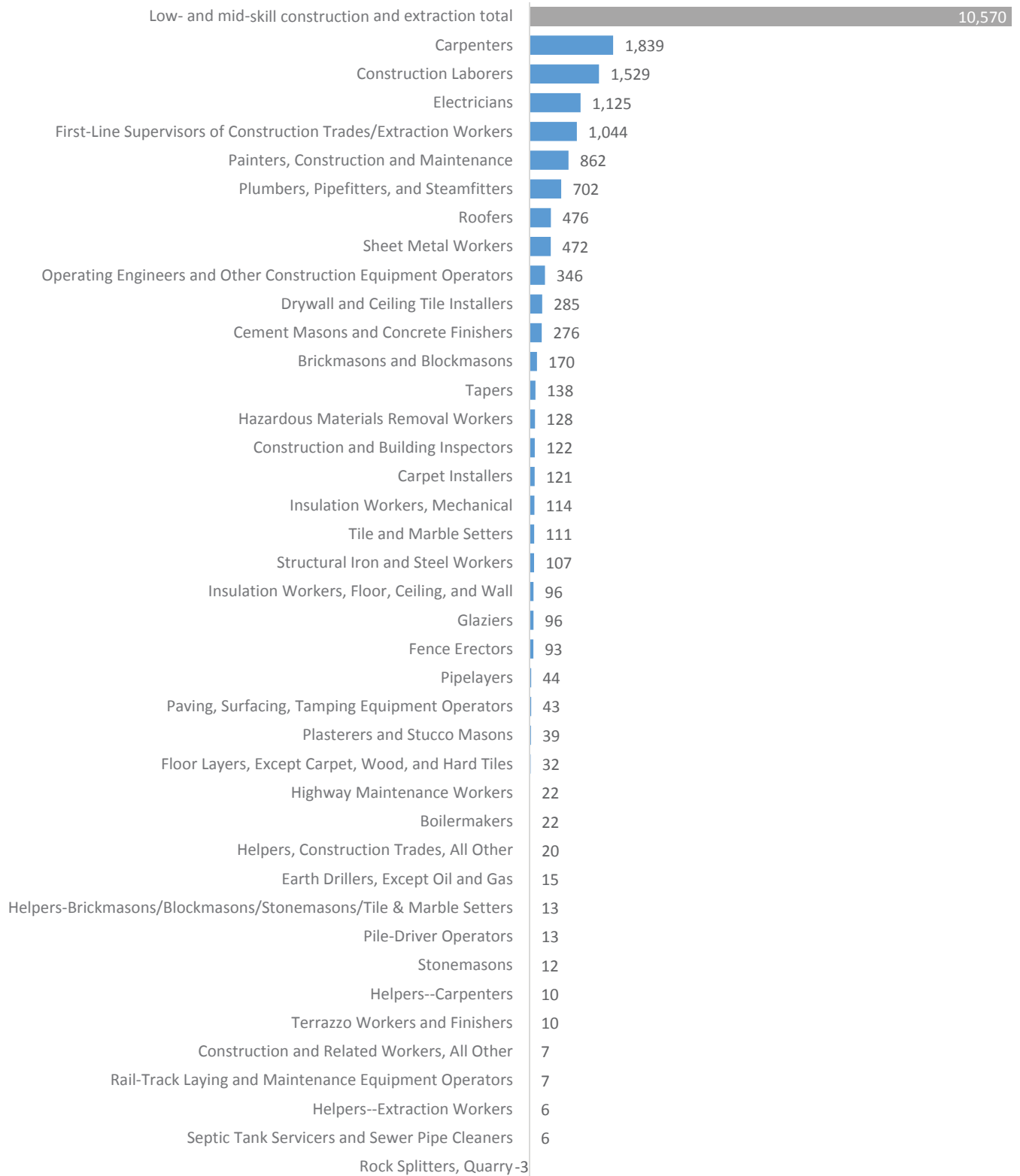
Six construction and extraction occupations are expected to add between 500 and 2,000 new jobs during the next ten years: plumbers, pipefitters, and steamfitters (702 jobs), painters, construction and maintenance (862 jobs), first-line supervisors of construction trades and extraction workers (1,044 jobs), electricians (1,125 jobs), construction laborers (1,529 jobs), and carpenters (1,839 jobs).

Slightly more than thirty percent of construction and extraction jobs are low wage, meaning the occupation's annual median wage is below the region's annual median wage (\$38,650 in 2013). Hispanic, Native Hawaiian or Pacific

Islander, and black or African American construction and extraction workers were the most likely to work in low wage occupations.

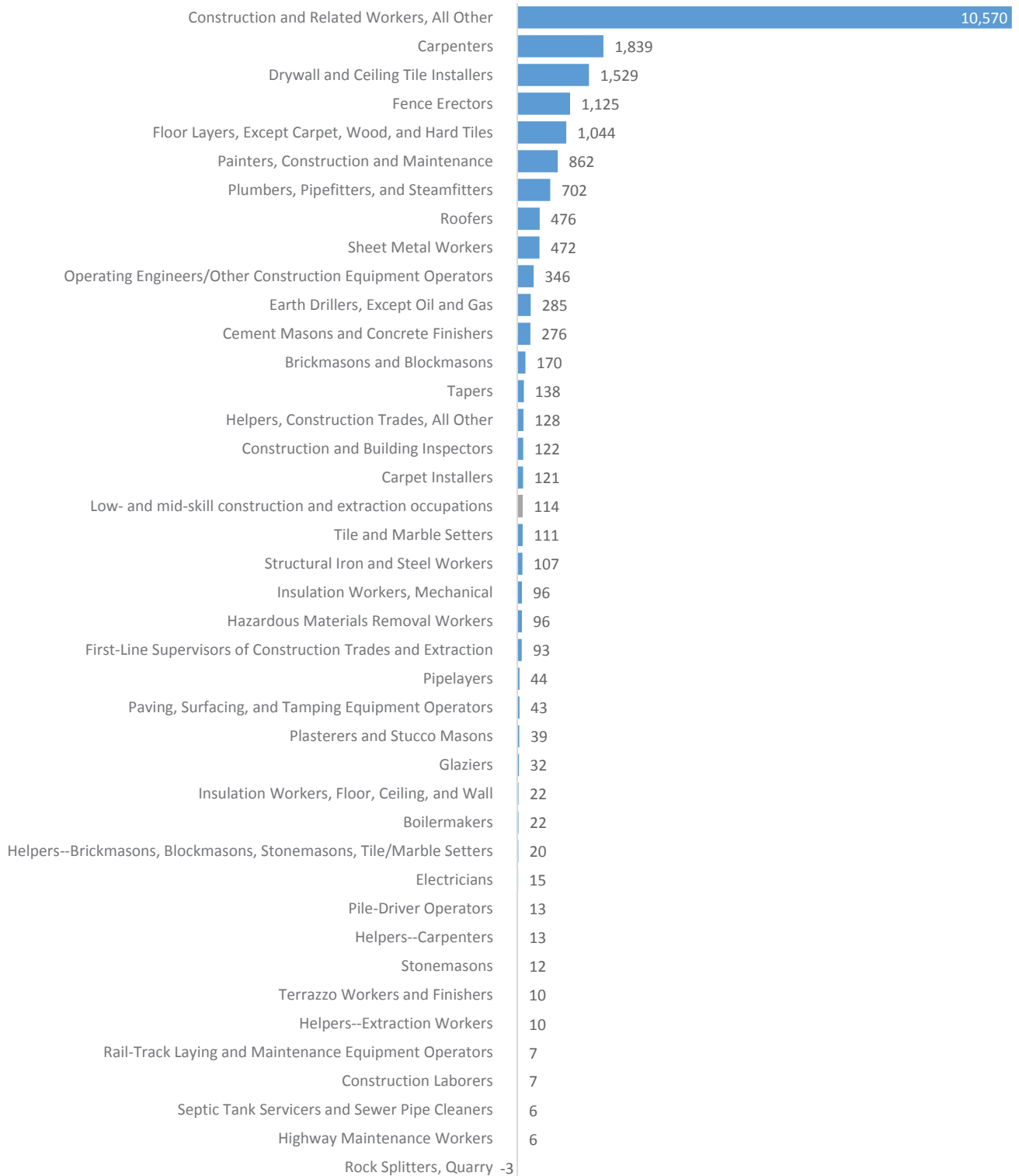
Of the five occupations where young workers are not represented, three are not anticipated to grow within the next ten years (paperhangers, mining machine operators, derrick, rotary drill, and service unit operators, and roustabouts, oil, gas, and mining) are two are expected to experience modest growth: rail-track laying and maintenance equipment operators (expected to add seven new jobs for a growth rate of 9%) and boilermakers (expected to add twenty-two new jobs for a growth rate of 11%).

Figure 24: Projected job growth, low- and mid-skill construction and extraction occupations, ten year estimates, 2012-2022



Source: Oregon Employment Department and Washington Security Department

Figure 25: Projected job growth, low- and mid-skill construction and extraction occupations, ten year estimates, 2012-2022



Source: Oregon Employment Department and Washington Security Department

HEALTHCARE

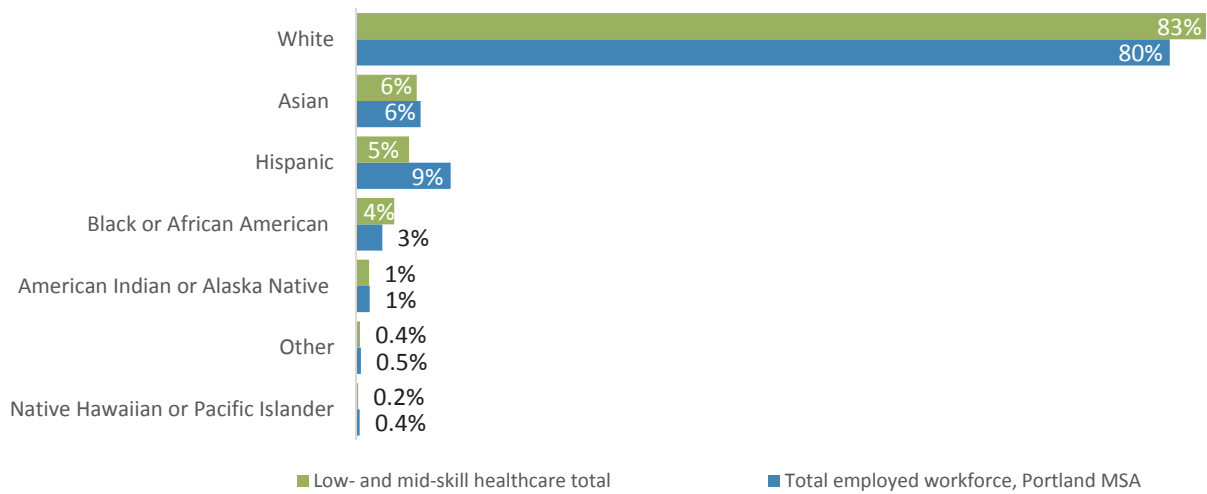
In the Portland-Vancouver-Hillsboro MSA, more than seventy thousand workers, just under seven percent of the total employed workforce, were employed in healthcare between 2006 and 2010. Seventy percent of healthcare jobs (more than 56,000) are in occupations that require educational credentials that can be earned with no more than two years of post-high school education. Those occupations are listed in Table 6. Healthcare, in this report, refers exclusively to these occupations. In 2013, these low- and medium-skill occupations account for more than five percent of all jobs in the Portland-Vancouver-Hillsboro MSA.

Race and Hispanic Origin

Compared to the region's total workforce, whites are over-represented in healthcare occupations (Figure 26). While whites comprise less than eighty percent of the total workforce, they hold more than eighty-two percent of healthcare jobs. With the exception of Hispanics, other groups are employed in healthcare in numbers that reflect their total workforce participation. Hispanics, however, are underrepresented in this group. More than nine percent of the MSA's total workforce is Hispanic but they hold just over five percent of healthcare jobs.

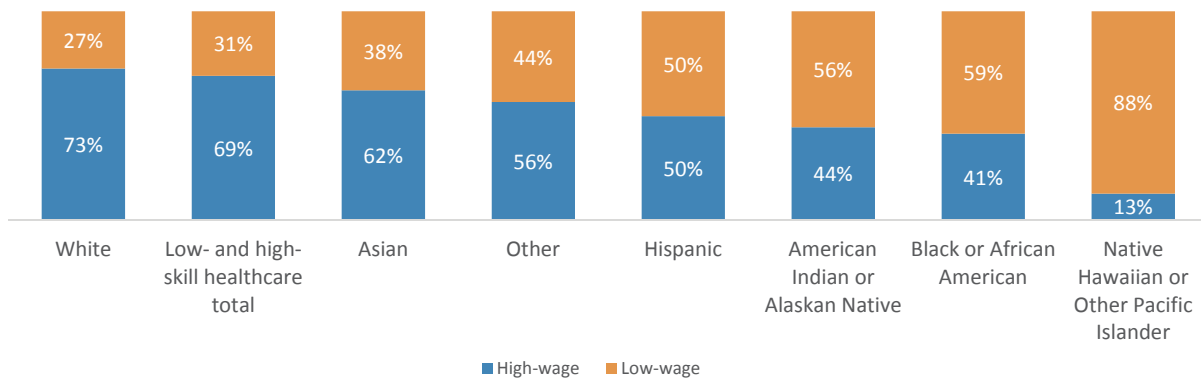
TABLE 6: HEALTHCARE OCCUPATIONS REQUIRING TWO OR FEWER YEARS OF POST-HIGH SCHOOL EDUCATION			
LESS THAN HIGH SCHOOL DIPLOMA			
HOME HEALTH AIDES			
HIGH SCHOOL DIPLOMA			
DENTAL ASSISTANTS	MEDICAL ASSISTANTS	ORDERLIES	PSYCHIATRIC AIDES
DIETETIC TECHNICIANS	OPTICIANS, DISPENSING	PHARMACY AIDES	VETERINARY ASSISTANTS AND LABORATORY ANIMAL CARETAKERS
HEALTHCARE SUPPORT WORKERS, ALL OTHER			
POST-SECONDARY CREDENTIAL			
EMERGENCY MEDICAL TECHNICIANS AND PARAMEDICS	MEDICAL AND CLINICAL LABORATORY TECHNICIANS	NURSING ASSISTANTS	PSYCHIATRIC TECHNICIANS
HEARING AID SPECIALISTS	MEDICAL EQUIPMENT PREPARERS	OPHTHALMIC MEDICAL TECHNICIANS	SURGICAL TECHNOLOGISTS
LICENSED PRACTICAL AND LICENSED VOCATIONAL NURSES	MEDICAL RECORDS AND HEALTH INFORMATION TECHNICIANS	PHARMACY TECHNICIANS	
MASSAGE THERAPISTS	MEDICAL TRANSCRIPTIONISTS	PHLEBOTOMISTS	
ASSOCIATE DEGREE			
CARDIOVASCULAR TECHNOLOGISTS AND TECHNICIANS	HEALTHCARE PRACTITIONERS AND TECHNICAL WORKERS, ALL OTHER	PHYSICAL THERAPIST AIDES	RESPIRATORY THERAPISTS
DENTAL HYGIENISTS	MAGNETIC RESONANCE IMAGING TECHNOLOGISTS	PHYSICAL THERAPIST ASSISTANTS	VETERINARY TECHNOLOGISTS AND TECHNICIANS
DIAGNOSTIC MEDICAL SONOGRAPHERS	NUCLEAR MEDICINE TECHNOLOGISTS	RADIOLOGIC TECHNOLOGISTS	
HEALTH TECHNOLOGISTS AND TECHNICIANS, ALL OTHER	OCCUPATIONAL THERAPY ASSISTANTS	REGISTERED NURSES	
SOURCE: OREGON EMPLOYMENT DEPARTMENT; BUREAU OF LABOR STATISTICS			
For a detailed description of each occupation, including a description of the job and training requirements, see appendix ii.			

Figure 26: Employed low- and mid-skill healthcare workforce, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W

Figure 27: Percentage of employed low- and mid-skill healthcare workforce in low and high wage occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

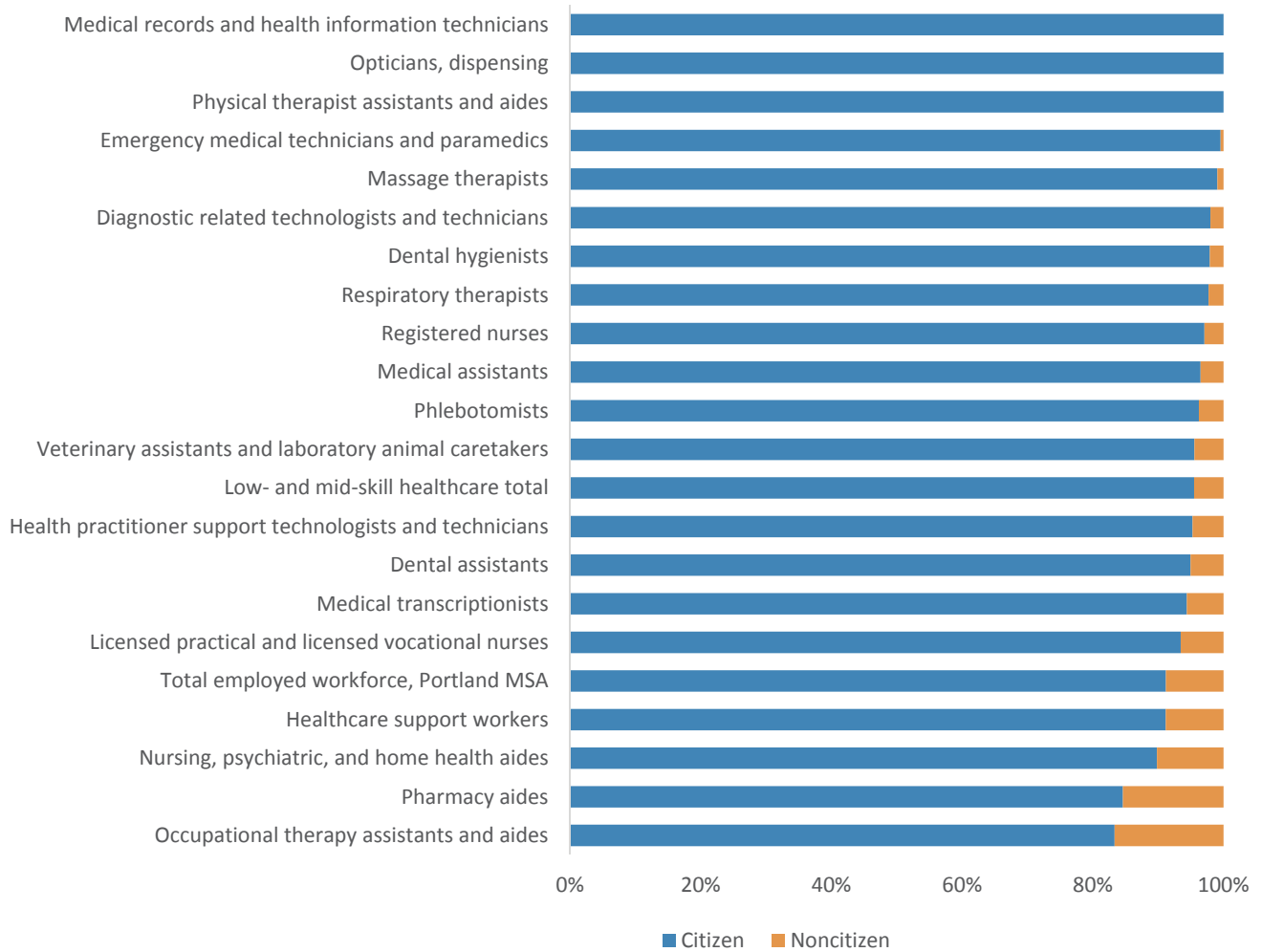
Citizenship Status

Workers with American citizenship are overrepresented in healthcare (96% compared to 91% for the region's total employed workforce). Four and a half percent of workers in healthcare occupations are not American citizens (Figure 27). The groups with the largest percentage of noncitizen workers were Hispanic (20%), Asian (17%), and black or African American (16%). Hispanic and Asian noncitizen

workers were underrepresented in healthcare compared to their presence in the region's total employed workforce while black or African American workers noncitizen workers were overrepresented (16% in healthcare compared to 5% in the total workforce).

As shown in Figure 28, the healthcare occupation with the highest percentage of noncitizen workers is occupational

Figure 28: Citizenship status of employed low- and mid-skill healthcare workforce, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-NCIT02W9

therapy assistants and aides. Opticians and medical records and health information technicians had the lowest percentage of noncitizen workers.

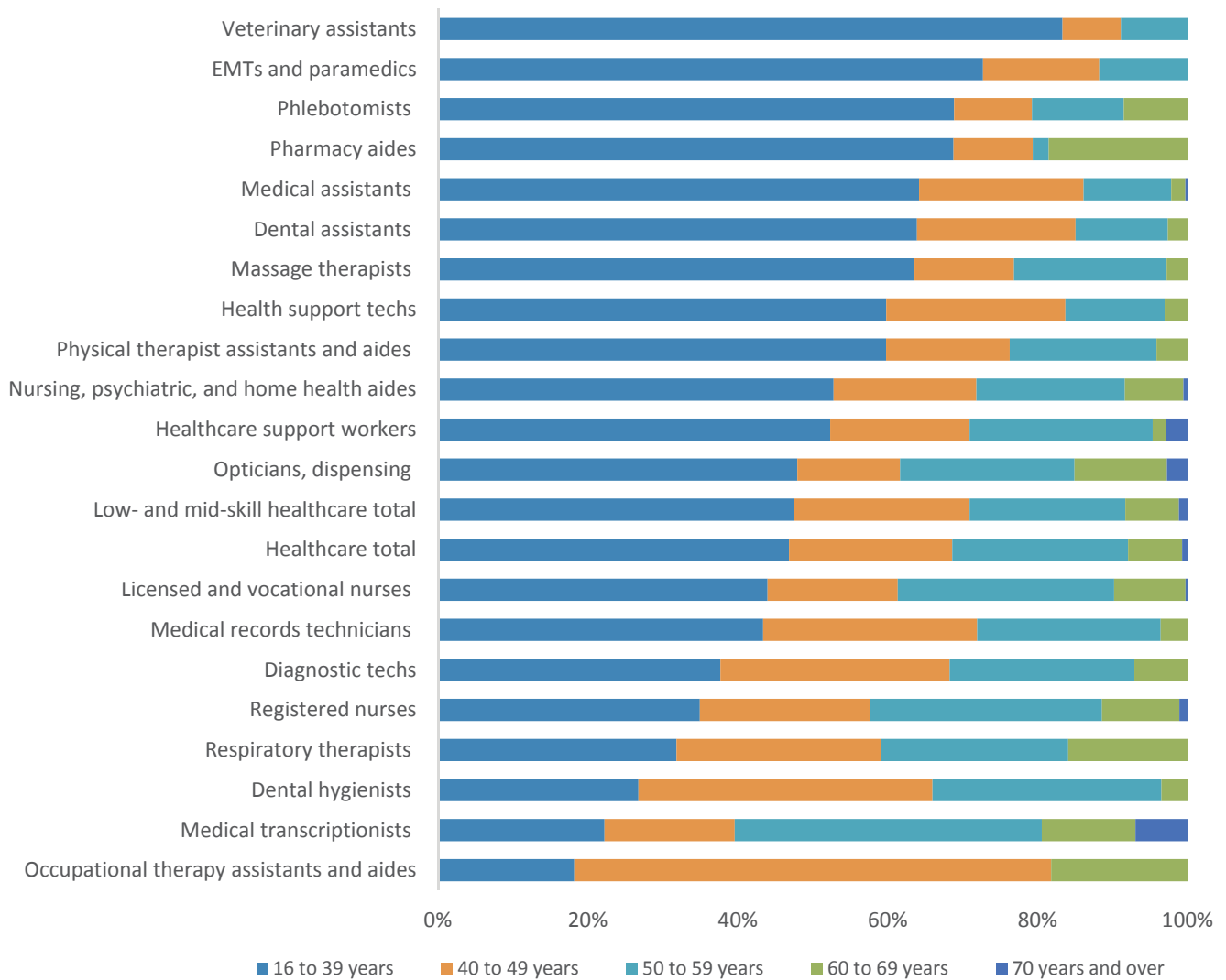
Age

The distribution of employed workers by age in the healthcare field is very similar to that of the region's employed workforce as a whole (Figure 29). Workers age fifty to fifty-nine years old are slightly overrepresented in healthcare, but the difference is likely insignificant (24% compared to

21% of the region's total workforce).

Within healthcare, there are two occupations where more than seventy percent of workers are ages sixteen to thirty-nine years: emergency medical technicians and paramedics (73%), and veterinary assistants and laboratory animal caretakers (83%). Workers age sixty years and over are eight percent of the region's workforce and of the total healthcare workforce, however, in five healthcare occupation they are more than fifteen percent of the workforce: occupational

Figure 29: Employed healthcare workforce, by age and occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL12W

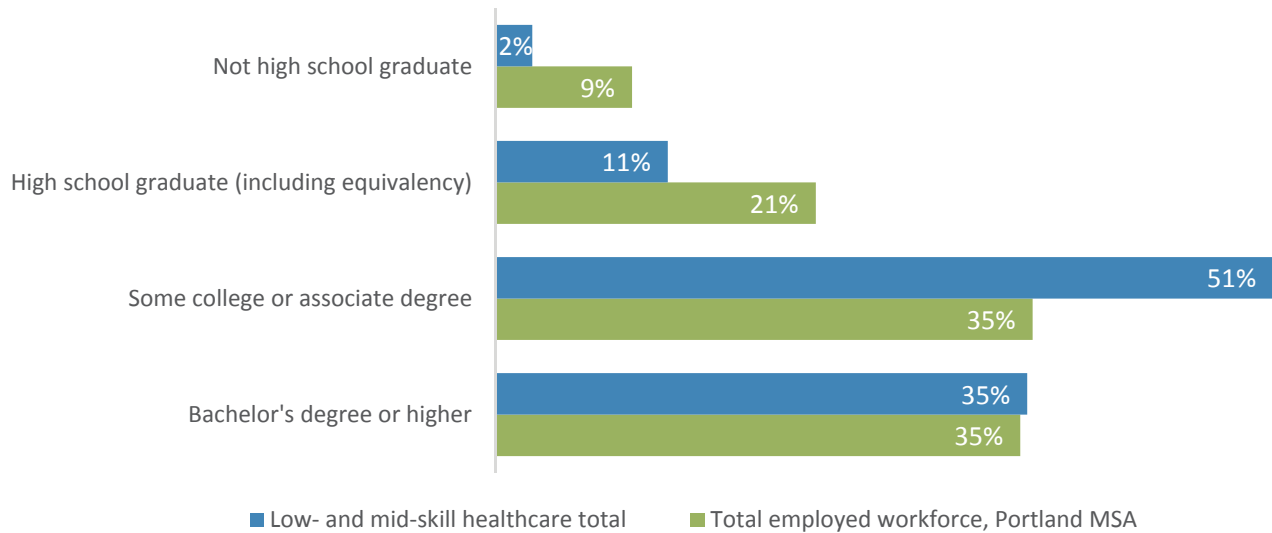
therapy assistants and aides (18%), medical transcriptionists (19%), respiratory therapists (16%), opticians (15%), and pharmacy aides (19%).

Educational Attainment

Although none of the occupations require a bachelor's, more than thirty-five percent of employed healthcare workers had a bachelor's or advanced degree (Figure 30). More than half of all workers had some college or an associate degree. It is

not clear, however, how many workers completed the associate degree and how many had taken one or more college courses but did not complete a degree. Compared to the region's total employed workforce, healthcare workers are more likely to have graduated high school (97% compared to 91% of the region's total workforce) and more likely to have some college or an associate degree (51% compared to 35% of the region's total workforce).

Figure 30: Employed low- and mid-skill healthcare workforce by educational attainment, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL08W

The healthcare occupation with the highest percentage of workers who hold a bachelor’s degree is registered nurses. As shown in Figure 31, although the job requires an associate degree, more than sixty-three percent of workers have a bachelor’s or advanced degree. More than fifty-two percent of dental hygienists have a bachelor’s degree or advanced degree, as do more than a third of physical therapy assistants and aides, occupational therapy assistants and aides, massage therapists, and emergency medical technicians.

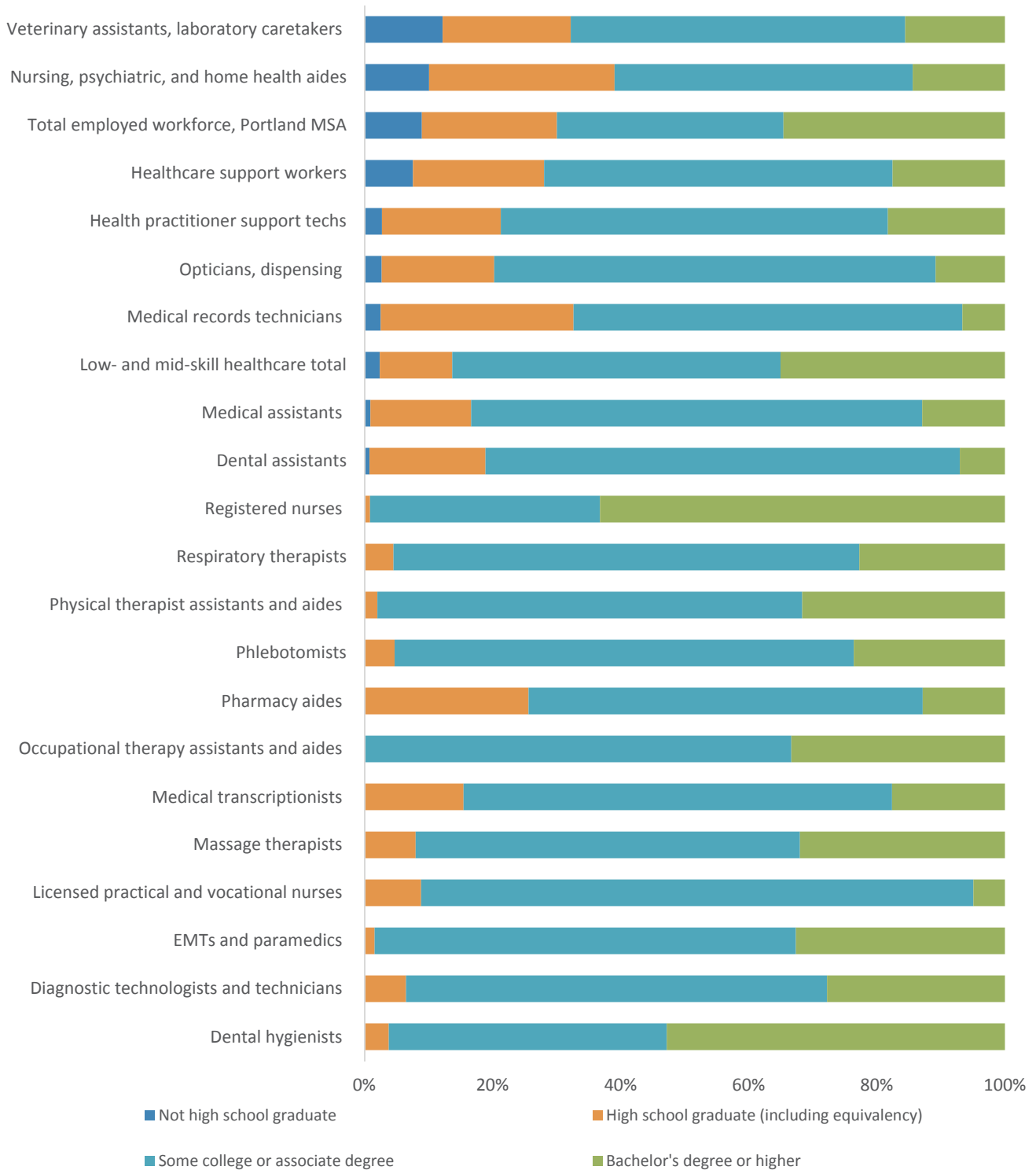
which data are available, twenty-three pay an annual median wage that is higher than the annual median wage for the region as a whole (\$38,650 in 2013). Eight occupations are in the seventy-fifty percentile of wages in the region (\$60,980).

Wages

Occupations with higher levels of educational attainment offer higher wages. The annual median wage for dental hygienists is 215 percent of the region’s annual median wage for all occupations. The median annual wage for registered nurses is slightly higher, at 217 percent of the region’s annual wage.

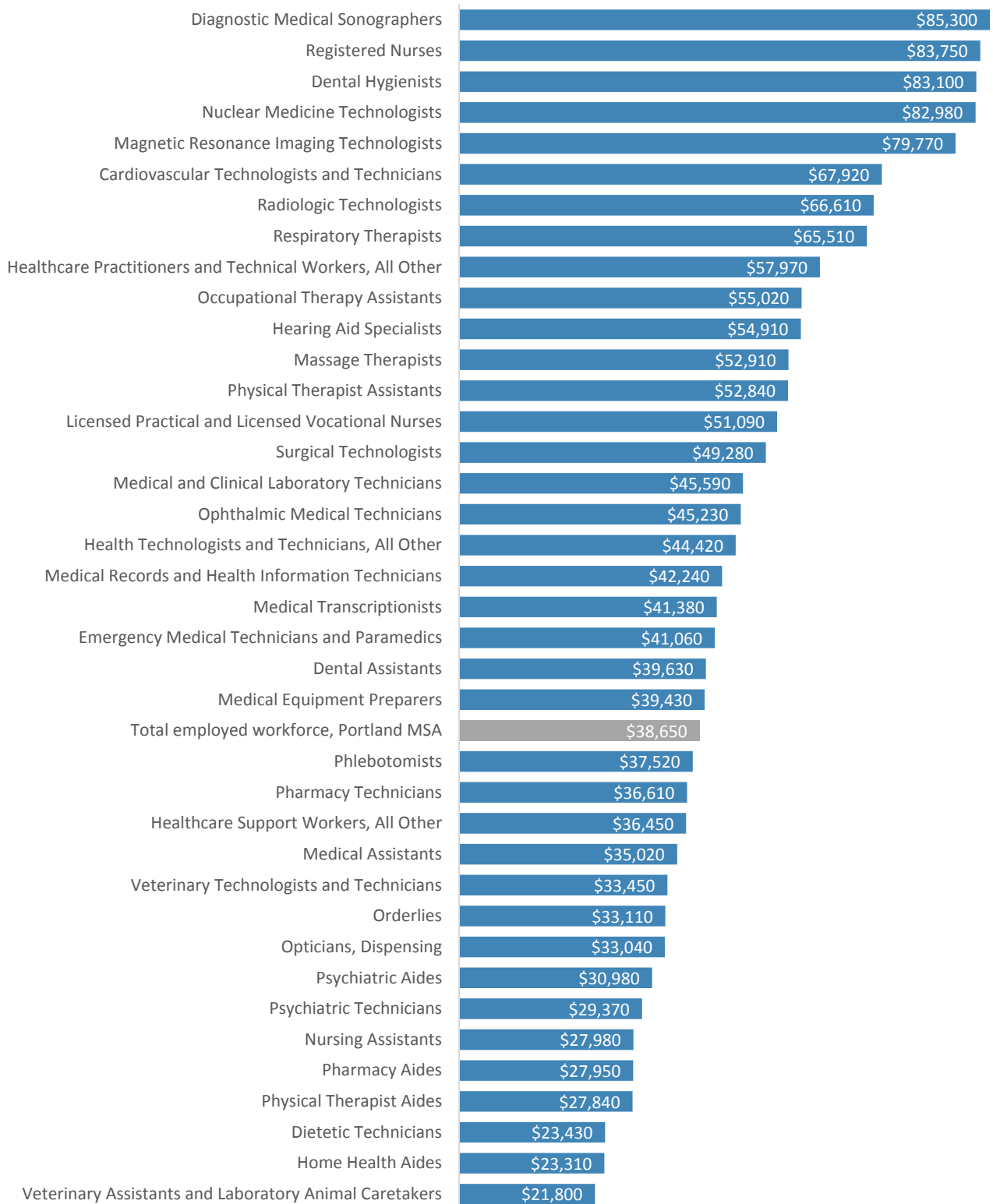
Figure 32 shows the median wage for each of the healthcare occupations. Of the thirty-eight healthcare occupations for

Figure 31: Employed low- and mid-skill healthcare workforce by educational attainment, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



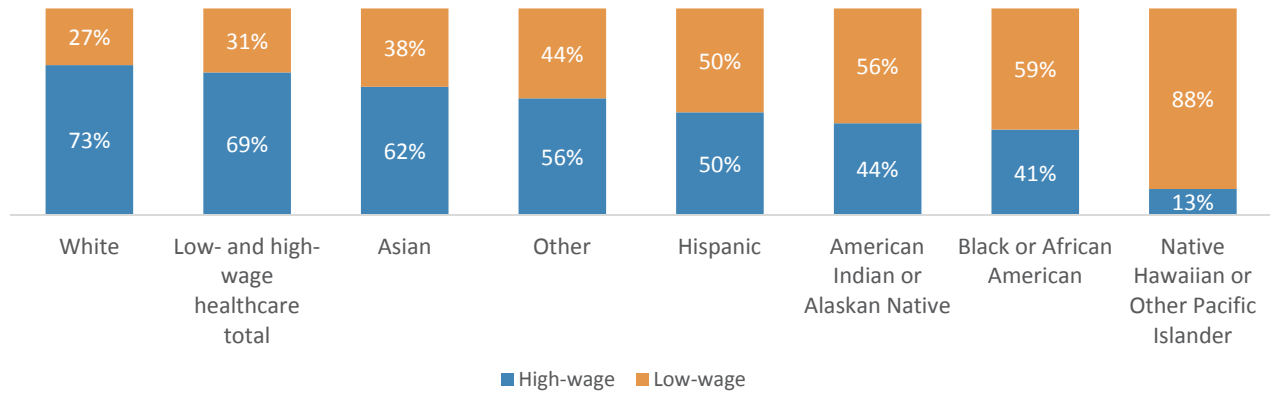
Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL08W

Figure 32: Annual median wage, low- and mid-skill healthcare occupations, Portland-Vancouver-Hillsboro MSA, 2013



Source: Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

Figure 33: Percentage of employed low- and mid-skill healthcare workforce in low- and high-wage occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

Figure 33 shows the distribution of low-wage and high-wage jobs across race and Hispanic origin. Thirty-one percent of healthcare jobs are low-wage, meaning the occupation’s annual median wage is below the region’s annual median wage. Of those employed in healthcare, white and Asian workers were the most likely to work in jobs where the annual median wage is higher than that of the region as a whole (\$38,650 in 2013). Hispanic, Native Hawaiian or Pacific Islander, and black or African American healthcare workers were the most likely to work in low-wage occupations.

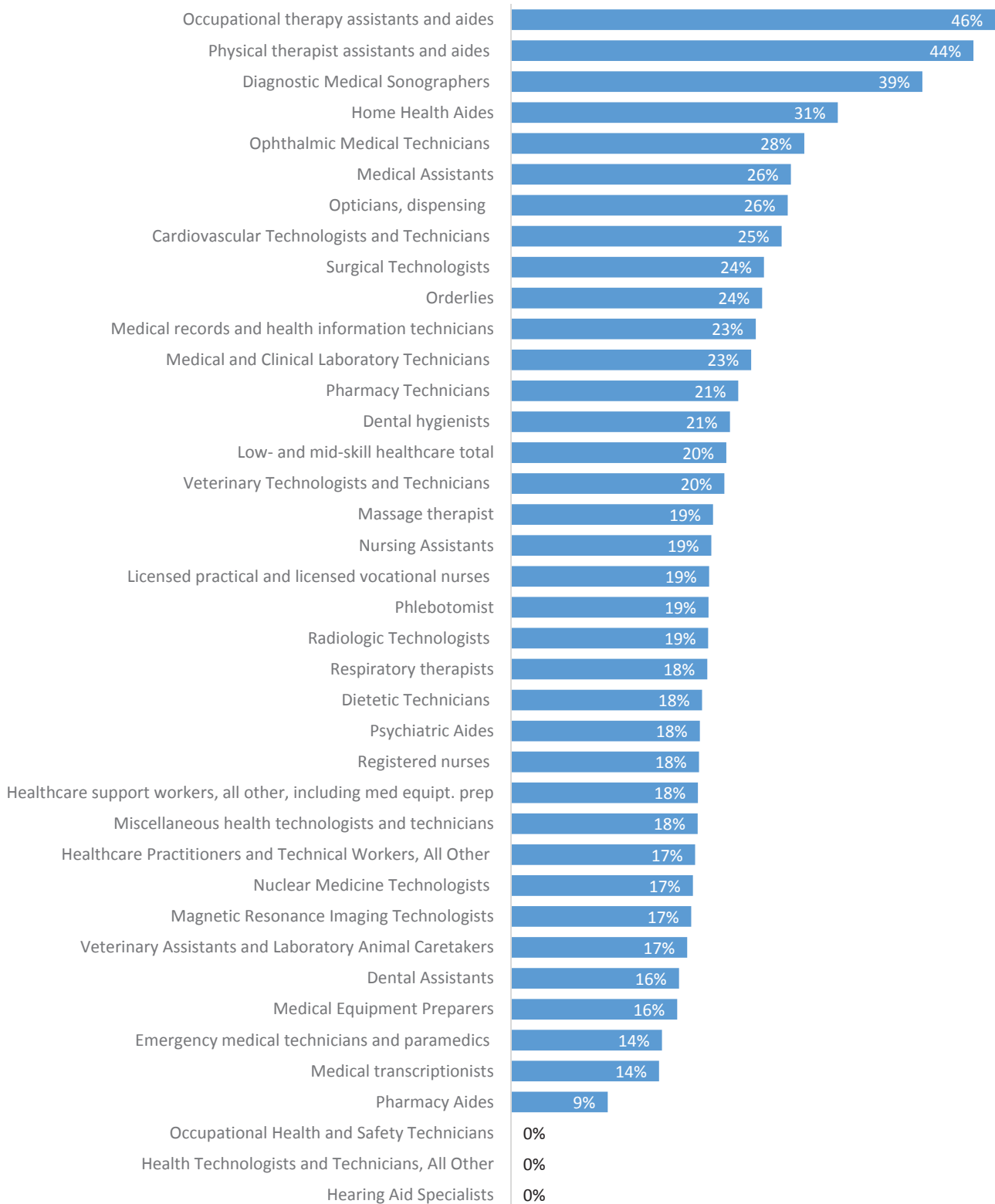
tional health and safety technicians (0%), and hearing aid specialists (0%).

Five healthcare occupations are expected to add between 500 and 3,500 new jobs during the next ten years: pharmacy technicians (620 jobs), medical assistants (1,012 jobs), home health aides (1,025 jobs), nursing assistants (1,092 jobs), and registered nurses (3,254 jobs).

Regional Employment Projections

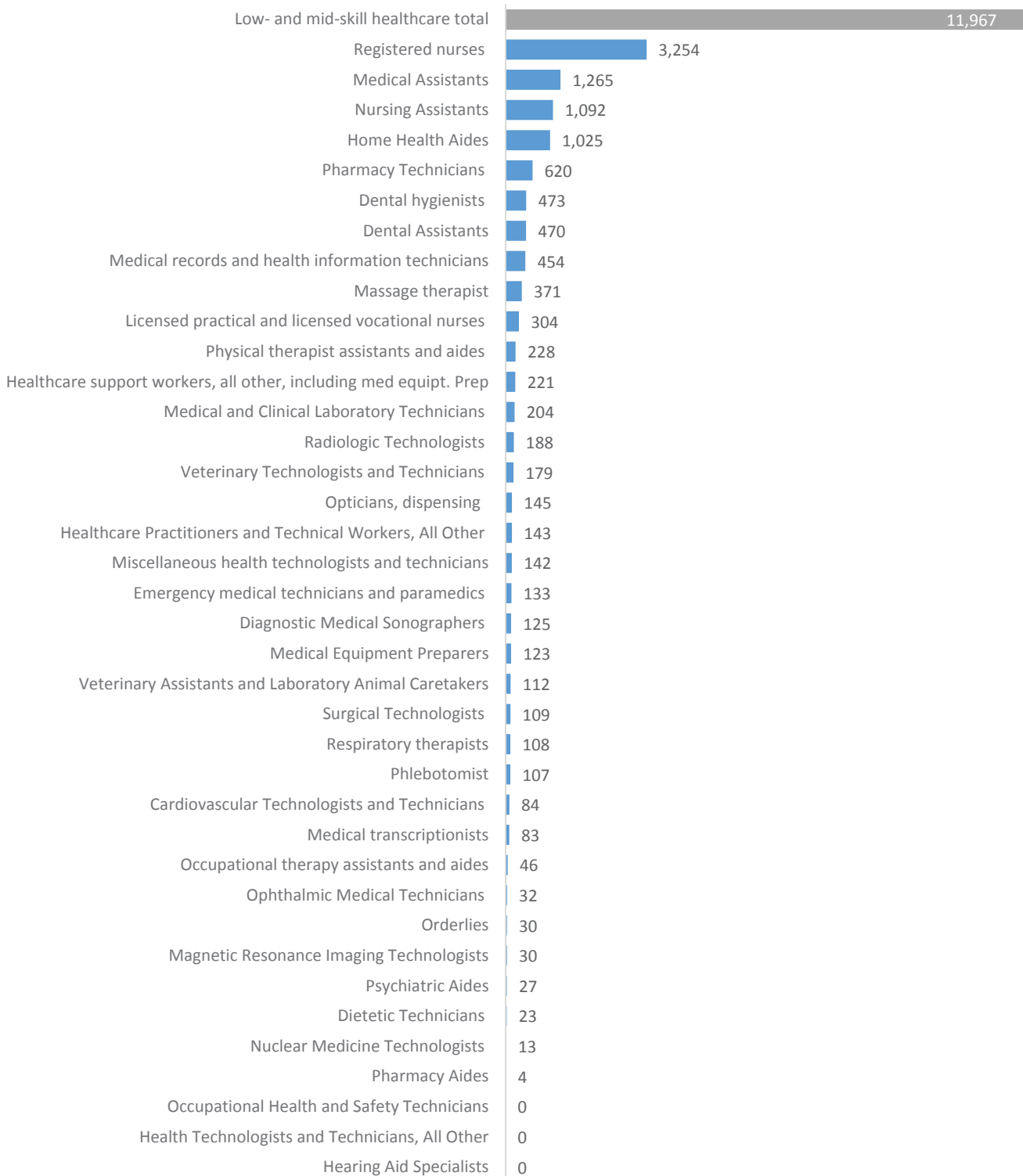
We report expected growth in job openings by both percentage (Figure 34) and number (Figure 35). Of the forty-one healthcare occupations for which data are available, thirty-nine are expected to experience positive growth in the number of jobs during the next ten years. Three occupations are expected to grow by more than a third: diagnostic medical sonographers (39%), physical therapist assistants and aides (44%), and occupational therapy assistants and aides (46%). The occupations with the smallest rates of anticipated positive job growth are pharmacy aides (9%), occupa-

Figure 34: Projected job growth, low- and mid-skill healthcare occupations, ten year estimates, 2012-2022



Source: Oregon Employment Department and Washington Department of Employment Security

Figure 35: Projected job growth, low- and mid-skill healthcare occupations, ten year estimates, 2012-2022



Source: Oregon Employment Department and Washington Department of Employment Security

INSTALLATION, MAINTENANCE, AND REPAIR

Installation, maintenance, and repair workers coordinate and perform activities related to the repair and maintenance

of machines, mechanical equipment, and buildings. They also work on plumbing, electrical, and air conditioning

TABLE 7: INSTALLATION, MAINTAINANCE, AND REPAIR OCCUPATIONS REQUIRING TWO OR FEWER YEARS OF POST-HIGH SCHOOL EDUCATION			
HIGH SCHOOL DIPLOMA			
AUTOMOTIVE BODY AND RELATED REPAIRERS	FARM EQUIPMENT MECHANICS AND SERVICE TECHNICIANS	MAINTENANCE WORKERS, MACHINERY	RAIL CAR REPAIRERS
AUTOMOTIVE GLASS INSTALLERS AND REPAIRERS	FIRST-LINE SUPERVISORS OF MECHANICS, INSTALLERS, AND REPAIRERS	MANUFACTURED BUILDING AND MOBILE HOME INSTALLERS	RIGGERS
BICYCLE REPAIRERS	HELPERS--INSTALLATION, MAINTENANCE, AND REPAIR WORKERS	MECHANICAL DOOR REPAIRERS	TELECOMMUNICATIONS LINE INSTALLERS AND REPAIRERS
BUS AND TRUCK MECHANICS AND DIESEL ENGINE SPECIALISTS	HOME APPLIANCE REPAIRERS	MOBILE HEAVY EQUIPMENT MECHANICS, EXCEPT ENGINES	TIRE REPAIRERS AND CHANGERS
CAMERA AND PHOTOGRAPHIC EQUIPMENT REPAIRERS	INDUSTRIAL MACHINERY MECHANICS	MOBILE HEAVY EQUIPMENT MECHANICS, EXCEPT ENGINES	WATCH REPAIRERS
COIN, VENDING, AND AMUSEMENT MACHINE SERVICERS AND REPAIRERS	INSTALLATION, MAINTENANCE, AND REPAIR WORKERS, ALL OTHER	MOTORBOAT MECHANICS AND SERVICE TECHNICIANS	
COMPUTER, AUTOMATED TELLER, AND OFFICE MACHINE REPAIRERS	LOCKSMITHS AND SAFE REPAIRERS	MOTORCYCLE MECHANICS	
CONTROL AND VALVE INSTALLERS AND REPAIRERS, EXCEPT MECHANICAL DOOR	MAINTENANCE AND REPAIR WORKERS, GENERAL	OUTDOOR POWER EQUIPMENT AND OTHER SMALL ENGINE MECHANICS	
HIGH SCHOOL DIPLOMA + APPRENTICESHIP			
MILLWRIGHTS			
POST-SECONDARY CREDENTIAL			
AIRCRAFT MECHANICS AND SERVICE TECHNICIANS	ELECTRICAL AND ELECTRONICS REPAIRERS, TRANSPORTATION EQUIPMENT, AND INDUSTRIAL AND UTILITY	MEDICAL EQUIPMENT REPAIRERS	SECURITY AND FIRE ALARM SYSTEMS INSTALLERS
AUTOMOTIVE SERVICE TECHNICIANS AND MECHANICS	ELECTRICAL POWER-LINE INSTALLERS AND REPAIRERS	MUSICAL INSTRUMENT REPAIRERS AND TUNERS	SIGNAL AND TRACK SWITCH REPAIRERS
AVIONICS TECHNICIANS	ELECTRONIC HOME ENTERTAINMENT EQUIPMENT INSTALLERS AND REPAIRERS	RADIO, CELLULAR, AND TOWER EQUIPMENT INSTALLERS AND REPAIRERS	TELECOMMUNICATIONS EQUIPMENT INSTALLERS AND REPAIRERS, EXCEPT LINE INSTALLERS
ELECTRIC MOTOR, POWER TOOL, AND RELATED REPAIRERS	HEATING, AIR CONDITIONING, AND REFRIGERATION MECHANICS AND INSTALLERS	RECREATIONAL VEHICLE SERVICE TECHNICIANS	
ASSOCIATE DEGREE			
PRECISION INSTRUMENT AND EQUIPMENT REPAIRERS, ALL OTHER			
SOURCE: OREGON EMPLOYMENT DEPARTMENT; BUREAU OF LABOR STATISTICS For a detailed description of each occupation, including a job description and training requirements, see Appendix III.			

systems. In Oregon, the field is expected to grow fourteen percent between 2012 and 2022. In 2013, three and a half percent of jobs in the Portland-Vancouver-Hillsboro MSA were in installation, maintenance, and repair.

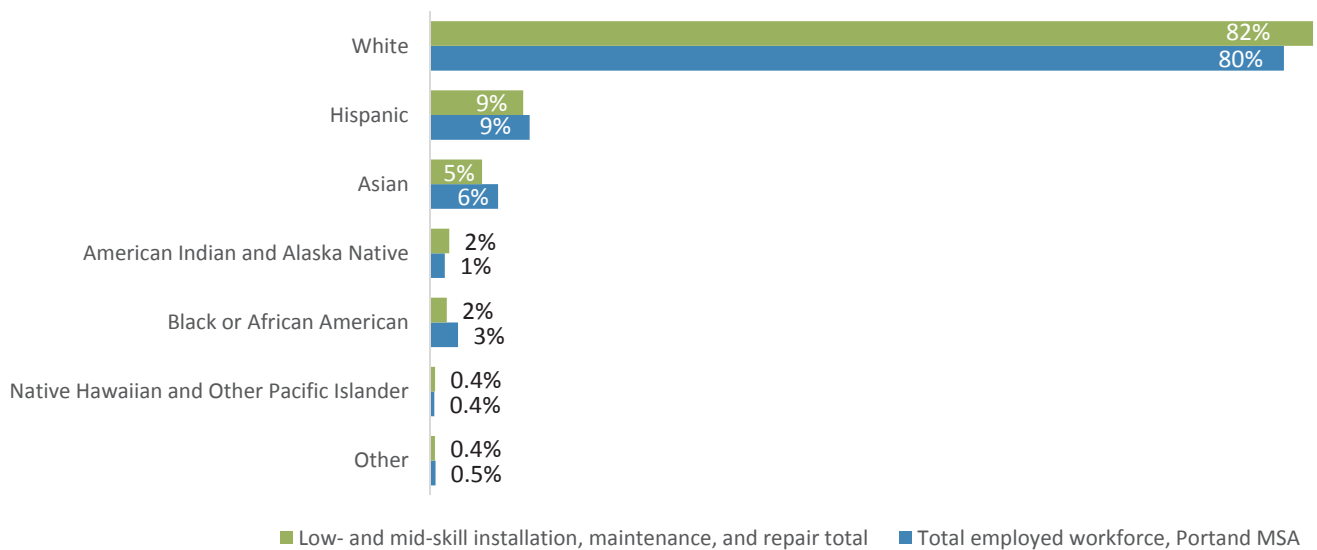
according to their educational requirements. Twenty-nine require a high school diploma, one requires a high school diploma plus an apprenticeship, fifteen require post-secondary credential, and one requires an associate degree.

This sector includes forty-six occupations that require two or fewer years of post-high school education. Table 7 lists them

Race and Hispanic Origin

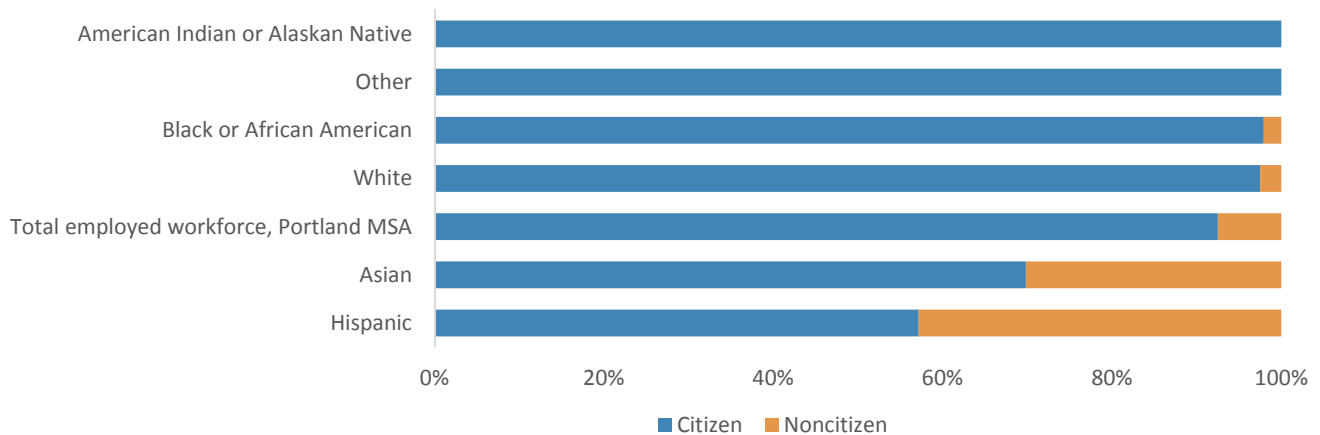
Compared to the region's total workforce, whites are over-

Figure 36: Employed low- and mid-skill installation, maintenance, and repair workforce by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



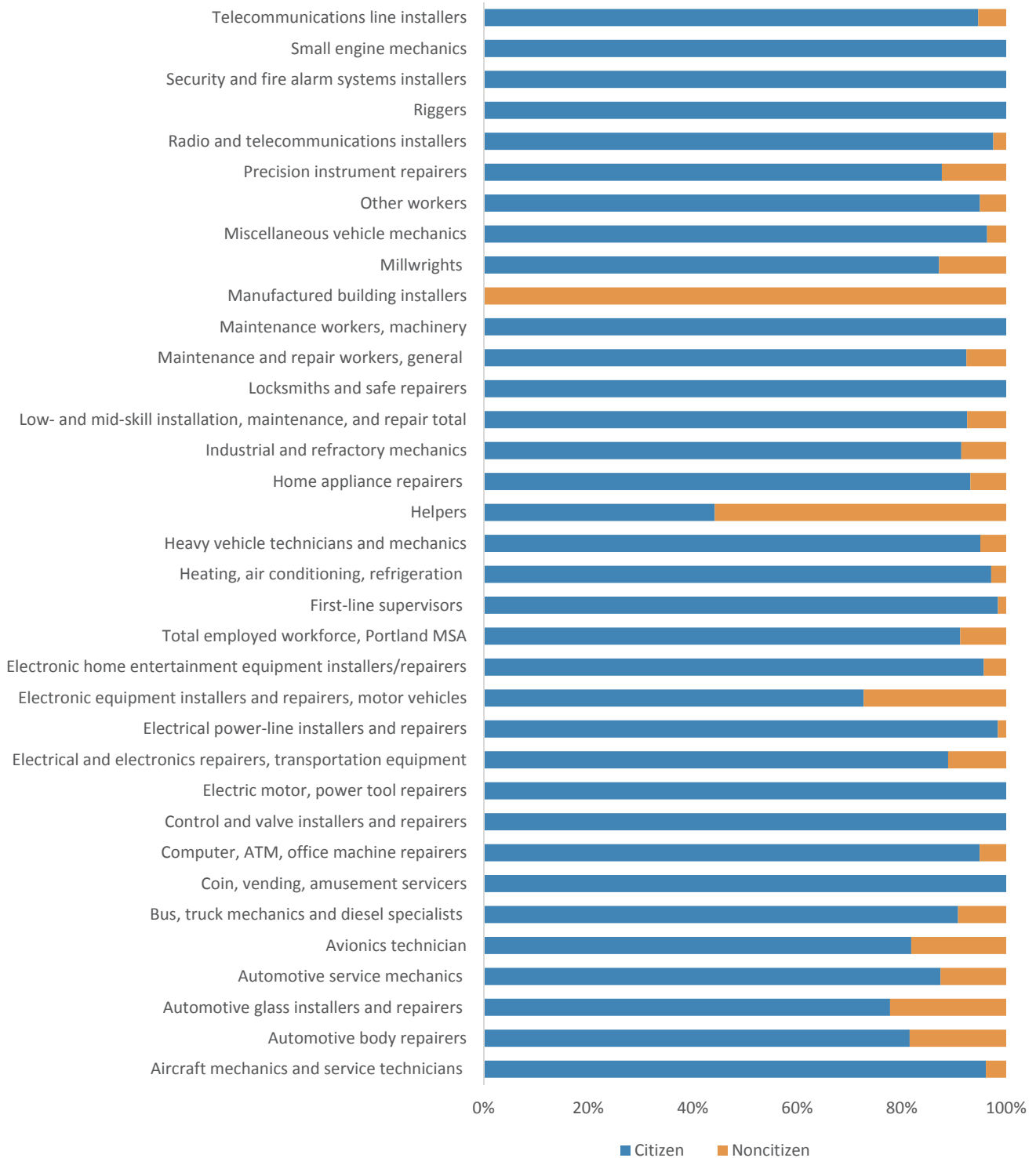
Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W

Figure 37: Citizenship status by race and Hispanic origin of employed low- and mid-skill installation, maintenance, and repair workforce, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-NCIT02W¹⁰

Figure 38: Citizenship status of employed low- and mid-skill installation, maintenance, and repair workforce, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-NCIT02W

represented in installation, maintenance, and repair occupations (Figure 36). While whites comprise less than eighty percent of the total workforce in the MSA, they hold more than eighty-two percent of installation, maintenance, and repair jobs. With the exception of Asians, other racial groups are employed in numbers that reflect their total workforce participation. Asians, however, are underrepresented in this group. More than six percent of the region's total workforce is Asian but Asians hold just fewer than five percent of installation, maintenance, and repair jobs.

Citizenship Status

Seven and a half percent of workers in installation, maintenance, and repair were not American citizens (Figure 37). The groups with the largest percentage of noncitizen workers were Hispanics (43%) and Asian (30%). Hispanic noncitizen workers were underrepresented in installation, maintenance, and repair compared to their presence in the region's total workforce. Forty-three percent of Hispanics in installation, maintenance, and repair are noncitizens, compared to fifty-three percent of Hispanics in the total workforce. Asian noncitizen workers were overrepresented (30% compared to 27% in the total workforce).

Figure 38 shows the occupation with the highest percentage of noncitizen workers was manufactured building and mobile home installers. All of the workers in this occupation were foreign born and none had American citizenship. However, at just ten workers, it is a very small field. The occupation with the second highest percentage of noncitizen workers was helpers--installation, maintenance, and repair workers. More than fifty-five percent of workers in this occupation are noncitizens. Eight occupations reported one hundred percent of workers were American citizens: coin, vending, and amusement machine servicers and repairers, control and valve installers and repairers, electric motor,

power tool, and related repairers, locksmiths and safe repairers, maintenance workers, machinery, riggers, security and fire alarm systems installers, and small engine mechanics.

Age

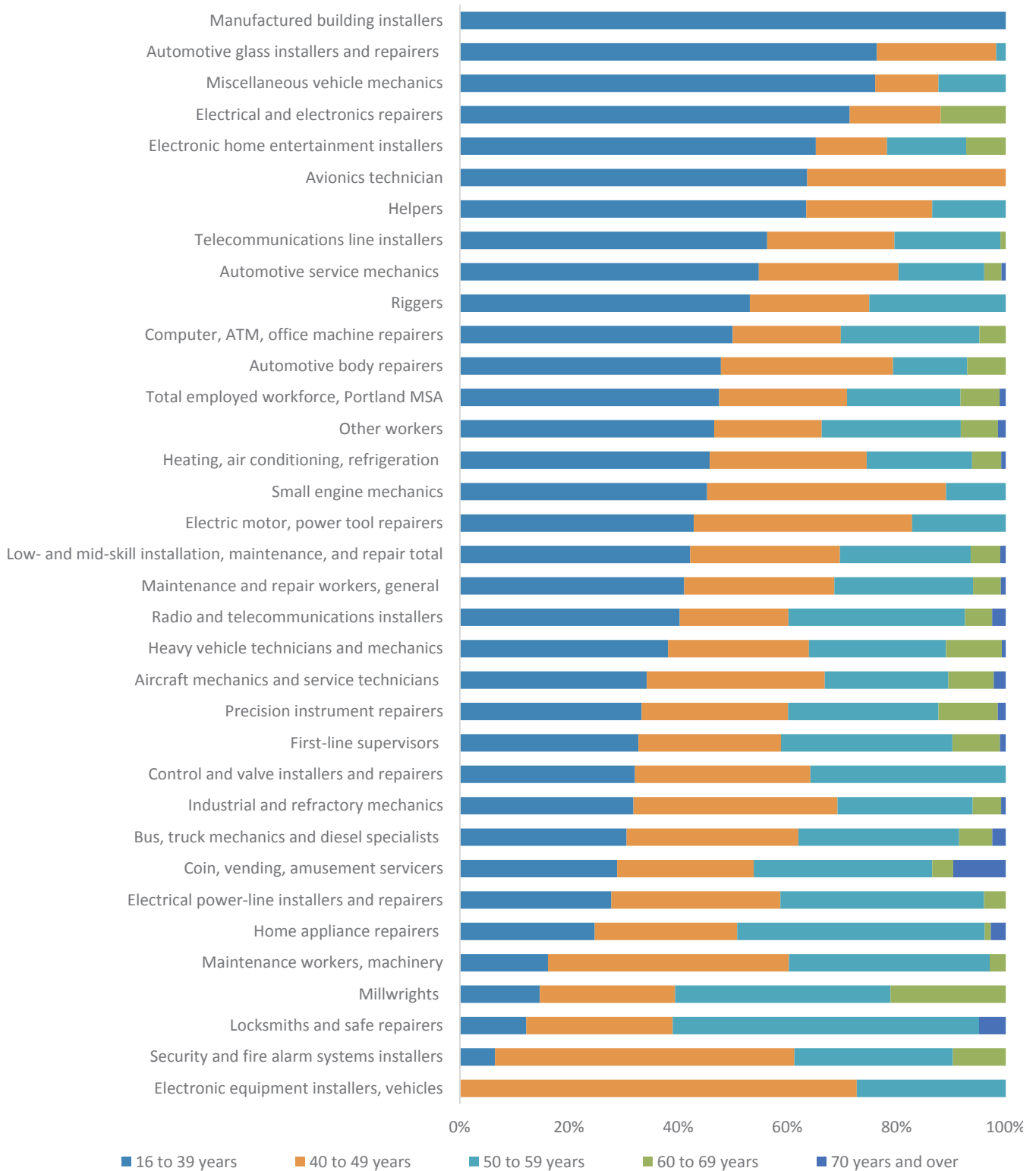
Workers age forty to fifty-nine are overrepresented in installation, maintenance, and repair occupations (51% compared to 44% of the region's total workforce). As shown in Figure 39, younger workers, age sixteen to thirty-nine years are underrepresented (42% compared to 48% of the region's total workforce). Within installation, maintenance, and repair, there are four occupations where more than seventy percent of workers are ages sixteen to thirty-nine years: electrical and electronics repairers, transportation equipment, and industrial and utility (71%), miscellaneous vehicle and mobile equipment mechanics, installers, and repairers (76%), automotive glass installers and repairers (76%), and manufactured building and mobile home installers (100%).

While just over six percent of employed installation, maintenance, and repair workers are age sixty year or over, there are six occupations within the field where workers age sixty years and older comprise ten percent or more of the total workforce: aircraft mechanics and service technicians (11%), heavy vehicle and mobile equipment service technicians and mechanics (11%), electrical and electronics repairers, transportation equipment, and industrial and utility (12%), precision instrument and equipment repairers (12%), coin, vending, and amusement machine servicers and repairers (14%), and millwrights (21%).

Educational Attainment

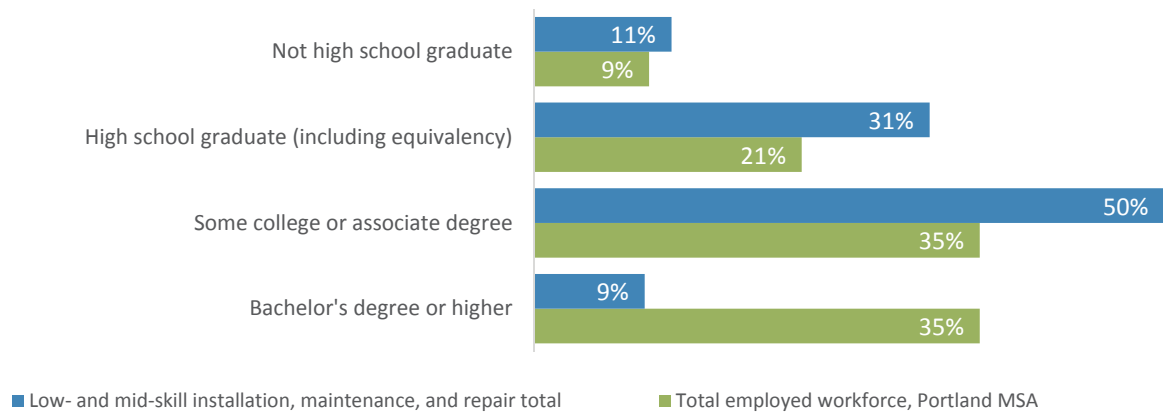
Although none of the occupations require a bachelor's degree, nearly nine percent of employed installation, maintenance, and repair workers had a bachelor's or advanced degree (Figure 40). Nearly fifty percent of workers had an associate

Figure 39: Employed low- and mid-skill installation, maintenance, and repair workforce, by age and occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL12W

Figure 40: Employed low- and mid-skill installation, maintenance, and repair workforce by educational attainment, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL08W

degree or some college. It is not clear, however, how many workers completed the associate degree and how many had taken one or more college courses but did not complete a degree. When compared to the region's total workforce, installation, maintenance, and repair workers were less likely to have a bachelor's or advanced degree (9% compared to 35% of the total workforce).

As shown in Figure 41, within the installation, maintenance, and repair field, the occupation with the highest percentage of workers who hold a bachelor's degree or advanced degree is electrical and electronics repairers, transportation equipment, and industrial and utility (50%). Although the job requires a post-secondary credential, half of workers have a bachelor's degree or advanced degree. This is also the occupation with the highest annual median wage, \$83,130 or 215% of the region's annual median wage for all occupations. More than twenty percent of precision instrument and equipment repairers and computer, automated teller, and office machine repairers have a bachelor's or advanced degree. While it is not one of the field's highest paying professions, this occupation pays an annual median wage of

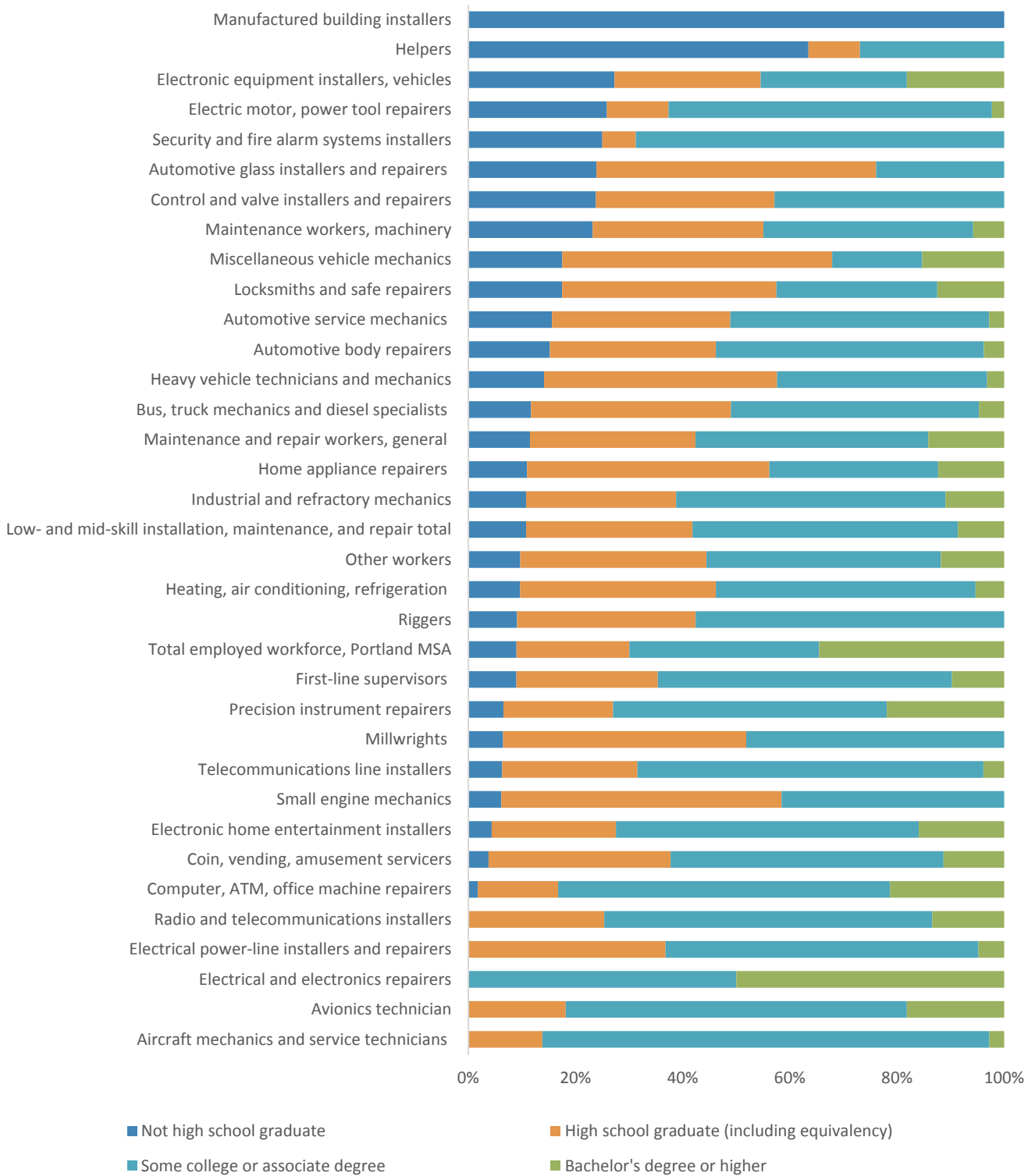
\$60,350 or 156% of the region's annual median wage for all occupations.

Wages

Figure 42 shows the median annual wage for each of the occupations in installation, maintenance, and repair. Of the forty-two occupations for which data are available, twenty-six pay an annual median wage that is higher than the annual median wage for the region as a whole (\$38,650 in 2013). Seven occupations are in the seventy-fifth percentile for wages in the region (\$60,980 or more). Slightly fewer than sixteen percent of jobs in installation, maintenance, and repair are low-wage.

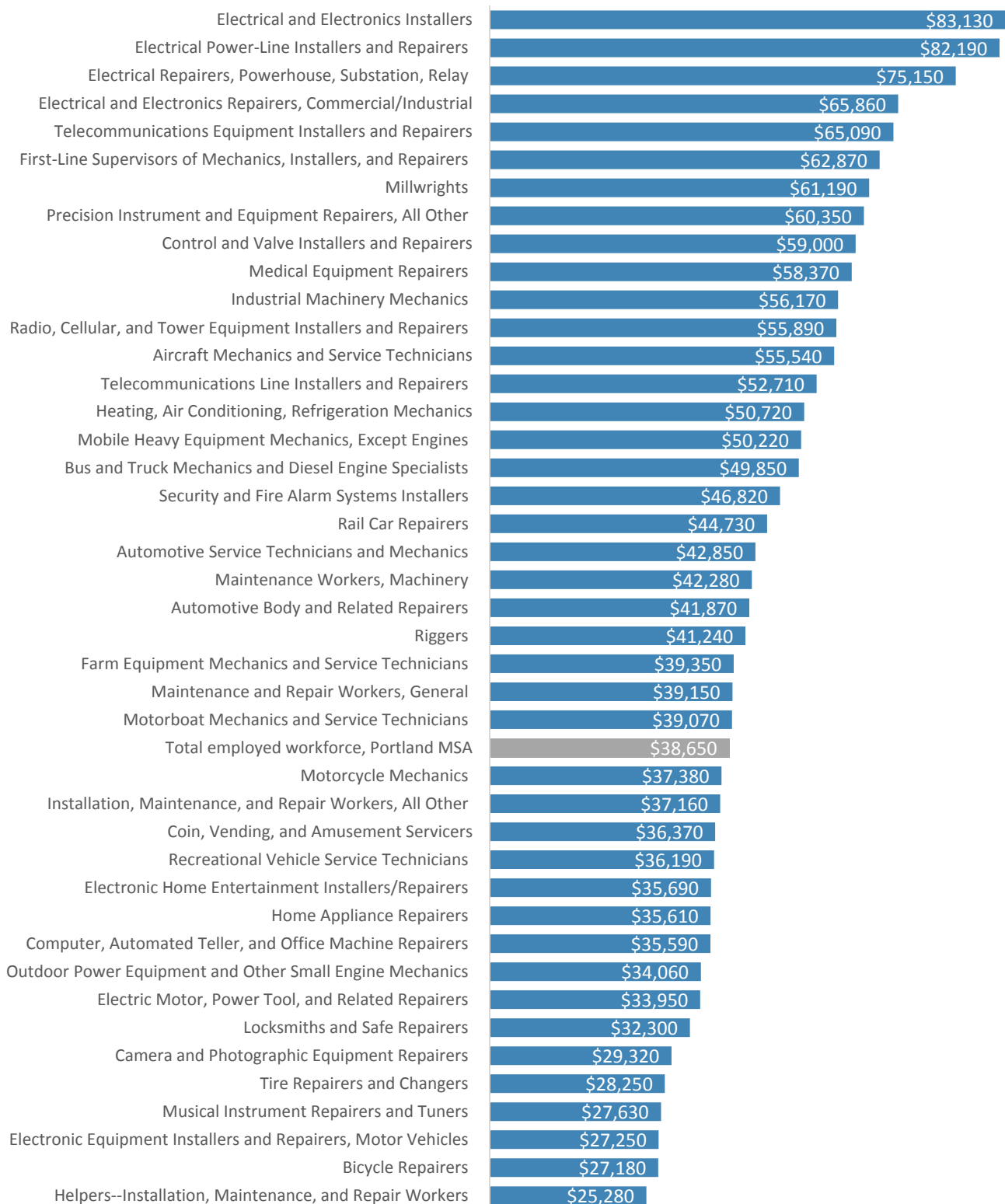
Figure 43 shows the distribution of high-wage and low-wage jobs across race and Hispanic origin. American Indian or Alaskan Native and Asian workers were the most likely to work in jobs where the annual median wage is higher than that of a region as a whole (\$38,650 in 2013). Native Hawaiian or Pacific Islander installation, maintenance, and repair workers were the most likely to work in low-wage occupations.

Figure 41: Employed low- and mid-skill installation, maintenance, and repair workforce by educational attainment, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



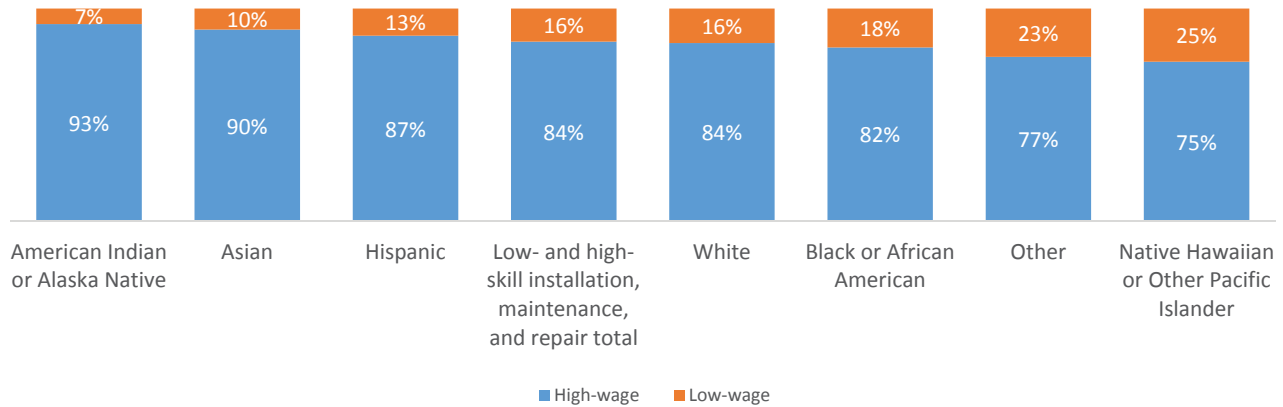
Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL08W

Figure 42: Annual median wage, low- and mid-skill installation, maintenance, and repair occupations, Portland-Vancouver-Hillsboro MSA, 2013



Source: US Census, Equal Employment Opportunity Tabulation

Figure 43: Percentage of employed low- and high-skill installation, maintenance, and repair low- and mid-skill workforce in low and high wage occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



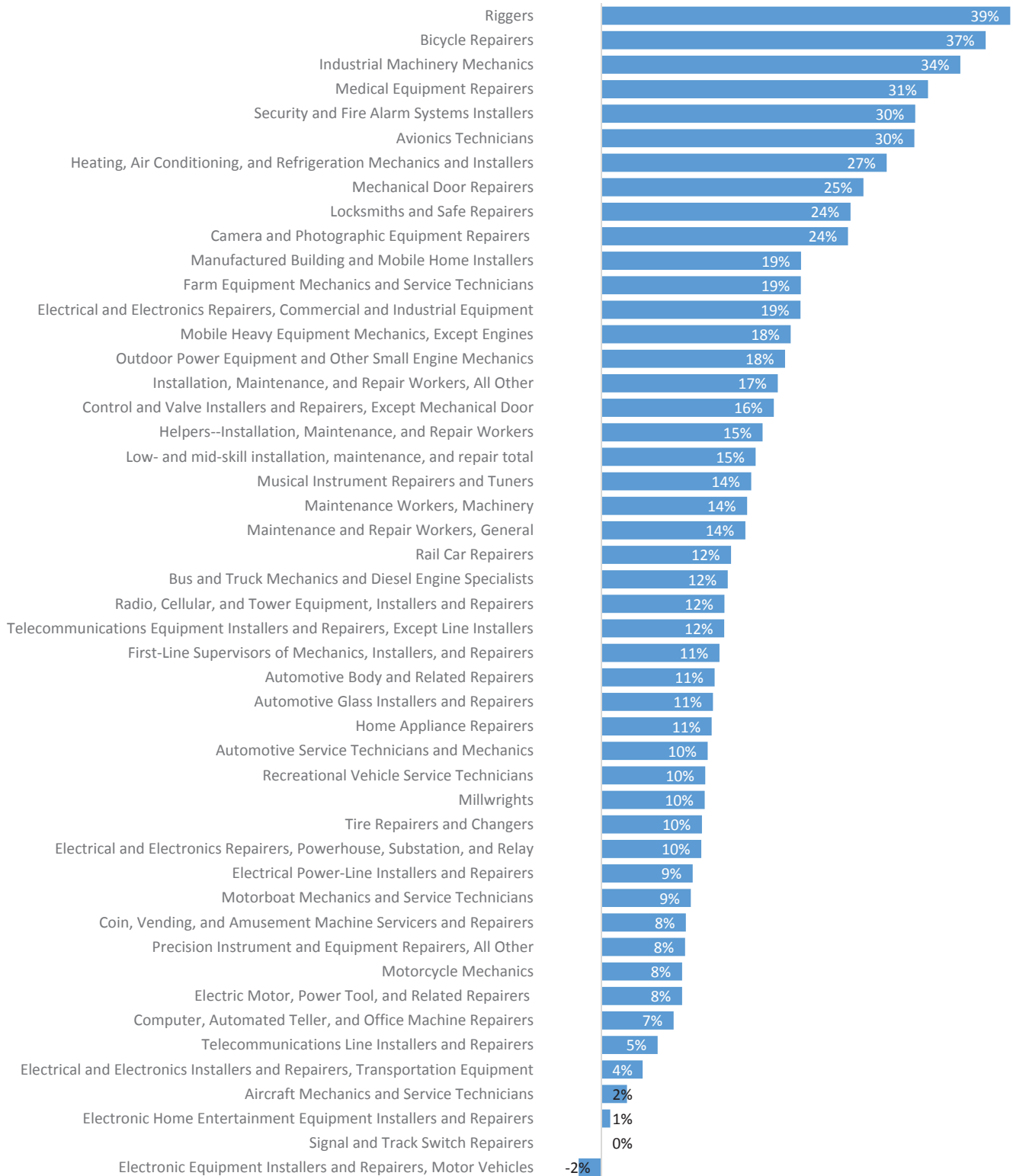
Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

Employment Projections

We report expected growth in job openings by both percentage (Figure 44) and number (Figure 45). Of the forty-seven installation, maintenance, and repair occupations for which data are available, forty-five are expected to experience positive growth in the number of jobs during the next ten years (Figure 44). Three occupations are expected to grow by more than a third: industrial machinery mechanics (34%), bicycle repairers (37%), and riggers (39%). The occupations with the smallest rates of anticipated positive job growth are electrical and electronics installers and repairers, transportation equipment (4%), aircraft mechanics and service technicians (2%), and electronic home entertainment equipment installers and repairers (0.8%).

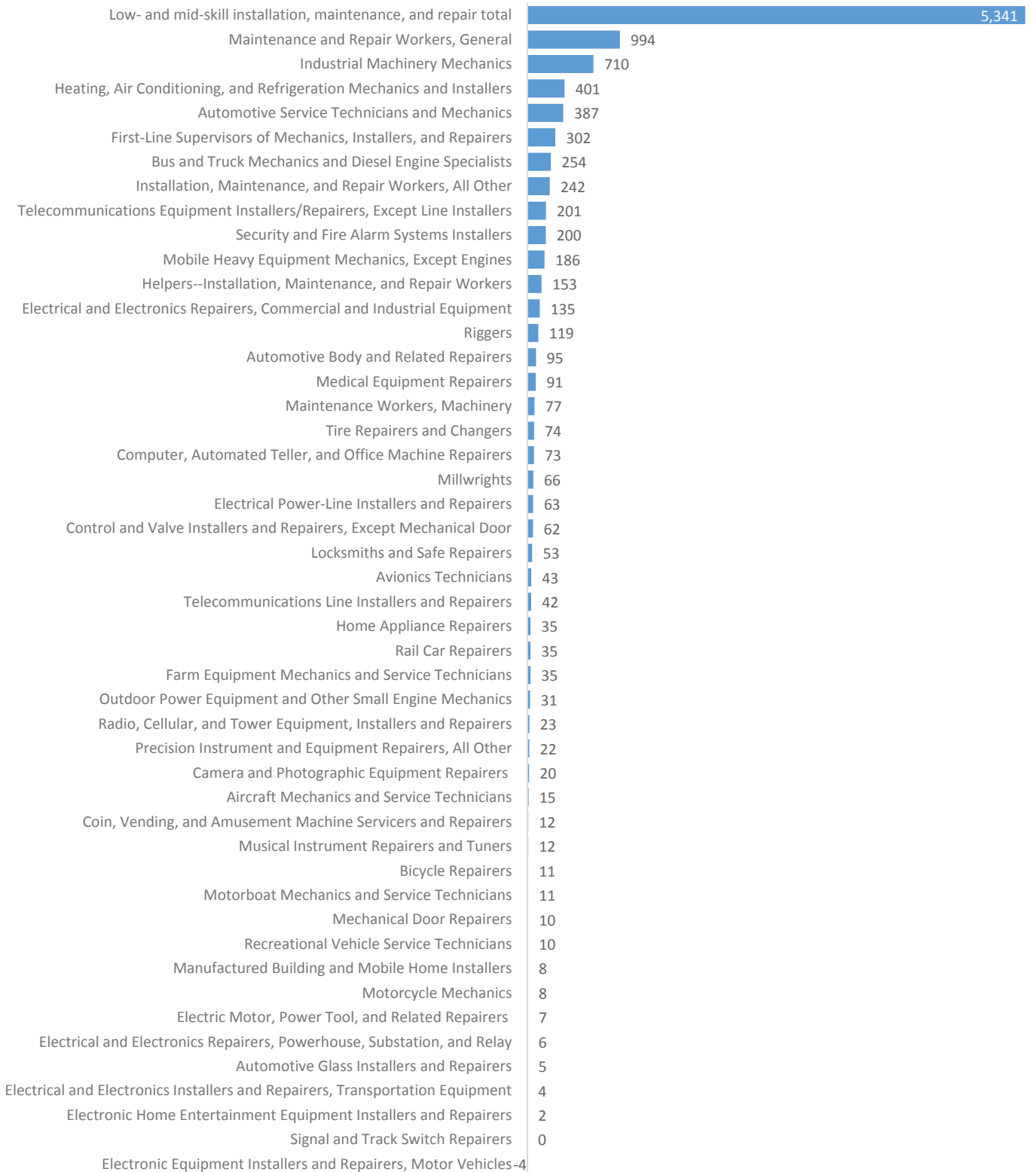
As shown in Figure 45, two installation, maintenance, and repair occupations are expected to add between 500 and 1,000 new jobs during the next ten years: industrial machinery mechanics (710 jobs), and maintenance and repair workers, general (994 jobs).

Figure 44: Projected job growth, low- and mid-skill installation, maintenance, and repair occupations, ten year estimates, 2012-2022



Source: Oregon Employment Department and Washington Department of Employment Security

Figure 45: Projected job growth, installation, maintenance, and repair occupations, ten year estimates, 2012-2022



Source: Oregon Employment Department and Washington Department of Employment Security

PRODUCTION

Most people working in production occupations are employed in the manufacturing industry. Manufacturing has suffered a long-term decline in the US and in the Portland-Vancouver-Hillsboro MSA. The most recent recession resulted in a loss of almost twenty thousand jobs; industry employment bottomed out in March 2010. In the four years since the height of the recession, job growth in manufacturing has roughly kept pace with total job growth in the region. However, job growth was uneven across the ten manufacturing subsectors. Employment in wood and paper manufacturing has continued to decline, decreasing

three percent and 15 percent respectively since 2009. The largest increases in job growth between 2009 and 2013 were in fabricated metal products (14%), machinery (19%), and food (20%).

Production occupations include low- and medium-skill jobs that require two or fewer years of post-high school education. In 2013, six and a half percent of jobs in the Portland-Vancouver-Hillsboro MSA were in production occupations.

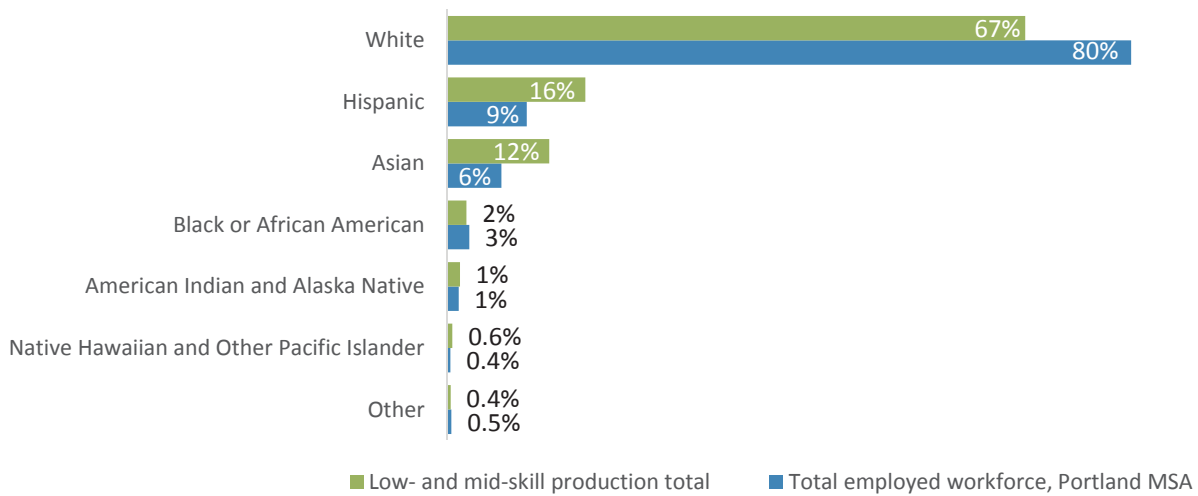
TABLE 8: PRODUCTION OCCUPATIONS REQUIRING FEWER THAN TWO YEARS OF POST-HIGH SCHOOL EDUCATION			
LESS THAN HIGH SCHOOL			
BAKERS	CUTTERS AND TRIMMERS, HAND	MEAT, POULTRY, AND FISH CUTTERS AND TRIMMERS	SLAUGHTERERS AND MEAT PACKERS
BUTCHERS AND MEAT CUTTERS	FOOD AND TOBACCO ROASTING, BAKING, AND DRYING MACHINE OPERATORS AND TENDERS	PRESSERS, TEXTILE, GARMENT, AND RELATED MATERIALS	TAILORS, DRESSMAKERS, AND CUSTOM SEWERS
CLEANING, WASHING, AND METAL PICKLING EQUIPMENT OPERATORS AND TENDERS	GRINDING AND POLISHING WORKERS, HAND	SEWERS, HAND	
COMPUTER-CONTROLLED MACHINE TOOL OPERATORS, METAL AND PLASTIC	LAUNDRY AND DRY-CLEANING WORKERS	SEWING MACHINE OPERATORS	
HIGH SCHOOL DIPLOMA			
ADHESIVE BONDING MACHINE OPERATORS AND TENDERS	COIL WINDERS, TAPERS, AND FINISHERS	ELECTRICAL AND ELECTRONIC EQUIPMENT ASSEMBLERS	FIBERGLASS LAMINATORS AND FABRICATORS
ASSEMBLERS AND FABRICATORS, ALL OTHER	CRUSHING, GRINDING, AND POLISHING MACHINE SETTERS, OPERATORS, AND TENDERS	Electromechanical Equipment Assemblers	FOOD BATCHMAKERS
CABINETMAKERS AND BENCH CARPENTERS	CUTTERS AND TRIMMERS, HAND	ENGINE AND OTHER MACHINE ASSEMBLERS	FOOD COOKING MACHINE OPERATORS AND TENDERS
CHEMICAL EQUIPMENT OPERATORS AND TENDERS	CUTTING, PUNCHING, AND PRESS MACHINE SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	ETCHERS AND ENGRAVERS	FOOD PROCESSING WORKERS, ALL OTHER
CHEMICAL PLANT AND SYSTEM OPERATORS	DENTAL LABORATORY TECHNICIANS	EXTRUDING AND DRAWING MACHINE SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	FORGING MACHINE SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC
COATING, PAINTING, AND SPRAYING MACHINE SETTERS, OPERATORS, AND TENDERS	DRILLING AND BORING MACHINE TOOL SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	EXTRUDING, FORMING, PRESSING, AND COMPACTING MACHINE SETTERS, OPERATORS, AND TENDERS	FOUNDRY MOLD AND CORE-MAKERS

TABLE 8: PRODUCTION OCCUPATIONS REQUIRING FEWER THAN TWO YEARS OF POST-HIGH SCHOOL EDUCATION			
HIGH SCHOOL DIPLOMA, CONT.			
Furnace, Kiln, Oven, Drier, And Kettle Operators And Tenders	MODEL MAKERS, METAL AND PLASTIC	PLATING AND COATING MACHINE SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	STATIONARY ENGINEERS AND BOILER OPERATORS
FURNITURE FINISHERS	MOLDERS, SHAPERS, AND CASTERS, EXCEPT METAL AND PLASTIC	POURERS AND CASTERS, METAL	STRUCTURAL METAL FABRICATORS AND FITTERS
GRINDING, LAPPING, POLISHING, AND BUFFING MACHINE TOOL SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	MOLDING, COREMAKING, AND CASTING MACHINE SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	POWER DISTRIBUTORS AND DISPATCHERS	TEAM ASSEMBLERS
HEAT TREATING EQUIPMENT SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	OPHTHALMIC LABORATORY TECHNICIANS	PREPRESS TECHNICIANS AND WORKERS	TEXTILE CUTTING MACHINE SETTERS, OPERATORS, AND TENDERS
HELPERS--PRODUCTION WORKERS	PACKAGING AND FILLING MACHINE OPERATORS AND TENDERS	PRINT BINDING AND FINISHING WORKERS	TEXTILE KNITTING AND WEAVING MACHINE SETTERS, OPERATORS, AND TENDERS
INSPECTORS, TESTERS, SORTERS, SAMPLERS, AND WEIGHERS	PAINTERS, TRANSPORTATION EQUIPMENT	PRINTING PRESS OPERATORS	TIRE BUILDERS
LATHE AND TURNING MACHINE TOOL SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	PAINTING, COATING, AND DECORATING WORKERS	PRODUCTION WORKERS, ALL OTHER	TOOL AND DYE MAKERS
LAY-OUT WORKERS, METAL AND PLASTIC	PAPER GOODS MACHINE SETTERS, OPERATORS, AND TENDERS	ROLLING MACHINE SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	TOOL GRINDERS, FILERS, AND SHARPENERS
MACHINISTS	PATTERNMAKERS, METAL AND PLASTIC	SAWING MACHINE SETTERS, OPERATORS, AND TENDERS, WOOD	UPHOLSTERERS
MEDICAL APPLIANCE TECHNICIANS	PETROLEUM PUMP SYSTEM OPERATORS, REFINERY OPERATORS, AND GAUGERS	SEPARATING, FILTERING, CLARIFYING, PRECIPITATING, AND STILL MACHINE SETTERS, OPERATORS, AND TENDERS	WELDERS, CUTTERS, SOLDERERS, AND BRAZERS
METAL WORKERS AND PLASTIC WORKERS, ALL OTHER	PHOTOGRAPHIC PROCESS WORKERS AND PROCESSING MACHINE OPERATORS	SETTERS, OPERATORS, AND TENDERS, METAL AND PLASTIC	WELDING, SOLDERING, AND BRAZING MACHINE SETTERS, OPERATORS, AND TENDERS
METAL-REFINING FURNACE OPERATORS AND TENDERS	PLANT AND SYSTEM OPERATORS, ALL OTHER	Shoe And Leather Workers And Repairers	WOODWORKERS, ALL OTHER
MIXING AND BLENDING MACHINE SETTERS, OPERATORS, AND TENDERS	PLATING AND COATING MACHINE	SHOE MACHINE OPERATORS AND TENDERS	
POST-SECONDARY CREDENTIAL			
JEWELERS AND PRECIOUS STONE AND METAL WORKERS	NUMERICAL TOOL AND PROCESS CONTROL PROGRAMMERS	POWER PLANT OPERATORS	WATER AND WASTEWATER TREATMENT PLANT AND SYSTEM OPERATORS

SOURCE: OREGON EMPLOYMENT DEPARTMENT; BUREAU OF LABOR STATISTICS
FOR A DETAILED DESCRIPTION OF EACH OCCUPATION, INCLUDING A DESCRIPTION OF THE JOB AND TRAINING REQUIREMENTS, SEE APPENDIX IV.

Table 8 lists ninety-four production occupations that require two or fewer years of post-high school education. Fourteen do not require a high school diploma, seventy-six require a high school diploma or equivalent, and four require a post-secondary credential.

Figure 46: Employed low- and mid-skill production workforce by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



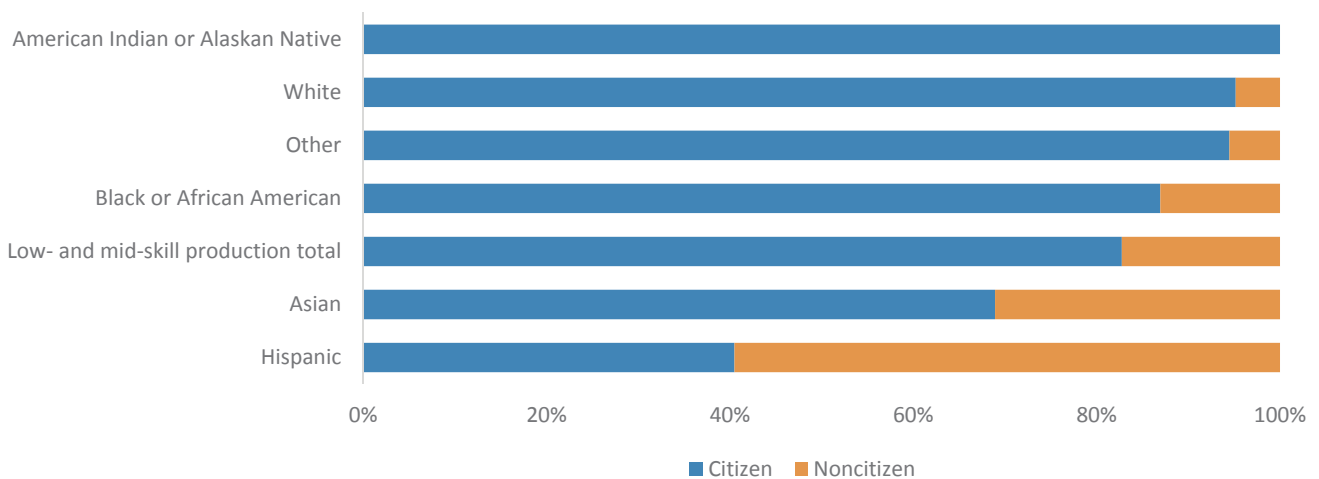
Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W

Race and Hispanic Origin

Compared to the region’s total workforce, Hispanics and Asians are overrepresented in production occupations (Figure 46). While Hispanics comprise just over nine percent of the region’s total workforce, they hold more than sixteen percent of production jobs. Asians comprise just over six percent of the total workforce but are nearly twelve per-

cent of the production workforce. With the exception of whites, other racial groups are employed in construction and extraction jobs in numbers that reflect their total workforce participation. Whites, however, are underrepresented in this group. Almost eighty percent of the region’s total workforce is white, but they hold just over sixty-seven percent of production jobs.

Figure 47: Citizenship status, by race and Hispanic origin, of employed low and mid-skill production workforce, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-NCIT02W¹¹

Citizenship Status

More than seventeen percent of employed production workers do not have American citizenship (Figure 47). The groups with the largest percentage of noncitizen workers were Hispanic (60%) and Asian (31%). Both groups were overrepresented in production occupations compared to their presence in the region's total workforce.

Workers without American citizenship are overrepresented in production occupations. Eighty-three percent of employed production workers in the region were American citizens, compared to more than ninety-one percent of the region's total employed workforce. As shown in Figure 48, the production occupation with the highest percentage of noncitizen workers was textile winding, twisting, and drawing out machine setters, operators, and tenders. All of the workers in this occupation were foreign born and none had American citizenship. However, at just fifteen workers, it is a very small field. The occupation with the second highest percentage of noncitizen workers is miscellaneous textile, apparel, and furnishings workers except upholsterers. More than sixty-one percent of workers in this occupation were not American citizens. Eighteen occupations reported one hundred percent of workers were citizens.

Age

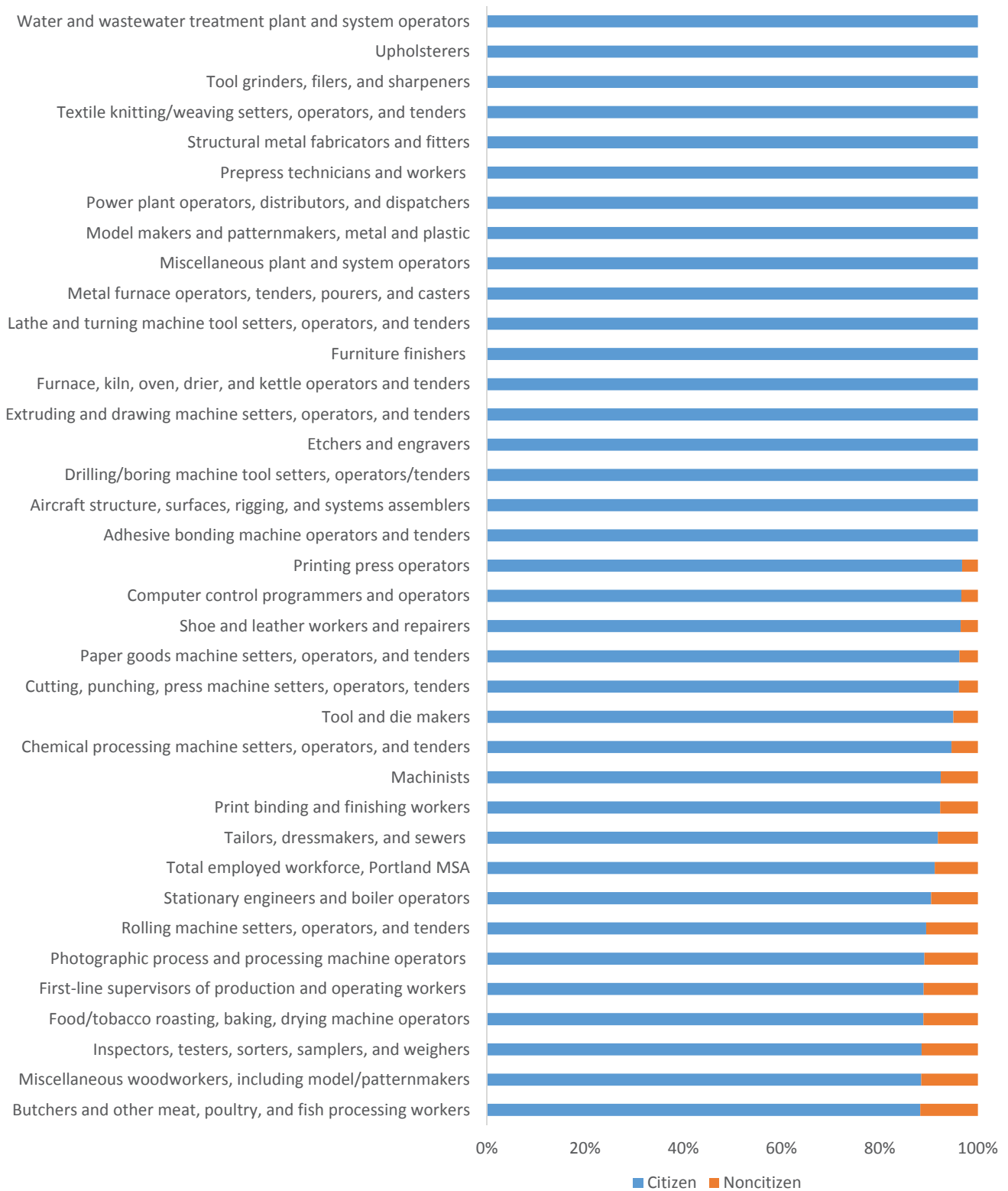
The distribution of workers by age in the production field is very similar to that of the region's employed workforce as a whole. Workers age forty to forty-nine years old are slightly overrepresented in production, but the difference is likely insignificant.

As shown in Figure 49, within production, there are eight occupations in which seventy percent or more of workers are ages sixteen to thirty-nine years: photographic process workers and processing machine operators (70%), aircraft

structure, surfaces, rigging, and systems assemblers (71%), sawing machine setters, operators, and tenders, wood (75%), etchers and engravers (80%), lathe and turning machine tool setters, operators, and tenders, metal and plastic (83%), extruding and drawing machine setters, operators, and tenders, metal and plastic (84%), tire builders (100%), and drilling and boring machine tool setters, operators, and tenders, metal and plastic (100%).

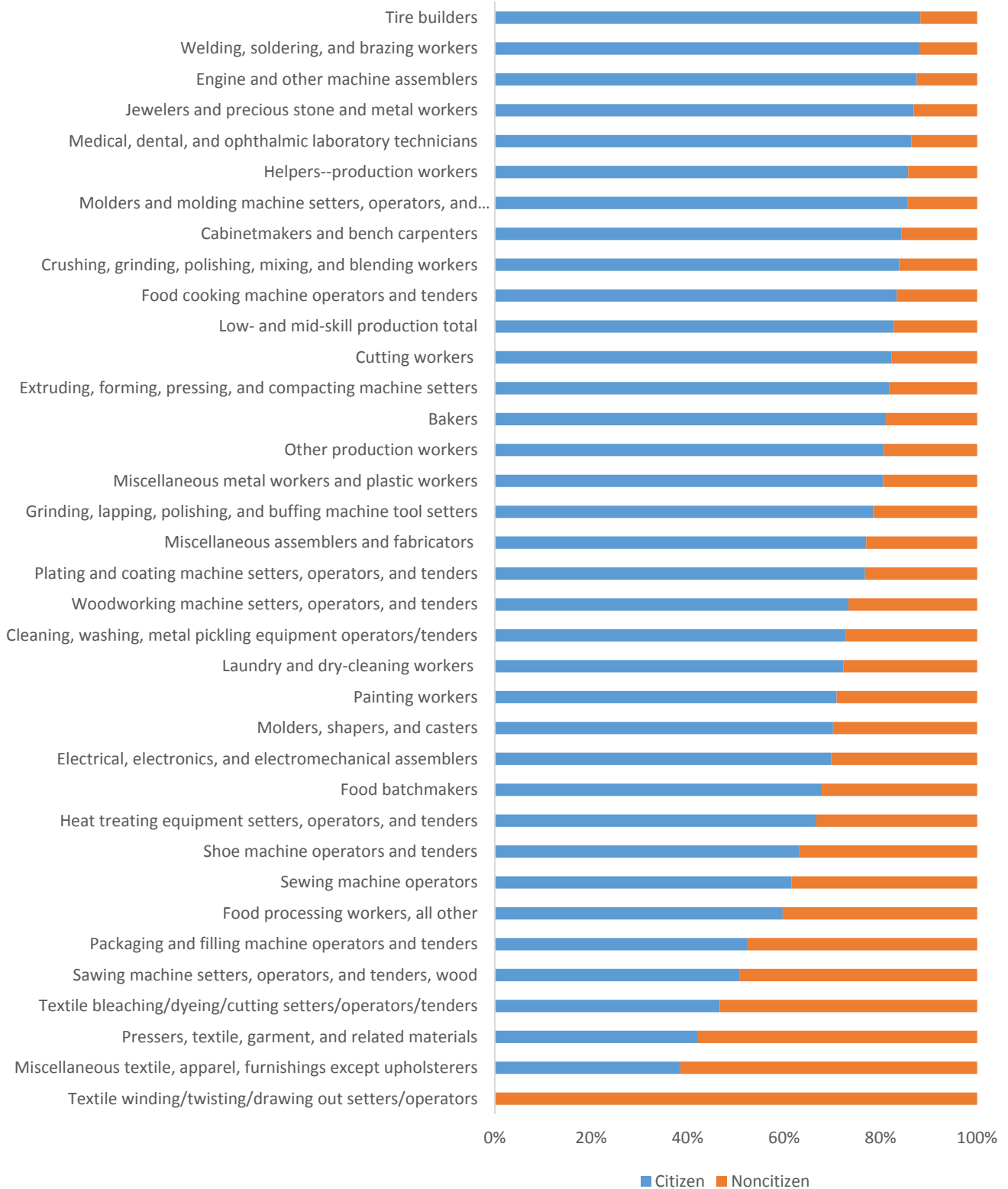
Workers age sixty years and older are about eight percent of the region's employed workforce and fewer than seven percent of the production workforce. However, in six production occupations they are more than twenty percent of the workforce: print binding and finishing workers (21%), miscellaneous woodworkers, including model makers and patternmakers (22%), heat treating equipment setters, operators, and tenders, metal and plastic (22%), upholsterers (23%), tool and die makers (27%), and textile bleaching and dyeing, and cutting machine setters, operators, and tenders (47%).

Figure 48: Citizenship status of employed low- and mid-skill production workforce, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



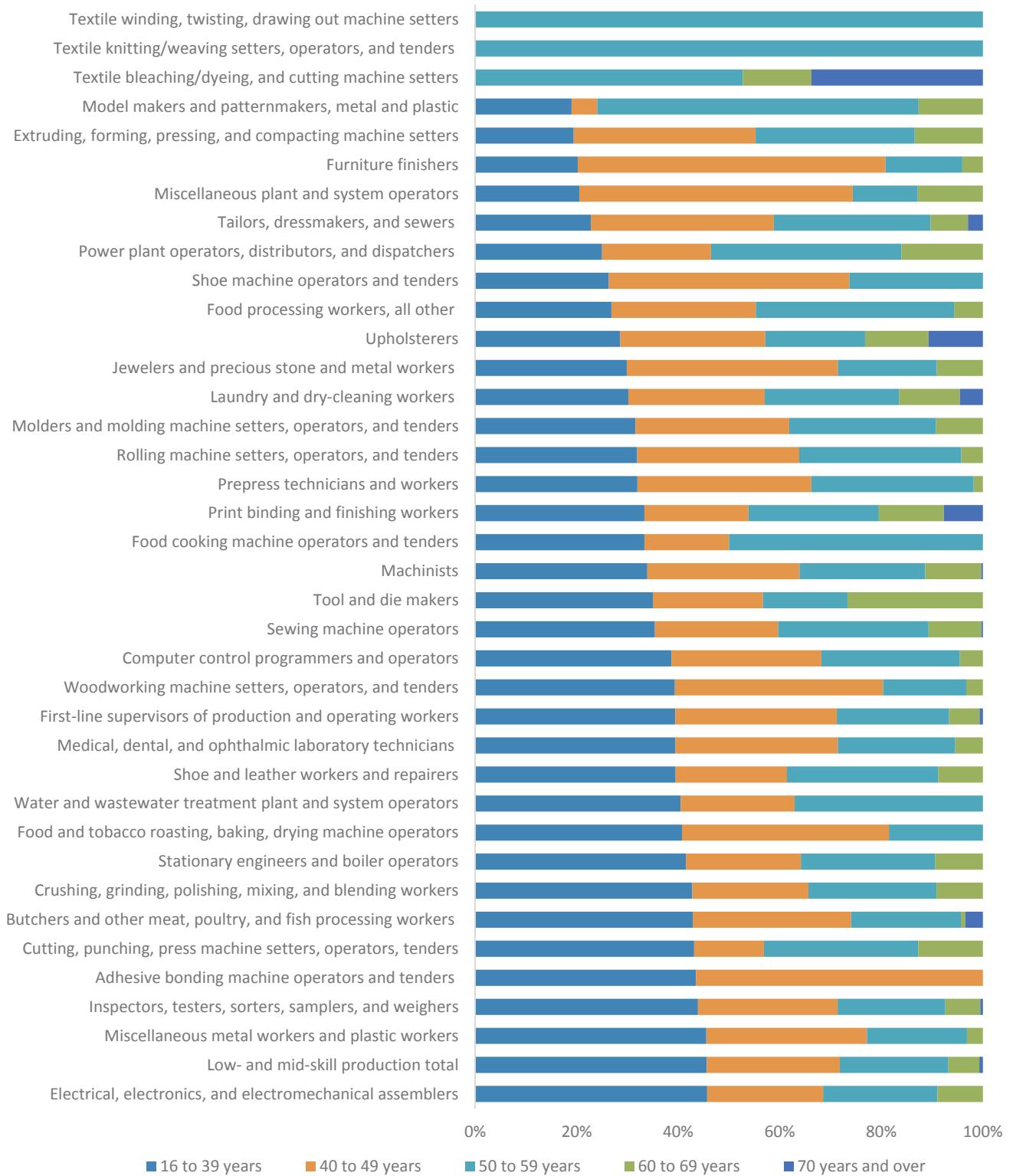
Source: US Census, Equal Employment Opportunity Tabulation, Table EEO-NCIT02W

Figure 48 cont.: Citizenship status of employed low- and mid-skill production workforce, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



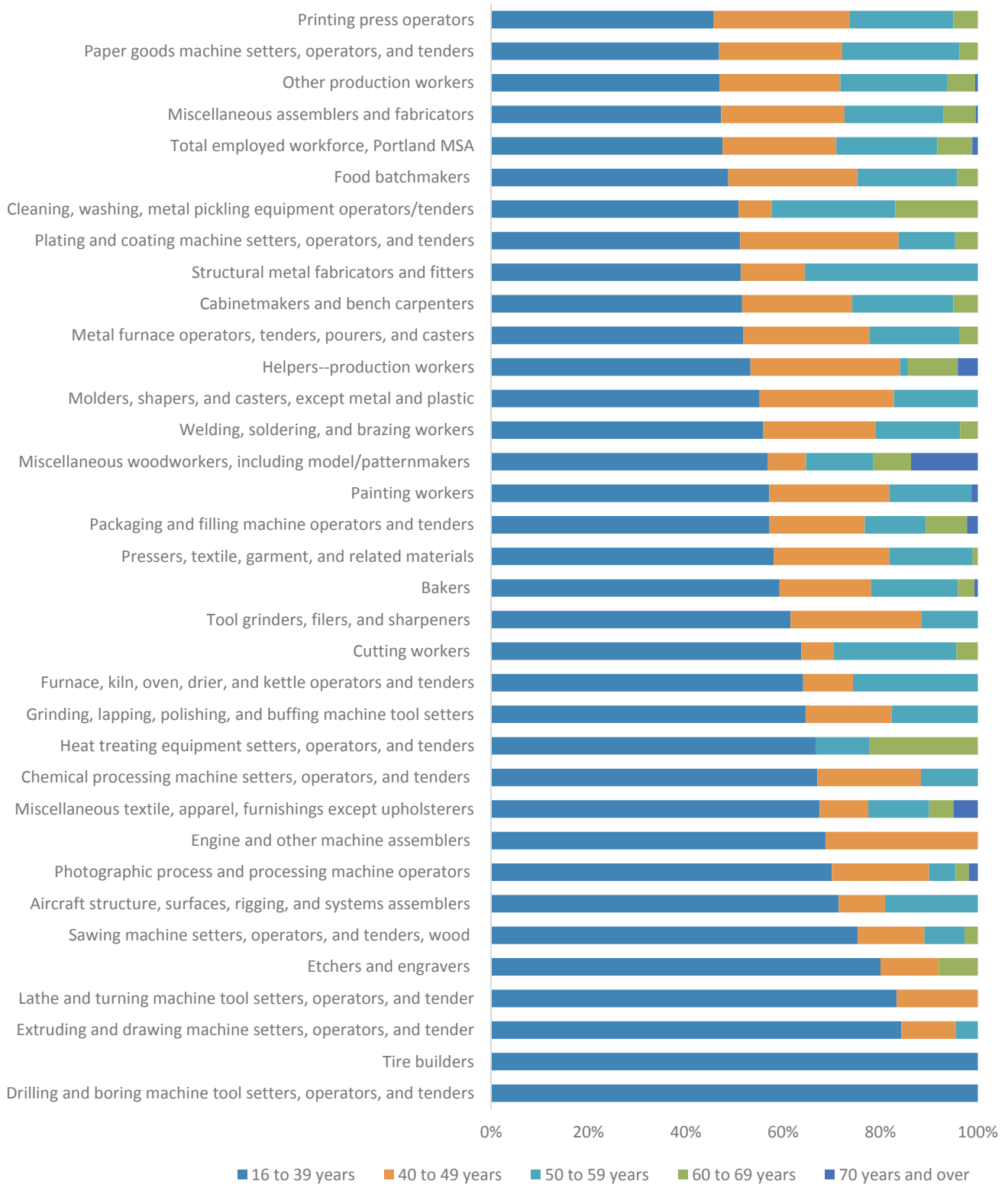
Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-NCIT02W

Figure 49: Employed low- and mid-skill production workforce, by age and occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



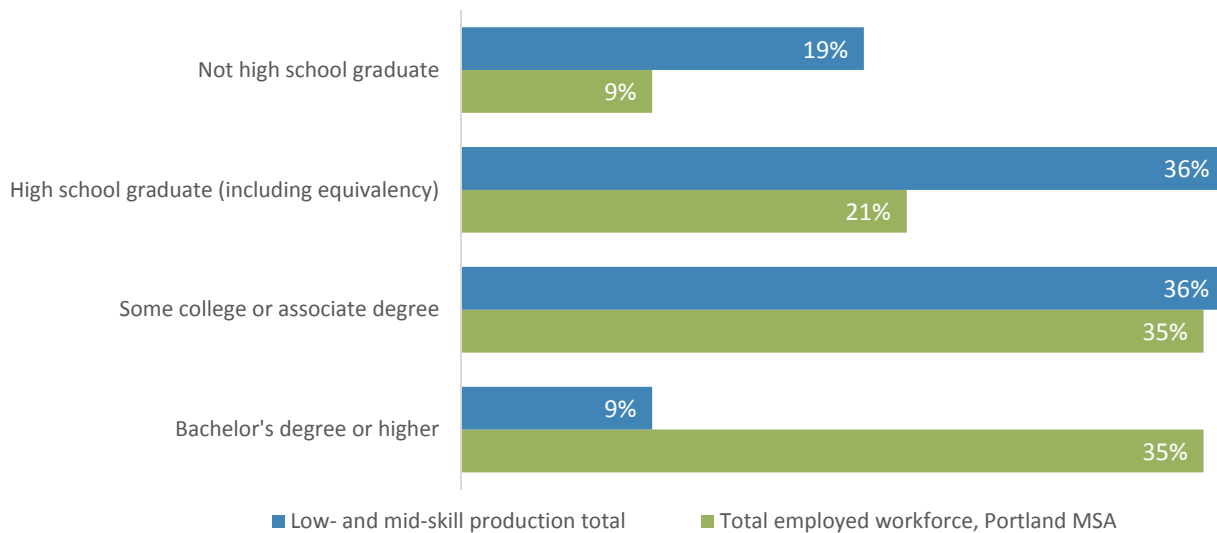
Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL12W

Figure 49 cont.: Employed low- and mid-skill production workforce by age, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL12W

Figure 50: Employed low- and mid-skill production workforce by educational attainment, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL08W

Educational Attainment

Although none of the occupations require an associate degree, nine percent of the employed workforce had a bachelor's or advanced degree (Figure 50). Thirty-six percent of workers had an associate degree or some college. It is not clear, however, how many workers completed the associate degree and how many had taken one or more college courses but did not complete a degree. Compared to the region's total workforce, production workers were less likely to have a high school diploma (81% compared to 91% of the region's total employed workforce) or a bachelor's or advanced degree (9% compared to 35% of the region's total workforce).

As shown in Figure 51, the production occupation with the highest percentage of workers who hold a bachelor's or advanced degree is extruding and forming machine setters. Although the job requires a high school diploma or equivalent, more than fifty-three percent of workers have a bachelor's or advanced degree. More than forty percent of chemical processing machine setters, operators, and tenders have a bachelor's or advanced degree, as do more than thirty

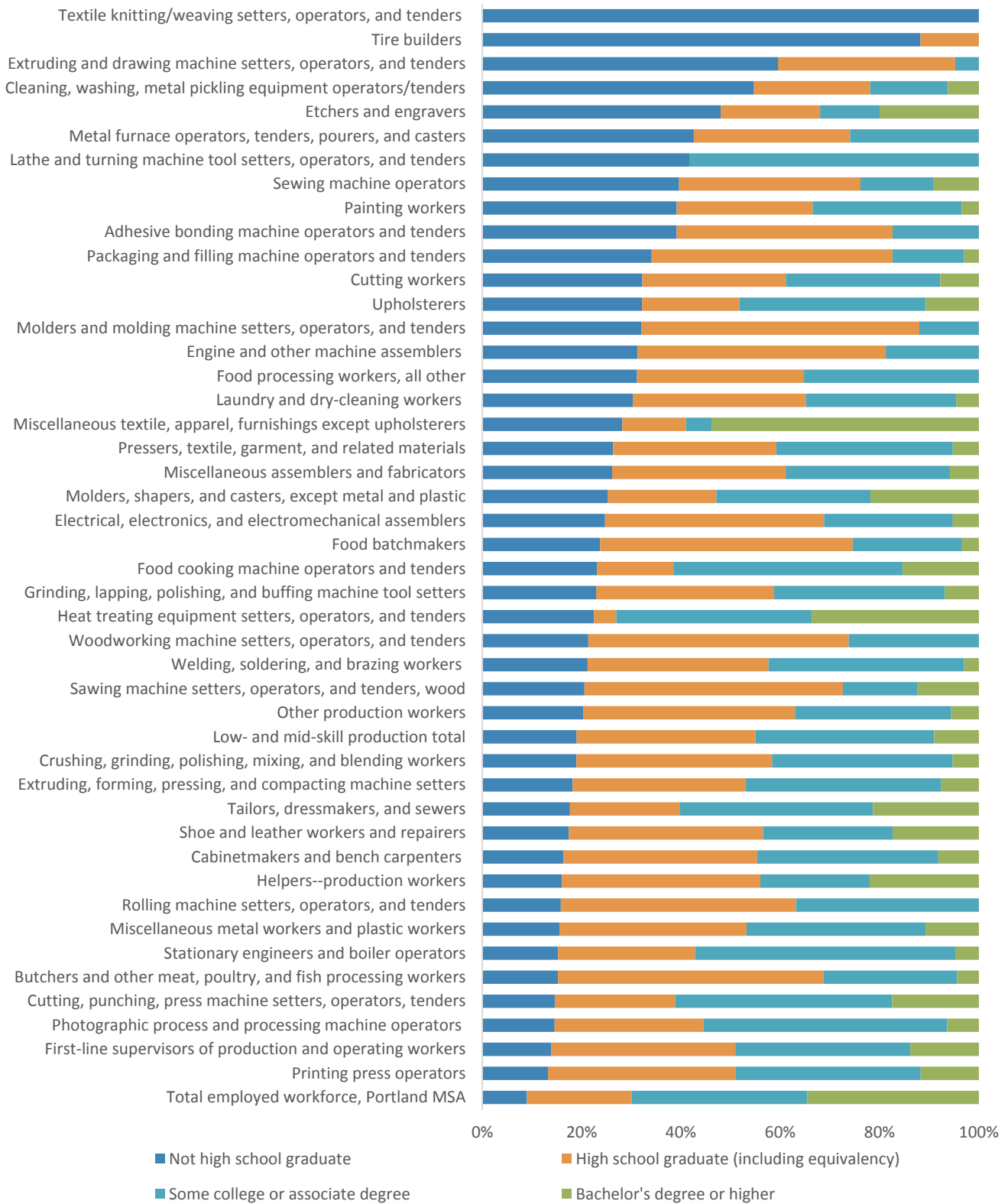
percent of textile bleaching and dyeing, and cutting machine setters, operators, and tenders, prepress technicians and workers, power plant operators, distributors, and dispatchers, jewelers and precious stone and metal workers, and heat treating equipment setters, operators, and tenders, metal and plastic. There does not appear to be a clear correlation between occupations with high rates of overly educated employees and high annual wages.

Wages

Of the ninety-one occupations for which data are available, thirty paid an annual median wage that is higher than the annual median wage for the region as a whole (\$38,650 in 2013). Three occupations are in the top twenty five percentile for wages in the region (\$60,980).

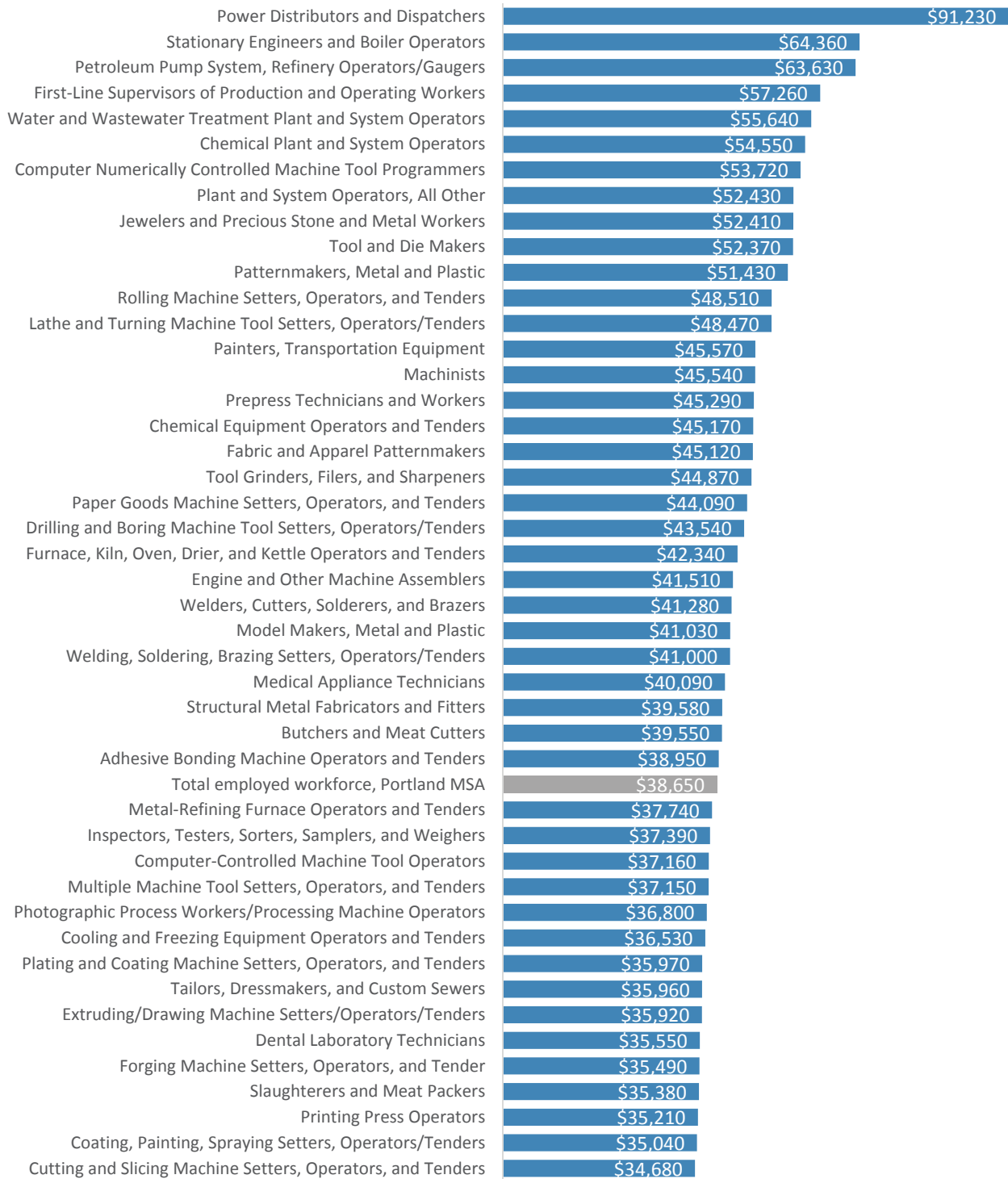
Sixty-eight percent of production jobs were low-wage, meaning the occupation's annual median wage is below the region's annual median wage. Figure 53 shows how high- and low-wage jobs are distributed among workers by race

Figure 51: Employed low- and mid-skill production workforce by educational attainment, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL08W

Figure 52: Annual median wage, low- and mid-skill production occupations, Portland-Vancouver-Hillsboro MSA, 2013



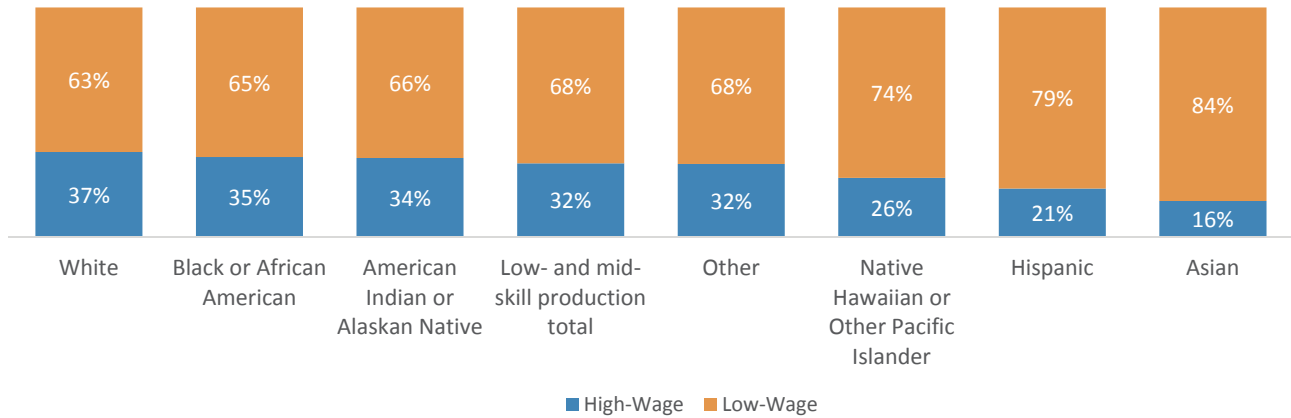
Source: Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

Figure 52 cont.: Annual median wage, low- and mid-skill production occupations,
Portland-Vancouver-Hillsboro MSA, 2013

Semiconductor Processors	\$34,420
Cabinetmakers and Bench Carpenters	\$34,380
Heat Treating Equipment Setters, Operators, and Tenders	\$34,370
Foundry Mold and Coremakers	\$34,320
Grinding/Lapping/Polishing/Buffering Tool Setters, Operators	\$34,280
Molders, Shapers, and Casters, Except Metal and Plastic	\$33,760
Mixing and Blending Machine Setters, Operators, and Tenders	\$33,290
Ophthalmic Laboratory Technicians	\$33,170
Sawing Machine Setters, Operators, and Tenders, Wood	\$32,960
Cutting, Punching, and Press Machine Setters	\$32,610
Painting, Coating, and Decorating Workers	\$31,770
Team Assemblers	\$31,420
Crushing, Grinding, and Polishing Machine Setters	\$31,030
Woodworking Machine Setters, Operators, and Tenders	\$31,030
Molding, Coremaking, Casting Machine Setters, Operators	\$30,940
Print Binding and Finishing Workers	\$30,910
Electrical and Electronic Equipment Assemblers	\$30,890
Food Cooking Machine Operators and Tenders	\$30,750
Upholsterers	\$30,710
Electromechanical Equipment Assemblers	\$30,610
Furniture Finishers	\$30,080
Assemblers and Fabricators, All Other	\$29,850
Fiberglass Laminators and Fabricators	\$29,530
Pourers and Casters, Metal	\$29,260
Bakers	\$29,250
Separating, Filtering, Clarifying, Precipitating Machine Setters	\$28,800
Packaging and Filling Machine Operators and Tenders	\$28,590
Food/Tobacco Roasting, Baking, Drying Machine Operators	\$28,070
Grinding and Polishing Workers, Hand	\$27,390
Helpers--Production Workers	\$27,180
Shoe and Leather Workers and Repairers	\$26,710
Production Workers, All Other	\$26,630
Food Batchmakers	\$26,450
Etchers and Engravers	\$25,540
Coil Winders, Tapers, and Finishers	\$25,400
Cutters and Trimmers, Hand	\$25,020
Meat, Poultry, and Fish Cutters and Trimmers	\$25,000
Food Processing Workers, All Other	\$23,660
Cleaning, Washing, and Metal Pickling Equipment Operators	\$23,650
Textile Cutting Machine Setters, Operators, and Tenders	\$23,240
Extruding, Forming, Pressing, and Compacting Machine Setters	\$23,200
Sewing Machine Operators	\$22,640
Metal Workers and Plastic Workers, All Other	\$22,540
Laundry and Dry-Cleaning Workers	\$22,150
Pressers, Textile, Garment, and Related Materials	\$20,410

Source: Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

Figure 53: Percentage of employed low- and mid-skill production workforce in low- and high-wage occupations, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: US Census, *Equal Employment Opportunity Tabulation*, Table EEO-ALL01W; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

and Hispanic origin. Of those employed in production, white and black or African American workers were the most likely to work in jobs where the annual median wage is higher than that of a region as a whole (\$38,650 in 2013). Hispanic and Asian workers were the most likely to work in low wage occupations.

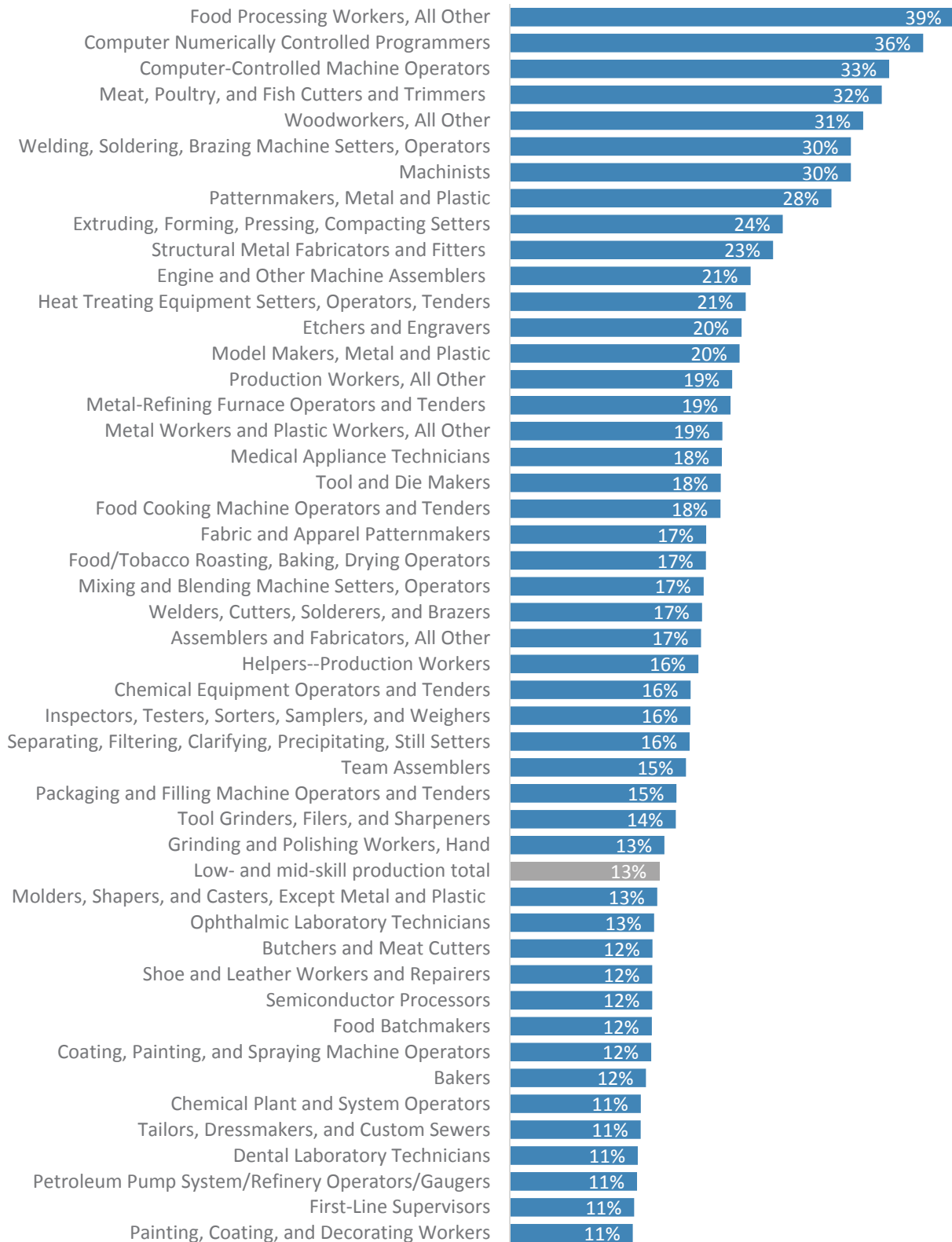
Regional Employment Projections

We report expected growth in job openings by both percentage (Figure 54) and number (Figure 55). Of the ninety-four production occupations for which data are available, eighty-two are expected to experience positive growth in the number of jobs during the next ten years. Three occupations are expected to grow by more than a third: computer-controlled machine tool operators, metal and plastic (33%), computer numerically controlled machine tool programmers, metal and plastic (36%), and food processing workers, all other (39%). The occupations with the smallest rates of anticipated positive job growth are photographic process workers and processing machine operators (2%), lathe and turning machine tool setters, operators, and tenders, metal and plastic (2%), cooling and freezing equipment operators and tenders

(1%), power distributors and dispatchers (1%), and plating and coating machine setters, operators, and tenders, metal and plastic (0.7%).

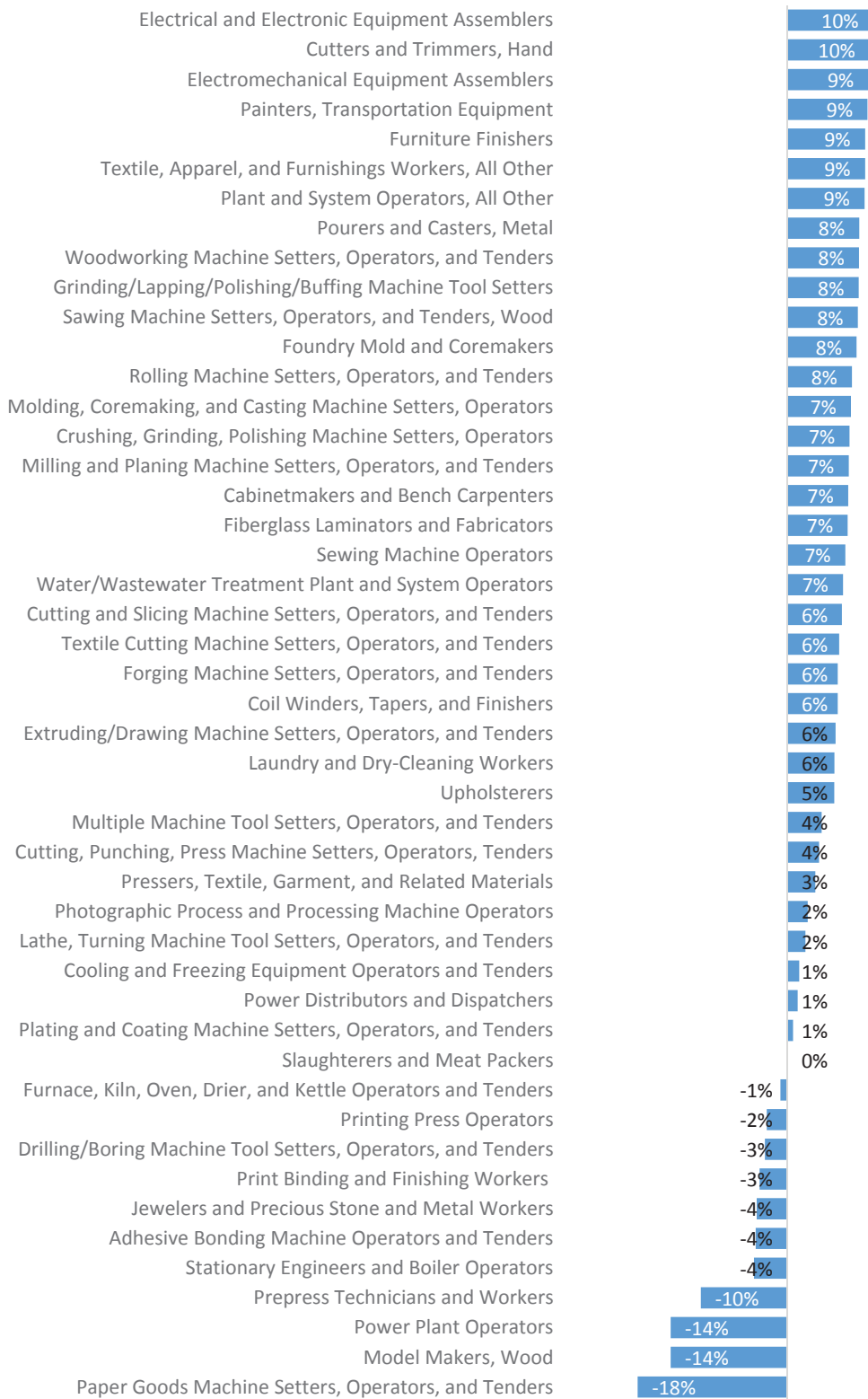
Five production occupations are expected to add between 500 and 1,000 new jobs during the next ten years: inspectors, testers, sorters, samplers, and weighers (507 jobs), computer-controlled machine tool operators, metal and plastic (512 jobs), assemblers and fabricators, all other (595 jobs), machinists (664 jobs), and production workers, all other (776 jobs). A total of 8,291 new openings are expected in low- and mid-skill production occupations within the next ten years.

Figure 54: Projected job growth, low- and mid-skill production occupations, ten year estimates, 2012-2022



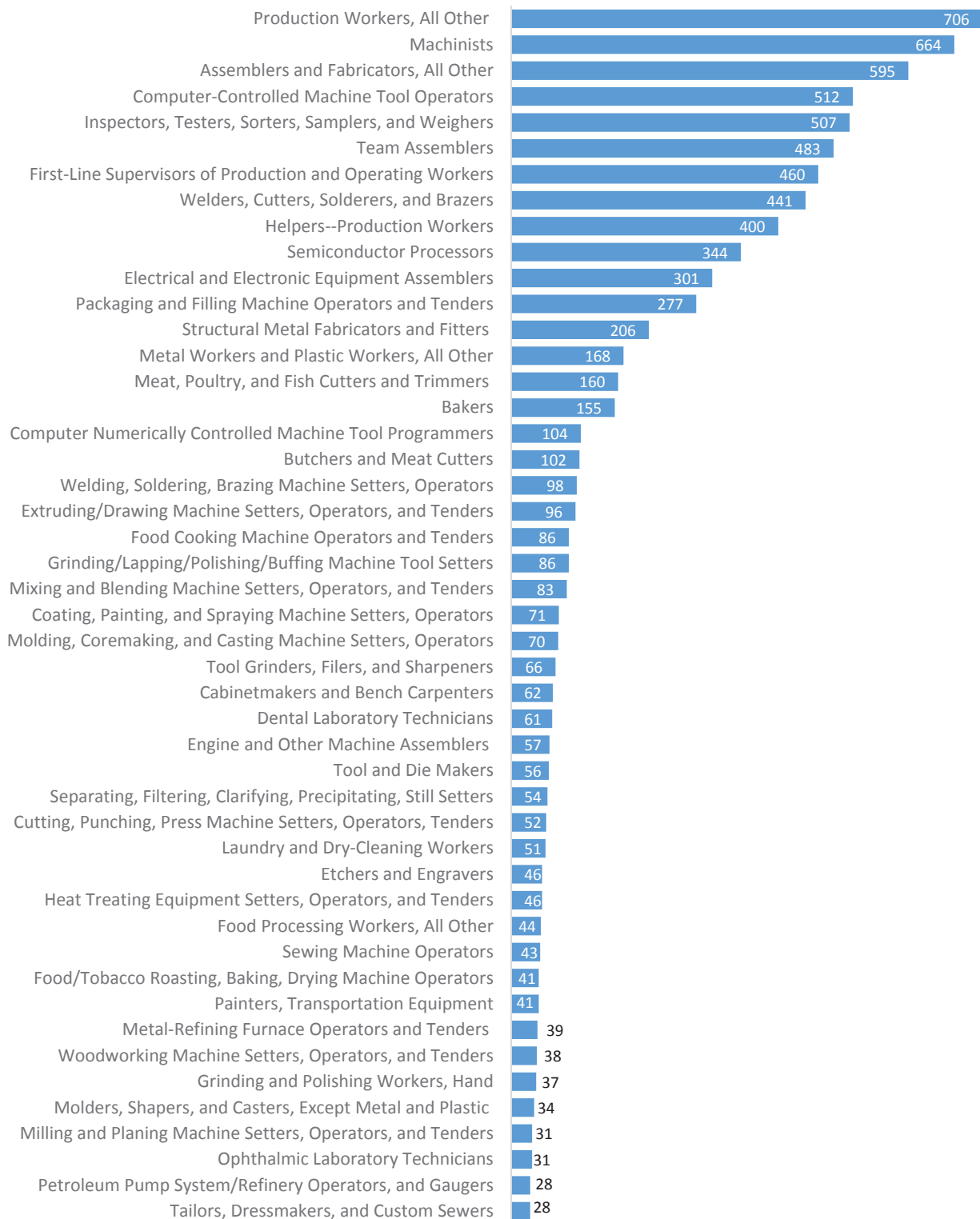
Source: Oregon Employment Department and Washington Department of Employment Security

Figure 54 cont.: Projected job growth, low- and mid-skill production occupations, ten year estimates, 2012-2022



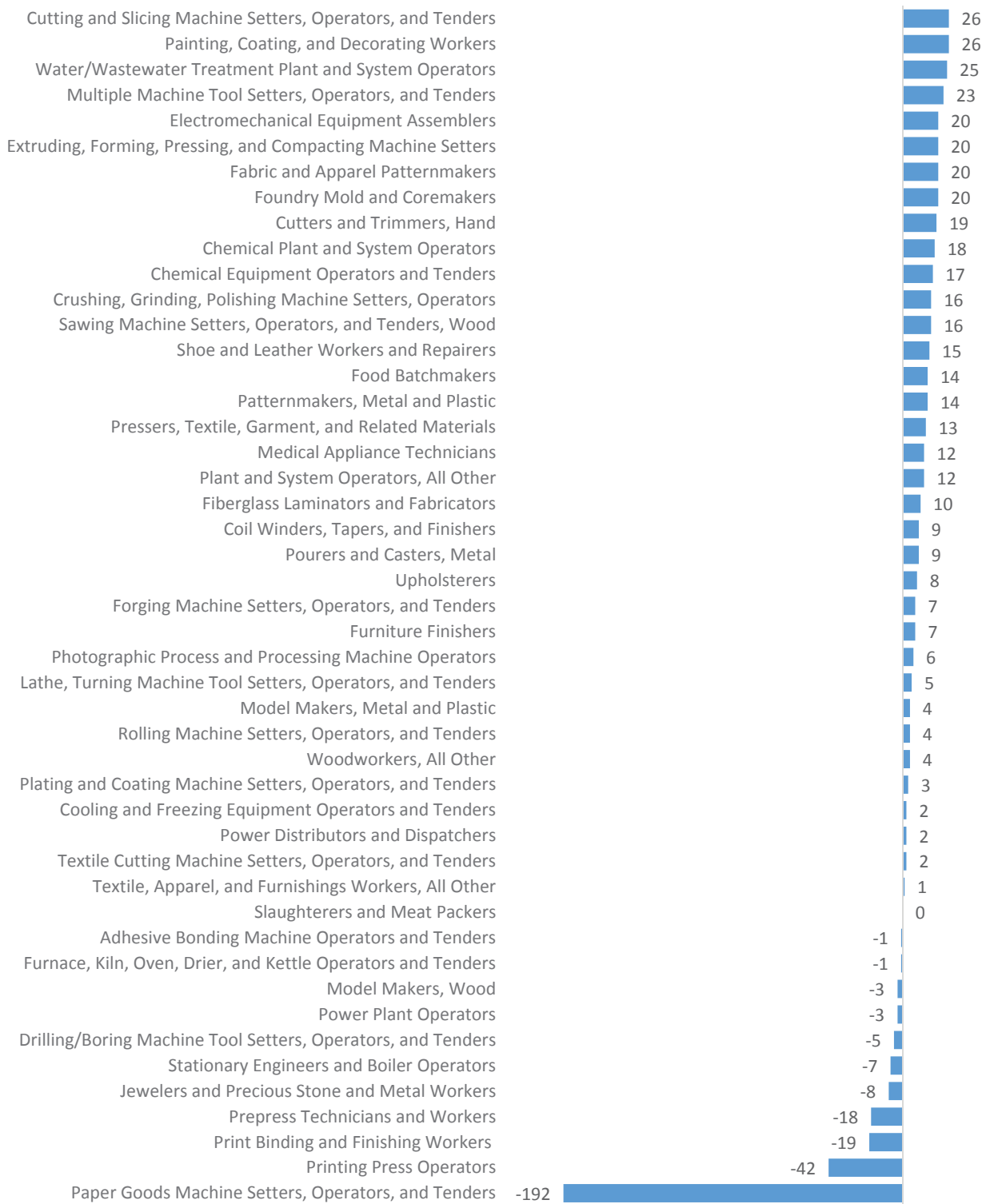
Source: Oregon Employment Department and Washington Security Department

Figure 55: Projected job growth, low- and mid-skill production occupations, ten year estimates, 2012-2022



Source: Oregon Employment Department and Washington Security Department

Figure 55 cont.: Projected job growth, low- and mid-skill production occupations, ten year estimates, 2012-2022



Source: Oregon Employment Department and Washington Security Department

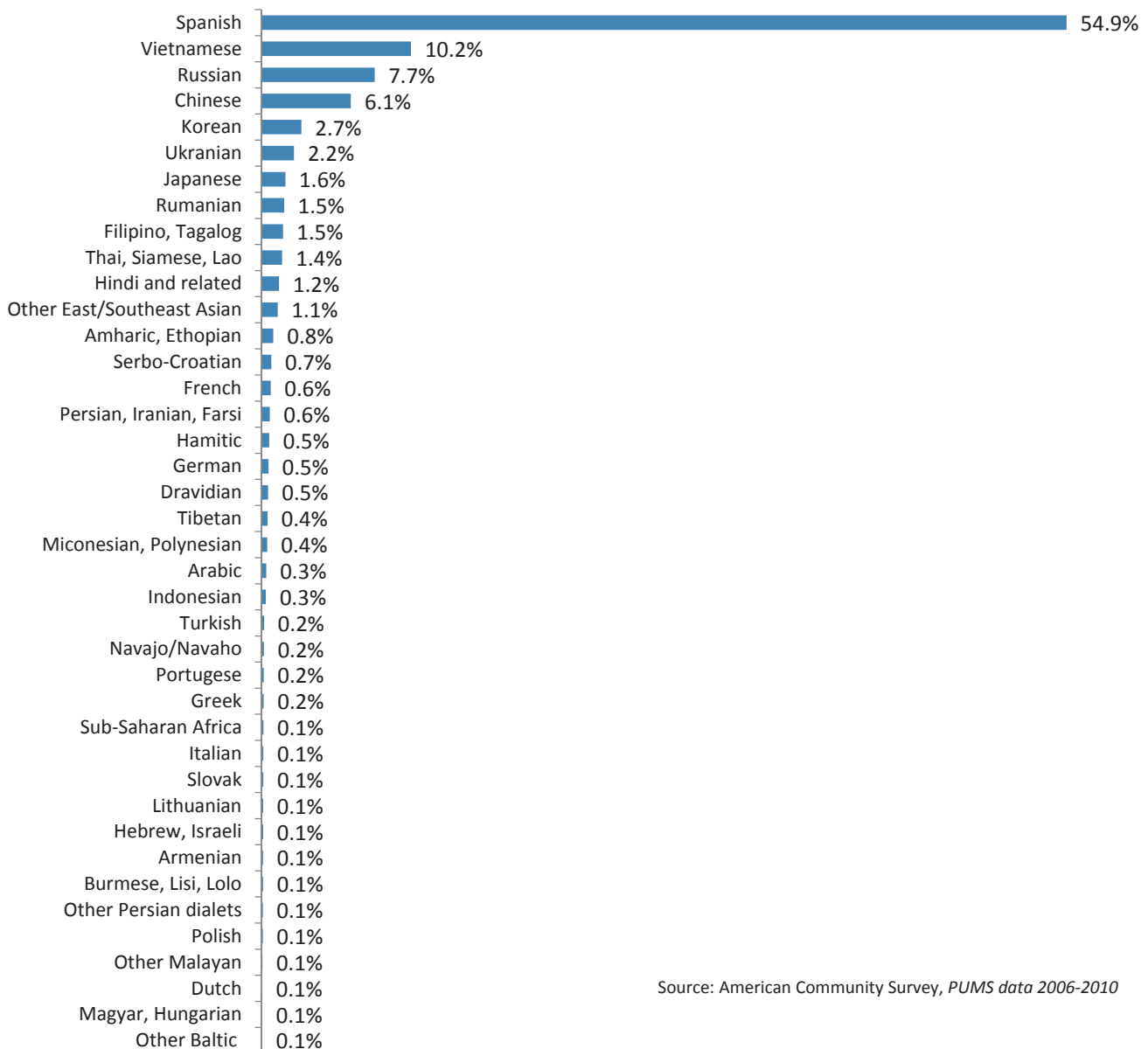
ENGLISH LANGUAGE LEARNERS

English language learners (ELL) can face barriers to employment. The standard definition of an English language learner is a person who reports that they speak English less than “very well.” This lack of English proficiency can impair a worker’s ability to learn about employment opportunities and communicate with coworkers and supervisors. Limited English proficiency can also inhibit a worker’s chances of

passing licensure exams for occupations for which they are otherwise qualified. Between 2006 and 2010, eight percent of the employed workforce in the seven county Portland-Vancouver-Hillsboro MSA were ELL.

Workers who are ELL reported speaking fifty-one distinct languages, but only six were spoken by more than two

Figure 56: Employed English language learners, by language spoken at home, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: American Community Survey, PUMS data 2006-2010

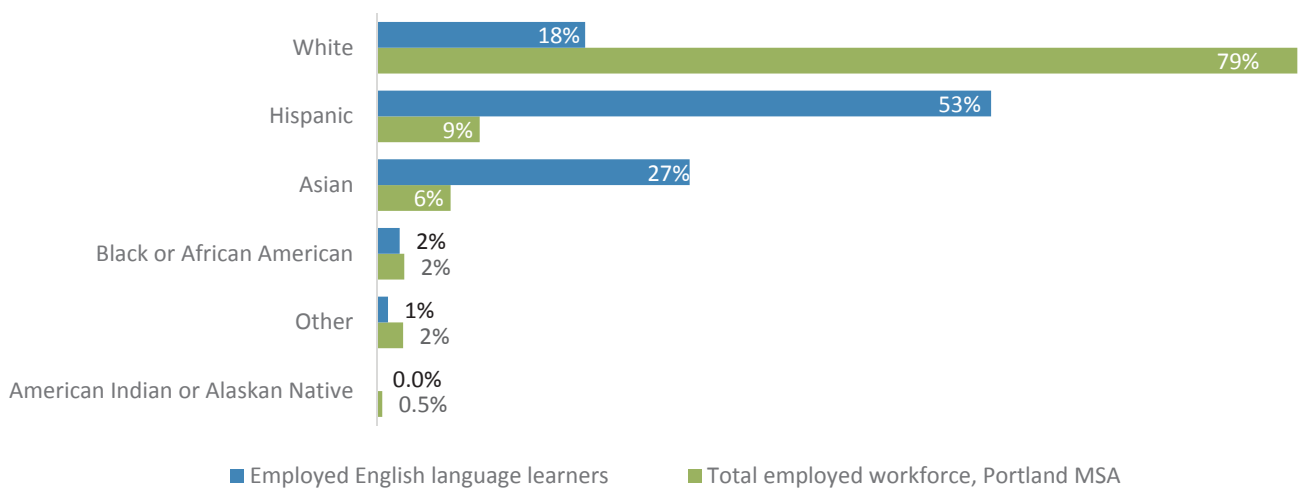
percent of the employed ELL workforce. As shown in Figure 56, more than half (55%) of employed ELL workers in the Portland-Vancouver-Hillsboro MSA spoke Spanish at home. Spanish was five times more common than the second most common language spoken at home, Vietnamese, spoken by ten percent of ELL workers. Russian was the third most commonly spoken language (7%), followed by Chinese (6%).

Race and Hispanic Origin

Between 2006 and 2010, Asian and Hispanic workers were

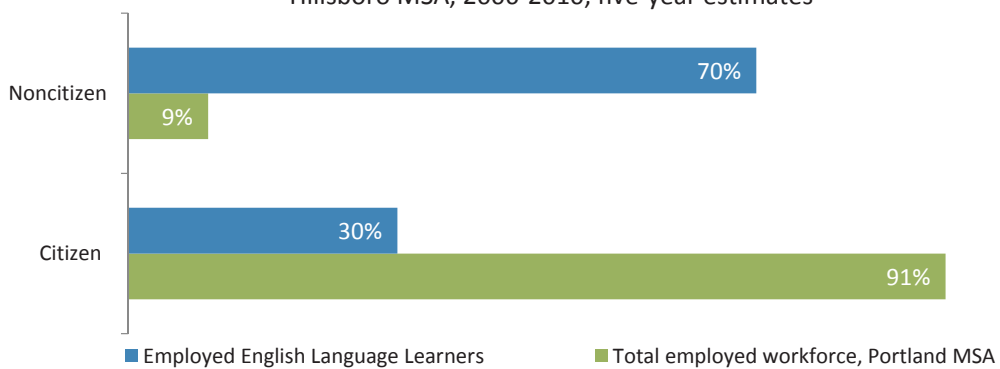
overrepresented among employed ELL compared to their presence in the total workforce (Figure 57). While Hispanics comprised nine percent of the region’s total employed workforce, they were more than fifty percent of the employed ELL workforce. Asians were six percent of the total employed workforce and twenty-seven percent of the employed ELL workers. Whites were underrepresented among employed ELL workers. Between 2006 and 2010, whites were seventy-nine percent of the total employed workforce in the Portland-Vancouver-Hillsboro MSA, but just eighteen percent of the employed ELL workforce.

Figure 57: Employed English language learners, by race and Hispanic origin, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: American Community Survey, PUMS data 2006-2010

Figure 58: Employed English language learners, by citizenship status, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: American Community Survey, PUMS data 2006-2010

Citizenship Status

Between 2006 and 2010, employed ELL workers were less likely to be American citizens than their native English speaking counterparts (Figure 58). While ninety-one percent of all employed workers were American citizens, just thirty percent of employed ELL workers were citizens.

Age

English language learners are younger, on average, than the workforce as a whole. As shown in Figure 59, workers age sixteen to thirty-nine years were overrepresented among employed ELL workers. While forty-eight percent

of the region’s total employed workforce was age sixteen to thirty-nine between 2006 and 2010, fifty-three percent of employed ELL workers were age sixteen to thirty-nine years. Workers age forty to forty-nine were also overrepresented, at twenty-six percent of the employed ELL workforce and twenty-three percent of the total employed workforce. Workers age fifty and over were underrepresented among employed ELL workers; twenty-one percent of employed ELL workers were age fifty or over compared to twenty-nine percent of the total employed workforce.

Figure 59: Employed English language learners, by age, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates

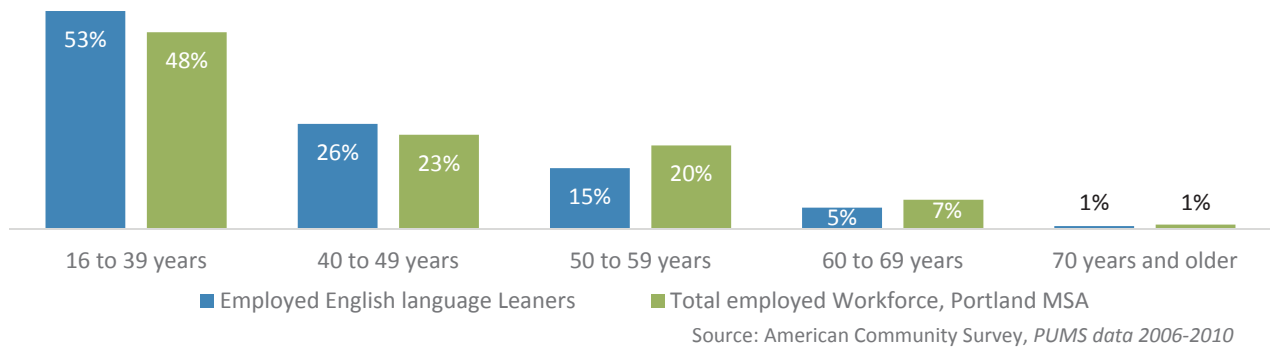
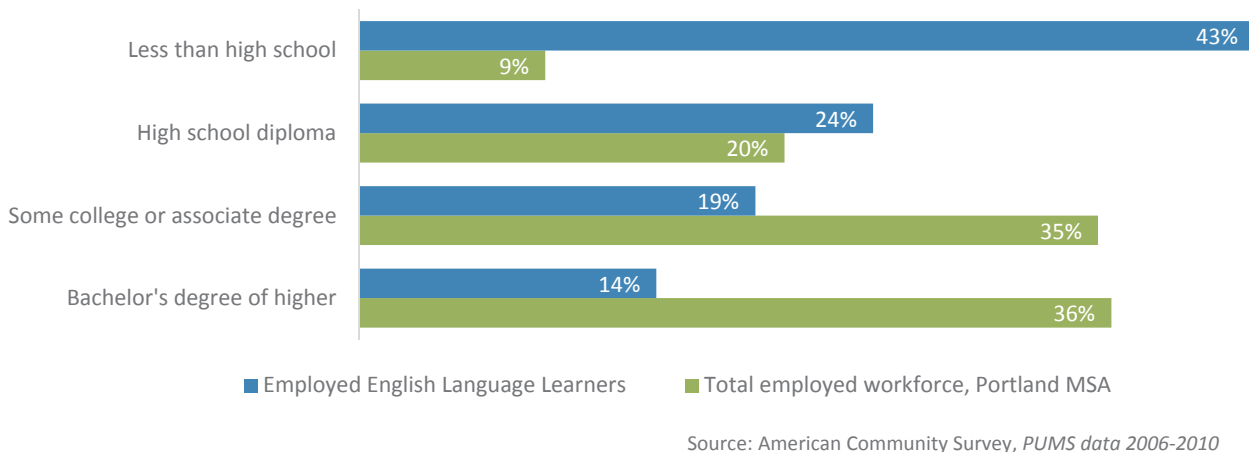


Figure 60: Employed English language learners, by educational attainment, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Educational Attainment

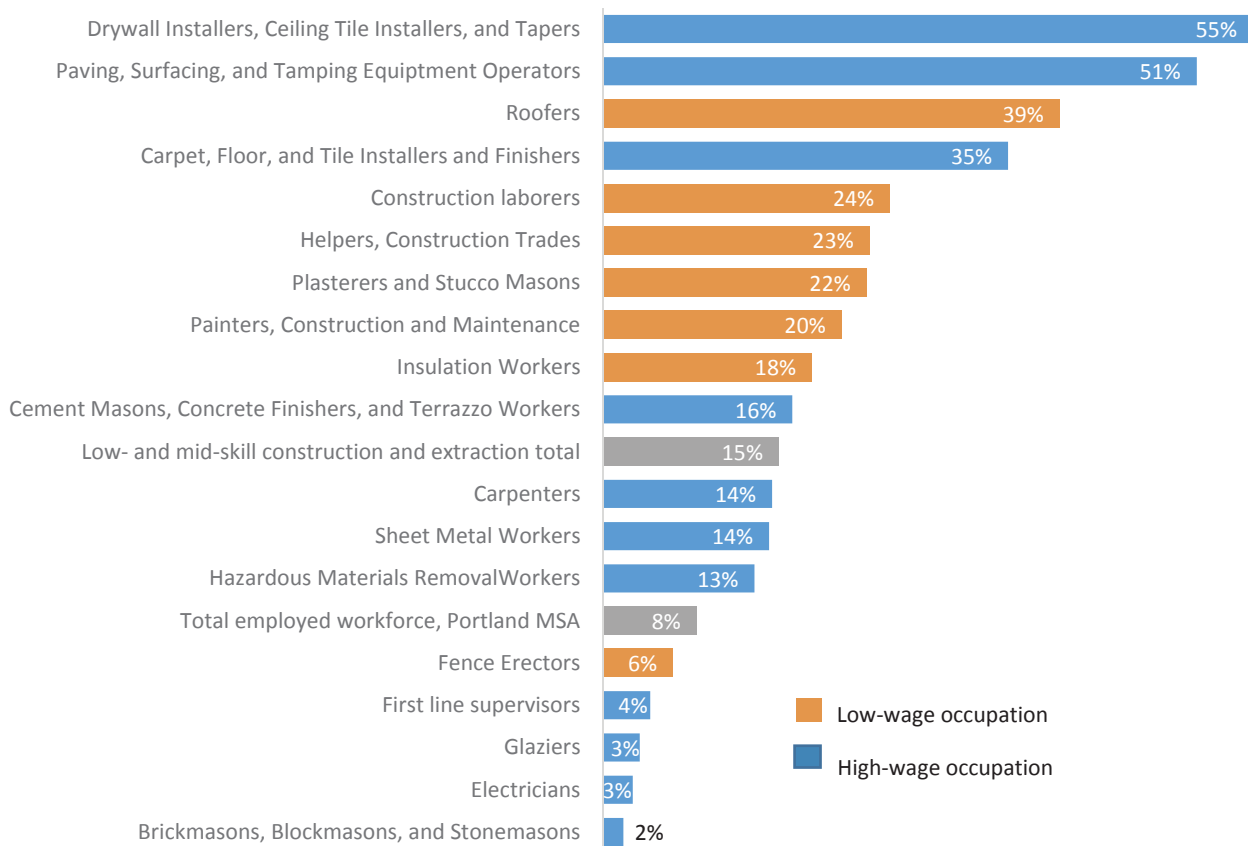
Employed ELL workers had lower levels of education than their non ELL peers. Between 2006 and 2010, nine percent of the region’s employed workforce did not have a high school diploma, compared to forty-three percent of employed ELL workers (Figure 61). Workers with no more education than a high school diploma or equivalency were also overrepresented among employed ELL workers, twenty-four percent compared to twenty percent of the total employed workforce. Employed ELL workers were less likely to have some college or an associate’s degree (19% compared to 35% of all employed workers), or a bachelors or advanced

degree (14% compared to 36% of the region’s total employed workforce).

Construction and Extraction

Between 2006 and 2010, fifteen percent of employed construction and extraction workers were ELL. As shown in Figure 62, forty-nine percent of ELL workers employed in construction and extraction worked in high-wage occupations. As shown in Figure 61, the occupations with the highest percentage of ELL workers were drywall installers, ceiling tile installers and tapers (55%) and paving, surfacing, and tamping equipment operators

Figure 61: English language learners employed in low- and mid-skill construction and extraction workforce, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



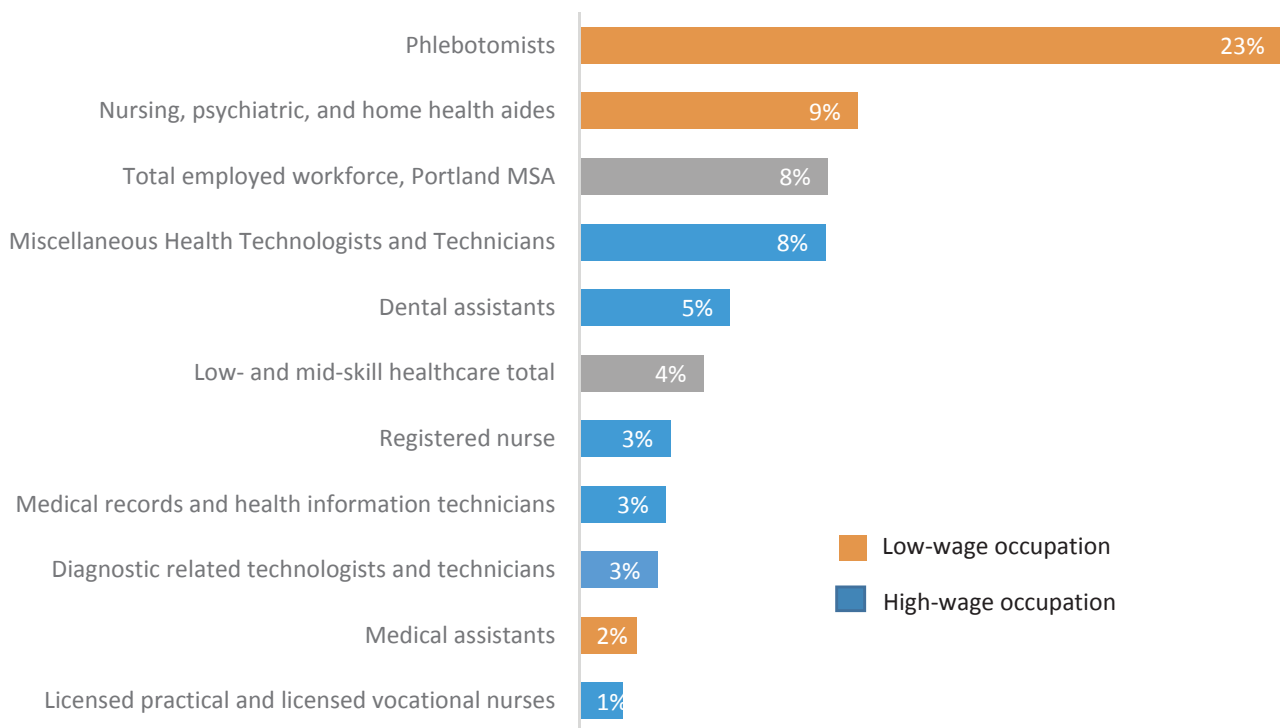
Source: American Community Survey, PUMS data 2006-2010; Bureau of Labor Statistics, U.S. Department of Labor, Occupational Employment Statistics

(51%). The 2013 median annual wage for drywall installers, ceiling tile installers and tapers in the Portland-Vancouver-Hillsboro MSA was \$46,890, 120 percent of the region's annual median wage. The median annual wage for paving, surfacing, and tamping equipment operators was \$57,570, 150 percent of the region's annual median wage.

Healthcare

Between 2006 and 2010, four percent of employed health-care workers were ELL. Forty-eight percent of ELL workers employed in healthcare worked in high-wage occupations. As shown in Figure 62, the occupation with the highest percentage of ELL workers were phlebotomists (23%). The 2013 median annual wage for phlebotomists in the Portland-Vancouver-Hillsboro MSA was \$37,520, ninety-seven percent of the region's annual median wage.

Figure 62: English language learners employed in low- and mid-skill healthcare workforce, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: American Community Survey, PUMS data 2006-2010; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

Installation, maintenance, and repair

Between 2006 and 2010, six percent of employed installation, maintenance, and repair workers were ELL. Ninety-two percent of ELL workers employed in installation, maintenance, and repair worked in high-wage occupations. As shown in Figure 63, the occupations with the highest percentage of ELL workers were electronic equipment

installers and repairers, motor vehicles (34%) and millwrights (29%). The 2013 median annual wage for electronic equipment installers and repairers, motor vehicles in the Portland-Vancouver-Hillsboro MSA was \$27,250, seventy-one percent of the region’s annual median wage. The 2013 median annual wage for millwrights was \$61,190, 158 percent of the region’s annual median wage.

Figure 63: English language learners employed in installation, maintenance, and repair workforce, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: American Community Survey, PUMS data 2006-2010; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

Production

Between 2006 and 2010, twenty-one percent of employed production workers were ELL. As shown in Figure 65, fifteen percent of ELL workers employed in production worked in high-wage occupations. As shown in Figure 64, the occupations with the highest percentage of ELL workers were adhesive bonding machine operators and tenders

(100%) and pressers, textile, garment, and related workers (69%). The 2013 median annual wage for adhesive bonding machine tenders was \$38,950, just over 100 percent of the region’s annual median wage. The 2013 median annual wage for pressers, textile, garment, and related workers was \$20,410, fifty-three percent of the region’s annual median wage.

Figure 64: English language learners employed in low- and mid-skill production workforce, by occupation, Portland-Vancouver-Hillsboro MSA, 2006-2010, five-year estimates



Source: American Community Survey, PUMS data 2006-2010; Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Employment Statistics*

FINDINGS

This report examines workforce demographics in low- and medium-skill occupations in four sectors, including construction and extraction; health care; installation, maintenance, and repair; and production. The report profiles the workforce in these sectors and identifies “High opportunity occupations” that are both high wage and projected to grow in the next decade.

Our main findings are as follows:

Among low- and mid-skill occupations in these four sectors, people of color are most commonly found in construction and production occupations. Twenty percent of the employed workforce is non-white or Hispanic; these populations of color represent more than 20 percent of the employed workforce in construction and production occupations but less than 20 percent of the workforce in health care and installation, maintenance, and repair occupations.

Installation, maintenance, and repair occupations have the highest proportion of workers in jobs that pay more than the median wage for the region. The construction and health care sectors also employ more than 50 percent of workers in jobs that pay more than the median for the region. However, workers in production occupations are employed predominately in jobs whose median wage is less than the region’s overall median wage.

White workers are most likely to hold the higher-wage occupations within most sectors. The only exception is in installation, maintenance, and repair occupations, where several ethnic minorities employed in this sector, including Hispanics, American Indians or Alaskan Natives, and Asians are more likely to hold higher wage positions than are

whites.

Noncitizens are overrepresented among workers in construction and extraction and production occupations. While noncitizens represent about nine percent of the total workforce, they represent seventeen percent each of the construction workforce and the production workforce. This reflects the high Hispanic populations in each of these sectors.

English language learners comprise 8 percent of the employed workforce. Fifty percent of the employed ELL workforce is Hispanic, and more than half (55%) speak Spanish at home. Twenty-seven percent of the employed ELL workforce is Asian, and ten percent speak Vietnamese—the second most common language among the ELL. Employed ELL workers have much lower educational attainment than does the rest of the workforce—only fifty-seven percent have a high school diploma or equivalent. They are also younger than non-ELL workers.

Among the four sectors studied, ELL workers are most common in production occupations, followed by construction and extraction, and installation, maintenance, and repair. The healthcare sector has the lowest percentage of ELL workers, possibly because many healthcare occupations require a license—in fact, the most common healthcare occupation among ELL—phlebotomists—does not require a license in Oregon.

A variety of occupations within these sectors offer opportunities for moving low- and mid-skill workers into higher paid occupations. Within each sector, we identified five “high opportunity” occupations. These four sectors offer over 14,000 potential openings that require only two or fewer years of schooling but pay more than the median

wage for the region. The greatest number of these opportunities is in the construction and extraction sector, where over 5,000 openings will occur in high opportunity occupations. Within health care, about 4,800 openings will occur in high opportunity occupations. However, the majority of these will be registered nurses, and this occupation is quickly transitioning into one that requires a bachelor's degree. Installation, maintenance, and repair and production occupations also present some good opportunities for people of color and English language learners to enter growing occupations with above-median wages.

Carpenters, medical records and health information technicians, automotive service mechanics, and first-line supervisors of production and operation workers currently offer living-wage opportunities for a significant proportion of people of color and English language learners. These occupations are currently providing good opportunities for people of color and might be appropriate case studies for understanding how people of color obtain the skills, experience, and networks required to enter and succeed in these professions.

ENDNOTES

¹ Data are not available for the following occupations: Construction and Extraction (Brickmasons and Blockmasons; Cement Masons and Concrete Finishers; Operating Engineers and Other Construction Equipment Operators; Plumbers, Pipefitters, and Steamers; and Tapers); Healthcare (Diagnostic Medical Sonographers; Radiologic Technologists; Healthcare Practitioners and Technical Workers, All Other; and Surgical Technologists); Installation, Maintenance, and Repair (Electrical and Electronics Repairers, Commercial and Industrial Equipment; Telecommunications Equipment Installers and Repairers, Except Line Installers; Industrial Machinery Mechanics; Mobile Heavy Equipment Mechanics, Except Engines); Production (Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic).

² Ibid.

³ Ibid.

⁴ For additional details see EEO documentation at <http://www.census.gov/people/eptabulations/documentation/>

⁵ Oregon and Washington use multi-county regions when predicting employment growth. The regions are not contiguous with the Portland-Vancouver-Hillsboro MSA. Thus, the employment projections in this report represent the following counties: Clackamas, Multnomah, Washington counties in Oregon and Clark, Wahkiakum, and Cowlitz in Washington. Oregon and Washington use overlapping but slightly different time periods for their projections: Oregon 2012-2022 and Washington 2011-2021. The chart titles in this report use the Oregon time period as the Oregon counties represent a larger share of total jobs.

The profiles are organized and identified using the Standard Occupational Classification (SOC) system. SOC codes are hierarchical, including both major and minor codes. In some cases, data from source is available for a minor codes while corresponding data from another source is available only for major codes. The following chart contains information for each case where both a major and minor SOC code were used. It also indicates places where data were not available for some occupations in one state but available in the other.

Oregon Employment Department, Regional Employment Projections, [June 4, 2014] [www.qualityinfo.org]; Washington Employment Security Department, Regional Employment Projections, [June 4, 2014] [www.esd.wa.gov].

⁶ The ACS EEO tables are broken into twelve racial and ethnic categories: Hispanic or Latino (white alone Hispanic or Latino and all other Hispanic or Latino), not Hispanic or Latino, one race (Black or African American, American Indian alone, Asian alone, Native Hawaiian and Other Pacific Islander alone), not

Hispanic or Latino, two or more races (White and Black, White and AIAN, White and Asian, Black and AIAN), and Balance of not Hispanic or Latino. For the purposes of this report, and to better reflect the area's mixed race population, some categories have been combined. The categories used for this report are as follows: Hispanic (Hispanic or Latino of all races), white (white alone, non-Hispanic), Native Hawaiian or Pacific Islander (Native Hawaiian or Other Pacific Islander alone, non-Hispanic), Other (Other, non-Hispanic), black or African American (black or African American alone or in combination with other races, non-Hispanic), American Indian or Alaskan Native (American Indian or Alaskan Native alone or in combination with other races, non-Hispanic), and Asian (Asian alone or in combination with other races, non-Hispanic).

⁷ Due to small population size, numbers are not available for Native Hawaiian and Other Pacific Islanders. U.S. Census; American Community Survey, 2006-2010 American Community Survey 5-Year Estimates, Equal Employment Opportunity Tabulation, Table EEO-NCIT02W, [July 8, 2014].

⁸ Data were not available for the following occupations: Boilermakers 6210 (SOC 47-2011), Derrick, rotary drill, and service unit operators, and roustabouts, oil, gas, and mining 6800 (SOC 47-50YY), Earth drillers, except oil and gas 6820 (SOC 47-5021), Explosives workers, ordnance handling experts, and blasters 6830 (SOC 47-5031), Glaziers 6360 (SOC 47-2121), Highway maintenance workers 6730 (SOC 47-4051), Mining machine operators 6840 (SOC 47-5040), Miscellaneous extraction workers, including roof bolters and helpers 6940 (SOC 47-50XX), Rail-track laying and maintenance equipment operators 6740 (SOC 47-4061), and Reinforcing iron and rebar workers 6500 (SOC 47-2171).

⁹ Data were not available for the following occupations: Hearing Aid Specialists (SOC 29-29092), Medical and Clinical Laboratory Technicians (SOC 29-2012), Medical Equipment Preparers (SOC 31-9093), and Health Technologists and Technicians, all other (SOC 29-2099).

¹⁰ Due to small population size, numbers are not available for Native Hawaiian and Other Pacific Islanders. U.S. Census; American Community Survey, 2006-2010 American Community Survey 5-Year Estimates, Equal Employment Opportunity Tabulation, Table EEO-NCIT02W, [July 8, 2014].

¹¹ Due to small population size, data might represent an undercount of the American Indian and Alaskan Native and Native Hawaiian and Other Pacific Islander population.

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