Oregon 2024 Talent Assessment

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Prepared For:

The Workforce and Talent Development Board and the Higher Education Coordinating Commission for the State of Oregon

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Executive Summary

Oregon's businesses drive innovation in the state and foster significant demand for new skills and occupations. A central factor in the continued growth and prosperity of the economy is a robust talent pool aligned with industry needs. While the state boasts a skilled and educated workforce, including many STEM graduates, it also faces stark hiring challenges and shortages in some key industries. To achieve equitable prosperity for all Oregonians and equip Oregon's businesses and communities with the talent they need for success, the State of Oregon's Higher Education Coordinating Commission (HECC) and Workforce and Talent Development Board (WTDB) collaborated with SRI International (SRI) to develop the Oregon 2024 Talent Assessment.

This assessment prioritizes four industry clusters that offer upward mobility and strong career pathways to workers in Oregon (Health Sciences, Information Technology & Analytical Instruments, Construction, and Wood Products Manufacturing), and two occupations that are essential to the functioning of Oregon's economy (Childcare and Heavy and Tractor-Trailer Truck Drivers). To gain a comprehensive understanding of the opportunities and challenges within these industries and occupations, SRI examined labor market data and workforce and education system coordination, conducted an analysis of job postings, interviewed key partners in Oregon, and implemented a statewide employer survey.

The *2024 Talent Assessment* presents analysis and findings on Oregon's economic and workforce landscape; skills supply and demand for target occupations; and the competitive position of Oregon's talent pool and workforce development system. Overall, this analysis finds that Oregon's workforce system benefits from a large network of partners, effective and scalable employer-led training, and significant state investments. Lack of a strong coordinating authority, burdensome licensure processes, fewer workforce development opportunities in rural communities, and evidence of credential bias threaten future prosperity for Oregon's workers and businesses.

Industry Clusters and Occupations

This analysis of four upwardly mobile industry clusters and two essential occupations highlights strong opportunities within Oregon's economy, addressing both current and future economic demands, while also delineating pathways towards quality employment that fosters individual and community prosperity. Industry clusters and occupations were selected based on partner insights and analysis of wage and employment trends, gross regional product, regional specialization, and "necessary" occupations as defined by the Center for Disease Control (CDC) and the National Institute for Occupational Safety and Health (NIOSH).

Assessment Summary of Select Industry Clusters and Occupations

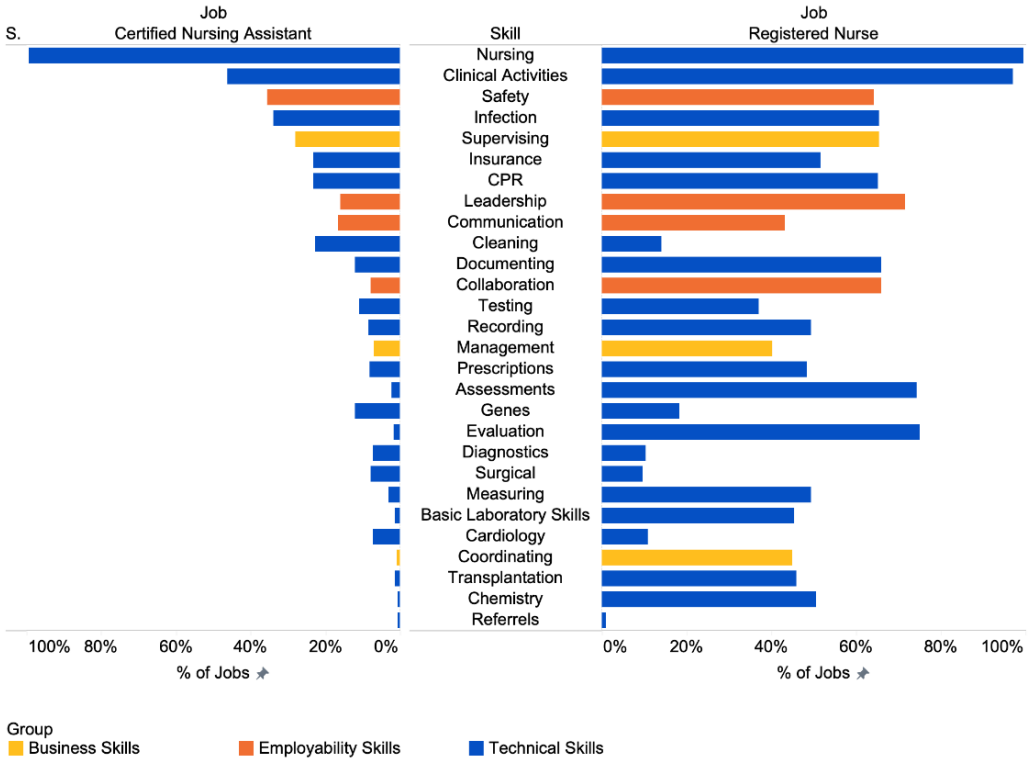
	Health Sciences	IT & Analytical Instruments	Construction	Wood Products Manufacturing	Childcare	Heavy & Trailer-Truck Drivers
Employment and wage trends	Strong wage growth Strong employment growth	Strong wage growth Stable growth overall, with significant growth in semiconductors	Strong wage growth Strong employment growth	Strong wage growth Minimal employment decline	Minimal wage growth Significant employment decline	Strong wage growth Strong employment growth
Most job openings	Home Health and Personal Care Aides Registered Nurses Nursing Assistants	Semiconductor Processing Technicians Software Developers Electrical, Electronic, and Electromechanical Assemblers, Except Coil Winders, Tapers, and Finishers	Construction Laborers Carpenters First-Line Supervisors of Construction Trades and Extraction Workers	Wood Sawing Machine Setters, Operators, and Tenders Miscellaneous Assemblers and Fabricators Machine Feeders and Offbearers	Preschool teachers Childcare workers	Heavy and tractor-trailer truck drivers Industrial truck and tractor operators Light truck drivers
Most frequently cited skills in job postings	Nursing Radiation	Network security and cybersecurity Leadership/ management Programming	Project management Contracting Tool usage	Safety Tool Usage Maintenance	Working with parents Teaching Curriculum	Tarping Driving Freight
Employer perception of workforce environment*	Negative	Positive	Negative	Negative	Neutral	Neutral
Labor shortage	11.9%	4.9%	6.7%	8%	12.6%	3.4%
Workforce programs align with industry needs*	Somewhat aligned	Somewhat aligned	Not at all aligned	Not at all aligned	Somewhat aligned	Somewhat aligned
Share of Total Employment	10.2%	2.7%	2.4%	1%	1%	2.3%
Total number of 2023 jobs	226,540	60,935	53,050	21,816	20,312	50,760
Industry share of State GRP ($/%)	$23.8M/8.9%	$18.7M/7.0%	$6.6M/2.5%	$3.9M/1.5%	N/A	N/A

**Most common employer response as indicated in the business survey.*

Health Sciences

- Job postings exhibit a considerable degree of fragmentation across skill categories, with no clear set of attributes emerging as universally important.
- Licensure processes in Oregon's health sciences industry is unusually burdensome compared with other states, disincentivizing people to pursue those credentials.
- Gaps in race and gender in the workforce widen along the career pathway.
- When examining the career pathway from certified nursing assistant (CNA) to registered nurse (RN) and then nurse practitioner (NP), the gap between skills taught and acquired at the CNA level and those needed for RN jobs may make advancing on the pathway from CNA difficult, in addition to the educational and licensure barriers between these steps.

The large gap between most CNA and RN skills make advancing through the health sciences career pathway difficult (share of job postings indicating skill, by occupation and skill group)

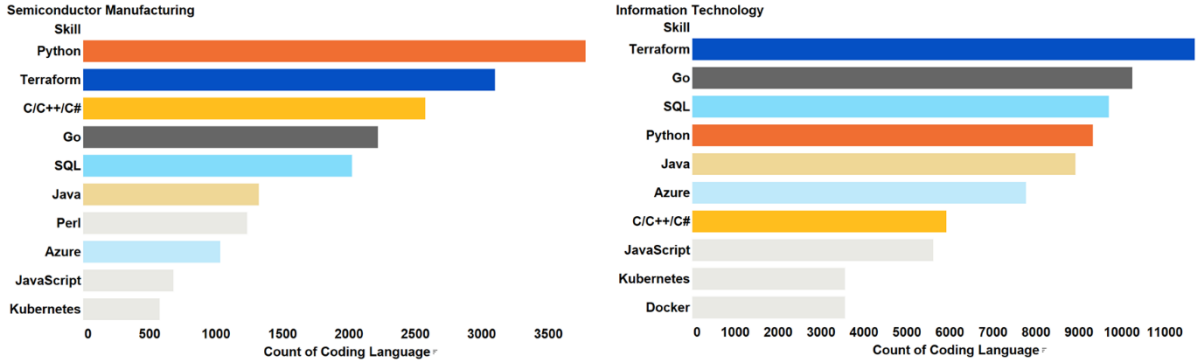


Information Technology & Analytical Instruments

- Technology innovation and adoption in this cluster occurs more rapidly than curriculum development, leading to knowledge gaps in the workforce.
- Race and gender gaps in the workforce narrow further up the career pathway.
- When comparing semiconductor and information technology roles, the overall type and distribution of skills is closely aligned, indicating opportunities for transferability and career progression between them.

AI requirements are not limited to the IT & analytical instruments industry - health sciences postings also often required these skills, too.

Semiconductor manufacturing and IT jobs each require a high degree of coding skills (top coding skills in semiconductor manufacturing and IT job postings)



Construction

- There is significant interest and projected growth in construction and construction-related industries; however, students' aptitudes do not align with interests.
- Amongst target industry clusters, construction job postings mentioned business skills the most and demonstrated as much of an emphasis on business skills as on technical skills.

Wood Products Manufacturing

- Wood products manufacturing has a competitive advantage in Oregon with an employment concentration more than 3 times higher than the national average.
- Wood products manufacturing has evolved significantly with advances in technology making the nature of work focus increasingly on knowledge and technology intensive (KTI) skills, such as CNC tool operations, rather than strictly manual labor.

Childcare

- Childcare occupations require mostly technical skills (teaching) and often do not offer career pathways through roles that introduce a mix of technical and managerial skills.
- Over 90% of childcare workers are female, and, on average, earn 55% of the average annual salary in Oregon, contributing to gender inequities in the state.
- The inaccessibility of affordable, convenient childcare prevents many parents from entering the workforce and contributing to economic prosperity in Oregon.

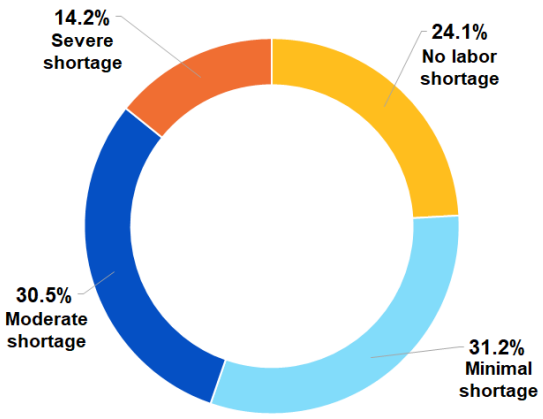
Heavy and Tractor-Trailer Drivers

- Labor shortages resulting from the need to reskill and upskill is a more significant challenge in heavy and tractor-trailer truck driver occupation cluster than others.
- Employers note the need for more formal transportation-focused K-12 and postsecondary training programs.
- As in the case with childcare workers, there is no ladder comprised of mixed technical and management skills into higher paid occupations. This, combined with low median wages, contributes to the decline in the trucking workforce.

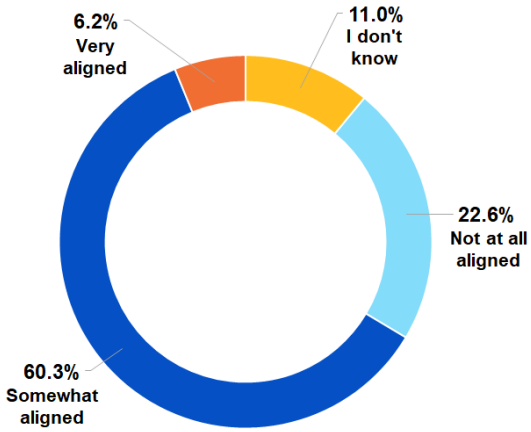
Employer Perspective

A business community survey was distributed to employers in Oregon across different industries, company sizes, and geographic locations. The survey provided insights from 201 participating employers on industry labor needs, skills gaps, partnerships, and assessment of resources. Most report that they are experiencing either no or minimal labor shortage. Health science employers and larger businesses are more likely to indicate severe shortages. Those reporting shortages indicate hiring challenges as the primary barrier, particularly candidates with a lack of technical skills and work experience. When asked how well aligned existing workforce and educational programs are with the labor needs of their business, most report that these programs are only somewhat aligned with their needs.

Is your company experiencing a labor shortage?

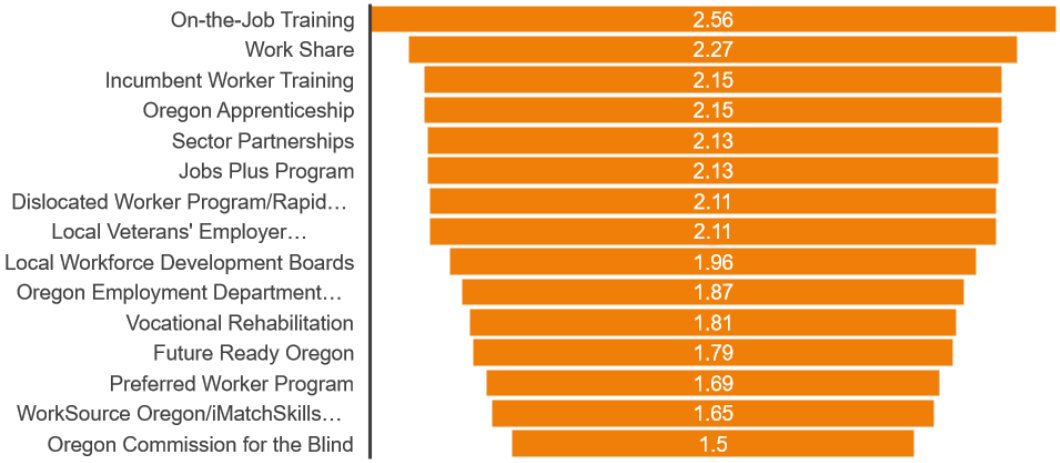


How aligned are programs with your labor needs?



When asked to assess Oregon's workforce organizations and programs in meeting workforce need (scale of 1 "not at all valuable" to 3 "very valuable"), on-the-job training and Work Share programs are rated as the most valuable of these offerings. WorkSource Oregon/iMatchSkills is rated less valuable despite it being the most known/used resource compared to others.

How valuable are the following workforce organizations and programs in meeting your workforce needs?



Recommendations

Oregon has largely overcome cyclical labor market challenges resulting from the COVID-19 pandemic. Beyond recovery, the state has experienced significant growth in increasingly technology intensive industries that offer opportunities for upward mobility. The state is well-poised for long-term economic prosperity but faces headwinds that must be addressed. The recommendations support Oregon's workforce goals of ecosystem alignment, equitable prosperity for all Oregonians, and supporting individuals along the career pipeline.

Strategy 1: Align and Strengthen Oregon's Workforce Ecosystem

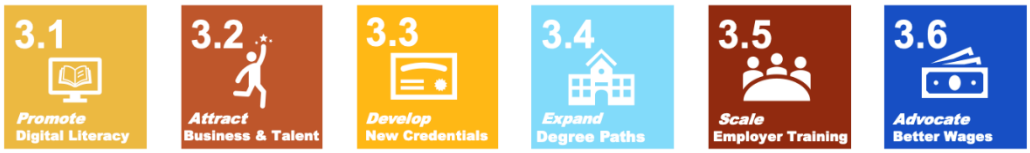
Oregon's workforce ecosystem includes several partners with various goals and needs. This strategy includes action items that bolster the alignment of these partners and improve the infrastructure of the workforce development ecosystem through new initiatives and increased collaboration.

Strategy 2: Promote efforts that increase workforce development access and equity for all Oregonians

Workers across the culturally and geographically diverse state have unique needs and challenges that have an impact on their ability to further their education and career. This strategy includes action items that improve workforce development access and equity through custom programs and investments.

Strategy 3: Support Oregon's target industries and occupations through attraction, retention, and life-long learning initiatives

As Oregon's economy continues its economic evolution workforce needs are rapidly shifting, and the state is experiencing shortages in several key occupations. This strategy includes action items that support career pathways and transitions for learners and workers, as well as actions that boost worker attraction and retention for crucial industries and jobs.



Introduction

Oregon's businesses drive innovation in the state and foster significant demand for new skills and occupations. A central factor in the continued growth and prosperity of the economy is a robust talent pool aligned with industry needs. While the state boasts a skilled and educated workforce, including many STEM graduates, it also faces shortages due to high levels of out-migration and an aging workforce. To evaluate the skills required to address these dynamics, achieve equitable prosperity for all Oregonians, and equip Oregon's businesses and communities with the talent they need for success, the State of Oregon's Higher Education Coordinating Commission (HECC) and Workforce and Talent Development Board (WTDB) collaborated with SRI International (SRI) to develop the *Oregon 2024 Talent Assessment*.

This assessment prioritizes four industry clusters that offer upward mobility and strong career pathways to workers in Oregon (Health Sciences, Information Technology & Analytical Instruments, Construction, and Wood Products Manufacturing), and two occupations that are essential to the functioning of Oregon's economy (Childcare and Heavy and Tractor-Trailer Truck Drivers). To gain a comprehensive understanding of the opportunities and challenges within these industries and occupations, SRI examined labor market data and workforce and education system coordination, conducted an analysis of job postings, interviewed key partners in Oregon, and implemented a statewide employer survey.

The *2024 Talent Assessment* presents analysis and findings on Oregon's economic and workforce landscape; the supply and demand of skills for occupations in clusters offering opportunities for career development and in occupations that are foundational to the economy; and the competitive position of Oregon's talent pool and workforce development system. These insights inform recommended actions that HECC and its partners can take to build on strengths, address weaknesses, and capitalize on opportunities within its workforce and workforce system.

Summary of Assessment Findings

- Oregon is experiencing a strong economic recovery from the COVID-19 pandemic, with GDP steadily increasing and labor shortages diminishing, primarily driven by growth in prime working age employment.
- Employers reporting labor shortages indicate hiring challenges as the leading barrier, particularly candidates with a lack of technical skills and work experience.
- Businesses have relatively low familiarity with most workforce support organizations and programs, which limits program effectiveness and return on investment for the state.
- Health science employers offer fewer opportunities for career advancement than employers overall but report a greater alignment between existing educational programs and skills needed for industry.
- When comparing semiconductor and information technology roles, the overall type and distribution of skills closely aligns, indicating opportunities for transferability and career progression between the two sectors.
- Top hiring challenges in the construction industry cluster are lack of work experience, technical skills, and employability skills, and basic suitability for available roles.
- Wood products manufacturing has evolved significantly, with advances in technology changing the nature of the work to increasingly focus on KTI skills rather than manual

labor. Given these changes, most employers rate Oregon's existing educational programs as "not at all aligned" with their company's labor needs.
- Increasing the childcare workforce will require several strategies including increasing wages, demonstrating and strengthening career pathways, and expanding the labor pool by addressing barriers to job access.
- Labor shortages due to the need to reskill and upskill are a significant challenge in the heavy and tractor-trailer truck driver occupation cluster, with employers citing challenges related to balancing skills program demands with current business operations and measuring the organization's supply and demand of skills on an ongoing basis.
- Workers of color are concentrated in roles that require no formal education credentials, leading to pay inequities for racially and ethnically diverse workers in Oregon. Within the health sciences industry cluster, gaps in race and gender widen as careers progress.

To further study Oregon's talent and economic landscape, this assessment focuses on occupations in four select industry clusters that offer upward mobility opportunities to workers in Oregon and on two occupations necessary for the functioning of Oregon's economy. SRI employed a combination of quantitative analysis, including labor market data and job postings analysis, as well as qualitative research, such as interviews with key partners in Oregon and an employer survey, to gain a comprehensive understanding of the opportunities and challenges within these sectors. The goal of studying these selected upward mobility industry clusters and essential occupations is to highlight strong opportunities within Oregon's economy, addressing both current and future economic demands, while also delineating pathways towards quality employment opportunities that foster individual and community prosperity.

Industry Cluster and Occupation Selection

To inform the selection of upward mobility industry clusters and essential occupations, SRI reviewed past Talent Assessments and other Oregon talent ecosystem reports to develop an initial, broad list of target industry clusters. To narrow down to those with the strongest opportunities for upward mobility, SRI's analysis including wage growth, employment growth, employment size, share of gross regional product (GRP), and regional specialization. SRI also analyzed occupations identified as necessary by the Center for Disease Control (CDC), the National Institute for Occupational Safety and Health (NIOSH), and economic indicators data.

> SRI presented a curated selection of industry clusters and occupations to the HECC and to the Steering Committee and conducted a survey of Steering Committee members to identify the industry clusters and occupations of interest for the *2024 Talent Assessment*. Analysis, additional feedback, and the survey informed the final industry and occupation selections.

SRI's assessment of Oregon's talent ecosystem for this report is based four primary data sources: a survey of members of the business community, partner engagement through one-on-one interviews and focus groups, analysis of economic data from the source Lightcast, and direct analysis of job postings data obtained from the National Labor Exchange's ResearchHub database. These data collection and analysis efforts were used to provide qualitative and quantitative data on the talent ecosystem, and our internal process for creating the report involved a synthesis of each data stream to ensure the presented results benefit from knowledge gained through other collection methods.

SRI collaborated with HECC to deploy a business community survey in Oregon, aiming to gauge industry labor needs and capture employer perspectives on skills gaps, partnerships, and

workforce development assets. SRI also conducted five focus groups and 21 interviews engaging a total of 64 total Oregon workforce partners. These workforce partners included local, regional, and state-level workforce development, education, and industry professionals.

In addition, SRI analyzed more than 175,000 job postings from across the selected industry clusters and occupations to extract requirements for skills, education, and experience. The skills extracted from the job postings were generally divided into technical, employability, and business skills. Technical skills are those specific to the industry or occupation which allow workers to do specialized tasks relevant to their job, but not generally transferrable across industries or, sometimes, occupations. Employability skills are essential skills for workers such as leadership and communication. Finally, business skills are those that are common to managerial or administrative positions, such as invoicing, scheduling, and budgeting. The IT & Analytical Instruments cluster also has two additional skills groups, programming languages and semiconductor skills, to allow for greater specificity for these postings.

Manufacturing Spotlight

The manufacturing sector in Oregon makes up 8.7% of state employment and contributes 12.4% to state GDP (U.S. Bureau of Labor Statistics, 2023). Oregon has a diverse manufacturing sector, with significant activity in to wood products manufacturing, information technology & analytical instruments (semiconductors), and other advanced manufacturing.

To better understand the talent needs and challenges of manufacturing firms in the state, SRI isolated results from the business community survey from manufacturing-related respondents. Manufacturing respondents account for 32% of total survey respondents, and represent firms of varying sizes and industries, primarily Advanced Manufacturing (other than semiconductors), semiconductors, and wood products manufacturing manufacturers (see Appendix E: Survey Summary Results for reference). Key findings include:

- Most indicate only a minimal, manageable labor shortage, but generally view the current workforce as having insufficient work experience and technical skills.
- Manufacturing employers indicate that Oregon's workforce system is "somewhat aligned" to employer needs, noting the need for additional electrical engineers, those with computer science and AI skills, and those with more specialized vs. general manufacturing skills.
- Top three state workforce organizations or development programs supporting manufacturing are on-the-job training, WorkSource Oregon/iMatchSkills online system, and Work Share.
- Top sources of skilled labor include employee referrals, career centers at community colleges or universities, WorkSource Oregon, and staffing agencies.
- Many manufacturers offer opportunities for career advancement, with one respondent noting, "We do not require any previous experience for machinist positions. We use a combo of in-house and off-site training to build employees' skills."
- Access to affordable housing and childcare services were identified as the primary barriers to job access for underserved populations in Oregon. Many manufacturing employers offer programs and resources to increase job access, such as "returnships" to bring people back into the workforce after taking time off, childcare and transit benefits, and funded scholarships for training in the trades.

Economic and Workforce Landscape

Introduction

To understand Oregon's current position, opportunities for growth and development, and challenges to future prosperity, this landscape assessment presents baseline data and trends across industry, innovation, workforce, education, and quality of life characteristics.

Key Findings

- Oregon is experiencing a strong economic recovery from the COVID-19 pandemic, with GDP steadily increasing and labor shortages diminishing
- Business-performed research and development (R&D) accounts for 4.7% of private-industry output in Oregon, surpassing the national average of 2.9% and placing Oregon among the top five state for business R&D.
- Oregon outpaces the national average and most states in its proportion of science and engineering graduates, with over one in three bachelor's degree graduates earning science- and technology-related degrees.
- Oregon faces challenges from the out-migration of educated residents.
- Most families in Oregon (60%) live in a "childcare desert," characterized by counties with more than three children for each regulated childcare slot.

Industry

Oregon's economy has exhibited steady growth, with gross domestic product (GDP) expanding by nearly 32% over the past five years, slightly outpacing national growth (Bureau of Economic Analysis, 2023). Oregon's GDP growth increased each year prior to the pandemic, which did not halt momentum (Bureau of Economic Analysis, 2023). Oregon's overall employment grew 7% from 2020 to 2023, again, demonstrating resilience following the pandemic.

Government (13.7%), health care and social assistance (13.4%), and retail trade (10.0%) industries are the largest shares of 2023 jobs in Oregon. The fastest growing industry is transportation and warehousing with 22% job growth from 2018 to 2023. Agriculture, forestry, fishing, and hunting, including wood products manufacturing, is Oregon's most specialized sector with a location quotient of 2.4, indicating that Oregon's employment concentration here is almost two and a half times the national average.

Innovation

In addition to resilient growth, Oregon's economy is characterized by a rich landscape of innovation. R&D contributes nearly 5% of Oregon's GDP, surpassing the national average by 1.23 percentage points (National Center for Science and Engineering Statistics, 2023). This high intensity of R&D activities in Oregon is a leading indicator of both current and future economic competitiveness.

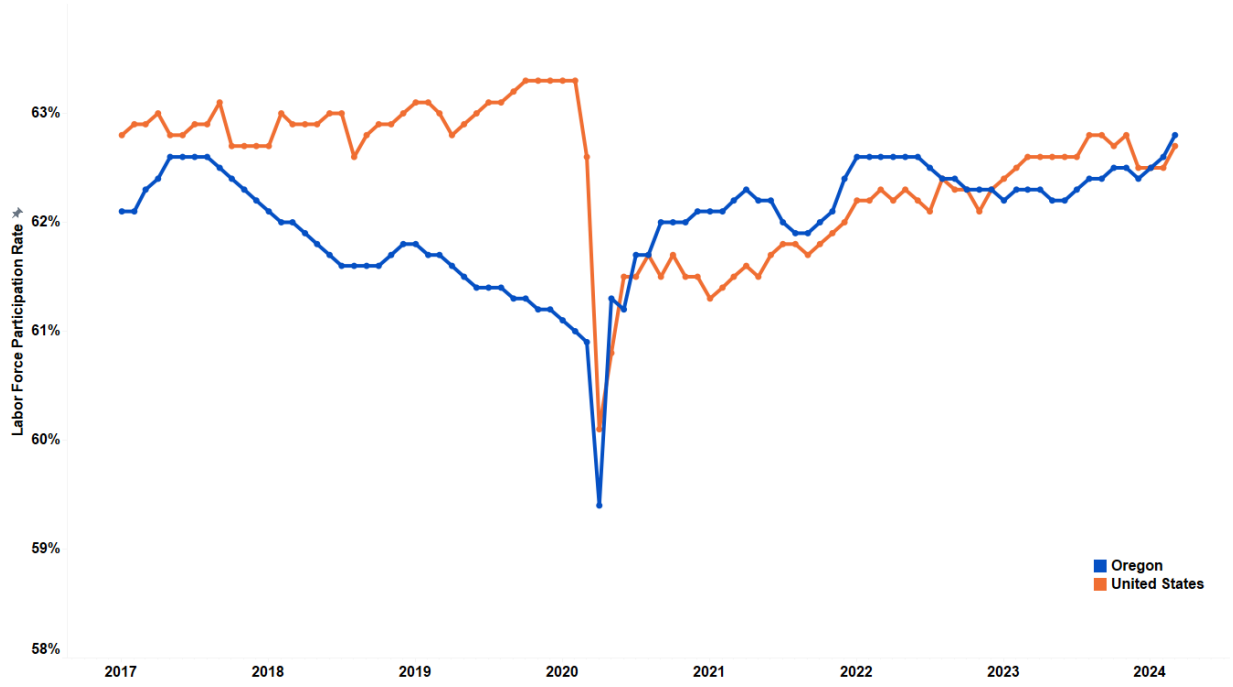
The private sector drives large investments in R&D activities. Business-performed R&D, led by the information technology industry, accounts for 4.7% of private-industry output in Oregon, compared to the national rate of 2.9% (National Science Foundation, 2020). In the fiscal year of 2022, Oregon's state government allocated $33.8 million towards R&D expenditures (National Center for Science and Engineering Statistics, 2022).

Oregon ranked seventh among other U.S. states in the Information Technology and Innovation Foundation's (ITIF's) 2022 North American Subnational Innovation Competitiveness Index. Oregon only trails Massachusetts and California in the number of Patent Cooperation Treaty (PCT) patents per capita (ITIF, 2022).

Workforce

From 2017 to 2020, the number of individuals in science and engineering occupations steadily increased and accounted for 5.36% of all occupations in Oregon in 2020, slightly exceeding the national average of 5.26% (National Center for Science and Engineering Statistics, 2021). Despite an aging workforce and only modest population growth in recent years, Oregon's labor shortage has improved (U.S. Chamber of Commerce, 2024). The increase in available workers can be attributed largely to the expansion of labor force participation, which rebounded and slightly expanded following the pandemic. At the start of 2019, the labor force participation rate in Oregon was 61.8%. During the pandemic, the labor force participation rate in Oregon got as low as 59.4%. As of March 2024, Oregon's labor force participation rate is 62.8%. While labor force participation rates in Oregon were less than the national average prior to the COVID-19 pandemic, the state's March 2024 labor force participation rate is marginally better than that of the United States (Figure 1).

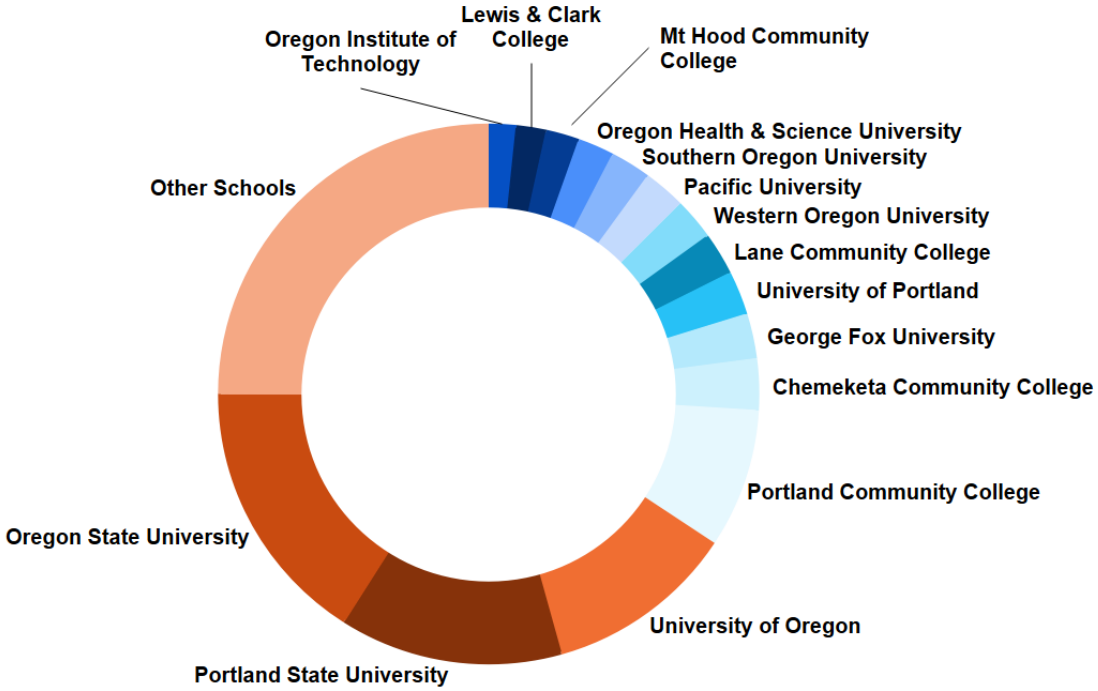
Figure 1: Labor force participation rates, 2017–2024. Source: Federal Reserve Bank of St. Louis.



Education

More than two in ten Oregonians aged over 25 have a bachelor's degree, and approximately one in ten with an associate degree, on a par with the national average. Among bachelor's degree holders, about 44% have degrees in science and engineering fields, outpacing the U.S. average of 35.5% (U.S. Census Bureau, American Community Survey, 2020). Oregon has seven public higher education institutions, 42 private colleges, universities, and trade schools, and 17 community colleges and satellite locations. Most students in higher education in Oregon are served by public institutions (Figure 2).

Figure 2: Share of 2022 graduates from Oregon institutions. Source: IPEDS Completion Data.



Oregon has been grappling with substantial out-migration of educated individuals; in 2022, the negative net migration out of the state was 0.4% of the total population. People who moved out of Oregon most frequently moved to California, Washington, and abroad (U.S. Census Bureau, American Community Survey, 2022). Nearly half of recent college graduates opt to live outside of Oregon following graduation.

Quality of Life

Overall, Oregon offers a good quality of life, as indicated by a host of resources and amenities available to residents and businesses, from housing and recreation to health resources. However, the state's lack of childcare, affordable housing, and range of drug-related health issues must be addressed for the state to reduce out-migration, retain graduates, and attract new workers.

"The single most important asset in Oregon is quality of life…Oregon is a great place to live."

-Survey respondent

Housing

There are approximately 1.8 million housing units in Oregon, of which 92.8% are occupied. This occupation rate is higher than the national average of 90.3%. Approximately 62.8% of housing units in Oregon are owner-occupied, which is slightly lower than the national average of 65.2%. Rent burden, defined as allocating 30% or more of household income towards gross rent in the past 12 months, is a significant issue – more than half (53.2%) of renters are rent burdened (U.S. Census Bureau, American Community Survey, 2022). The median gross rent in Oregon in 2022 was $1,370 per month ($70 more per month than the U.S. average). Monthly rent in Oregon increased by $291 from 2017 to 2022.

Recreation

Oregon is renowned for its many recreational activities, catering to both residents and visitors alike. In 2016 alone, visitors to state parks contributed $1.1 billion to the state's economy and supported 16,000 jobs. Oregon's state parks are in the top 10 most visited in the U.S., with over 54 million visitors during the 2017–2018 period (Oregon Parks and Recreation Department, 2024). The state is home to 5 national parks, 11 national forests, 21 national wildlife refuges, and 361 state parks (Travel Oregon, 2024).

Childcare

Childcare in Oregon is not widely accessible for all families. As of December 2022, 60% of families in Oregon with at least one child under the age of 5 reside in a "childcare desert", compared to the national average of 50% This designation applies to counties where there are more than three children for each regulated childcare slot. Compounding this problem, between 1999 and 2022, the total number of childcare slots for children under the age of 13 in Oregon declined by approximately 6,600 slots. Most Oregon's childcare facilities rely on parent funding; less than a quarter of available slots were publicly funded (Oregon State University, 2023).

Health

In November 2014, Oregon became the fourth state to legalize adult-use cannabis, encompassing possession, home cultivation, and retail sales. Recreational legalization has led to an approximate 20% increase in cannabis use across the U.S. (Zellers et. al, 2022) and cannabis sales in the state totaled $6.301 billion (Oregon Liquor & Cannabis Commission, 2024). However, concerns arise regarding workplace safety, particularly in roles involving heavy machinery, firearms, or law enforcement duties, as there is currently no reliable method to detect intoxication levels in employees during testing.

In Oregon, the per capita volume of prescription opioids surged by 294% between 1999 and 2015, averaging a 9% annual increase. This increase contributed to a 1.7 percentage point decline in the state's labor force participation rate of prime-age workers, resulting in a slowdown of annual real gross GDP growth by 0.6 percentage points and an estimated loss of $20.8 billion in real economic output from 1999 to 2015.

Business Community Survey

Introduction

In early 2024, SRI collaborated with HECC to deploy a business community survey to Oregon employers across industries, company sizes, and locations. The purpose of the survey was to gauge industry labor needs and capture employer perspectives. This section provides an overview of the results of the business community survey from 201 respondents. Survey data also appears throughout other sections of the report.

Key Findings

- Businesses prioritize culture fit/team dynamics and technical skills over work experience, essential employability skills, and educational credentials in job candidates.
- Most businesses report that existing educational programs are only somewhat aligned with their needs; businesses in suburban communities were most likely to report misalignment.
- Businesses have relatively low familiarity with most workforce support organizations and programs, which limits program effectiveness and return on investment for the state.
- Respondents rate Oregon's on-the-job training and Work Share program as most valuable of these offerings. WorkSource Oregon/iMatchSkills was rated less valuable, despite it being the most known/used, compared to other organizations and programs.

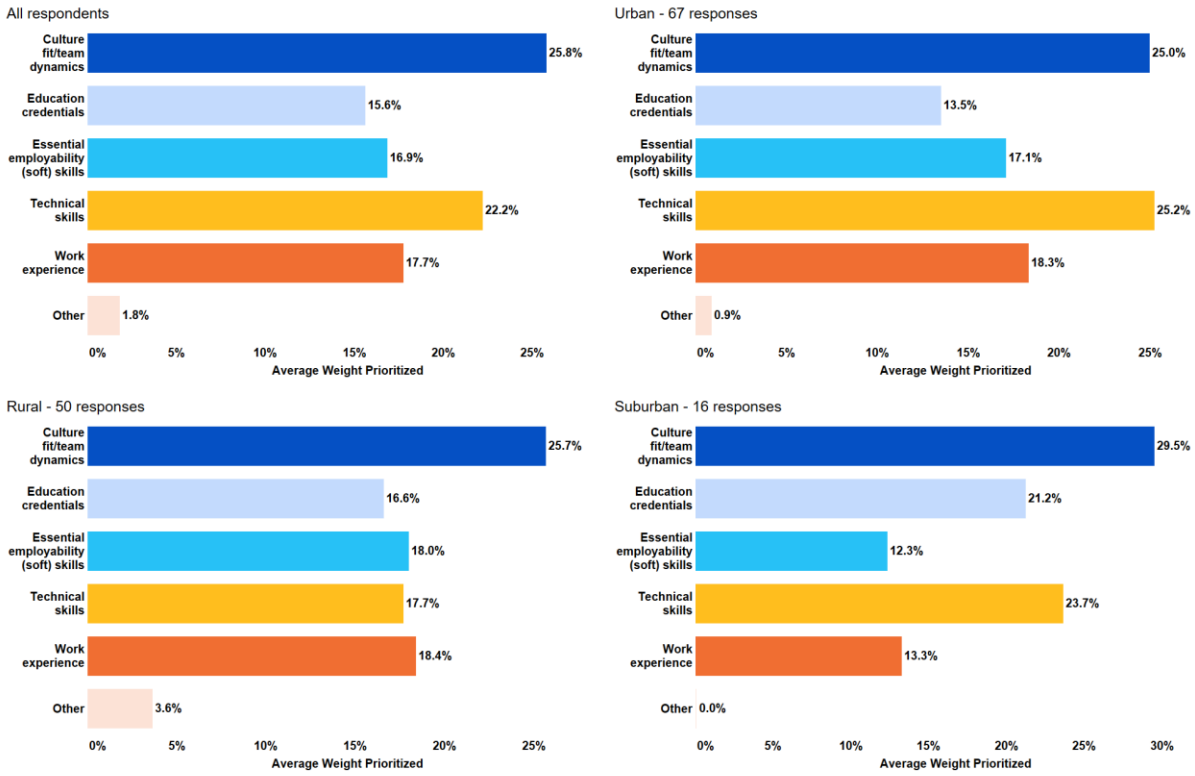
Assessing the Talent Pipeline

The business survey offered insights into how Oregon businesses generally view the talent pool and hiring priorities. Figure 3 demonstrates the perceptions and attitudes of businesses towards Oregon's overall workforce environment. Of the 350+ words from this question, approximately 64% of responses were negative, 34% were positive, and 2% were neutral. Figure 4 shows the hiring priorities for Oregon businesses. Hiring priorities in the survey include culture fit/team dynamics, educational credentials, employability skills, technical skills, and work experience. Culture fit/team dynamics and technical skills were the highest priorities, but their similar ratings demonstrate the importance to Oregon employers of well-rounded candidates.

Figure 3: What three words would you use to describe Oregon's overall workforce environment?

Figure 4 also demonstrates how hiring priorities vary across geographic classifications in the state. While responses across geographies are mostly aligned, some geographic differences emerge in how educational credentials and technical skills are prioritized during hiring.

Figure 4: Roughly, how does your company prioritize the following aspects of a candidate during the hiring process? By geography.



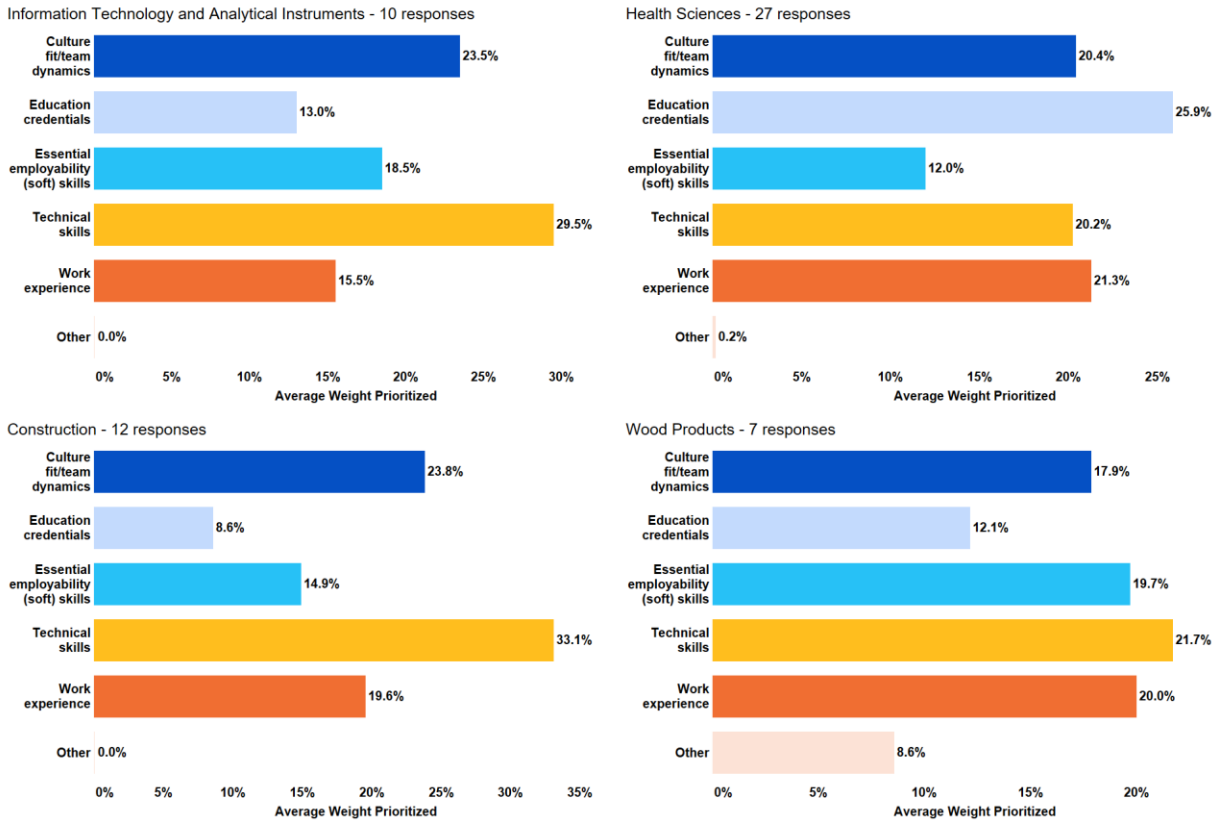
For example, there is a difference of 7.5 percentage points in how technical skills are rated between urban and rural employers. Despite the small sample size, suburban employers deem culture fit/team dynamics and educational credentials more important, and work experience and essential employability skills less important than other geographies.

Figure 5 examines hiring priorities among select industry groupings. According to the employer survey's respondent pool, there are meaningful differences in how industries evaluate talent and hire. Most of these trends align with our expectations of the talent needed per industry. For example, educational credentials (~26%) and work experience (~21%) have the highest ratings in health sciences. Technical skills are rated highest in construction (~33%) and IT & Analytical Instruments (~30%). Results from this question may help identify industries with specific barriers to entry for Oregonians. For example, businesses in IT & Analytical Instruments prioritize the right culture fit, employability skills, and technical skills more than work experience, potentially creating opportunities for those without full-time work experience. Also, educational credentials are less important and could create entry pathways in industry clusters like construction (~9%) or wood products manufacturing (~12%) compared to the rest of the survey population.

The survey asked respondents about reliable streams or sources of skilled labor in the state. Responses varied by respondent industry and geography, but the range of submissions demonstrated the breadth of resources employers could use in Oregon. Among this variety,

career centers at Portland, Chemeketa, Linn-Benton, and Mt. Hood Community Colleges were popular responses. Several respondents also mentioned the Multiple Engineering Cooperative Program (MECOP), which connects students from Oregon State University (founding academic partner), Oregon Institute of Technology, Portland State University, and the University of Portland with leading manufacturing, electronics, and construction companies (e.g., Boeing, Siemens, Intel, Cisco, Frito-Lay, Cognex) for paid internships. Over 60 respondents listed employee referrals and more than 30 worked with WorkSource Oregon as reliable streams.

Figure 5: Roughly, how does your company prioritize the following aspects of a candidate during the hiring process? By industry.



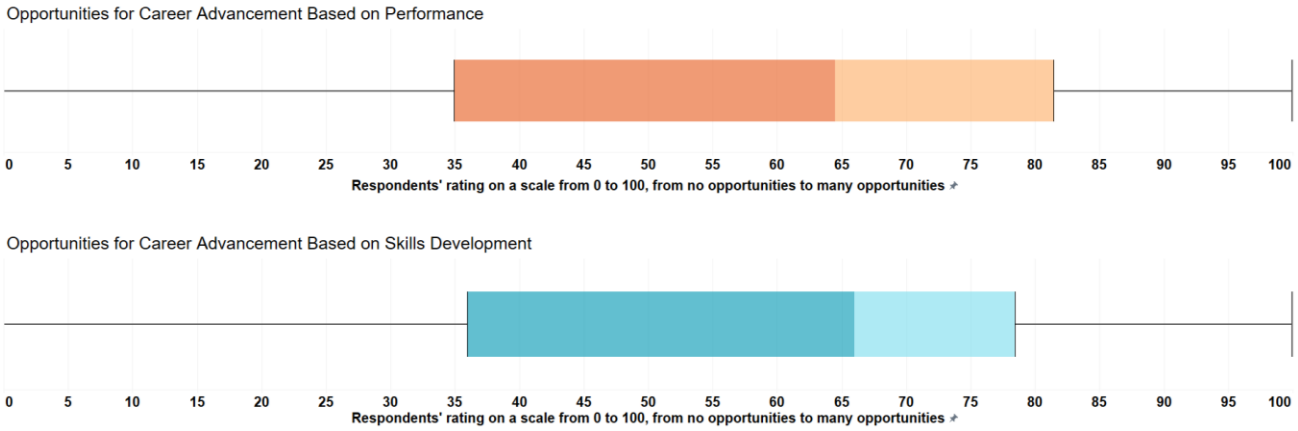
Opportunities for Upward Mobility

Given the priority of this assessment on identifying opportunities for upward mobility, the survey asks businesses about opportunities for career advancement based on performance and opportunities based on skills development. Figure 6 shows similar responses for opportunities based on performance and on skills development. A score of “0” indicates that the business does not offer any special training, incentives, or grants for career advancement for current employees, while a score of “100” indicates many such offerings. Career advancement opportunities based on performance and on skills both have responses ranging from a low of about 35 to a high of about 80. On average, Oregon businesses report a score of 68 for career mobility opportunities based on performance and 64 based on skills development. These responses suggest that many businesses are offering substantial opportunities to employees for advancement, while some businesses still have room for improvement.

Many survey respondents provided examples of the career advancement opportunities offered by their company. For example, 27 respondents cited a specific training opportunity; references

ranged from technical training to essential employability skills and leadership development. Several companies shared examples of entry-level employees having the opportunity to grow into a more skilled role, such as a management or certified technical role. One respondent shared an anecdote of a customer service representative who worked their way up to the company's CFO. Another respondent mentioned that they are covering the tuition and related expenses for ten employees to complete nursing, respiratory therapy, or medical technologist educational training programs.

Figure 6: Please rate the opportunities your company provides for career advancement on a scale of 0 to 100, from no opportunities to many opportunities.



…larger companies in Oregon offer more opportunities for career advancement, likely due to increased capacity.

Respondents from larger companies (100 workers or more) report higher scores, on average, for career advancement opportunities based on skills development (70) and performance (74) compared to the rest of the survey population, especially those from small businesses (0 to 9 workers), who report average scores of 53 and 57, respectively. This finding suggests that larger companies in Oregon offer more opportunities for career advancement, likely due to increased capacity.

Alignment and Effectiveness of Workforce Programs and Organizations

The employer survey then assessed perspectives on educational alignment with labor needs. Often, academic curricula can struggle to keep up with rapidly changing industry needs, which can make worse existing labor shortages and emerging skills gaps in a local workforce. Figure 7 shows that a majority (about 60%) of Oregon businesses said that existing educational programs are somewhat aligned with company labor needs, 6% said "very aligned," and 23% said "not at all aligned."

Using the geographic classifications from the Oregon Office of Rural Health, we sorted responses to this answer by companies operating in rural, urban, and suburban environments throughout the state. Given salient workforce challenges in rural communities, surprisingly, companies in Oregon's rural areas rated educational-industry alignment better than the overall survey population, with about 6 percentage points fewer saying not at all aligned and 6 percentage points greater saying somewhat aligned. Further, in terms of educational-industry alignment, businesses in suburban parts of the state seem to be the most distressed, with over 40% (of an albeit small sample) replying "not at aligned."

Figure 7: How aligned are Oregon's existing educational programs with your company's labor needs?

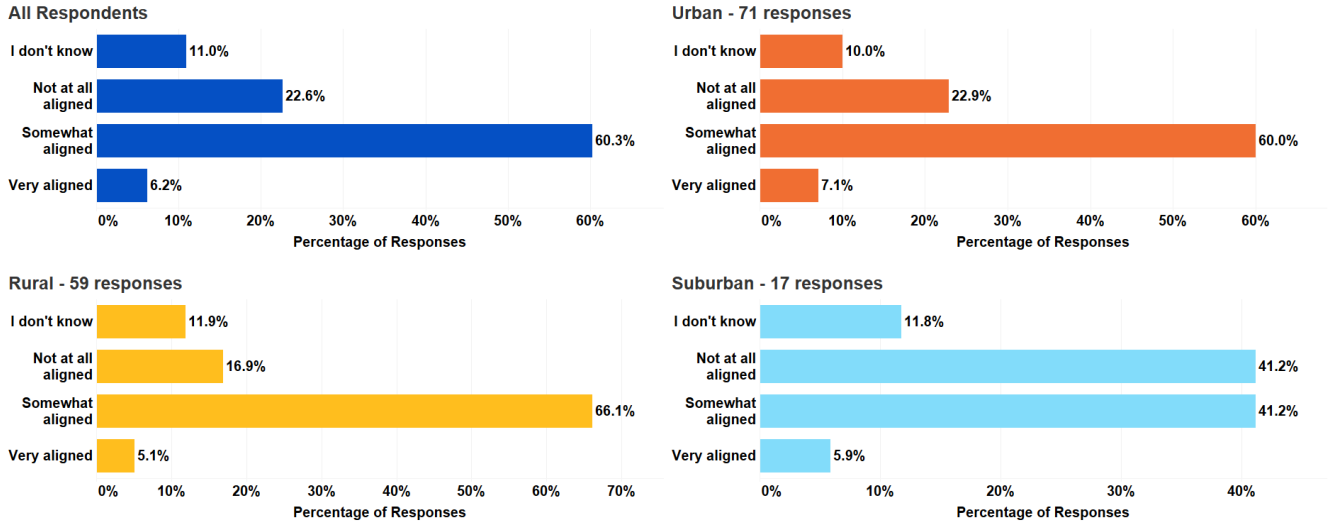


Figure 8 provides representative quotes from respondents explaining their alignment ratings. Among survey respondents who said that Oregon's educational programs are not at all aligned with their company needs, the themes focused on a skills mismatch between what is provided and what is needed, an overarching lack of employability skills, and needing more from the state's K-12 education providers. We must note that businesses also play a role in improving the state's educational program-industry alignment. For example, the industry can inform academic curricula with information about in-demand occupations or skills, provide schools with essential training equipment or resources, and form partnerships for students to participate in apprenticeships, internships, or other industry-led projects.

Figure 8: Representative quotes from respondents describing Oregon's educational program and industry alignment.

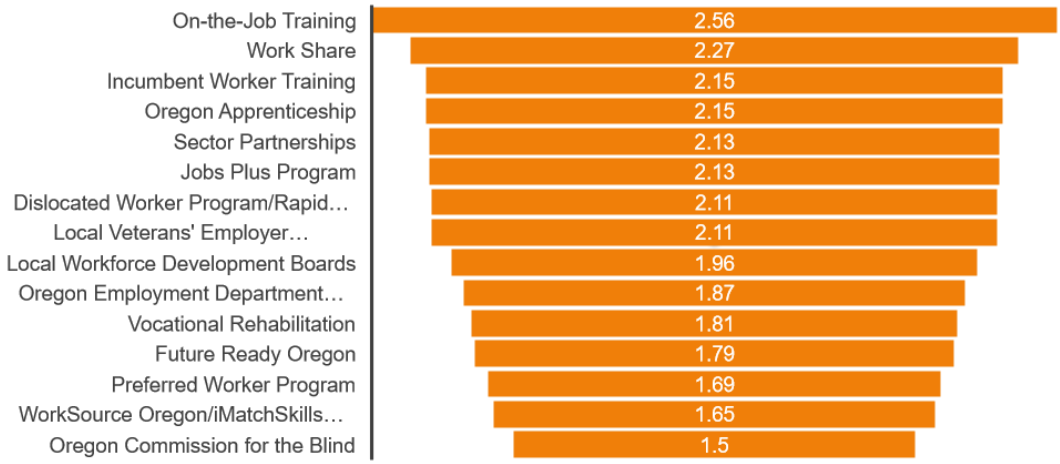
Educational Program and Industry Alignment

Very aligned	Somewhat aligned	Not at all aligned
• "The colleges offer coursework commensurate with the needs of the company"	• "Programs produce either under-qualified or over-qualified talent."	• "Curriculum does not keep up with technology advancements."
• "Students learn everything they need to know to succeed"	• "We need to form stronger community partnership in enabling and educating Oregon workforce"	• "We don't see individuals apply with backgrounds tied to Oregon's existing educational programs.
• "We work very closely with our industry partners to educate and train our employees in their respective careers."	• "In the nonprofit sector, generally, the education required is not well aligned with the range of salary offered"	• "I would rather have experienced, hard working applicants than Master's Degrees"
• "We have successfully employed several interns over the last few years and these students have been prepared for work."	• "We are working hard to create alignment"	• "No visible efforts to promote skilled trades as a viable means of support at high school or college levels, outside of local community college."
• "Oregon has made strides to get more students interested in careers in STEM and semiconductors specifically, and these seem to be working	• "They are getting a well-rounded technical education but lack some of the soft skills - team environments, public speaking, time management, task management."	• "Lots of Oregon education programs focus on things that aren't actually aligned with the workforce"
	• "There needs to be more placement programs or apprenticeship programs to get our skilled labor workforce to meet demand."	

Lastly, the baseline conditions section assessed respondent's awareness and use of Oregon workforce organizations and development programs. Of the 15 organizations and programs identified, Oregon businesses broadly did not know of most. Respondents were least familiar with the Jobs Plus Program (79% "don't know"), Dislocated Worker Program/Rapid Response (74%), and Preferred Worker Program (71%). The most known included WorkSource Oregon/iMatchSkills online system and on-the-job training, with only 44% and 55% of respondents, respectively, indicating "don't know." Simply put, businesses have a low familiarity with many of workforce programs and organizations, which limits effectiveness and the return on investment for the state.

Figure 9 indicates the value Oregon businesses place on the listed workforce organizations and programs (weighted averages based on rating "not at all valuable" [1], "somewhat valuable" [2], or "very valuable" [3]). The chart shows that respondents found Oregon's on-the-job training and Work Share program most valuable, with a weighted average of 2.56 and 2.27, respectively. Surprisingly, WorkSource Oregon/iMatchSkills was rated second to last in value despite being the most used compared to other organizations and programs. Although the Dislocated Worker Program/Rapid Response and Jobs Plus Program were among the least known and least utilized, these programs were rated quite well with averages above 2, between somewhat and very valuable.

Figure 9: Valuableness weighted average ratings for Oregon's workforce assets.



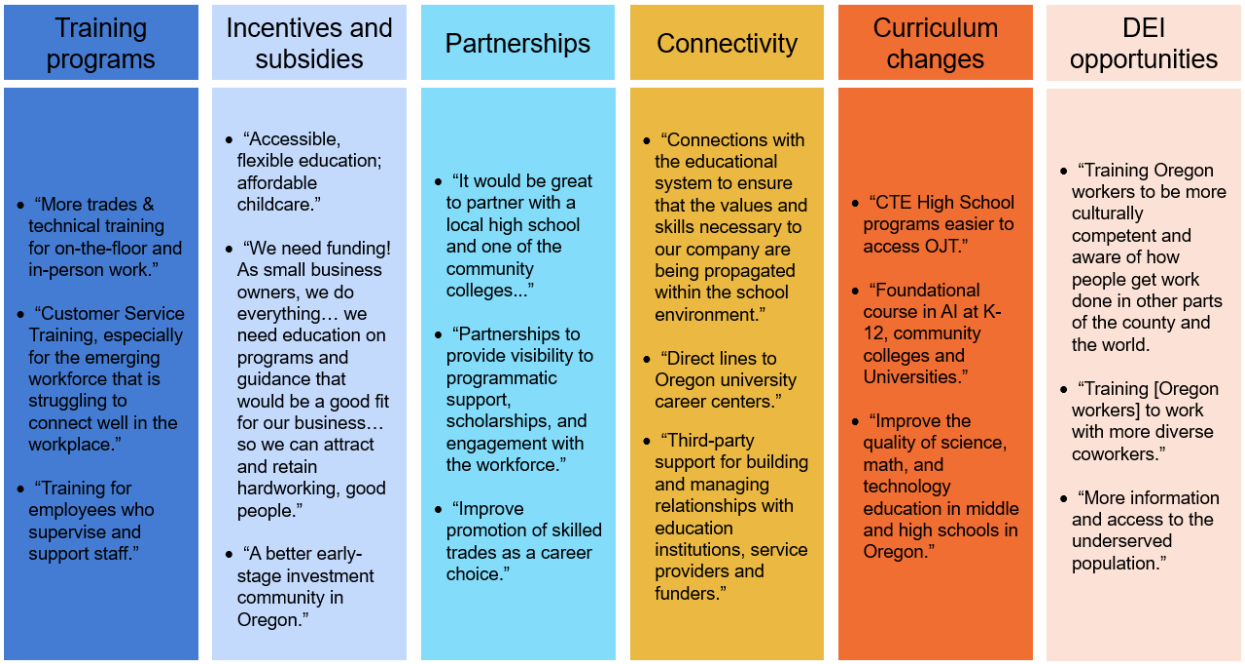
Aside from the workforce resources rated in Figure 9, Oregon businesses shared comments on several other important workforce assets that support their company's labor needs. Quality of life in Oregon came up several times, helping Oregon draw on skilled talent from other places such as California and even overseas through J-1 visas. Others mentioned using online job boards and social media sites such as Indeed, Instagram, and LinkedIn to help attract talent.

Strengthening the Talent Pipeline

Businesses provided much feedback on types of programming or resources that would help them hire and retain workers with well-aligned skills. Of the 80 open-ended comments received, the primary themes focused on training programs (~33% of comment were related), financial incentives or subsidies (~28%), partnership formation or other forms of specialized support (~24%), the connectivity between workforce assets in the state, K-12 or higher education curriculum changes (~16%), and diversity, equity, and inclusion opportunities (8%). Oregon businesses' interest in greater connectivity and collaboration within the state's workforce

environment stands out. Industry buy-in to support or partner with academic institutions, government work programs, and community nonprofits can significantly elevate the impact of state or regional workforce development initiatives as well as fill gaps in the workforce talent pipeline. Figure 10 provides some representative quotes across each theme.

Figure 10: Representative quotes from respondents describing programming or resource needs



Most of the recommendations for training programs were unique, with one respondent requesting advanced machine and manufacturing automation training, a foundational K-12 computer science course, and another customer service training. Several respondents wanted more experiential learning programs (e.g., apprenticeships and internships). Similarly, several types of financial incentives or subsidies were requested, including education reimbursements, funding for CDL schools, and underserved community investments. Again, several respondents were aligned in requesting policies or programs that make vital resources (e.g., housing, childcare, transportation) more affordable. Interestingly, respondents were interested in building different types of connectivity within Oregon's workforce environment. For example, some requested support in building connectivity generally to form and manage relationships within the ecosystem. Others sought connectivity with an industry-academia lens (e.g., ensuring curricula align with industry needs, hosting career fairs, identifying candidates for internships or job roles). Respondents' comments on barriers to participation focused on a general lack of awareness of programs themselves and on the fact that workforce development programs often move too slowly for the speed of businesses.

Chronic Worker Shortages

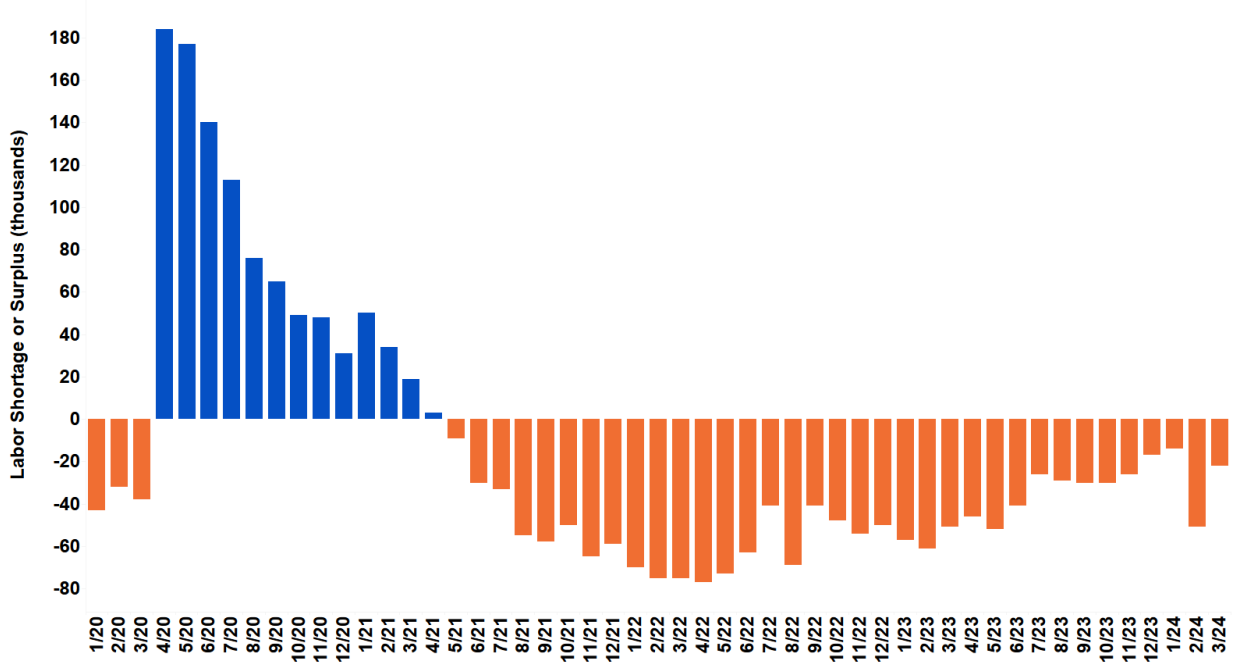
Key Findings

- Most businesses that participated report that they are experiencing either no shortage or a minimal labor shortage. However, larger businesses are more likely than small and mid-sized firms to indicate severe shortages.
- Businesses in health sciences are also experiencing more severe shortages.
- Those reporting shortages indicate hiring challenges as the leading barrier, particularly candidates with a lack of technical skills and work experience.

In 2020, Oregon had a labor surplus of 86,000 workers (Figure 11). The “Great Resignation”, where millions nationwide left their jobs due to disruptions caused by the pandemic, resulted in a labor shortage of 14,000 workers in Oregon in 2021, 53,000 workers in 2022, and improved again to a shortage of 36,000 workers in 2023. The worker shortage is still described as severe where Oregon’s worker shortage index is 0.66, indicating there are approximately 66 workers available for every 100 open jobs (U.S. Chamber of Commerce, 2024). In 2024, hiring rates outpace the still-high quit rates. This dynamic is referred to as “The Great Reshuffle” where many in the workforce are transitioning to new, more flexible jobs (U.S. Chamber of Commerce, 2024).

Labor shortages are different across Oregon’s four target upward mobility industry clusters and occupations where some have a greater shortage than others. The estimated labor market shortage for health science jobs in Oregon is 26,901 workers, or 11.9%. This means that the health sciences industry cluster needs almost 27,000 additional workers to meet demand. This significant labor shortage unfortunately mirrors the national trend of labor shortage in the health workforce (Bureau of Health Workforce, 2023). The estimated labor shortage for IT and Analytical Instruments is 2,793 workers, or 4.9%. The estimated labor market shortage for construction jobs is 3,563, or 6.7%. The estimated labor shortage for wood products manufacturing is 1,753, or 8%. In critical occupations, the childcare worker shortage is 2,891 workers, or 12.6% and heavy and tractor-trailer truck drivers is 3,279 workers, or 3.4% (Lightcast, 2023).

Figure 11: Oregon's average labor shortage or surplus, 2020–2024. Source: U.S. Chamber of Commerce.



Skilled Technical Workforce

The skilled technical workforce (STW) refers to occupations requiring technical skills in STEM fields, and which require less than a bachelor's degree. While greater use of technology and automation has led to decreases in employment in some industries, it has increased demand for workers who maintain and operate new technologies. According to the National Center for Science and Engineering Statistics (NCSES), in 2017, there were an estimated 202,438 individuals in the STW in Oregon. Given lower educational barriers to entry, STW occupations provides strong pathways into middle income employment.

Within each industry cluster, SRI identified key STW occupations experiencing chronic worker shortages. These are important areas to address to increase opportunities for those often left out of the innovation economy. In the health sciences industry cluster, the STW occupations facing the greatest shortages based on data by the Bureau of Labor Statistics Quarterly Census of Employment Statistics include radiologic technologists and technicians, pharmacy technicians, and cardiovascular technologists and technicians. In the IT & Analytical Instruments industry cluster, the STW occupations facing the most significant shortages are inspectors, testers, sorters, samplers, and weighers; computer user support specialists; and electrical and electronic engineering technologists and technicians. Electrical power-line installers and repairers, architectural and civil drafters, and metal fabricators and fitters are the STW occupations in Oregon's construction industry cluster enduring the most significant shortages. The STW occupations with the greatest shortages in the wood products manufacturing industry cluster include carpenters; inspectors, testers, sorters, samplers, and weighers; and computer numerically controlled (CNC) tool operators (Lightcast, 2024).

Business Survey Findings

The employer survey explores labor shortages, the challenges companies face with hiring, reskilling and upskilling, and employee retention. The survey first assesses employer's perspectives on their current labor status in the context of four categories:

- No labor shortage (adequately staffed; can meet current demand comfortably)
- Minimal shortage (understaffed; can manage current demand with some stress)
- Moderate shortage (understaffed; meeting current demand is somewhat challenging)
- Severe shortage (understaffed; cannot meet current demand)

Figure 12 shows the experienced labor shortages across the total survey population; followed by Figure 13, Figure 14, and Figure 15 showing reported labor shortages by firm size, employers of necessary occupations (e.g., childcare, truck drivers, teachers), and regional classification.

Figure 12: Is your company experiencing a labor shortage?

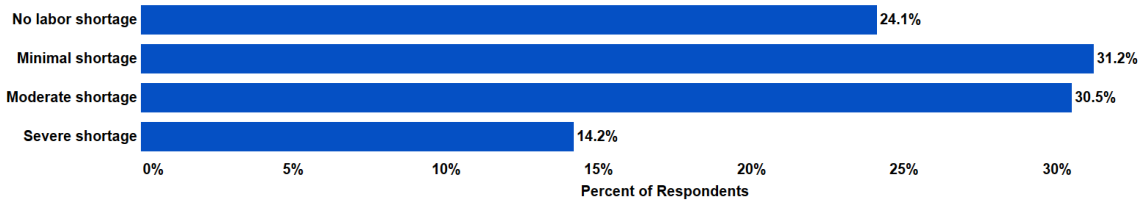


Figure 13 shows how larger businesses (250 or more workers) seem most susceptible to severe labor shortages and reported the smallest percentage of “no labor shortage” compared to other firm size groups. Figure 14 shows reported labor shortages for respondents who primarily hire or engage necessary occupation groups, including for the highlighted necessary occupations from this report (childcare workers and heavy and tractor-trailer truck drivers).

Figure 13: Is your company experiencing a labor shortage? By firm size.

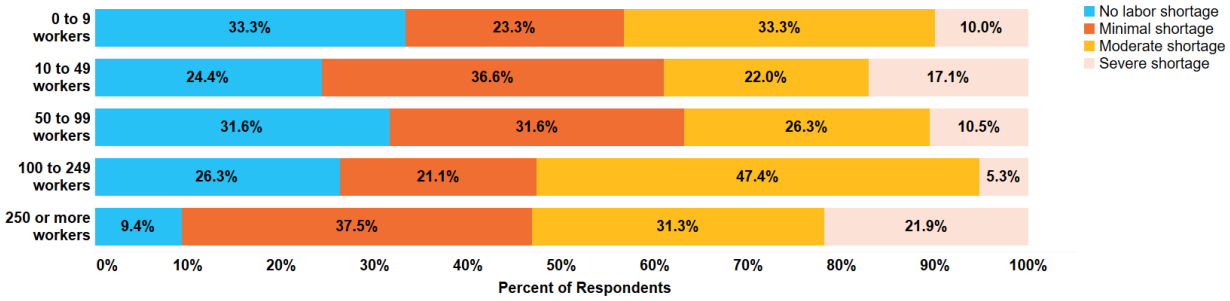


Figure 14: Is your company experiencing a labor shortage? By necessary occupations.

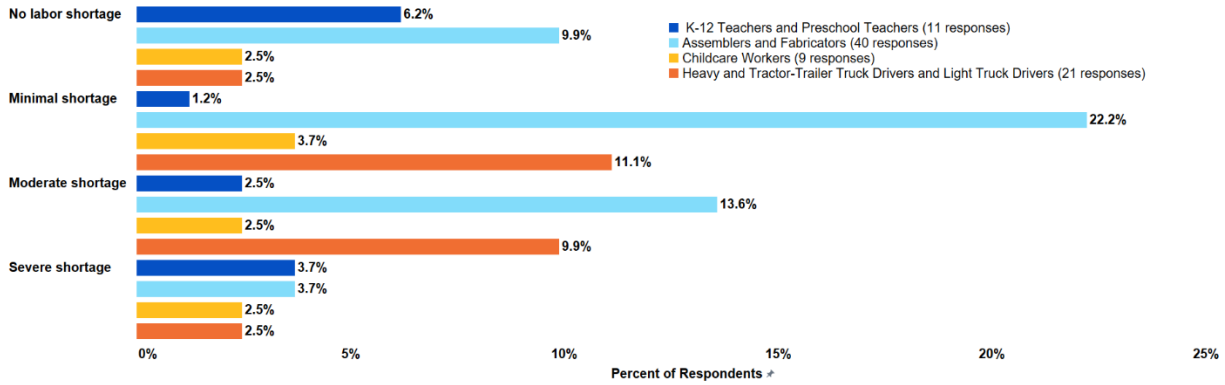


Figure 15 explores reported shortages across regional classifications. Urban respondents report the lowest shortage pressures. Relative to urban businesses, respondents in rural areas face a greater composition of “severe shortage” and far less of “no labor shortage” responses; suburban employers report the highest level of severe shortage.

Figure 15: Is your company experiencing a labor shortage? By regional classification.

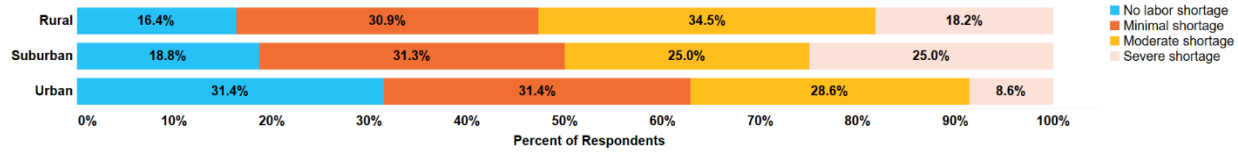
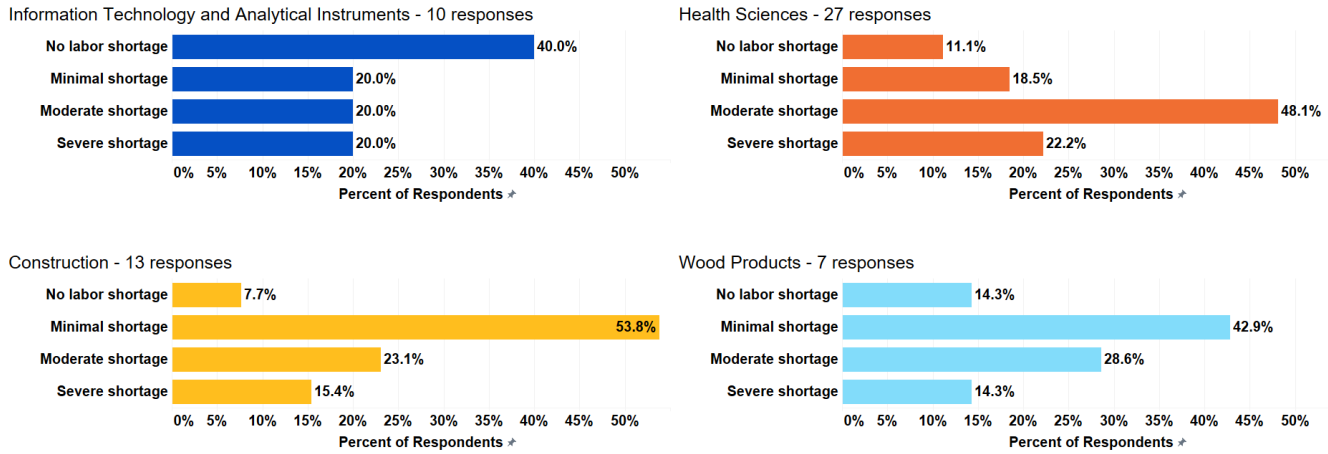


Figure 16 shows the labor shortages within each selected industry cluster. Although it has a relatively small sample size, 40% of respondents from IT & Analytical Instruments companies reported no labor shortage, outpacing the total survey population by about 16%. Most construction companies are experiencing a mainly minimal labor shortage (54%). However, health sciences report a much higher level of moderate shortage than other sectors.

Figure 16: Reported labor shortages by critical industry clusters.



The next figures show challenges faced by business reporting shortages to better understand why labor shortages and workforce gaps exist. Nearly 90% of companies reporting a shortage identified challenges with hiring as a driving factor (Figure 17). Figure 18 shows reported shortage reasons by firm size. Large businesses reported challenges with employee retention at higher rates than medium- and small-sized businesses.

Reskilling and upskilling challenges are more prevalent in smaller businesses.

Figure 17: Why may your company be experiencing a labor shortage? Please select all that apply.

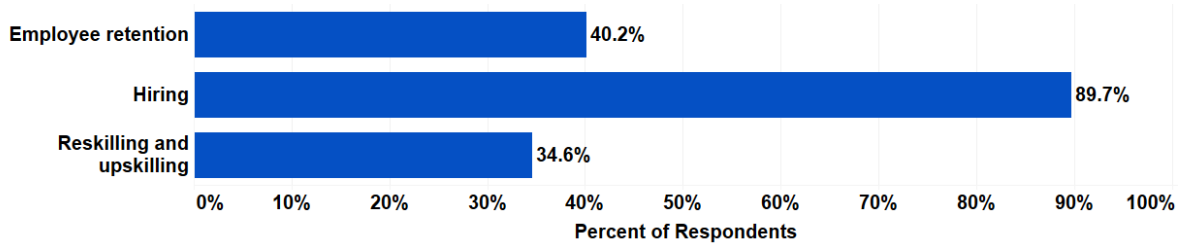


Figure 18: Reasons for experiencing a labor shortage by firm size.

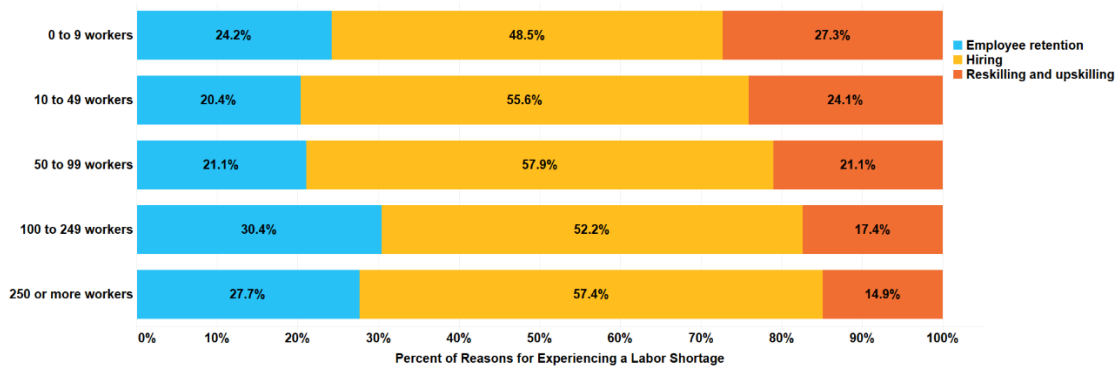


Figure 19 shows the composition of reasons for experiencing labor shortages by the critical industry clusters in this study. Key differences include the prevalence of reskilling and upskilling as a key challenge, where reskilling and upskilling accounts for 36% of construction and 30% of wood products manufacturing compared to only 7% of health sciences companies. Also, IT & Analytical Instruments reported employee retention as a reason for experiencing a labor shortage at a much lower rate than other industries, at about 11%.

Figure 19: Reasons for experiencing a labor shortage by industry.

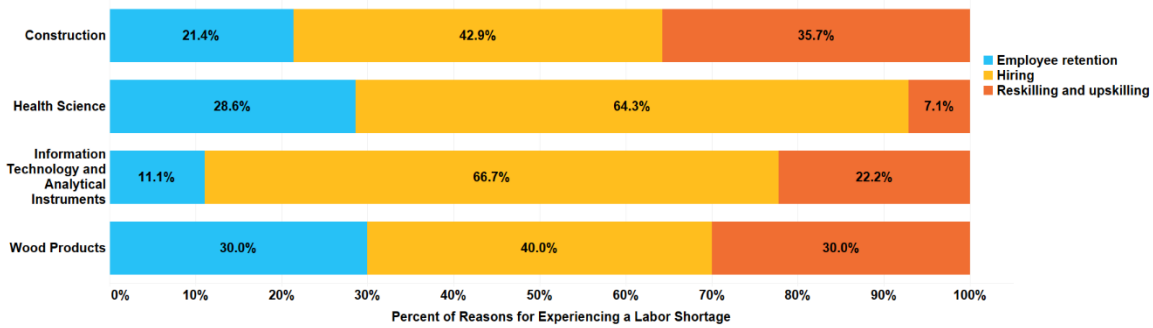
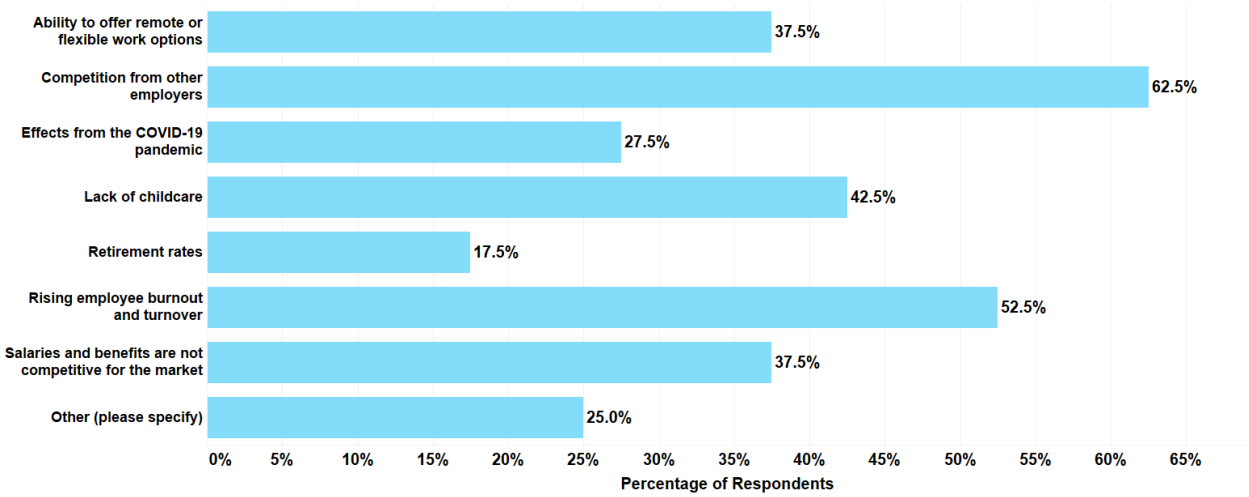


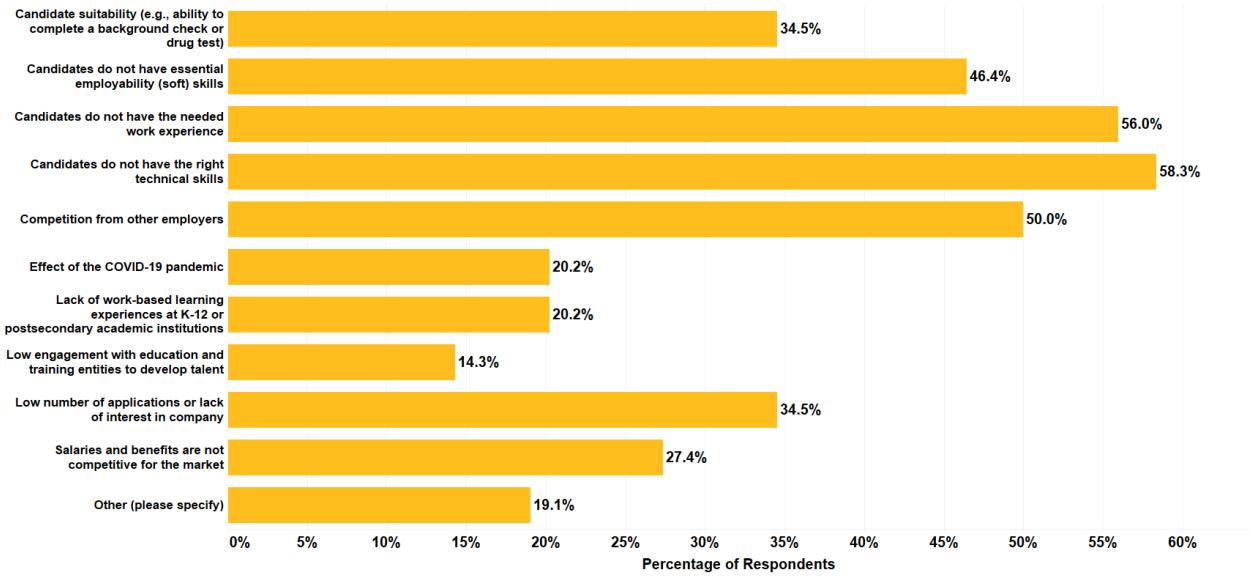
Figure 20, Figure 21, and Figure 22 present more in-depth information on the challenges faced within industries of employee retention, hiring, and reskilling and upskilling. Of survey respondents who cited employee retention as a reason for experiencing their labor shortage, competition from other employers, rising employee burnout and turnover, and a lack of childcare were most popular. “Other” responses ranged from respondents discussing the labor- intensive nature of their work (wood products manufacturing), essential employability skills and rising cost of living.

Figure 20: What challenges does your company face with employee retention? Please select all that apply.



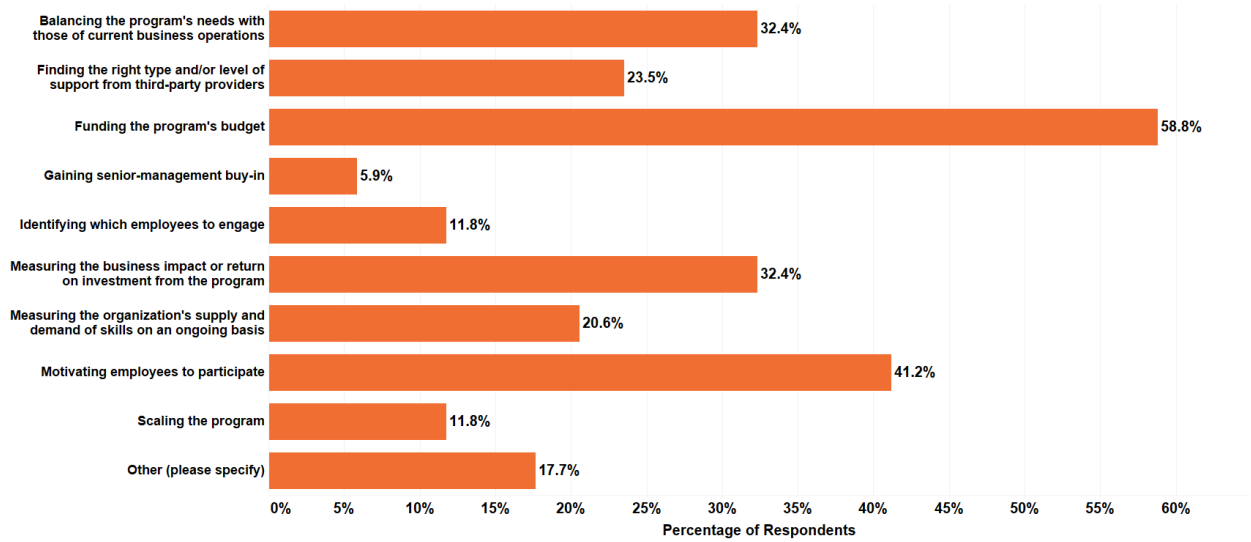
The most reported challenges related to the supply of talent include candidates not having the right technical skills (58% of respondents) or the right work experience (56% of respondents). About 47% struggle to find candidates with employability skills and 35% identified basic suitability (e.g., completing a background check) as a challenge. In addition 50% of respondents face competition from other employers and about 35% deal with a low number of applications or lack of interest in the company.

Figure 21: What challenges does your company face with hiring? Please select all that apply.



The most common challenge related to reskilling and upskilling programs (Figure 22) is the business operations tradeoff with training program costs, time, and risk. This includes concerns with funding the program, measuring the return on investment from the program, and balancing the program's needs with those of current business operations. The other primary challenge for this category is motivating employees to participate. One respondent highlighted that many reskilling and upskilling programs in Oregon are "cohort-based" and that it can be challenging to train a group of employees at once; which rolling or flexible basis training could help.

Figure 22: What challenges does your company face with reskilling and upskilling programs? Please select all that apply.



Finally, we asked respondents who identified reskilling and upskilling as a challenge about any specific areas they would like company training to address. Responses included project management, manufacturing-related technical skills (machining, welding, equipment operation, electronics) and computer-related skills (Excel, social media, programming)

Health Sciences

The health sciences industry cluster in Oregon is dynamic and rapidly evolving and plays a vital role in the state's economy. This cluster primarily consists of industries that provide medical services and healthcare to patients and manufacture medical equipment or drugs. The top three industries by employment are focused on the direct provision of medical services and include the offices of physicians (except mental health specialists), the offices of dentists, and residential intellectual and developmental disability facilities. The health sciences industry cluster also includes such industries as medical laboratories, research and development in biotechnology, diagnostic imaging centers, and others.

Oregon's health sciences industry cluster is characterized by innovation, with a strong emphasis on research and development, particularly in areas such as personalized medicine, genomics, and digital health. Industries experiencing some of the fastest growth and highest wages include Biotechnology R&D and Physical, Engineering, and Life Sciences R&D. In addition, the health sciences cluster in Oregon has experienced significant growth, driven by factors such as an aging population, advances in medical technology, and increasing demand for healthcare services. This growth has led to an expansion of the workforce within the cluster, as well as increased investment in infrastructure, research, and education.

Key Findings

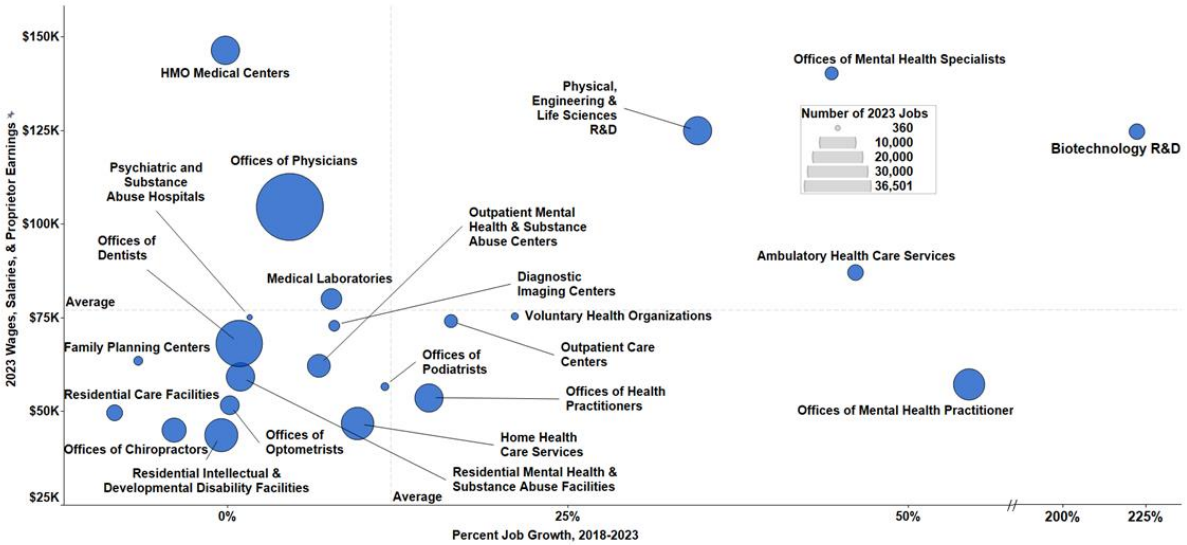
- The cluster growth in employment and wages follows national post-pandemic trends.
- The most widespread labor shortages in this industry cluster are for nurses and mental and behavioral healthcare workers.
- The occupations with the largest share of job postings includes registered nurses, followed by nursing aides and medical assistants. Managerial positions are notably sparse.
- Nursing skills including patient care best practices, treatment planning, and advanced cardiac life support, and radiation skills including radiation safety, knowledge of federal regulations, and use of specialized equipment, are the top health sciences skills in job postings.
- However, job postings exhibit a considerable degree of fragmentation across skill categories, with no clear set of attributes emerging as universally important. Even broadly applicable skills such as communication or safety are not consistently emphasized across job postings.
- Health science employers offer fewer opportunities for career advancement than employers overall but report a greater alignment between existing educational programs and industry demand.
- When examining the career pathway from CNA to RN and finally to NP, the gap between skills taught and acquired at the CNA level and those needed for RN jobs may make advancing on the pathway from CNA especially difficult, in addition to the educational and licensure barriers between these steps.

Trends

The 2022 GRP for the health sciences industry cluster in Oregon was $12.8 billion (Lightcast, 2024). Oregon, like other states is becoming increasingly older in age, which will drive up demand for services provided by the health sciences cluster, and potentially increase GRP in

the future. Health sciences industry cluster employment grew eight% from 2018 to 2023, reaching approximately 115,878 jobs in 2023 (Figure 23). Average wages, salaries, and earnings for this industry cluster have also increased by over $15,000 in the past five years, with an average annual wage of $59,219 in 2018 versus $76,562 in 2023. Average wages in this industry cluster are much higher than the average across all industries in Oregon ($65,893) for 2023. Growing wages in Oregon's health sciences industry cluster are reflective of broader national trends in which wages for healthcare workers increased significantly through the pandemic as demand increased. Despite competitive wages, partners indicate shortages for specific, critical healthcare roles, like nurses and mental/behavioral health clinicians. Biotechnology R&D experienced a 222% job growth from 2018 to 2023, significantly outpacing the average 21% for this industry cluster nationwide. Physical, engineering, and life sciences R&D experienced a 35% job growth from 2018 to 2023.

Figure 23: Average wages, percent job growth, and size of industries in Oregon's health sciences industry cluster, 2018–2023. Source: Lightcast.



Partner Perspectives

The workforce partners engaged in this assessment shared great concern over the health sciences talent pool. Currently, the state is challenged by a workforce shortage for key occupations in this cluster, such as nurses and mental and behavioral healthcare workers. Workforce partners indicated that this shortage is driven by a few key factors. First, the licensure process for healthcare is time-intensive and disincentivizes workers to join this labor pool. Oregon workforce partners shared that within the licensing process it can take up to a month to onboard practitioners into health insurance systems to work in the state. There have been efforts to reduce this credentialing burden on prospective workers. The recently proposed House Bill 4071, which is currently under review at the time of this report, would have allowed practitioners licensed in other states to acquire a temporary license to work in Oregon; however, these individuals would need to fulfill Oregon's licensing requirements within one year after the temporary license is issued (Thomas, 2024). In addition, rapid-delivery entry-level training models are rarely available for the most in-demand healthcare roles due to worker licensing and degree requirements. Partners also expressed concern over the lack of coordination among partners over available funding for healthcare workforce development efforts.

Despite these concerns, there is excitement for recent state investments and initiatives to bolster the health sciences industry cluster. For example, Future Ready Oregon has designated funding for new healthcare apprenticeship and pre-apprenticeship programs, and other rapid-training programs. Additionally, a healthcare industry consortium was established through Future Ready Oregon to identify workforce needs and credentials, develop effective recruitment and retention strategies, and foster collaboration and coordination. Further, partners recognize the efforts by several community colleges and K-12 institutions to offer healthcare-focused Career and Technical Education (CTE) opportunities for students. However, the lack of lab research and learning space for healthcare presents challenges to training individuals for modern healthcare technologies.

Business Survey Findings

Health sciences had the largest industry-specific participation in the employer survey, with 42 total respondents. The 42 were distributed by firm size (e.g., 12 respondents from firms 0 to 9 workers, 14 respondents from firms 250 or more workers) and geography (e.g., 16 respondents from Portland metro, two from Eugene, one from Redmond, Ontario, Baker City, and Bend). Overall, health science employers indicate that they offer fewer opportunities for career advancement than employers overall and report greater alignment between existing educational programs and industry demand than employers overall.

For reliable streams or sources of skilled labor, health sciences respondents acknowledged staffing agencies (e.g., Aya, Express) and employee referral programs as well as other traditional streams, including experiential learning programs (e.g., Lewis & Clark College internships program), high school CTE programs (e.g., North De La Salle High School partnership, Willamette Career Academy), and 4-year educational programs (e.g., University of Oregon, Oregon State University, and Willamette University).

Health sciences responses diverged from the survey population in the primary challenges faced in hiring, reskilling and upskilling, and retention. Over 70% of health sciences respondents who identified hiring as a reason for experiencing a labor shortage selected competition from other employers as a key challenge, compared to only ~50% of the total survey population. For reskilling and upskilling challenges, health sciences respondents identified finding the right type and/or level of support for third-party providers more often than the total survey population and balancing the program's needs with those of current business operations less often than the total survey population. For retention, there are notable increases in challenges such as competition from other employees, effects from the COVID-19 pandemic, lack of childcare, and rising employee burnout and turnover in health sciences respondents (who identified retention as a reason for experiencing a labor shortage) compared to the total survey population. These challenges can be further contextualized by the findings of the Skills Analysis, below, which details the competencies and skills requested in health sciences job postings.

Skills Analysis

As shown in Figure 24, 70% of the competencies that health sciences employers desire are technical skills. This trend is carried through other industries and occupations. These data underscore the critical importance placed on technical proficiencies in today's competitive job market, reflecting the increasing reliance of industries on advanced technologies and specialized knowledge. Technical skills identified in health sciences jobs posting include radiation, patient care, clinic visits, clinical activities, and patient education.

"The roles needed in healthcare are more specialized than what Oregon educational programs generally offer."

-Survey respondent from North Bend, Oregon

Approximately 20% of the identified competencies in health sciences job postings are essential skills. These skills encompass a wide range of abilities, such as communication, problem-solving, teamwork, and adaptability, all of which hold universal value across diverse sectors and organizational settings. The significance placed on these foundational competencies in job postings reflects employers' recognition of their pivotal role in fostering workplace productivity, innovation, and collaboration.

Figure 24: Skills groups in health sciences job postings: Source: National Labor Exchange.

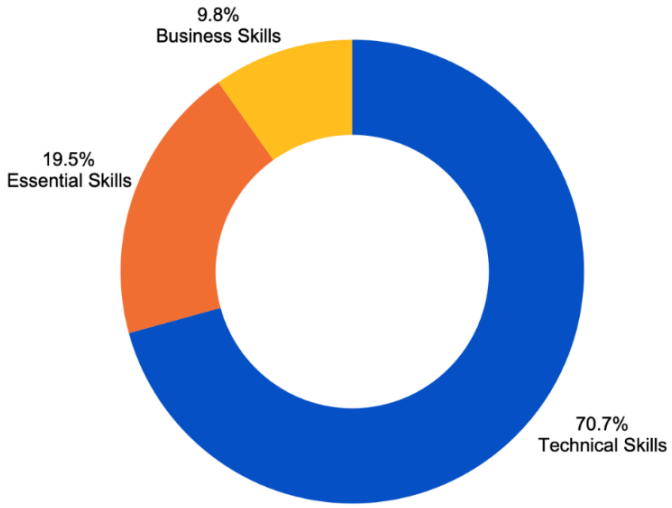
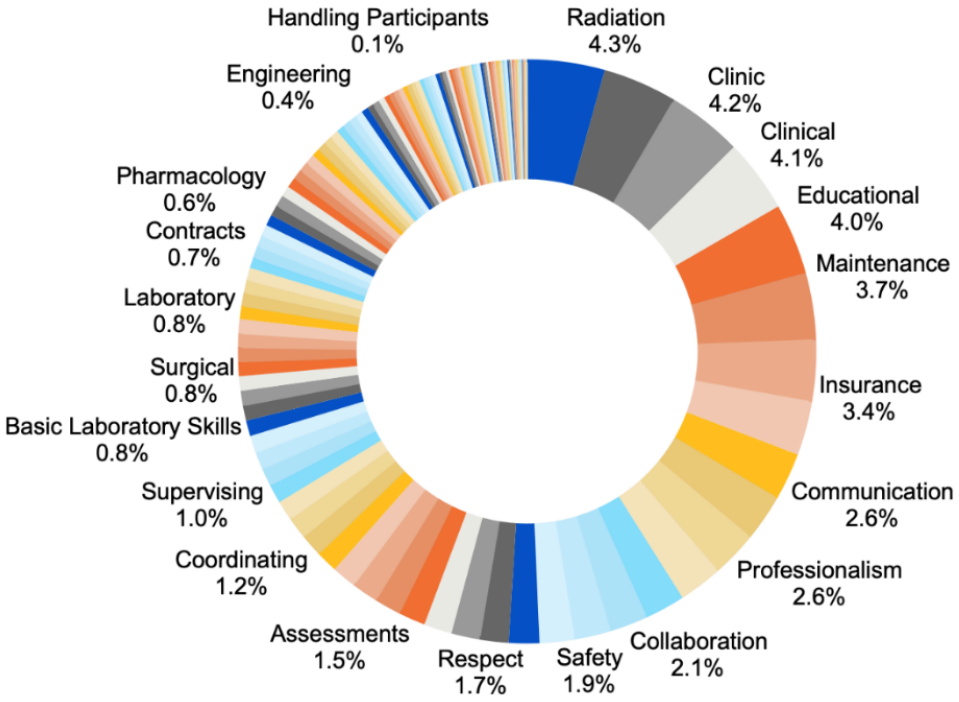


Figure 25 provides a detailed breakdown of the specific skills identified in health sciences job postings, across all occupations in the industry cluster. Unlike some other industries, this analysis reveals a considerable degree of fragmentation, with no clear set of attributes emerging as universally important. Even broadly applicable skills such as communication or safety are not consistently emphasized across job postings. This suggests that the industry cluster's hiring focus is on individuals with specialized, niche skill sets tailored to specific roles, rather than on candidates who can seamlessly transition or communicate across different areas. All the top skills are technical skills, which thus align with the most common skills described above.

Given the lesser emphasis in job postings on leadership skills, like communication, collaboration, and organization, the industry's focus on technical expertise is understandable, with skills being more specialized and less generalized compared to other sectors. Consequently, training programs for this industry should prioritize nursing education, with a specific emphasis on medical skills, rather than a broad focus on general business skills, as immediate leadership roles may not be readily available.

Figure 25: Specific skills in health sciences job postings. Source: National Labor Exchange.



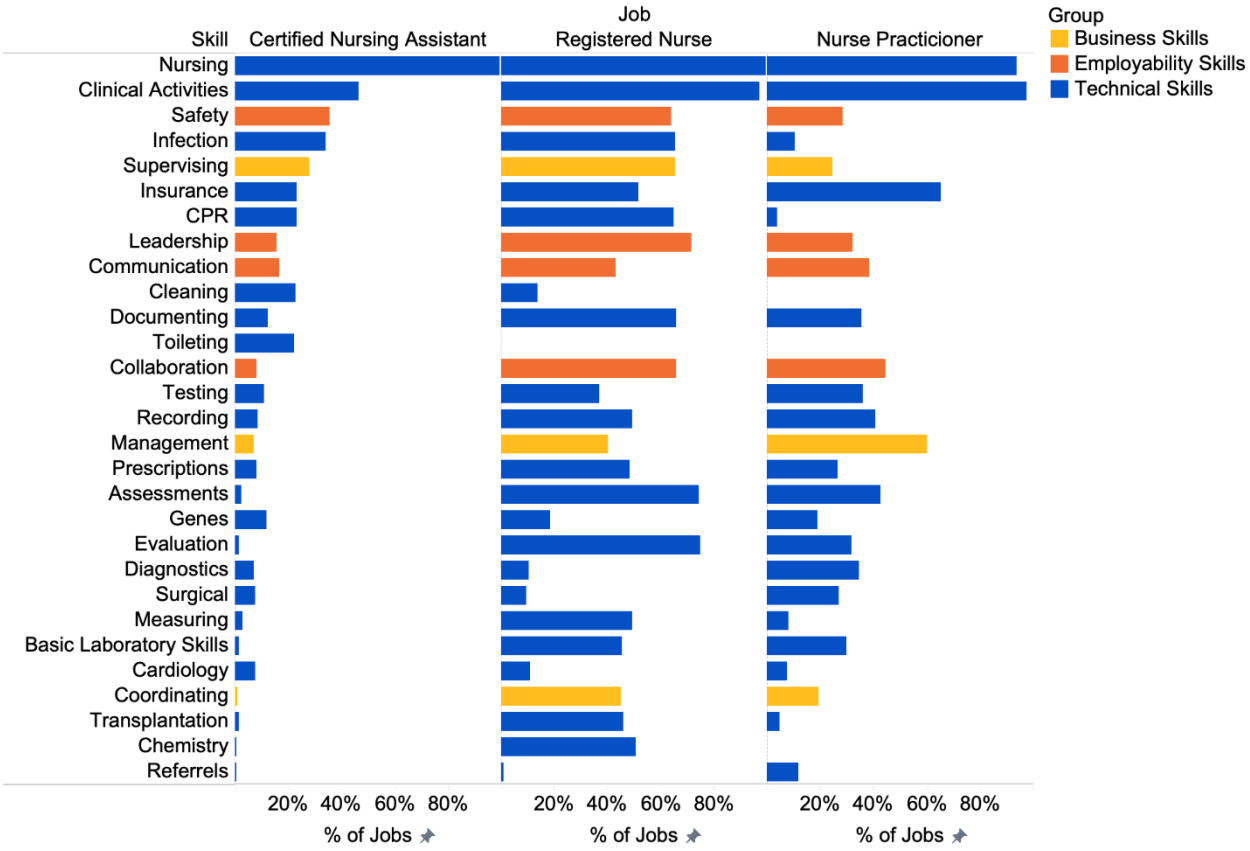
Career Pathways Analysis

The skills and job postings data for each of the selected upward mobility industries can be further extended to study a series of occupations which lead from entry-level positions to more senior roles through the lens of common skills and necessary education levels for advancement. For the health sciences industry cluster, the pathway this report will examine is the nursing pathway, which begins with Certified Nursing Assistant occupations and progresses, primarily through additional education, to Nurse Practitioner.

This gap between skills taught and acquired at the CNA level and those needed for RN jobs may make advancing on the pathway from CNA especially difficult, in addition to the educational and licensure barriers between these steps.

Though they are the two smallest occupations on the pathway, as Figure 26 shows, RNs and nurse practitioners have significant overlap in their required skills across the board. Certified nursing assistants, however, do not require as many skills per job overall especially skills related to clinical activities and supervisory skills. Gaining experience managing a team and contributing to the broader range of patient care activities RNs are responsible for may help bridge what is now a very large skills gap that makes job transition difficult. However, efforts in this direction are likely to be limited by the regulatory differences between the scope of care of CNAs and RNs.

Figure 26: Skills Required for Nursing Career Pathway Occupations. Source: National Labor Exchange



Overall, there appears to be a systemic gap when advancing beyond a CNA position. CNA job postings indicate these workers are not in a strong position to learn the skills required to make the jump to RN while on the job. This is both because the primary RN skills are less applicable to CNA roles and because CNAs are not, by practice and by licensure restrictions, typically elevated to supervisory positions in a specialized health care focus. The nursing pathway has a clear educational pathway, however, which does provide training to students pursing nursing degrees and RN licensure, which can help to make up the skills gap. A goal for supporting workers on this pathway seeking career growth and greater stability should include finding ways to support CNAs in educational programs to obtain their RN licensure, while working full or part time.

Information Technology & Analytical Instruments

The information technology (IT) and analytical instruments industry cluster focuses on both the hardware and software aspects of the computing industry. The cluster is a major contributor to Oregon's economy, generating significant revenue and employment opportunities. Its impact extends beyond the state, with Oregonian products and services exported around the world.

The IT portion of the industry cluster encompasses the software systems used to manage and process information and applications of hardware, such as networking devices. The analytical instruments portion of the cluster is the portion of the cluster related to the manufacturing and fabrication of hardware systems and components used by the IT portion of the cluster and other industries. The largest component of this portion is semiconductor manufacturing.

As shown in several of the charts in this chapter, our data show semiconductor manufacturing requires specialized knowledge and skills that are more closely related to those found in the IT industry than in traditional advanced manufacturing.

Semiconductor manufacturing is deeply intertwined with IT, as semiconductors are essential components in computing devices, telecommunications equipment, and other IT products. By aligning semiconductor manufacturing with the IT industry in this analysis, SRI was able to apply a more holistic approach to understanding and addressing the needs of both sectors, and so foster collaboration and innovation across related fields. As shown in several of the charts in this chapter, our data show that semiconductor manufacturing requires specialized knowledge and skills that are more closely related to those found in the IT industry than in traditional advanced manufacturing.

By recognizing the overlap in skills and knowledge between the analytical instruments and IT industries, workforce programs and initiatives can be tailored to meet the specific needs of both portions of the wider industry cluster, ensuring that the workforce is equipped with the right skills to support growth and innovation in semiconductor manufacturing and IT alike.

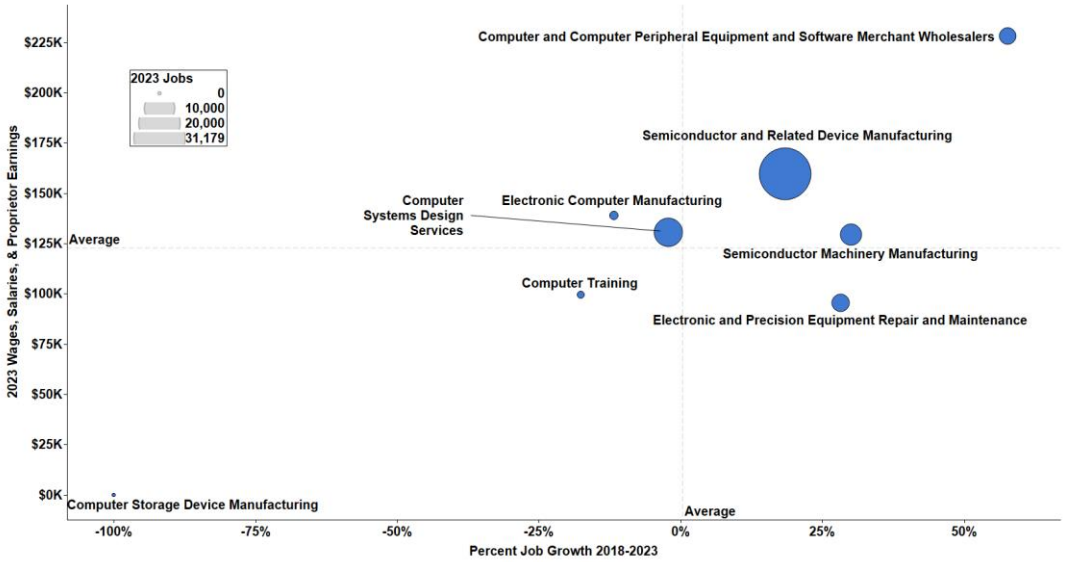
Key findings

- Technology innovation and adoption in this industry cluster occurs much more rapidly than curriculum development, leading to knowledge gaps in the workforce.
- IT and analytical instrument employers generally view Oregon’s workforce environment more favorably than other Oregon employers.
- While a greater share of IT and analytical instrument employers report “no labor shortage” compared with Oregon employers in other industry clusters, a greater share also indicate that workforce programs and organizations are not well-aligned to industry needs. This sentiment seems to be particularly salient for semi-conductor occupations.
- The most sought-after skills in the IT & Analytical Instruments job postings include network security and cybersecurity, with a strong focus on firewalls and identity verification.
- When comparing semiconductor and information technology roles, the overall type and distribution of skills closely aligns, indicating opportunities for transferability and career progression between the two.

Trends

IT & Analytical Instruments cluster has had 0.4% job growth from 2018 to 2023 with approximately 42,171 jobs in 2018 and 49,134 jobs in 2023 (Figure 27). While the cluster overall had minimal growth due to some shrinking industries, several industries within the cluster had considerable growth. Computer and computer peripheral equipment and software merchant wholesalers had the most growth (58%) from 2018 to 2023. Both semiconductor manufacturing industries had 28% and 30% growth. Average wages, salaries, and earnings for this industry cluster have increased by over $20,000 in five years with average wages in 2018 at $101,609 and average wages in 2023 at $122,695. The computers and information technology average wages are the highest of the four select upward mobility industry clusters.

Figure 27: Average wages, percent job growth, and size of industries in Oregon's IT & Analytical Instruments industry cluster, 2018–2023. Source: Lightcast.



The 2023 location quotient, or employment concentration, for the IT & Analytical Instruments cluster was 3.27, or greater than three times the national average. This cluster is specialized and has competitive advantage in Oregon, led by major employers including Intel and Hewlett-Packard. The 2022 GRP for the computers and information technology industry cluster is $14.1 billion, the highest GRP of the four-target upward mobility industry clusters.

Partner Perspectives

Oregon's workforce partners expressed great optimism for the economic development potential represented by the IT & Analytical Instruments cluster. The industry cluster is among the fastest growing in the state, largely due to the rapid expansion of Oregon's semiconductor and chip manufacturing industries. Recent and planned state investments such as Future Ready Oregon and the Oregon CHIPS Fund have supported growth in this cluster. Future Ready Oregon established funding for new and innovative education and training programs for the technology sector, as well as a technology industry consortium. Through Oregon's CHIPS Fund, the state is investing $240 million in 15 semiconductor facilities across the state to help tech companies preserve or expand their operations in Oregon by purchasing or readying land for new

construction, building out facilities on existing property, or investing meaningfully in new research (VanderHart, 2023).

Additionally, workforce partners expressed excitement over the multiple existing efforts and programs in place that currently support the workforce development needs of Oregon's IT & Analytical Instruments industry cluster. For example, Intel and Portland Community College (PCC) partnered to develop the PCC Intel Quick Start Program. This program provides an intensive, two-week training to workers for Intel and has been successful in getting entry-level workers upskilled and hired. Additionally, the City of Hillsboro is working with the Oregon Manufacturing Innovation Center R&D to implement Uniquely Abled, a program that would train students with autism for semiconductor manufacturing.

> ***"Computer Science needs to start at K-12, as a graduating requirement. Foundational and cross-disciplinary AI program at all levels of education is a strong need."***
>
> ***- Survey respondent from Hillsboro, Oregon***

Although the IT & Analytical Instruments cluster has had significant recent success and growth in Oregon, state workforce partners did express concerns regarding workforce readiness. Technology innovation and adoption in this industry cluster occurs much more rapidly than curriculum development, leading to technology knowledge gaps. Additionally, K-12 learning loss during the pandemic has IT & Analytical Instruments partners concerned that the state's upcoming local labor pool will not have adequate reading, writing, and math skills that are crucial for many of the roles in the cluster.

Business Survey Findings

16 survey respondents associated with the IT & Analytical Instruments (including semiconductors) industry. Many of them mentioned primarily hiring or engaging with assemblers and fabricators (6), software or electrical engineers (6), and IT, maintenance, or instrumentation technicians (3). Respondents were also quite centralized, with respondents based in Hillsboro (6), Portland (3), or Corvallis (2). IT & Analytical Instruments respondents were almost equally distributed across companies with 250 or more workers (5), 10 to 49 workers (5), and 0 to 9 workers (6).

> ***"Oregon has made strides to get more students interested in careers in STEM and semiconductors specifically, and these seem to be working. We have a large talent pool to pull from and little difficulty hiring when needed."***
>
> ***- Survey respondent from Corvallis, Oregon***

Notably, this industry group's overall perception of Oregon's workforce environment seemed more positive than the total survey population. When asked for three words to describe the state's workforce environment, the general sentiment across all respondents was about 64% negative, 34% positive, and 2% neutral. When disaggregating respondents for IT & Analytical Instruments, responses were approximately 52% positive and 48% negative, a noticeable positive difference. These positive descriptors included words like "Competitive" (2), "Growing" (2), "Specialized" (2), "Diverse," "Healthy," "Productive," and "Robust."

Differing from health sciences respondents, this industry group reported higher opportunities for career advancement based on both performance and skills development compared to the survey population. IT & Analytical Instruments respondents averaged a 69 for career advancement opportunities based on performance compared to 64 for the total population and

averaged a 78 based on skills developed compared to 68 for the total population. Examples of these opportunities ranged from regular assessment of employees, performance-based promotion opportunities, rotational programs available to move to different departments, and learn diversified skills through shadowing.

Generally, this industry group viewed Oregon's existing educational programs as less aligned, with 27% reporting "not at all aligned" compared to 23% from the total survey population. One survey respondent said, "We have a good source of engineering talent locally, but electrical engineering specialties are not as prevalent. We would like to see more focus on semiconductor industry within Oregon, especially for post-grad degrees." Another respondent explained, " All of our [redacted] hires come to us with poor written and verbal communication skills, poor critical thinking skills, and very little understanding of semiconductor technologies and materials. For a state spending $250M of the Governor's emergency budget on CHIPS Act infrastructure investment, I am appalled at the lack of emphasis on semiconductor technologies."

Shifting to reported labor shortages, IT & Analytical Instruments companies seem to fare better than other industries in the state. Nearly 40% reported no labor shortage, almost 16% points more than the total survey population. About 18% of respondents in this industry reported a minimal or moderate shortage, about 13% points less for both response options than the total survey population.

Skills Analysis

A new skills category emerged in the IT & Analytical Instruments cluster jobs postings. Figure 28 shows the share of job postings in the IT & Analytical Instruments cluster that require a particular skill. Nearly 70% of all job postings in this cluster require at least one programming language or platform. One in four jobs in this cluster required semiconductor skills, prompting a more in-depth study and comparison with other skills, and resulting in isolating semiconductor manufacturing-related skills into their own category for further analysis of these semiconductor manufacturing jobs.

The safety skill in postings for the IT & Analytical Instruments sector refers to the security of networks, computing equipment, and digital infrastructure. The most sought-after skills in the IT & Analytical Instruments job postings include network security and cybersecurity, with a strong focus on firewalls and identity verification (Figure 28). Leadership and management skills follow closely behind, underscoring the importance of overseeing and coordinating security measures within organizations. While proficiency in specific platforms is crucial, the sheer diversity of these platforms often elevates the significance of broader security and oversight skills. This trend highlights the critical role of IT professionals in safeguarding sensitive information and ensuring the integrity of digital networks, underscoring the need for comprehensive security protocols and adept leadership in managing these complex systems.

The subsequent figures examine the semiconductor industry in isolation and juxtapose it with information technology jobs to better understand the similarities and differences between the two portions of the IT & Analytical Instruments cluster. In Figure 29, we focus on coding skills, anticipating a notable contrast from typical manufacturing roles. However, semiconductor jobs surprisingly require a comparable number of coding skills per job posting. While there is a slightly higher proportion of jobs demanding no coding skills and a lower count necessitating more than five coding skills, the overall distribution closely aligns between semiconductor and information technology roles.

Figure 28: Skills groups in IT & Analytical Instruments job postings. Source: National Labor Exchange.

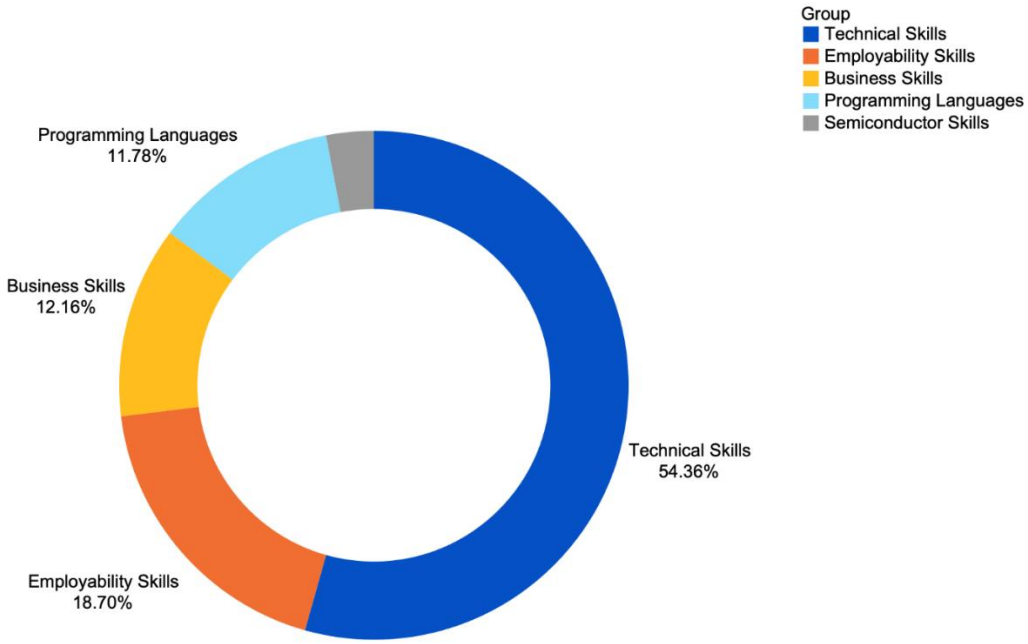
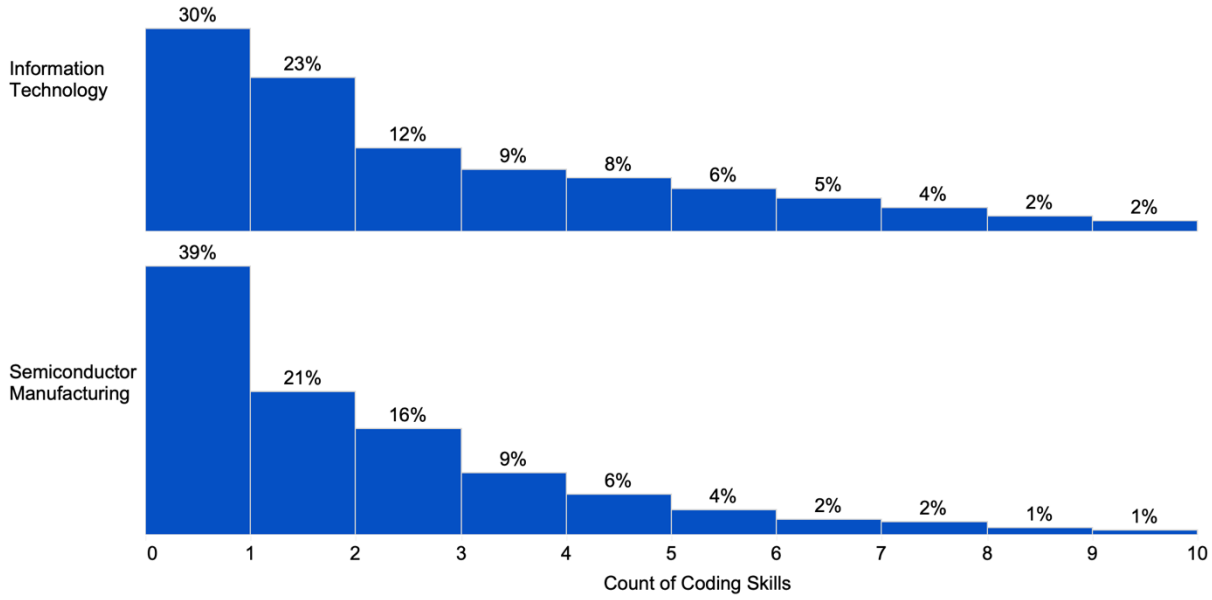


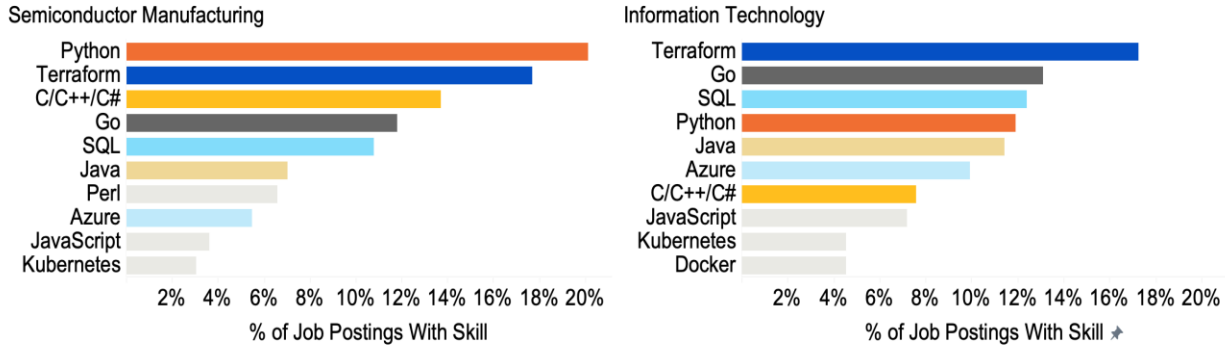
Figure 29: Count of coding skills required in semiconductor manufacturing and non-semiconductor manufacturing (information technology) job postings. Source: National Labor Exchange.



Moreover, there is a remarkable similarity in the coding languages used between the two industries, suggesting significant potential for crossover (see Figure 30). The primary distinction lies in the prevalence of Python, which is notably more prominent in semiconductor jobs but still prevalent in IT roles. However, IT positions exhibit a higher demand for Go, SQL, and JavaScript compared to semiconductor roles. It is important to note that these trends can vary significantly depending on the company. Upon filtering the analysis to focus on the top 20

companies by job listings in each industry, the differences in specific coding languages nearly disappear. This indicates that if a company houses both semiconductor and non-semiconductor roles, transitioning between them could be relatively seamless. When considering training programs for these languages, it would be prudent to prioritize partnerships with companies in the region where the training is taking place to ensure alignment with industry demands.

Figure 30: Top coding skills required in semiconductor manufacturing and non-semiconductor manufacturing (information technology) job postings. Source: National Labor Exchange.

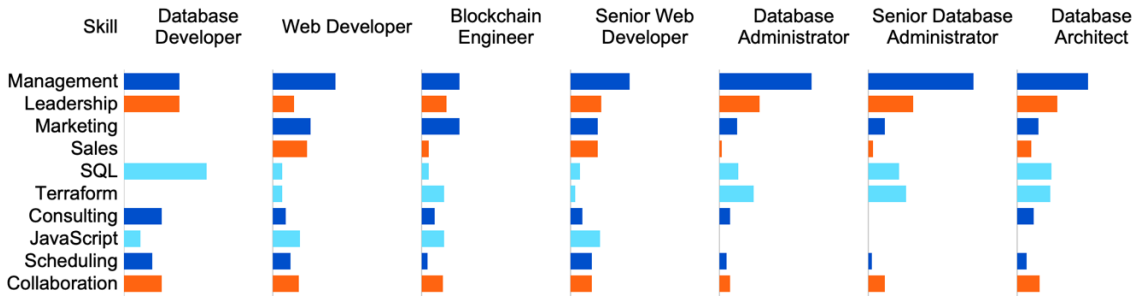


Career Pathways Analysis

To better understand careers in the IT & Analytical Instruments industry cluster, this section will explore in depth the *Integrated Database & Web Development Spectrum* career pathway. This pathway combines two aspects of full-stack development, web development, and databases to show how the same skill set can be used throughout a career in IT. Although programming languages fall in and out of favor throughout an IT professional's careers and technological advances rapidly change the tools available to work with, core programming knowledge and software development skills can benefit IT workers on this pathway throughout their time in tech.

To better understand this pathway and why web development and database careers have been grouped into a single pathway, Figure 31 shows the top skills required by occupation in the pathway. This figure shows that the skills required in job postings for these occupations in Oregon have large similarities, especially with a strong focus on management and leadership skills. There are some skill specializations within individual occupations, but, for the most part, these occupations all share low levels of different programming skills which differ more based on the company or product hired employees will be working on than the occupation itself.

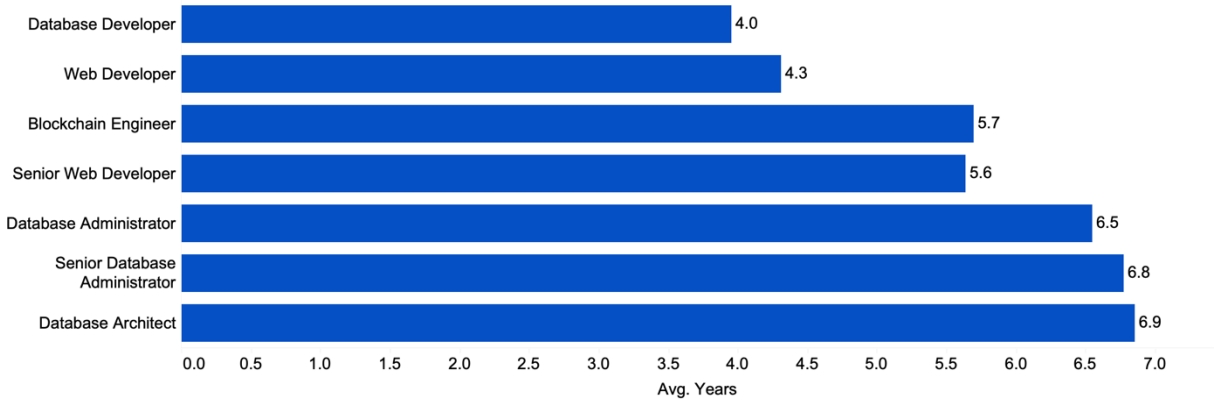
Figure 31: Skills Required for IT Pathway Occupations. Source: National Labor Exchange



Even though the figure above shows that the skills required may be highly similar across occupations, we can see in Figure 32 that there is a substantial difference by occupation when

comparing required years of experience to obtain the job. All occupations in this pathway require greater than entry-level experience, as even database developer roles asked for, on average, 4 years, but at the higher end, applicants would need about 7 years of experience on average to meet the requirements in job postings.

Figure 32: Average Years of Experience by Occupation in IT Pathway. Source: National Labor Exchange.



A thorough review of these job postings shows that this is not because the senior roles require mid-career levels experience, but because many job postings given the non-senior titles nonetheless describe roles seeking professionals who are more advanced in their careers. This brings the average years of experience of the non-senior roles up closer to their senior counterparts.

Unlike the patterns that can be seen in other industry clusters, in the IT & Analytical Instruments cluster, positions described as "senior" roles do not have significantly greater experience requirements than positions for the less senior role when viewed by averages.

Data on this pathway shows that gaining several key skills can set workers interested in this pathway up well for advancement after obtaining a minimum amount of experience in other roles. The last chart shows that there are many forms of experience that are valuable, ranging through many aspects of full stack development. The pathway also offers workers specialization options using similar skills, which can increase worker satisfaction and offer protection to workers given the broad applicability of their skills within the pathway.

Our examination of the data, however, was not able to identify large occupations for entry-level workers that had the same skill patterns shown in our data for this pathway with enough job postings to constitute a large enough sample size for this analysis. This gap in the pathway is an important area for further reflection, as it is difficult to make recommendations to emerging talent on how to enter this pathway, other than to gain the skills and desired education (typically a bachelor's, though graduate degrees were mentioned in a number of postings) and to identify open roles that leverage the skills described in Figure 31.

Construction

The multifaceted construction cluster primarily plans, designs, finances, and constructs a wide range of infrastructure. One of the key characteristics of the construction industry in Oregon is its diverse and skilled workforce. The industry employs a wide range of professionals, including carpenters, electricians, plumbers, and construction managers, among others. The industry cluster is made up of 16 different industries such as industrial building construction; highway, street, and bridge construction; construction machinery manufacturing; and others. Despite occasional economic downturns, the industry has shown a consistent pattern of growth over the years, driven by factors such as population growth, urbanization, and infrastructure development. The top three by employment are new single-family housing construction (except for-sale builders), commercial and institutional building construction, and site preparation contractors.

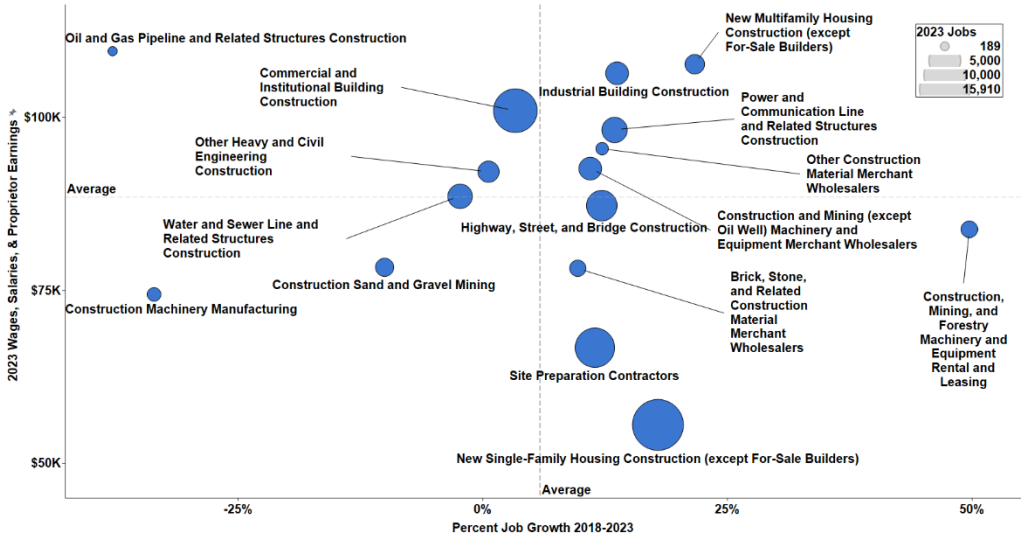
Key Findings

- Average wages, salaries, and earnings for the construction industry cluster have increased by $18,000 from 2018 to 2023 and are higher than the average wage for all industries in Oregon.
- About 58% of construction survey respondents reported that Oregon's existing educational programs are "not at all aligned" with their company's labor needs. Construction training programs will benefit from investments like Future Ready Oregon.
- Top hiring challenges were identified as candidates not having the needed work experience, right technical skills, employability skills, and basic suitability.
- Amongst target industry clusters, construction job postings mentioned business skills the most and demonstrated similar emphasis on business skills as technical skills.

Trends

The overall concentration of employment in construction (location quotient) is 1.03, roughly unchanged since 2018 and right at the national average. The 2022 GRP for the construction industry cluster in Oregon was $6.6 billion. Construction has experienced a 6% job growth from 2018 to 2023, totaling 53,754 jobs in 2023 (Figure 33). This growth is in part driven by state investments to promote housing construction. These investments have had positive influences on wages for construction works. During the same period, average wages, salaries, and earnings for this industry cluster have increased by over $18,000, with average wages $69,279 in 2018 and $88,448 in 2023. Average wages in this industry cluster are much higher than $65,893, the average wage for all industries in Oregon in 2023. Future growth in the construction industry will be motivated in part by the attractiveness of growing earning potential for workers.

Figure 33: Average wages, job growth, and size of industries in Oregon's construction industry cluster, 2018–2023. Source: Lightcast.



Partner Perspectives

Oregon workforce partners indicated both optimism and concern with respect to the state's construction industry. As with the IT & Analytical Instruments industry cluster, Oregon's construction industry has grown significantly in recent years. Much of the new growth is due to the governor's push to increase the construction of multi- and single-family housing in response to the state's affordable housing shortage and homelessness crisis.

Like other target industry clusters, construction training programs will benefit from investments like Future Ready Oregon. In addition, a statewide coalition, convened by Portland General Electric, receives $3 million from U.S. Department of Labor to develop Oregon's clean energy workforce which includes construction workers who will build the state's new clean energy infrastructure (Portland General Electric, 2023). Oregon's construction workforce has also become increasingly diverse. Oregon's workforce partners shared that these strides have been due to community benefits agreements that include incentive goals to train and hire women and racially and ethnically diverse people in the construction industry. The key is ensuring that Oregon's construction industry is aware and can access workforce development resources and funding.

> ***"We need more representation who can be a liaison between the Home Builders Association and the programs offered through workforce development."***
>
> ***-Survey respondent from Roseburg, Oregon***

Oregon workforce partners also shared community college and K-12 CTE programs that prepare participants for careers in the construction industry which are readily available across the state. Innovative training models, like virtual/augmented reality training models, for construction have been crucial for making education and upskilling opportunities more accessible for Oregon's rural and low-income residents. Despite the availability and accessibility of construction training and education programs, state workforce partners shared that it has been difficult to connect younger people to apprenticeship and other training opportunities for construction and other trade industries. Among this population, there is a lack of interest and negative perceptions about the trades industry.

Business Survey Findings

In total, 15 respondents from the business survey identified their company as part of the construction industry. Respondents' businesses were in Portland, Hillsboro, Canby, Oregon City (2), Sherwood, Dallas, Albany, Salem, Beaverton, Roseburg, Astoria, North Bend, Redmond, and Clackamas. 10/15 of responding construction firms were small businesses (e.g., five sized 0 to 9 workers, five sized 10 to 49 workers). This short section supplements the Business Community Survey section with additional findings about construction respondents.

For reliable streams or sources of skilled labor, construction respondents most mentioned apprenticeship programs, including the Clackamas Community College Apprenticeship Program, Tongue Point Job Corps Center Pre-Apprentice Programs (e.g., Building Construction Technology, Carpentry, Cement Masonry), Northwest College of Construction Apprenticeship Program, and the Northwest Line JATC Apprenticeship Program. Respondents also mentioned high school CTE programs, such as the Saben-Shellenberg Professional Technical Center (mentioned by two respondents), Carrier Technical Education Center (CTEC), Molalla River School District, and Warrenton Hammond School District.

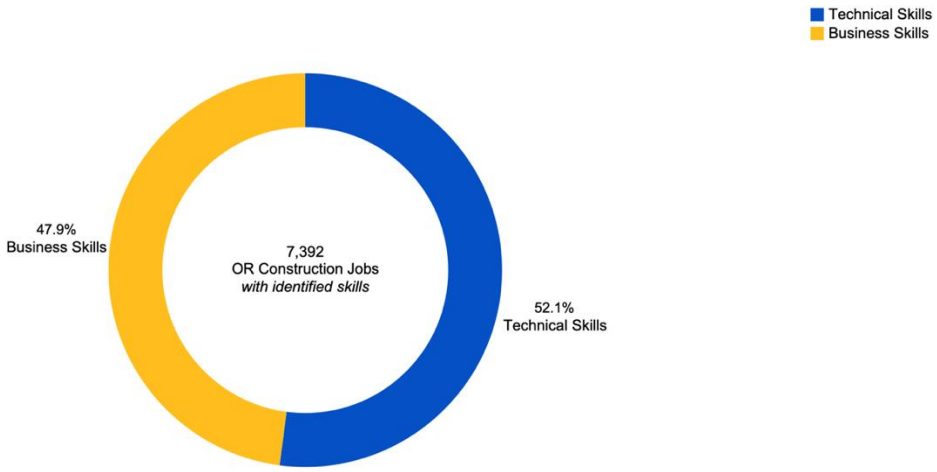
Despite mentioning some reliable streams or sources of skilled labor, about 58% of construction respondents reported that Oregon's existing educational programs are "not at all aligned" with their company's labor needs. This percentage far exceeds the 23% that selected the same response from the total survey population. This negative perception of industry-educational alignment stems from a demand from industry for more skilled talent that requires more trades skill training and experiential learning opportunities for students (e.g., apprenticeships, internships), as well as more emphasis on construction-related careers by the state and K-12 educational providers.

Respondents of the construction industry reported a more difficult workforce environment, generally, than the total survey population. About 8% of construction respondents reported "no labor shortage," outpacing the total survey population by about 6% points. Further, about 54% of construction respondents reported a "minimal labor shortage," compared to approximately 31% of the survey population. Moreover, the construction industry responded similarly to the survey population in terms of hiring and reskilling and upskilling challenges. Top hiring challenges were identified as candidates not having the needed work experience, right technical skills, employability skills, and basic suitability. For reskilling and upskilling programs, the construction industry cited funding the program's budget, measuring the business impact or return on investment from the program, and motivating employees to participate as core challenges. In open-ended responses, program management was provided as a specific knowledge gap respondents would like to address.

Skills Analysis

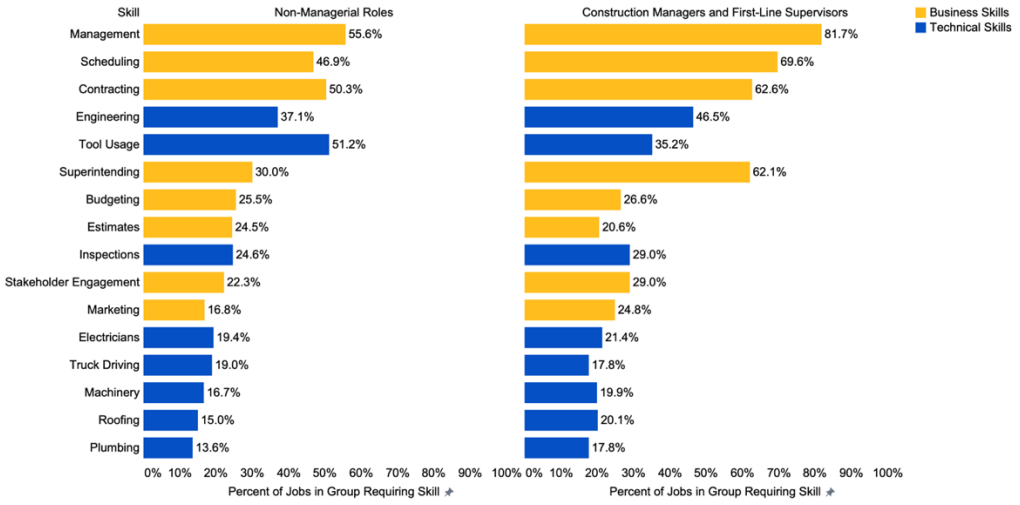
Construction jobs have the highest share of business skills desired across jobs, which are skills generally associated with more of the managerial positions (Figure 34). The prevalence of business skills in the analysis is notably tailored to on-site workplace environments, emphasizing skills such as scheduling and superintending over more abstract, white-collar competencies like leadership. These skills are practical and directly applicable to the demands of construction work, contrasting with the scarcity of employability skills in this industry. Additionally, skills like estimates and partner engagement, positioned in the middle range, expand the job duties beyond construction and team management, requiring professionals to provide project updates to partners, thus encompassing aspects of middle management responsibilities.

Figure 34: Skill groups in construction job postings. Source: National Labor Exchange.



The skills analysis conducted by SRI highlights the cost of this negative perception and the value of the career pathways present in this cluster. Construction is made up of industries that are relatively easy to enter at lower skill levels, but which contain many occupations that offer a mix of technical and managerial skills (Figure 35). The implication is that technical skills retain some value for workers at every level, including managerial occupations. The skills acquired early in technical areas form a foundation to which managerial skills are added, yielding high value occupations, offering a pathway into higher value opportunities. Managers need some technical skills, and nearly all technical occupations require some management skills.

Figure 35: Skills required for non-managerial and managerial roles. Source: National Labor Exchange.

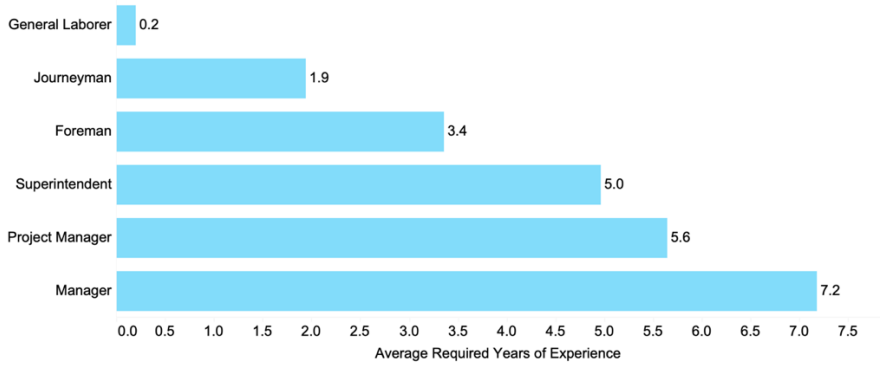


Career Pathways Analysis

The example career pathway this section will explore for the Construction industry cluster tracks the growth of workers from the entry-level general laborer position through the manager position. This pathway shows strong data for growth, but also indicates that the gap between general laborer and the next level up, journeyman or in some cases foreman, is steep. Once past this jump, though, there is good alignment of required skills between the mid-career and senior occupations and a clear increase in year of experience that tracks with progression.

Figure 36 shows the average required years of experience. The first conclusion from this chart is that general laborer is overwhelmingly an entry-level position that requires neither specific education nor experience to obtain. Each step in the pathway requires, on average, more years of experience than the roles that come before it in the path.

Figure 36: Averages for Required Years of Experience by Occupation in Construction Pathway. Source: National Labor Exchange.



Lastly, Figure 37 shows strong evidence of the construction pathway's skill overlap, allowing for smoother transitions between occupations once the required experience is gained. While general laborers have requirements for more on-the-ground skills such as tool usage, all the mid-career and seniors' positions share the same set of skills for management, scheduling, contracting, engineering, and superintending at roughly the same levels. Once employees advance to the more senior tiers of superintendent and beyond, there is some difference where budgeting goes up and the more technical skills decrease, but the gap is limited.

Figure 37: Skills Required in Construction Pathway Occupations. Source: National Labor Exchange.

Wood Products Manufacturing

The wood products manufacturing cluster primarily produces a wide range of wood products manufacturing. The industry cluster is deeply rooted in its rich forestry heritage and consists of eight industries: logging, wood preservation, reconstituted wood product manufacturing, and others. In the wood products manufacturing sector, advanced manufacturing is evident through the integration of digital technologies for design, production optimization, and waste reduction. One of the key strengths of the wood products manufacturing industry in Oregon is its commitment to sustainable forestry practices. The top three by employment are logging; lumber, plywood, millwork, and wood panel merchant wholesalers; sawmill, woodworking, and paper machinery manufacturing.

Key Findings

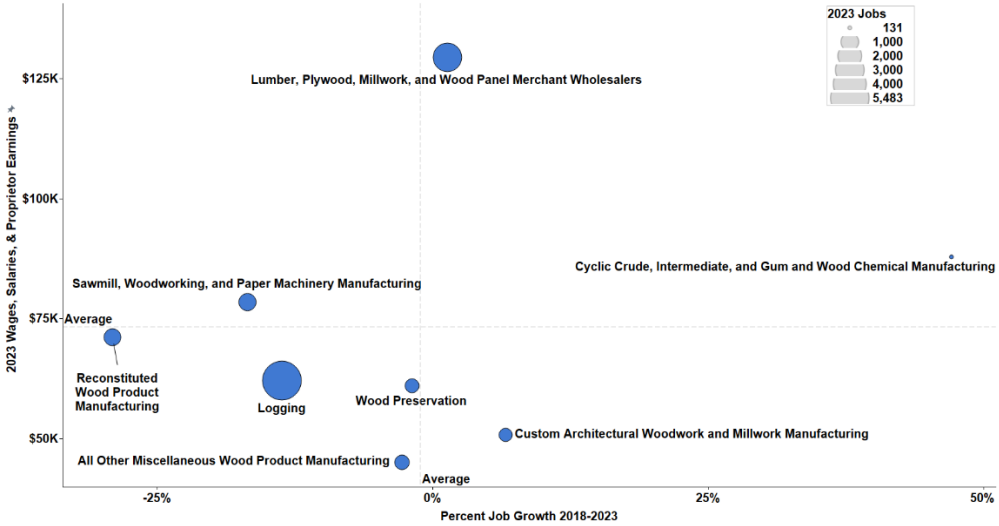
- Wood products manufacturing has a competitive advantage compared to other places in the U.S. with an employment concentration more than 3 times higher than the national level.
- Despite a loss of 1,000 jobs over the course of 2018 to 2023, average wages, salaries, and earnings for the wood products manufacturing industry cluster have increased by over $17,000.
- Wood products manufacturing has evolved significantly with advances in technology making the nature of work focus increasingly on KTI skills rather than manual labor.
- About 71% of wood products manufacturing survey respondents rated Oregon's existing educational programs as "not at all aligned" with their company's labor needs.

Trends

Wood products manufacturing has a significant history and current presence in Oregon, and this is reflected in the state's labor specialization for the cluster. Employment concentration (location quotient) in 2023 was 3.38, approximately 0.35 less than it was in 2018 but still more than 3 times higher than the national level. Despite a decline in labor specialization, this employment concentration indicates that the industry cluster has a competitive advantage when compared to other places in the U.S. Wood products manufacturing has the highest employment concentration of the four-target upward mobility industry clusters.

Wood products manufacturing experienced negative 1% job growth from 2018 to 2023, with approximately 11,881 jobs in 2023 (Figure 38). Despite a loss of 1,000 jobs over the course of the last five years, average wages, salaries, and earnings for this industry cluster have increased by over $17,000, with average wages being $73,244 in 2023. Wood products manufacturing was traditionally a trades industry; however, the skills demanded for these roles have become increasingly technical as technology integration has increased over time. Average wages in this industry cluster are much higher than the $65,893 average wage of all industries in Oregon in 2023. The 2022 share of GRP for the wood products manufacturing industry cluster was $1.95 billion which is the lowest share of GRP of the four-target upward mobility industry clusters.

Figure 38: Average wages, job growth, and size of industries in Oregon's wood products manufacturing industry cluster, 2018–2023. Source: Lightcast.



Partner Perspectives

According to Oregon workforce partners, wood products manufacturing, and timber and forestry more broadly, has a long history as a significant employer for the state. In the decades following World War II, there was a huge influx of labor into forestry and wood products manufacturing; however, many of those workers are retiring now. In addition to shifting labor demographics, workforce partners have shared that the wood products manufacturing industry has evolved significantly with advances in technology. This shift has made the nature of work in wood products manufacturing focus increasingly on KTI skills rather than manual labor. The wood products manufacturing industry continues to be important for the state's economy and needs support to sustain a talent pool adapted to changing technology.

Industry and workforce partners shared that compared to other target industries, the wood products manufacturing industry struggles substantially more than others in reaching incoming workforce candidates (e.g., high school and post-secondary graduates). Some individual companies have found success in developing partnerships with educational institutions to support their labor needs. For example, Roseburg Public Schools partnered with Roseburg Forest Products to provide high school students with hands-on education and training at lumber mills. In Tillamook, the Hampton Lumber Company has an internship program for high school students. The Hampton Lumber Company also provides some financial support to older mill workers so they can take continuing education classes. Additionally, the Oregon Mass Timber Coalition, led by the Port of Portland, received $41.4 million from Build Back Better Regional Grant Challenge. This grant includes $1.3 million for PCC to provide training and support and to coordinate the work of the other community colleges in the region in the mass timber construction industry (Hill, 2022). Where opportunities for hands-on learning are less available, wood products manufacturing education and training programs have adopted virtual/augmented reality training models like those in the construction industry. Despite these examples of workforce development success, industry partners indicated that the wood products manufacturing industry struggles more than other industries to market career pathways and opportunities to young Oregonians. These industry leaders expressed a desire for more state support to build these connections.

Business Survey Findings

Wood products manufacturing had modest industry-specific participation in the employer survey, with 8 total respondents. The eight were distributed by firm size (e.g., three respondents from firms 10 to 49 workers, two respondents from firms 0 to 9 workers, and two respondents from 50 to 99 workers) and geography (e.g., all eight respondents from different cities, including North Bend, La Pine, Rickreall, Portland, Banks, and John Day). Among respondents, the most common occupations were loggers, equipment operators, and heavy and tractor-trailer truck drivers. This section builds off the Business Community Survey section, which shared some specific findings about wood products manufacturing respondents and how they compared to other industries.

Notably, 7/8 of wood products manufacturing respondents gave examples of upward mobility opportunities. One survey respondent from Rickreall said, “An applicant can start with no experience at $26. If they can demonstrate work ethic, leadership, attendance, a driver’s license, and mechanical abilities, they can move on to supervisor or equipment operator 30 to $40. Another from Portland said, “When workers with a great attitude join, we have senior workers mentor and train them on basic to advanced carpentry.” These quotes are representative of feedback from wood products manufacturing employers, implying the core workforce need of employers who care and want to be working.

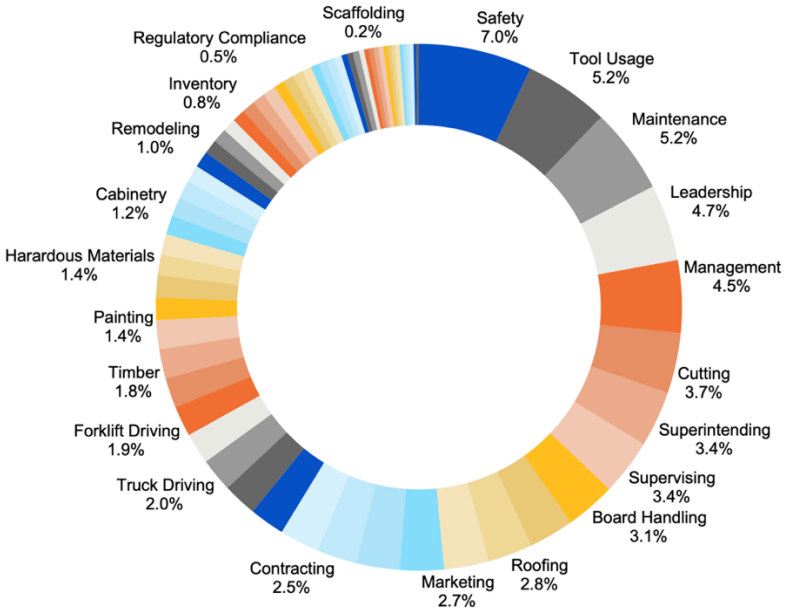
Wood products manufacturing respondents provided very few examples of reliable sources for skilled labor. Further, about 71% of wood products manufacturing respondents rated Oregon’s existing educational programs as “not at all aligned” with their company’s labor needs. This greatly exceeds the rate of the total survey population, which was only about 23% reporting “not at all aligned.” One respondent optimistically commented on Southwestern Oregon Community College’s (SWOCC) Construction & Heavy Equipment Operator Pre-Apprenticeship Program as an employment pool. This free, state-registered program for high school juniors and seniors to gain entry-level construction skills and an OSHA safety certification through 120 hours of free training under industry-experienced instructors (SWOCC, 2024).

Wood products manufacturing respondents identified a few challenges faced in hiring, reskilling and upskilling, and retention consistently. For example, a supermajority or greater of wood products manufacturing respondents (who identified hiring as a reason for experiencing a labor shortage) selected hiring issues around candidate quality, including candidates not having the needed work experience (100%), essential employability skills (100%), basic suitability (100%), and the right technical skills (75%). Other reported challenges related to an interest and a desire to work in the wood products manufacturing industry include a low number of applications or lack of interest in the company (50%) and difficulty motivating employees to participate in reskilling and upskilling programs (50%).

Skills Analysis

The relatively high wages and rich skill mix at every level of the occupational ladder in forest products should make it appealing to entry-level workers. Realizing this opportunity is especially important given the retirement of a significant cohort of older workers and the technological transformation of the industry. Figure 39 below shows the wide variety of technical and business skills required across the industry cluster. In the context of wood product manufacturing, the prioritization of skills may appear unexpected. Safety understandably takes precedence, given the inherent risks of the job, followed by proficiency in tool usage. Surprisingly, actual wood manipulation skills rank lower, with leadership qualities such as project management, supervision, and superintendence taking precedence. This emphasis on leadership suggests that employers value candidates who can effectively lead teams in woodworking projects, ensuring project efficiency and team coordination.

Figure 39: Specific skills in wood products manufacturing job postings. Source: National Labor Exchange.



Given the strong focus on managerial roles, the wood product manufacturing industry places greater emphasis on business skills. This differs from the childcare sector, where hiring practices require a balance across all skill levels, with a greater emphasis on technical proficiency. However, in industry clusters like construction and wood products, the emphasis is heavily skewed towards business acumen. This is an important finding, as these sectors predominantly seek managerial candidates for long-term positions through these platforms.

Career Pathways Analysis

The pathway selected for analysis for the wood products manufacturing industry cluster focuses on manufacturing roles within plants, starting from the entry-level roles of material handler and production line worker, and advancing to team lead and production supervisor.

Occupations in this pathway show greater separation between required years of experience for advancement than new skills required for more advanced positions.

Figure 40 shows the skill requirements for each occupation in the pathway. Here, a material handler needs far fewer skills than other occupations in the pathway, including more skills than are required for production line workers. This is significant because, as the next charts show, production line worker is an entry-level occupation that in many cases does not require any years of experience. Material handlers and production line workers both require lower levels of business skills than are needed for team leads and production supervisors. Production line workers have the broadest skill requirements, with a particular concentration on technical skill requirements. There is substantial overlap in skill requirements between team leads and production supervisor positions.

Figure 40: Skills Required in Wood Products Manufacturing Example Career Pathway Occupations. Source: National Labor Exchange.

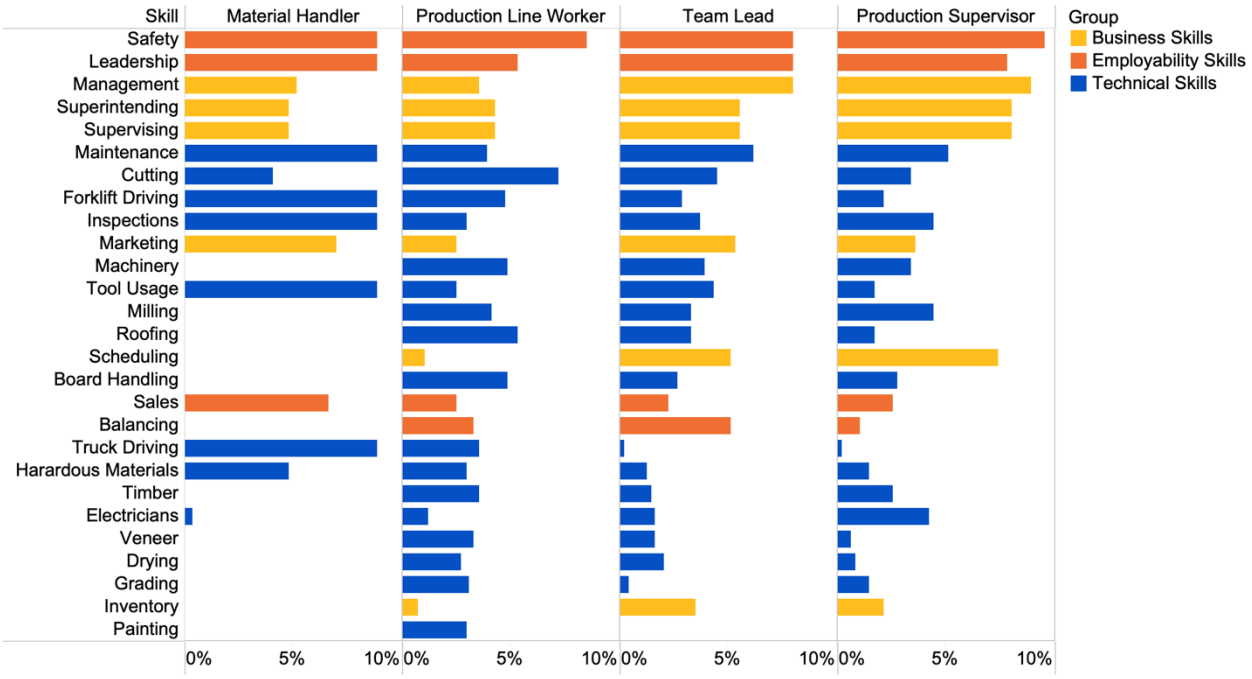
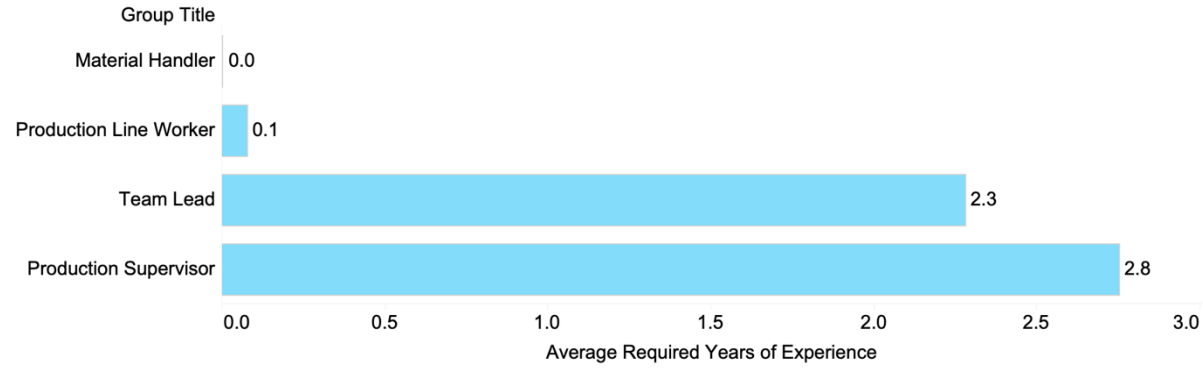


Figure 41 shows the average required years of experience for each occupation in this pathway, and we can see that material handler and production line worker are both entry-level positions, as all material handler postings and most production line worker postings do not require prior experience. This is contrasted with team lead or production supervisor, which each require an average of over two years of experience. A main difference between material handler and production line worker entry-level roles is that, from our review of the data, most production line worker roles required a high school diploma or a GED, where this was not listed as a requirement in any material handler jobs.

Figure 41: Average Required Years of Experience for Wood Products Manufacturing Pathway Occupations. Source: National Labor Exchange.



Childcare

The childcare industry in Oregon is a crucial component of the state's economy, providing essential services that allow parents to work and contribute to the workforce. Childcare workers primarily provide care services for infants, toddlers, and young children before and/or after school. These workers provide care in a variety of settings, including daycare centers, home-based providers, and preschools, all of which play a vital role in supporting the development and well-being of young children. The two primary occupations in this industry are preschool teachers and childcare workers.

Having a strong childcare network and industry is essential for supporting the state's economy. Access to affordable, high-quality childcare allows parents to work with peace of mind, knowing that their children are well cared for. This, in turn, can lead to higher workforce participation rates, increased productivity, and a stronger economy overall. For these reasons, we have chosen childcare workers as a key necessary occupation to study, even though jobs in this sector are less likely than jobs in our target upward mobility industry clusters to provide stable well-paid jobs for workers. By investing in the childcare industry and supporting providers, Oregon can not only improve access to quality care for families but also create economic opportunities and support the state's overall economic growth.

"Childcare is a prohibitive expense that often leaves families with one provider having to stay home and turn down work-related opportunities."

-Survey respondent from Oregon City, Oregon

Key findings

- Oregon's childcare industry faces several challenges, including high costs, low pay, limited availability of quality care, and workforce shortages.
- Over 90% of childcare workers are female, and, on average, earn 55% of the average annual salary in Oregon, contributing to gender inequities in the state.
- Childcare occupations require mostly technical skills (teaching) and often do not offer career pathways that provide progression through roles that introduce a mix of technical and managerial skills.
- However, there are many career pathways from childcare to other occupations with a wide variety of experience and education required for advancement.
- Increasing the childcare workforce will require several strategies including increase wages, demonstrate and strengthen career pathways, and expand the labor pool by addressing barriers to job access.
- The inaccessibility of affordable, convenient childcare prevents many parents from entering the workforce and contributing to economic prosperity in Oregon.

Trends

The state lost 16% of its childcare workforce between 2018 and 2023, resulting in approximately 20,000 childcare jobs in 2023 (Lightcast, 2023). Oregon is among the 15 states with the highest proportion (60%) of individuals facing childcare deserts (Center for American Progress, 2018). Demand for childcare services through the pandemic declined substantially as many families worked from home and provided their own childcare; however, as Oregon further transitions into

its post-COVID economy, declines in the availability of childcare are going to have significant impacts for families.

The average annual earnings for childcare workers in 2023 was $35,245, which is much less than $64,705, the average 2023 annual earnings for all occupations in Oregon (Lightcast, 2023). Over 90% of childcare workers in Oregon are female, which, given the substantially lower than average annual earnings for childcare workers, contributes to income inequities for Oregonian women.

Partner Perspectives

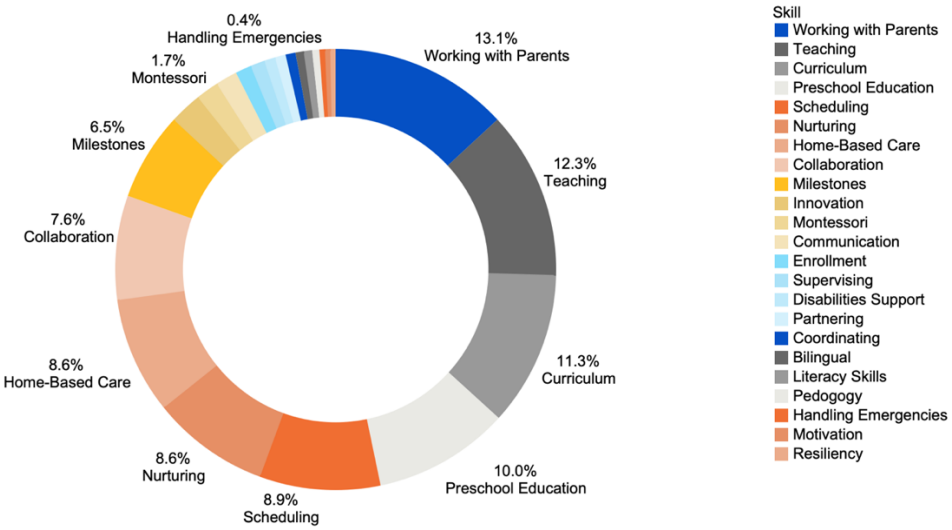
Oregon's workforce partners expressed significant concerns over both the affordability and accessibility of childcare. The COVID-19 pandemic has exacerbated these issues with the steep decline in the childcare workforce and it still has not yet fully recovered. This childcare shortage is largely driven by the fact that wages for these workers are relatively low and do not match the high demand for childcare services. In addition, Oregon's childcare workforce has been female dominated. As female workers have had increasing access to KTI education and career opportunities, more are opting to pursue other career opportunities that are higher paying than childcare. Oregon's lack of childcare has significant implications for the workforce participation of others, especially in rural communities that must overcome additional proximity-related access challenges. Many who cannot afford access to childcare are opting to leave the workforce and provide their own childcare.

Despite these childcare challenges, state workforce partners are making efforts to support childcare needs. For example, Multnomah County passed universal pre-K. As part of this initiative, the county granted funds to study existing capacity and strategies for increasing the childcare workforce supply. In addition, Clackamas Workforce Partnership is part of a coalition that is advocating for universal childcare in Clackamas County. Oregon's workforce partners also shared that many employers and post-secondary institutions do have programs and initiatives in place to support worker and student childcare needs. However, several of these firms and institutions that offered childcare support have eliminated these services since the pandemic. Although these local and regional efforts to address childcare are important, there is a strong desire among Oregon workforce partners for more state action to address the childcare worker shortage.

Skills Analysis

Staffing for these roles, show in Figure 42 below, require mostly technical skills (teaching). While the focus of childcare is typically on the children, job postings indicate that the top skill sought after is the ability to work effectively with parents. Furthermore, there appears to be a balanced mix of hard skills and employability skills required, even within the technical aspects of the field. Skills such as scheduling and nurturing are highly valued, alongside qualities like collaboration and the ability to provide home-based care. Despite the importance of specific skills like knowledge of developmental milestones or Montessori principles, these requirements often rank lower than the general ability to manage oneself in a classroom setting. Similarly, skills related to handling emergencies and specialized tasks are less emphasized in these postings, which instead prioritize a more general skill set.

Figure 42: Specific skills required in childcare job postings. Source: National Labor Exchange.



In Oregon, there is a significant demand for daycare center and preschool teachers, particularly for lead teacher positions within childcare centers, which involve mentoring other teachers and developing curriculum. Despite this demand, the skills breakdown suggests less of a need for traditional managerial roles, as indicated by the low demand for director positions. It appears that these roles require individuals who can effectively manage a wide range of contacts and responsibilities, including scheduling lesson plans and addressing parent concerns that may need to be escalated up the management chain. This suggests a need for individuals to fill middle management roles in childcare centers, rather than only new teachers for preschools and daycares.

Career Pathways Analysis

There are a variety of options and pathways to advance careers that depend on various factors. In the career pathways analysis, we estimated career advancement utilizing three Oregon-specific measurable factors: competencies; skills transferability compatibility index; and degree and credential requirements. For these pathways, most of the stepstool, mid-career, and experienced job titles are above a 75 in the compatibility index. The compatibility index is generated by an algorithm that uses O*NET data consisting of required competencies for various occupations. The index scores the compatibility of two occupations in terms of required knowledge, skills, and abilities. A score of 100 means complete compatibility (Lightcast, 2024). Many of the knowledge, skills, and abilities competencies that were considered when creating relevant career pathways have importance levels of 70 or higher. Throughout the career pathways, each next step job title is a career advancement in not only title, but in salary as well.

While there are various paths that individuals can take to advance their careers within childcare, we focused on six primary paths. Many of these roles require knowledge competencies of customer and personal service, English language, and education and training. Required skills include social perceptiveness, service orientation, monitoring, and active listening. Required abilities are written and oral comprehension and expression.

The first path is for center aides to family services coordinator or child, family, and school social worker. After a few years of experience as a center aide, individuals can advance to assistant youth directors. If the assistant youth director is interested in advancing their career to a higher paying, more experienced role, they can become a family services coordinator, upon obtaining

an associate degree in family science or a related field. Alternatively, they could decide to become a child, family, and school social worker. This role typically requires a bachelor's degree in social work or a related field, but relevant years of work experience can occasionally qualify the individual for the role.

There are a few paths for preschool teachers as well. Upon obtaining a bachelor's degree in early childhood education, preschool teachers can advance to become elementary classroom teachers. Alternatively, if preschool teachers do not want to go through the process of obtaining a bachelor's degree, they can advance to become a library technician.

One path is for child caregiver to nursing assistant. An individual can start off as a child caregiver with little to no prior experience. After a few years of experience in that role, child caregivers can advance to home care aides. If the home care aide is interesting in advancing their career again, they can become a nursing assistant, upon obtaining a certified nurse aide (CNA) certificate.

Another path is for childcare professional to early childhood education specialist. There are not many barriers to obtain an entry-level career as a childcare professional. After a few years of experience as well as an associate degree or official certification in early childhood education, childcare professionals can advance to childcare director. If individuals are interested in advancing to a higher paying, more experienced role, they can move onto being an early childhood education specialist upon earning a bachelor's degree in early childhood education.

Heavy and Tractor-Trailer Truck Drivers

The heavy and tractor-trailer truck drivers cluster primarily transport goods and materials over land routes and serves as the backbone of Oregon's transportation sector. The occupation cluster is made up of three different occupations: heavy and tractor-trailer truck drivers, industrial truck and tractor operators, and light truck drivers.

Key Findings

- Despite strong growth in the heavy and tractor-trailer truck drivers through the pandemic, these occupations are experiencing mild labor shortages within the state.
- Labor shortages resulting from the need to reskill and upskill is a more significant challenge in heavy and tractor-trailer truck drivers occupation cluster than others, with employers citing challenges related to balancing reskilling and upskilling program needs with current business operations and measuring the organization's supply and demand of skills on an ongoing basis.
- Employers note the need for more formal transportation-focused K-12 and postsecondary training programs.
- As in the case with childcare workers, there is no ladder comprised of mixed technical and management skills into higher paid occupations. This fact, in combination with low median wages in this sector, contributes to the decline in the trucking workforce.

Trends

The heavy and tractor-trailer trucks drivers' occupation cluster in Oregon grew 7% from 2018 to 2023 with approximately 50,760 jobs in 2023. Light truck drivers experienced the most growth with 22% job growth from 2018 to 2023. Both heavy and tractor-trailer truck drivers and industrial truck and tractor operators experienced 2% job growth from 2018 to 2023. While Oregon's growth in this occupation cluster is lower than the national average in this cluster (15%), it is still impressive given extreme shipping and supply chain disruptions that occurred through the COVID-19 pandemic. Average annual earnings in 2023 were $49,908, which is much less than $64,705, the average annual earnings for all occupations in Oregon in 2023. Heavy and tractor-trailer truck drivers earned $57,709 annually on average which is more than the light truck drivers ($46,229) and industrial truck and tractor operators ($45,787). To encourage entry into this occupation despite below average wages, the state and private industry is investing a diversity of strategies to encourage entry through financial incentives, like the Oregon Truck Driver Loan Program.

Business Survey Findings

About 10% of all employer survey respondents said that they primarily hire or engage heavy and tractor-trailer truck drivers in Oregon. These 21 respondents were distributed across firm sizes, with five respondents from companies with 50 to 99 workers and 250 or more workers, four respondents from companies with 0 to 9 workers and 10 to 49 workers, and three respondents from companies with 100 to 249 workers. By industry, six respondents fell into transportation, five in construction, and two in advanced manufacturing.

Shifting to some notable results, 84% of respondents reported that existing educational programs are "somewhat aligned" with their company needs. Compared to other industries and occupation groups, employers of heavy and tractor-trailer truck drivers reported educational program alignment slightly more positively, despite several respondents citing the need for more formal transportation-focused K-12 and postsecondary training programs. One large transportation company (250 or more workers) described their primary hiring method as the "domino effect." They explained this system creates plenty of rotations and developmental opportunities for employees to rise the ranks or try something different.

> ***"Many of [our recruits] stem from an internal promotion, which results in another vacancy, which is then filled with an internal or external candidate."***
>
> ***-Survey respondent from Salem, Oregon***

Heavy and tractor-trailer truck drivers identified a few Oregon state workforce organizations or development programs valuable to their workforce needs. Of respondents who were at least aware of the organization/program, the three with the highest % of somewhat or very valuable responses were ~86% Oregon Employment Department Workforce and Economic Research Division/QualityInfo.org (~86%), Local Workforce Development Boards (70%), and WorkSource Oregon/iMatchSkills online system (~58%).

Next, about 47% of heavy and tractor-trailer truck driver employers reported reskilling and upskilling as a reason for experiencing a labor shortage, exceeding the total survey population by about 14% points. While most of the specific challenges within reskilling and upskilling are similarly experienced between this group of employers and the total survey population, balancing the program's needs with those of current business operations and measuring the organization's supply and demand of skills on an ongoing basis were selected more often, each by 57% of heavy and tractor-trailer truck driver employers.

Partner Perspectives

Despite relatively modest growth in recent years, Oregon workforce partners shared that the state is experiencing a shortage of heavy and tractor-trailer truck drivers. This qualitative finding aligns with the business survey results, where about 44% of heavy and tractor-trailer truck driver employers reported experiencing a minimal shortage, 28% reported a moderate shortage, and 17% reported a severe shortage. This shortage of truck drivers has a negative impact on the states and the Pacific Northwest's industrial and consumer supply chains. The heavy and tractor-trailer truck driver shortage in Oregon is also pervasive across the U.S., largely driven by negative perceptions of the occupation. Truck driving is often thought of as a time-intensive occupation with increased exposure to the health problems related to the sedentary nature of the work, as well as skin cancer from sun exposure.

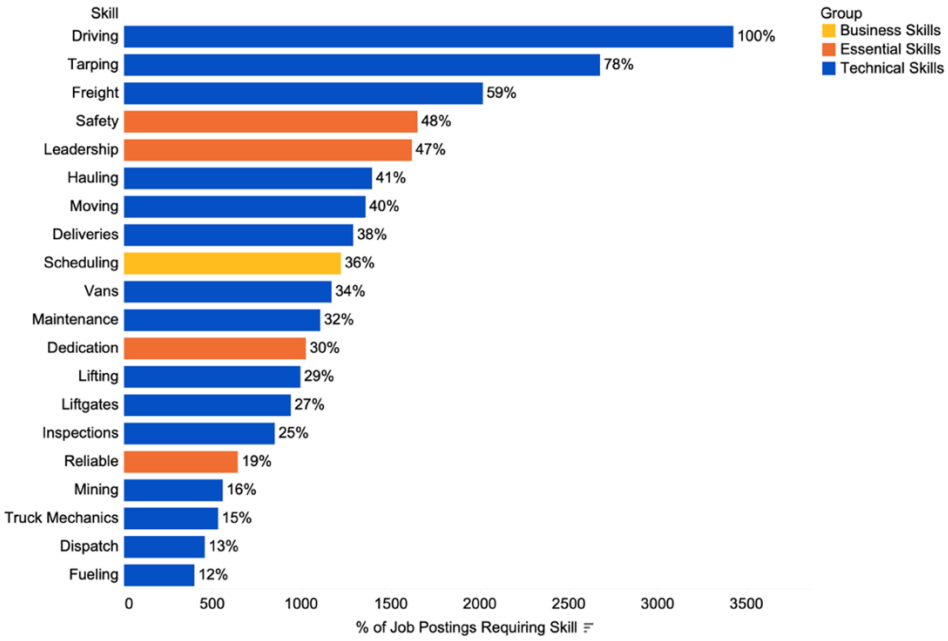
Many community colleges and other private training institutions offer CDL training to help fill the state's heavy and tractor-trailer truck driver shortage and have worked with the state and regional workforce partners to improve supply. The Oregon Legislature, to motivate interest in the truck-driving industry, has invested over $600,000 in the Oregon Truck Driver Loan Program. This program provides loans of up to $3,000 to help new drivers cover some of the cost of training and certification (Oregon Trucking Association). Additionally, there is a transportation-sector partnership in Eastern Oregon that improves alignment between industry and educators and training providers. Despite these programs and partnerships, state workforce partners believe more action may be needed to incentivize Oregonians to take on heavy and tractor-trailer truck driving roles.

Skills Analysis

As in the case of childcare workers, truck drivers need chiefly technical skills. Beyond the requirement for commercial driver's licenses, these technical skills are limited in kind. The few management skills required are associated with scheduling. While driving is an almost ubiquitous skill required in most postings for truck drivers, it does not rank as the number one top skill. This suggests that the role demands a more nuanced skill set beyond basic driving abilities. Skills such as tarping, inspections, and maintenance are highlighted as top skills. This emphasis on caring for the truck and its cargo underscores the importance of attention to detail in this profession. Figure 43 groups these skills, with technical skills comprising all but five of them. Among technical skills, tarping and freight handling are prominently featured, with specific mention of skills such as hauling, moving, and lifting, which emphasize the substantial weight of materials involved. Despite being distinct skills, deliveries and scheduling are highly ranked, indicating that timeliness is as highly valued as the physical act of moving items.

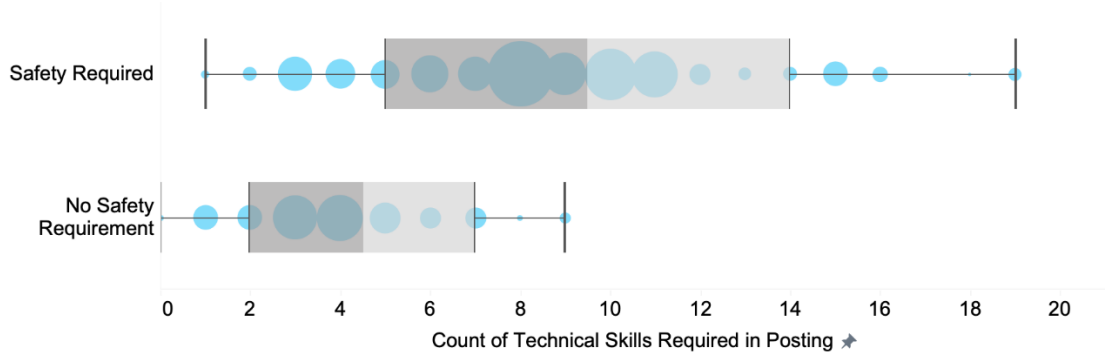
An additional consideration involves examining the relative variances among similar terms to identify the skills that should be emphasized when highlighting qualifications (see Figure 43). That the freight skill is substantially higher than hauling, moving, and lifting seems to point to a general knowledge of the most efficient way to move something being more important than just the physical aspects of moving freight.

Figure 43: Top skills required for heavy and tractor-trailer truck drivers with skill group indicated by bar color. Source: National Labor Exchange.



Safety is classified as an employability skill; Figure 44 illustrates that when safety is a job requirement, at least five additional technical skills are typically needed in the posting. Unlike job postings in other occupations where these skill categories may be more distinct, truck driving often involves solo work or collaboration with a small team of dispatchers or coordinators. This necessitates a broader skill set with considerable overlap.

Figure 44: Share of heavy and tractor-trailer truck drivers job postings requiring safety. Source: National Labor Exchange.



Career Pathways Analysis

There are a variety of options and pathways to advance careers that depend on various factors. In the career pathways analysis, we estimated career advancement using three Oregon-specific measurable factors: competencies, skills transferability compatibility index and degree and credential requirements. For these pathways, most of the stepstool, mid-career, and experienced job titles are above a 75 in the compatibility index. Many of the knowledge, skills, and abilities competencies that were considered to adjudicate relevant pathways have importance levels of 70 or higher. Throughout the career pathways, each next step job title is a career advancement with less hands-on positions as well as an increase in salary.

While there are various paths that individuals can take to advance their careers within heavy tractor-trailer and truck drivers, we focused on five main paths. Many of the entry-level roles require main knowledge competencies of production and processing, mathematics, and English language. Required skills are coordination, operation and control, and operation monitoring. Required abilities are multi-limb coordination, control precision, depth perception, and reaction time. However, many of the more advanced careers in the pathways require different sets of knowledge, skills, and abilities competencies. Required knowledge skills are mechanical, administration and management, design, and mathematics. Required skills are reading comprehension, monitoring, critical thinking, and active listening. Required abilities are category flexibility, written and oral comprehension and expression, and deductive reasoning.

The first pathway is heavy and tractor-trailer truck driver to first-line supervisor of mechanics, installers, and repairers. Individuals can start as heavy and tractor-trailer truck drivers with minimal barriers to entry. After a few years of experience in that position, truck drivers can advance to locomotive engineers. With a few years of experience as an engineer, they can continue to advance their careers and become first-line supervisors of mechanics, installers, and repairers.

Another pathway is for industrial truck and tractor operators to become mechanical engineering technologists and technicians. Industrial truck and tractor operating jobs are more accessible with little to no barriers to entry. After a few years of experiences, industrial truck and tractor operators can decide to become automotive engineering technicians. At that point, there are two main paths that an individual can take. First, they can decide to become a mechanical engineering technologists and technician. Alternatively, if they are interested in obtaining a bachelor’s degree in management or a related field, they can become a biofuel/biodiesel technology and product development manager. It is important to note that while bachelor’s

degrees are the most common way to advance a career from automotive engineering technician to manager, it is possible to make that transition through relevant years of experience.

There are several pathways for light truck drivers. Light truck driving positions have little to no barrier to entry. From there, a light truck driver can become a crane and tower operator. Following years of experience in that role, they can advance to a first-line supervisor of material-moving machine and vehicle operators. Depending on relevant experience and competencies, individuals can potentially skip the crane and tower operators position and go straight into being first-line supervisors. From that position, first-line supervisors can become transportation, storage, and distribution managers, upon earning a bachelor's degree in management or a related field. However, it is possible for individuals to advance from supervisor to manager without a bachelor's degree if their work experience is relevant and robust.

DEI Analyses

SRI's assessment of target industry clusters and critical occupations examines implications on diversity, equity, and inclusion (DEI) by investigating four major topics related to equitable workforce development. First, SRI analyzed the impact of "credential bias" on underserved populations in Oregon. Often, individuals most negatively affected by credential bias are those with less traditional career pathways, people of color, and those often left out of the technology and innovation-based economy. Second, SRI applied an analysis of race and gender at each level of career progression to identify points in the trajectory where gaps in race and gender widen or are greater than expected. Third, SRI investigated barriers to job access for underserved populations, including lack of childcare services, transit, or workforce training programs (or programs aligned with critical occupations). Barriers were identified through partner engagement and the business survey.

Key Findings

- Despite requiring more education than some target occupations and industry clusters, pay for childcare workers is significantly lower than all other occupations and target industry clusters. This lends to significant pay inequities for women who dominate the childcare workforce.
- Non-White workers are overly concentrated in roles that require no formal education credential, lending to pay inequities for racially and ethnically diverse workers in Oregon.
- Within the health sciences industry cluster, gaps in race and gender tend to widen as careers progress.
- In the IT & Analytical Instruments cluster, racial and gender gaps decrease as careers progress.
- Lack of access to affordable housing, childcare, transportation, and education and training services are the most significant barriers to Oregonians from entering or advancing in the workforce.

Credential Bias

Credential bias is a phenomenon where people make judgments or decisions based on someone's educational or professional credentials rather than evaluating their specific skills. Credential bias has historically impacted underserved populations (women, racially and ethnically diverse populations), lending to inequitable pay and economic opportunity. Typically, it is expected that as education increases, wages will also increase. Interestingly, in Oregon, pay decreases by about $5,806.46 between jobs that require a high school diploma or equivalent and jobs that require some college but no degree. Otherwise, as typical entry-level education requirements increase, pay tends to increase (Figure 45).

Male and female participation by typical entry-level education requirements is inconsistent as education levels increase. Men are far more likely than women to participate in jobs that require a high school degree or less, as well as jobs that require doctoral or professional degrees. Women are more likely than men to participate in jobs that require some college with no degree or jobs that require a master's degree. Male and female diversity across other occupations that require other types of education are relatively even (Figure 46).

Figure 45: Typical entry-level education and average annual earnings in Oregon. Source: Lightcast.

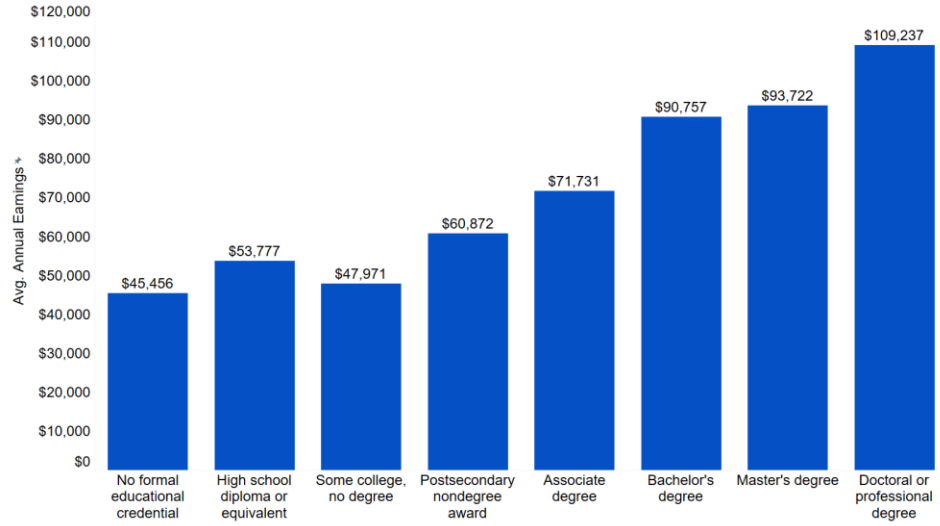
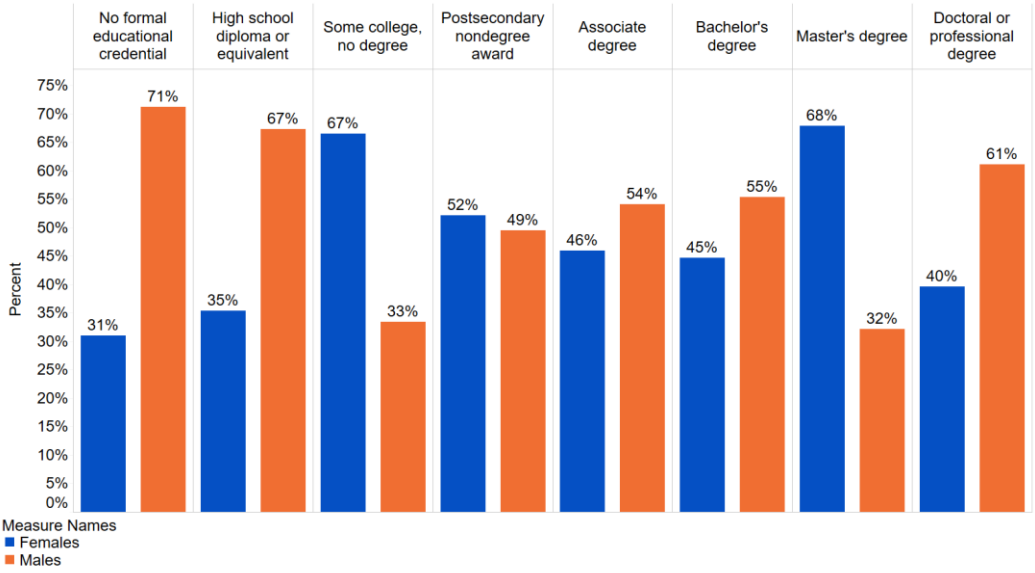


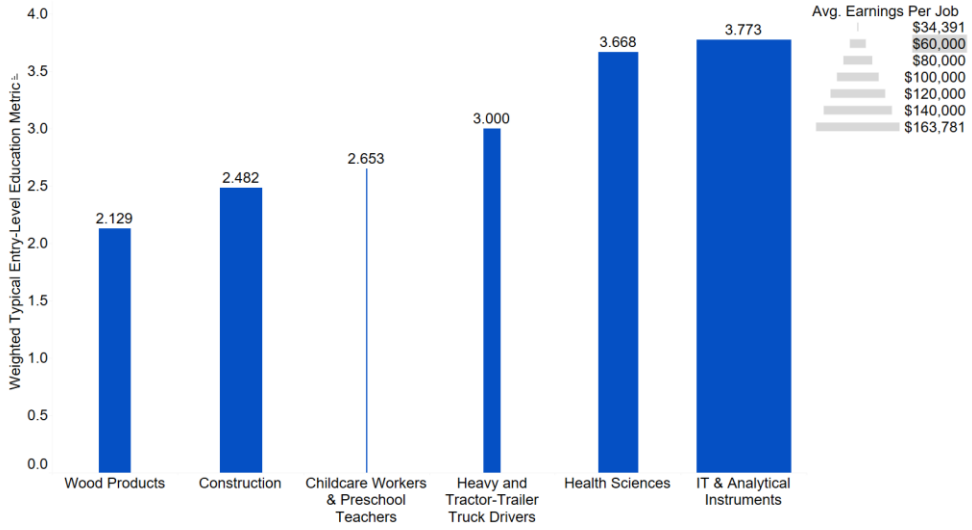
Figure 46: Job participation by typical entry-level education and gender. Source: Lightcast.



To assess typical entry-level education requirements across all the state's target industry clusters and occupations, a typical entry-level education metric was developed by using an education metric scale weighted by the share of employment each occupation has within its respective grouping[l]. Wood products manufacturing occupations often require less education than other industry clusters. Health sciences and IT & Analytical Instruments require the most education (Figure 47).

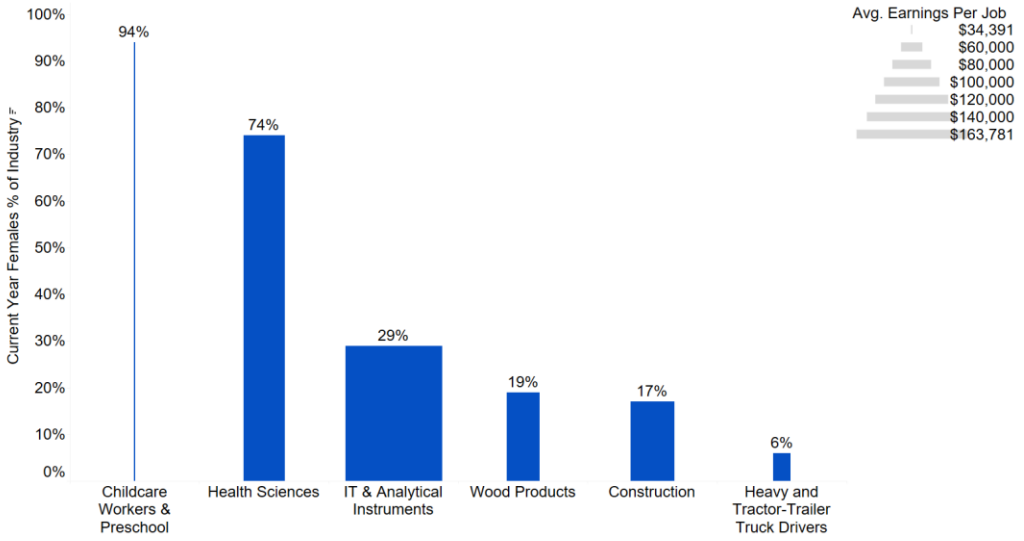
[l] 1 – no formal education credential; 2 – high school diploma; 3 – some college, no degree, or postsecondary nonaward; 4 – associate degree; 5 – bachelor's degree; 6 – master's degree; 7 – doctoral or professional degree

Figure 47: Target industries and occupations by typical entry-level education and average annual earnings (shown in bar width). Source: Lightcast.



It is of note that despite requiring more education, pay for childcare workers is significantly lower than all other occupations and target industry clusters. This lends to significant pay inequities for women, who represent 95% of childcare workers. Furthermore, women occupy 74% of health sciences roles in Oregon (Figure 48). However, health sciences roles have average annual earnings of $89,141, which is less than construction roles that tend to require far less education. Unfortunately, these trends indicate gender disparities in hiring for certain roles, and pursuing greater education levels may not result in greater pay for women.

Figure 48: Industry cluster and occupations by female participation and average annual earnings (shown in bar width). Source: Lightcast.



Racial and ethnic diversity participation trends by entry-level education requirements are more consistent than gender trends. Racially and ethnically diverse populations are more likely to participate in roles that require no formal educational credential compared to roles that require more education, and participation declines and stays relatively consistent for roles that require

at least a high school diploma or equivalent. The participation rate of non-White workers across all occupations is about 26%. The overconcentration of non-White groups in roles that require no formal education credential is concerning and contributing to economic disparities between White and non-White Oregonians.

Race & Gender Barriers in Pathways

The Oregon local health services cluster has become more racially and ethnically diverse between 2018 to 2023. The number of non-White individuals working in this industry cluster have increased by approximately 2 percentage points. However, 76.21% of this industry cluster are White individuals, which outpaces the state percentage of White individuals (74.1%). Women make up the largest percentage of this industry cluster; 69% are women and 31% are men. The gender percentages in this target industry cluster are much greater than the state percentage of women (50%). The gender proportions in the local health services cluster have not changed since 2018. The IT & Analytical Instruments cluster is the opposite of the local health services cluster; in 2023, 65.7% of the cluster was comprised of men while 41% was comprised of women. However, the IT & Analytical Instruments cluster is like the local health services cluster; 76% are White individuals, outpacing the state percentage of White individuals (71.1%).

Within the local health services cluster, gaps in race and gender tend to widen as careers progress. For example, in the career pathway of personal care aides to registered nurses, the proportion of non-White and male individuals decreases as the pathway advances. The percent of men in the occupation decreases by 8% from entry-level to mid-career (Figure 49). The percent of non-White individuals in the occupation decreases by 13% from entry-level to mid-career (Figure 50).

Figure 49: Gender diversity in the local health services cluster career pathway, 2023. Source: Lightcast.

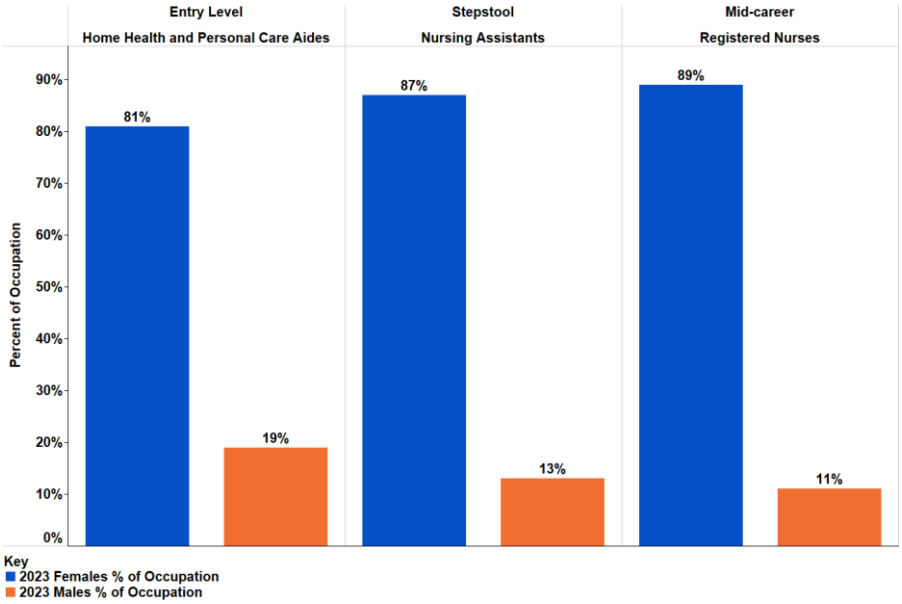
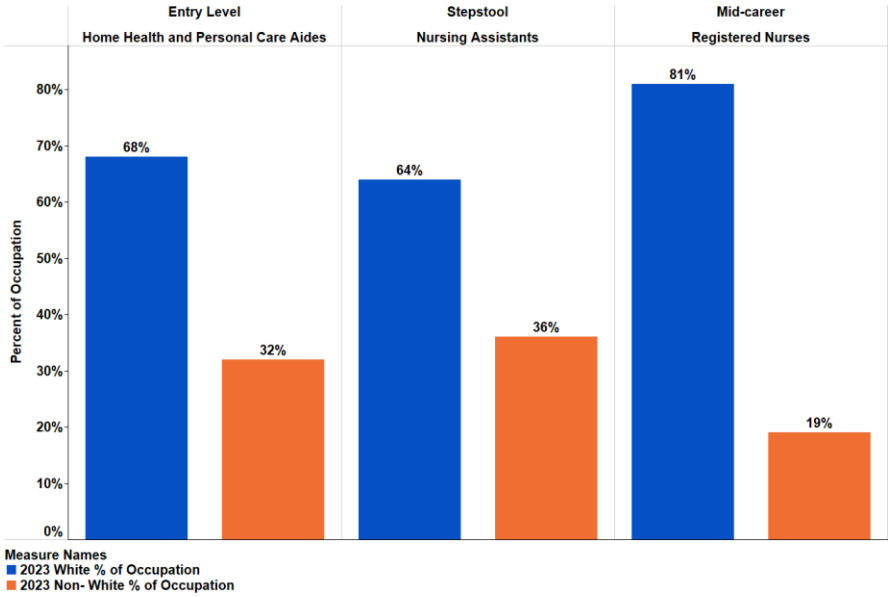


Figure 50: Racial diversity in the local health services cluster career pathway, 2023. Source: Lightcast.



In the IT and analytics cluster, as career pathways increase, racial and gender gaps decrease. For example, as the computer repairer to computer and information systems managers pathway goes from entry to experienced, the proportion of women and non-White individuals increases by 23% (Figure 51) and the percent of non-White individuals increases by 7% (Figure 52). There are no notable trends in gaps through career pathways for the wood products manufacturing and construction clusters.

Figure 51: Gender diversity of the IT & Analytical Instruments cluster pathway, 2023. Source: Lightcast.

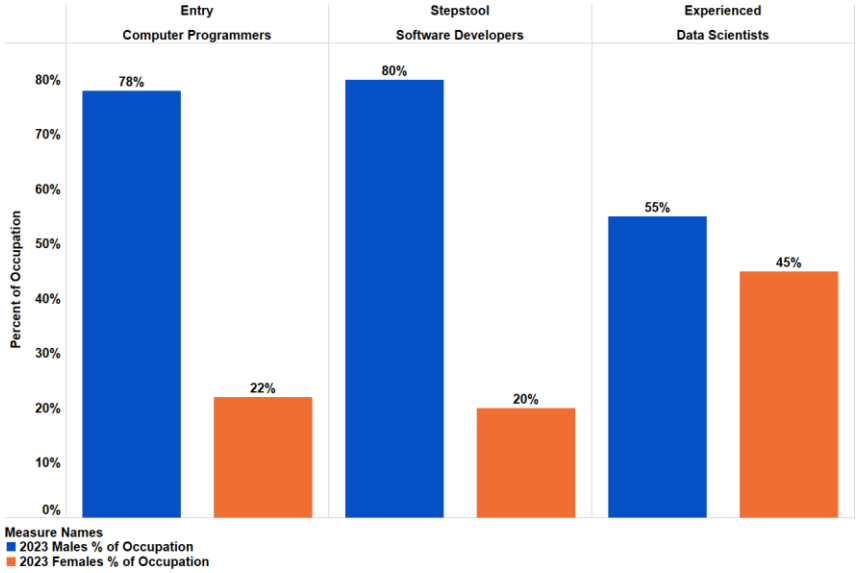
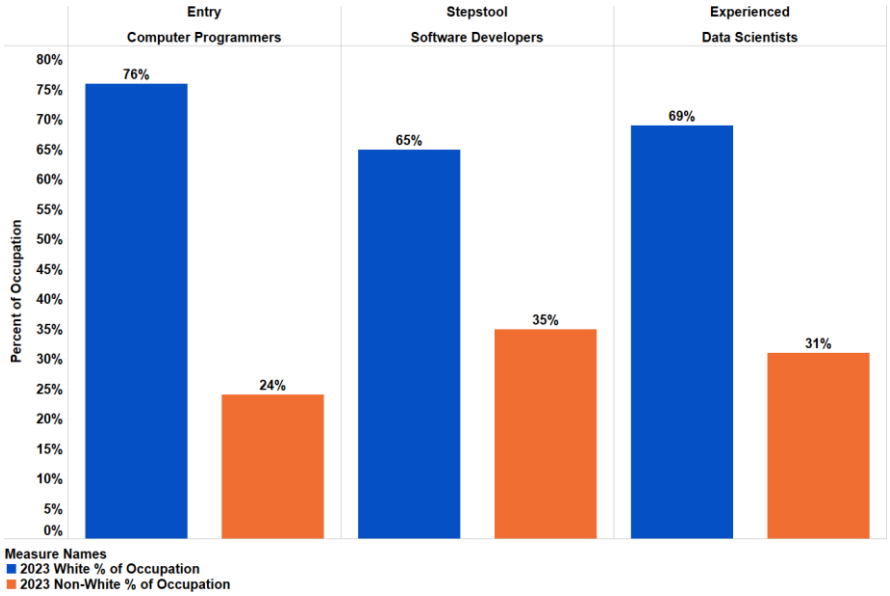


Figure 52: Racial diversity of the IT & Analytical Instruments cluster career pathway, 2023. Source: Lightcast.



Barriers

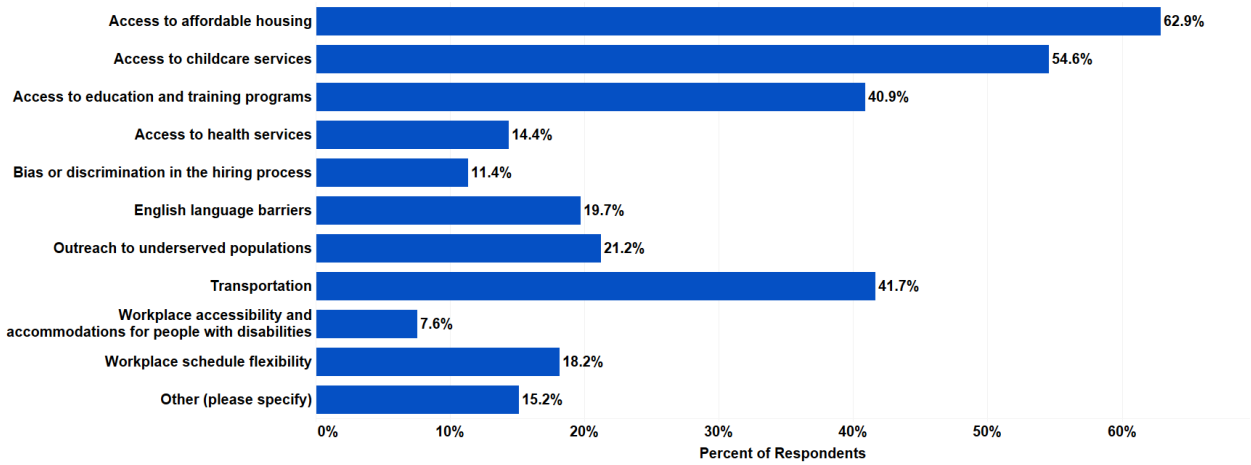
Barriers to employment in Oregon, broadly or within target industry clusters and occupations, arise from various interconnected factors. Workforce partners in Oregon have shared that housing costs, transportation limitations, childcare needs, healthcare inaccessibility, and food insecurity hinder employment prospects, particularly for marginalized communities. Geographic challenges exacerbate these issues in rural areas which also have a more significant share of Hispanic and Latinx workers. While the internet has eased some obstacles, broadband connectivity is inconsistent across the state. Workforce partners also shared that language barriers, particularly in Hispanic and Latinx communities, and insufficient support for people with disabilities pose significant challenges to employment access. Addressing these barriers requires systemic changes, including better connectivity between education systems and support for diverse family structures. Ultimately, achieving inclusive employment practices demands a holistic approach that recognizes and addresses the diverse needs of all individuals, regardless of race, gender, ability, or socioeconomic status.

Beyond barriers to labor market entry, many existing employees in low-wage occupations with transferable skills and experiences struggle to access pathways to higher-paying careers due to several key challenges. State workforce partners shared that accessing education or training programs poses significant hurdles, including scheduling conflicts, financial constraints, and geographic inaccessibility in rural communities. Furthermore, workforce partners believe that the risk-averse nature of the low-income population discourages investment in education without guaranteed access to a higher-paying job opportunity, necessitating reliable support systems and financial assistance. Addressing these barriers requires comprehensive policy and program reforms and support structures to empower individuals to pursue career pathways that allow them to transition from low-paying occupations into good jobs.

The survey of Oregon employers asked about primary barriers to job access for underserved populations in Oregon. Of this broad list of barriers, Figure 53 shows the most widespread — nearly 63% of respondents selected access to affordable housing, 55% identified access to childcare services, 42% recognized transportation, and 41% designated access to education and training programs as a primary barrier affecting job access for underserved populations in the state. For the 15% of "other" selections, respondents mentioned the overall affordability of the area, access to drug/mental health services, and a general willingness/interest to work. One respondent mentioned how Oregon's public transportation system is designed for non-time-critical activities and is localized. They explained that the lack of a high-speed rail system in the Willamette Valley limits the growth of Portland's semiconductor industry.

> ***"We really need help in our rural community with affordable housing and affordable childcare. We are very competitive in our pay and benefits, but employees still struggle to afford these needs."***
>
> ***-Survey respondent from Coquille, Oregon***

Figure 53: As an employer, what do you perceive as the primary barriers to job access for underserved populations in Oregon? Please select all that apply.



In the survey, several businesses documented existing initiatives, programs, or resources used to increase job access for underserved populations. Many existing efforts revolve around community building and outreach to underserved populations, including working with cultural and racial-based engineering and science organizations at Oregon's academic institutions, creating employee resource groups for coworkers to support one another, and developing a process to expand the talent pool of DEI and underserved workers. Five respondents mentioned specific efforts to support non-English primary speakers with solutions such as communications or training materials created in several languages or hired translators to assist with the hiring process. A handful of Oregon businesses mentioned various benefits that can ease the burden of transportation or childcare-related barriers through partnerships with childcare providers and transportation subsidies.

Emerging Talent

The following section leverages data shared with SRI from YouScience describing the aptitudes and interests of high school students from across the state of Oregon. We have combined this rich data source with employment projections for three of the upward mobility industries described earlier in this report to identify the anticipated demands of the future job market with the skills and preferences of current students. By examining the alignment—or mismatch—between the workforce of tomorrow and the opportunities that will be available, we will be able to gain insights about the talent pool. This information can be used to identify where Oregon's education and training programs can be adjusted to better prepare students for the realities of the future job landscape.

Key Findings

- There is significant interest and projected growth in the Architecture and Construction industry in Oregon; however, student's aptitude may not match the interest level.
- Computers & Technology jobs in Northeast Oregon have projected growth over the next decade, and students have a high-level of aptitude for those roles.
- Health Sciences industry anticipates growth, and students are well-equipped to take on those roles after graduation based on aptitude scores.

Health Sciences

Lastly, Figure 54 shows the aptitude to interest ratio for the Health Science industry. Here, we see a higher aptitude count over interest primarily in the Northern suburban or exurban counties and down the coast, especially in Washington county.

Figure 54: Aptitude/Interest Ratio - Health Sciences

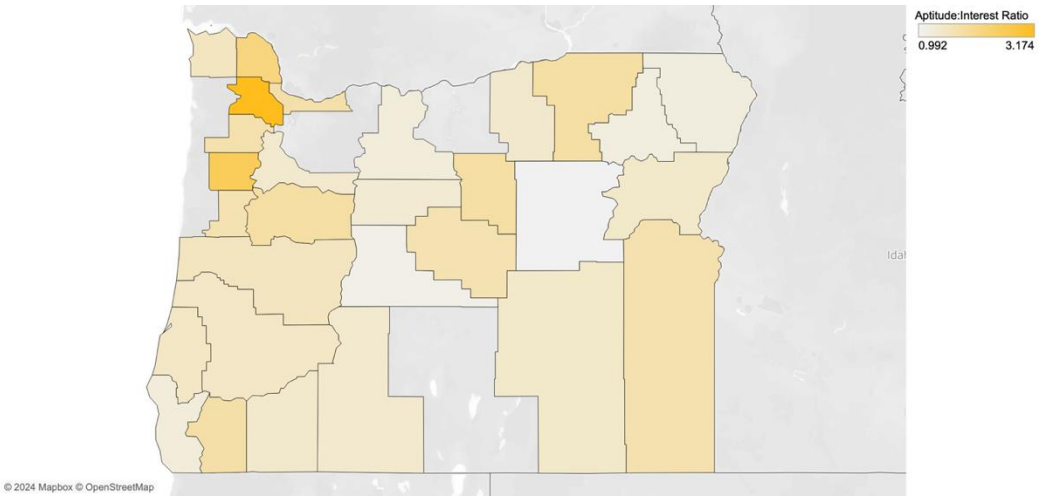
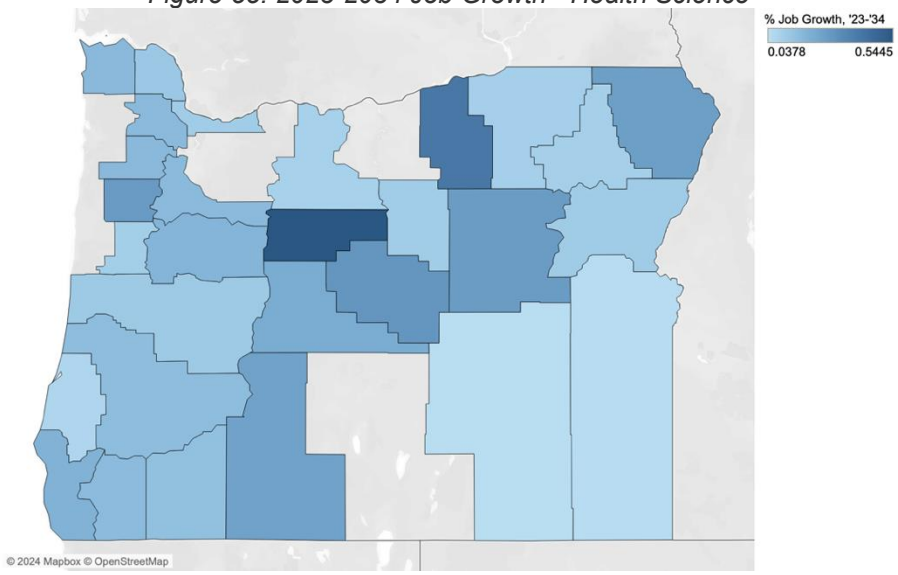


Figure 55 shows that the Health Science industry cluster is projected to grow in every county over the next 10 years. The projected growth patterns align with the areas of the state where the population is already older, such as in the coast and the middle of the state. For the Health Science cluster, however, jobs are projected to be plentiful statewide, increasing the importance

of identifying the large number of students with an aptitude for Health Science and encouraging career choices in this cluster.

Figure 55: 2023-2034 Job Growth - Health Science



Computer & Technology

Figure 56 examines the Computers & Technology cluster, which has overlap with the IT & Analytical Instruments cluster discussed earlier in the report. For this cluster, the ratio map has a different pattern than can be observed in the Architecture & Construction industry. Here, there is a higher number of students whose scores indicate a high aptitude for this industry cluster. There is significant clustering in the northeast of the state, as well as in Benton County. Overall, this shows that there are students in rural areas that would be well suited for this work, but their expressed interests do not align with this high level of aptitude, possibly due to lack of exposure to the industry cluster or perceptions of the cluster that may be different in rural areas.

Figure 56: Aptitude/Interest Ratio - Computers & IT

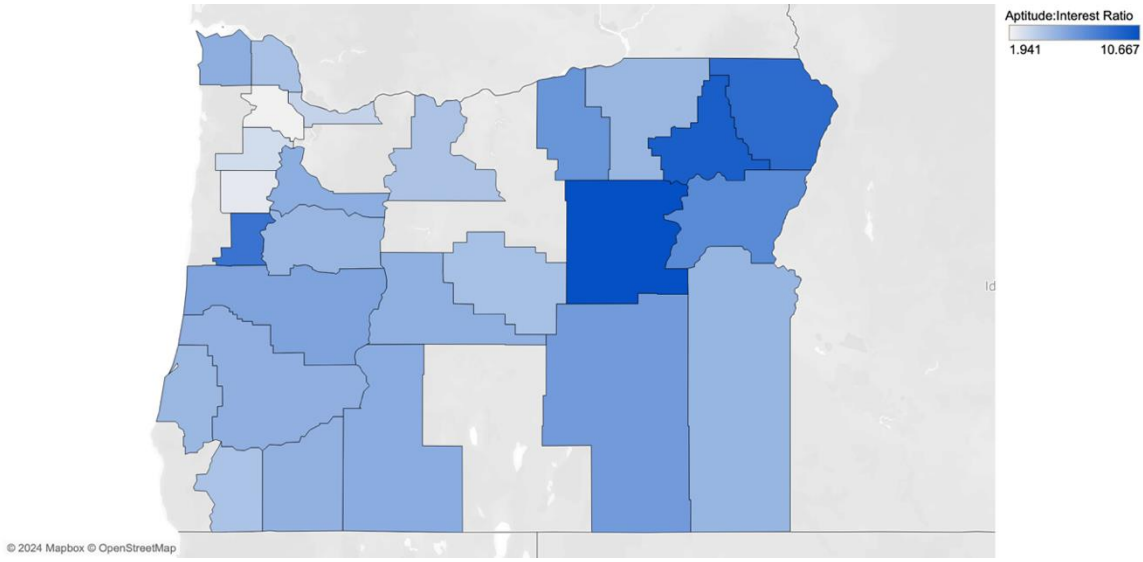
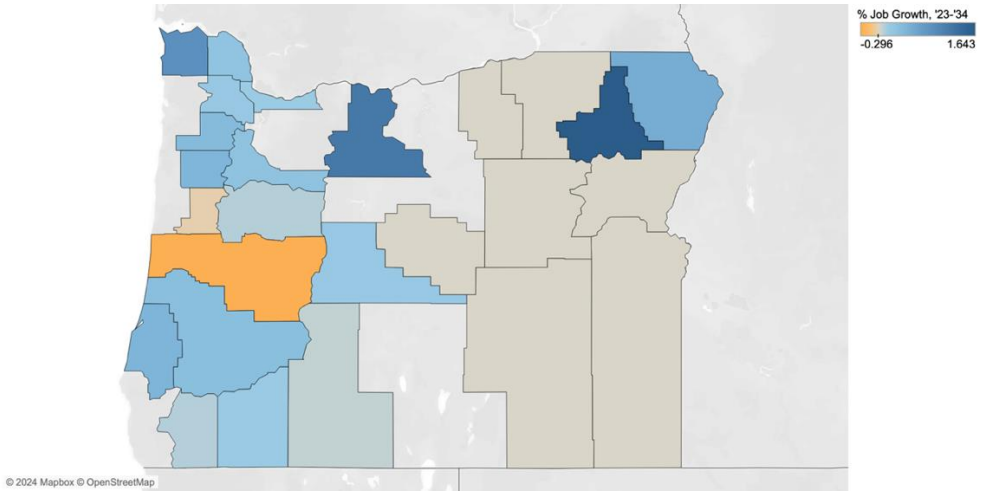


Figure 57 shows the projected growth in jobs in the Computers & Technology industry cluster between 2023 and 2034 and highlights that the projected future job growth largely takes place outside of the largest metropolitan areas of Oregon, particularly in the coastal counties. While most of the eastern part of the state is not currently projected to see growth, the projections do show opportunities in Union and Wallowa counties for nearby students with high aptitude.

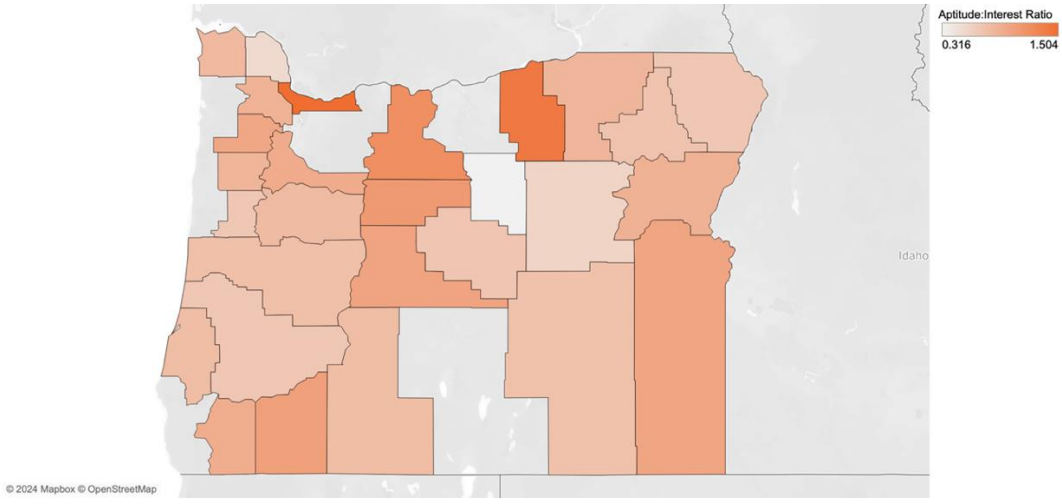
Figure 57: 2023-2034 Job Growth - Computers & Technology



Architecture and Construction

Figure 58 shows a map that compares the ratio[II] of student aptitudes for the Architecture and Construction industry cluster to student interest in the cluster, which overlaps the Construction industry studied in detail earlier in the report. The map below shows that the highest ratio is concentrated around Central Oregon, especially Multnomah and Morrow counties.

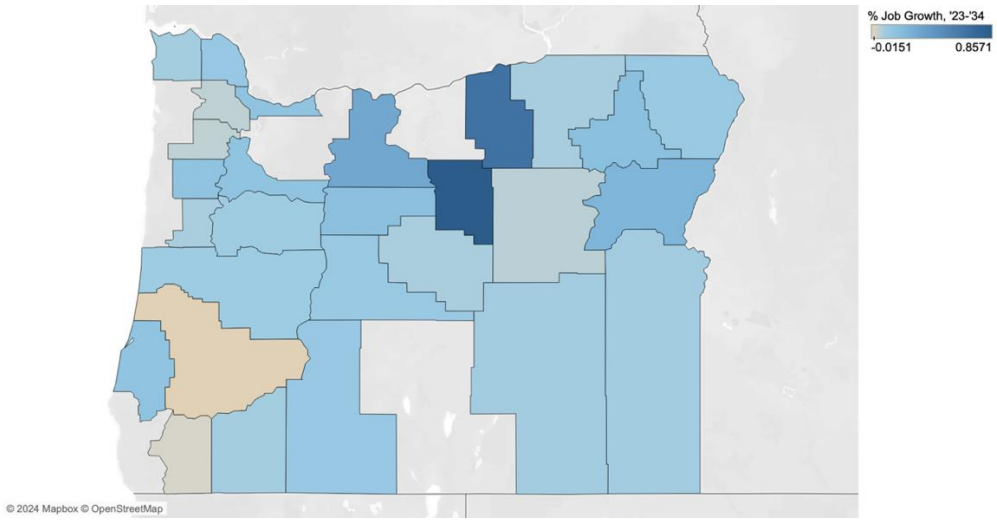
Figure 58: Aptitude/Interest Ratio - Architecture & Construction



[II] This ratio is the count of those who have an aptitude for the industry in a county divided by the share who said they were interested. For example, if 150 respondents had scores indicating the industry cluster was a good fit for them, but only 100 students expressed an interest in that industry cluster, the ratio would be 150 / 100 = 1.5. Ratio values under 1 indicate that interest in the cluster is higher than aptitude scores would indicate.

Figure 59 shows the percentage change in jobs expected over the next decade. Counties that are shaded with darker blues indicate more jobs in the Architecture and Construction industry cluster are projected there. Counties shaded with orange have a projected contraction for the industry cluster. Combining these this figure with Figure 58 shows that students with an interest in the industry cluster who currently live in the center of the state represent a prime opportunity for education on nearby future job opportunities. At the same time, students expressing an interest in Grant County may be better served by a wider review of opportunities in the industry cluster than are available to them nearby to avoid discouragement from the cluster overall.

Figure 59: 2023-2034 Job Growth - Architecture & Construction

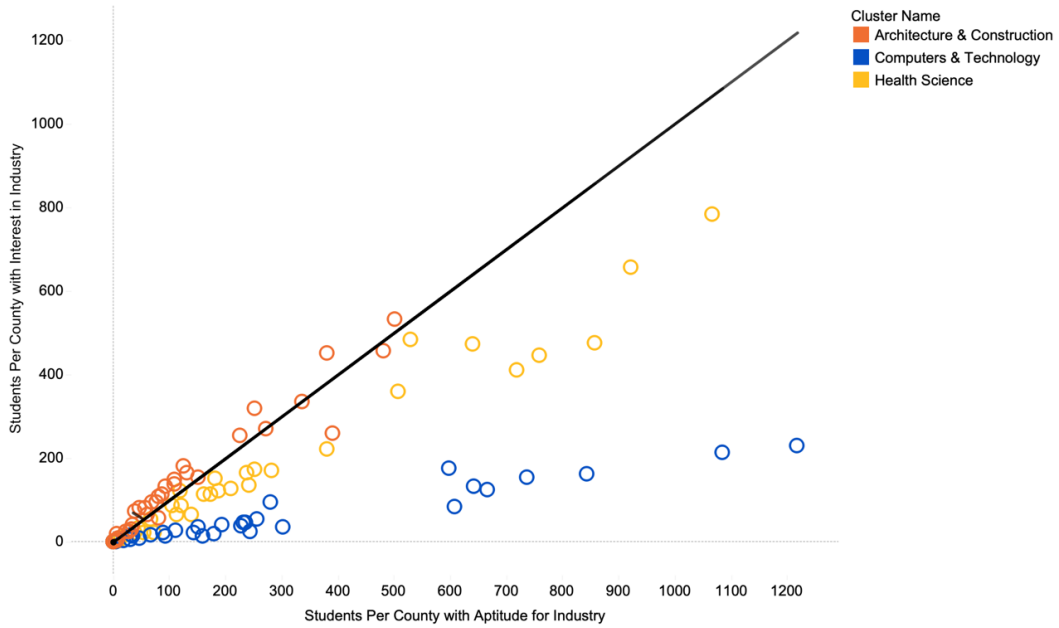


Interest vs. Aptitude

The next series of charts plots the counts of students with identified aptitudes and interest against each other for these highlighted industry clusters, allowing the identification of outlier counties. In Figure 60, the circles represent values for industry cluster aptitude and interest counts within a county. The circle colors represent the industry clusters and there is a black reference line that serves as a marker of a 1:1 ratio between aptitude and interest. Points that fall below the reference line represent counties where there are a greater number of students showing an aptitude for the industry cluster, but not reporting an equally high level of interest in the clyster. These charts are valuable because they can provide a snapshot view of current student interest levels.

The figure shows that the Architecture & Construction industry cluster largely lines up along the reference line, indicating generally equal levels of interest and aptitude across counties. The yellow points, representing the Health Science industry cluster, show a slightly more lagging gap, which increases in larger counties. The points representing the Computers & Technology cluster, though, are substantially below the reference line. This indicates high numbers of students across the state with scores indicating a high aptitude for the industry cluster, but greater misalignment in interest than in the other two clusters is explored in depth in this section.

Figure 60: Interest vs. Aptitude Count By County



The next three visuals plot the aptitude and interest scores data one industry at a time. In addition, the points are colored by job growth like the maps above. Counties that are also outliers are highlighted for analysis. Figure 61 shows the county-level data specifically for the Health Science industry cluster. Because this industry cluster is projected to see large growth in every county statewide, accompanying growth in interest among emerging talent in needed across the state. While all the counties fall above the 1:1 ratio for interest without significant deviation, in terms of raw numbers, the larger counties will need higher total numbers of students indicating that they are interested in working in this industry. Deschutes county is one of the only counties to rise above the trend line, and so may be an area to look to for possible methods for success in engaging young future talent in Health Science.

Figure 61: Interest vs. Aptitude Count for Health Science

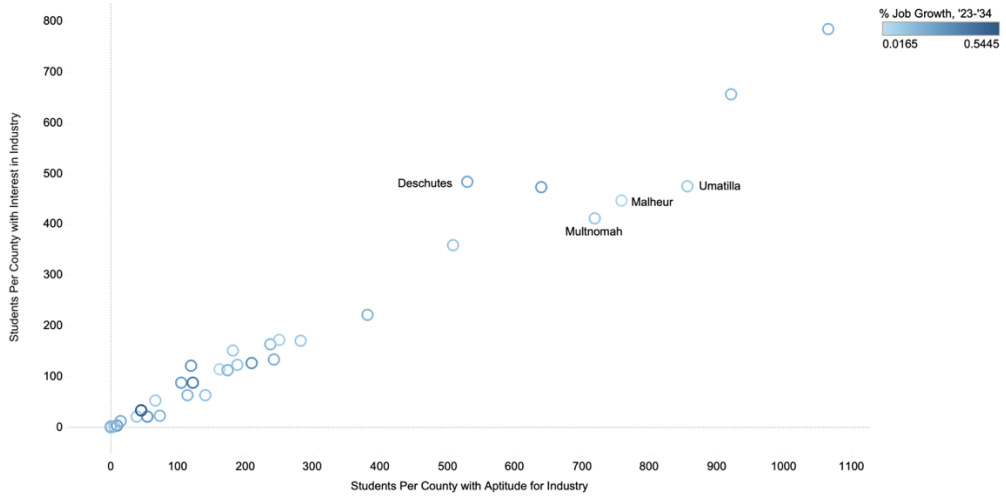


Figure 62 shows this ratio data specifically for the Computers & Technology industry cluster. Here, Multnomah and Yamhill stand out as positive outliers, where the number of students who

show aptitude are also showing notable levels of interest. There are several mid-sized points, though, where interest is low. For example, in Union County, the industry is expected to grow meaningfully but student interest may not keep up with projected jobs growth. Other counties like Benton, Wallowa, and Grant have similarly high aptitude scores, but more limited accompanying interest in the industry cluster.

Figure 62: Interest vs. Aptitude Count For Computers & IT

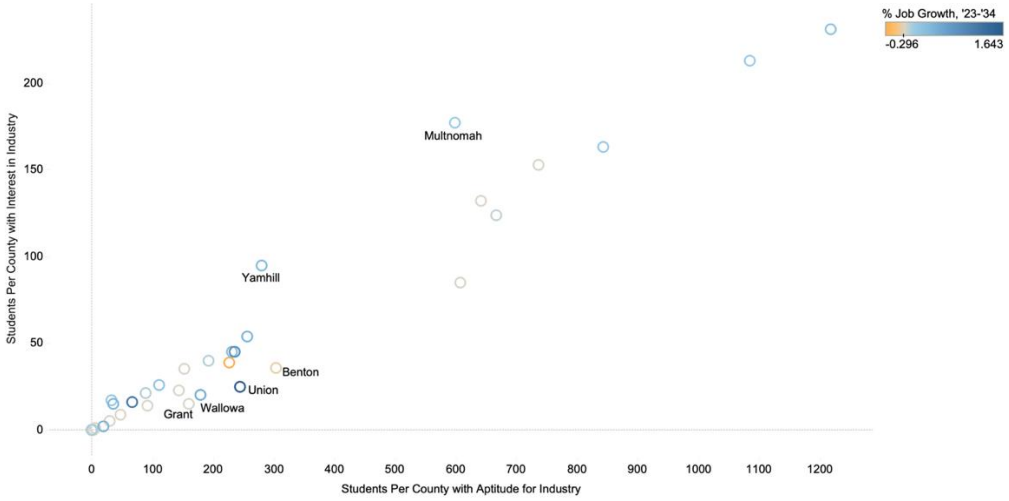
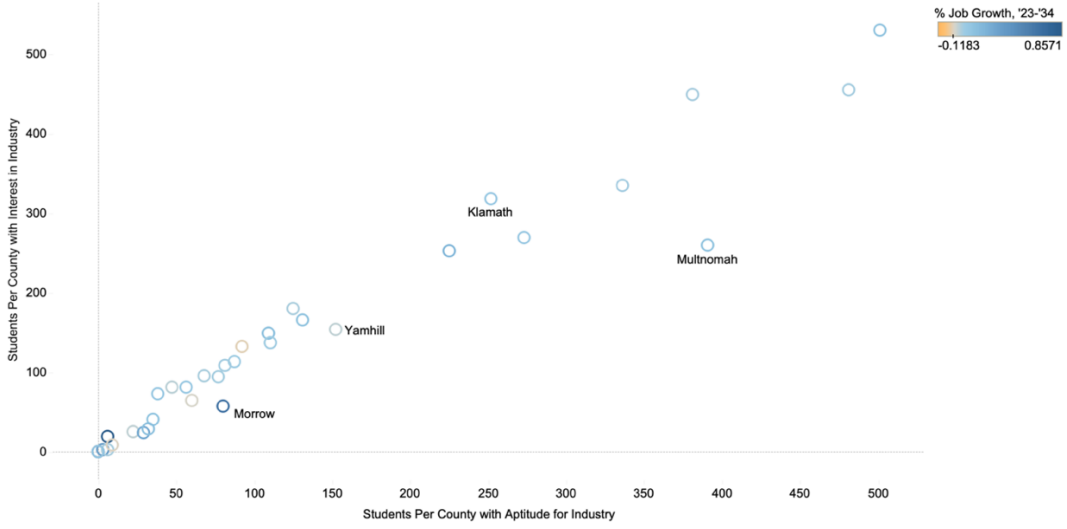


Figure 63 shows the data specifically for the Architecture and Construction industry cluster. This industry cluster had the most counties on or very close to the ideal 1:1 ratio. There are relatively few positive outliers except Klamath county, indicating that students have higher interest than aptitude. Instead, there are more negative outliers, indicating that students do not express as much interest in the industry cluster as is suggested by their aptitude scores. For Multnomah and Yamhill counties, the student interest gap is present, but of less concern because neither county is expected to see a large growth in the Architecture & Construction industry cluster within the next 10 years. Students in Morrow County, by contrast, express interest is both far below the best fit line, and the industry is expected to surge soon, potentially creating a gap.

Figure 63: Interest vs. Aptitude Count For Architecture & Construction



SWOT Analysis

SRI conducted an analysis of Oregon's strategic position to foster the growth and development of career pathways. This analysis included an assessment of strengths, weaknesses, opportunities, and threats (SWOT) shown in Table 1 below. Strengths refer to characteristics of Oregon's workforce and economy that impart a competitive advantage. Weaknesses refer to characteristics that put the state at a competitive disadvantage. Opportunities are external elements that Oregon could leverage to further its labor objectives, while threats refer to external factors that could hinder Oregon's efforts to achieve its objectives. The section concludes with insights from Oregon employers on key elements the state's workforce and training ecosystem.

Table 1: Summary SWOT of Oregon's workforce and training ecosystem.

STRENGTHS	WEAKNESSES
• Future Ready Oregon is a significant funding package that increases workforce investment in the health science, IT & Analytical Instruments, wood products manufacturing, and construction target industries. • Large network of workforce, education, and training partners to serve Oregonians and support target industries. • Oregon is a national hub for semiconductor and chip production. • Employer and industry-centered training programs have had success upskilling employees and supporting career pathways. • The state's diverse recreational opportunities are appealing for many prime-age workers.	• Lack of a central state workforce authority lends to competing and misaligned initiatives amongst workforce development, education, and training providers. • Licensure processes in Oregon's health sciences industry is unusually burdensome compared to other states, disincentivizing people to pursue those credentials. • Oregon's K-12 system is not aligned with other workforce systems in the state to meet the needs of the state's target industries. • Rural workers have less access to workforce development, training opportunities, and support services than their urban counterparts. • Lack of access to affordable childcare. • Lack of access to affordable housing.
OPPORTUNITIES	**THREATS**
• More consistent workforce program data collection across regions will improve transparency and investment monitoring. • Growth of high-wage occupations in the IT & Analytical Instruments cluster and construction industry. • Key collaborations and partnerships could form the foundation for better aligned state and local workforce strategic vision, plans, and activities. • There are existing industry-higher education training partnerships that can be scaled and adapted to other occupations and employers. • Several K-12 CTE programs exist that can be better positioned to support direct career pathways in target industries and occupations after high school graduation.	• Employers prioritize specific degree and credential rather than competencies for hiring. • Oregon has a worker shortage, driven by an aging population and population loss since the pandemic, that limits the state's ability to "grow their own" talent. • Across the nation, low wages for childcare workers do not match the high demand for those roles. • Oregon's aging population will further increase demand and strain on the state's healthcare system. • Environmental challenges related to climate change like wildfires will directly and indirectly impact target industries negatively and impede the state's ability to attract talent. • There is a possibility of a steepening skills gap among future Oregon-native workers since recent and soon-to-be high school graduates suffered from learning loss through the pandemic, which was worse in Oregon than the national average.

Strengths

Future Ready Oregon is a significant funding package that increases workforce investment in the health science, IT & Analytical Instruments, wood products manufacturing, and construction target industries.

Oregon's commitment to enhancing workforce opportunities in its target industries is evident through its recent investment, Future Ready Oregon. This comprehensive program entails a substantial $200 million funding package aimed at equipping Oregonians with the education and training needed for high-paying jobs. Future Ready Oregon allocates funds strategically to bolster various sectors vital jobs to the state's economy. For example, $95 million of the funding to was channeled to the HECC to administer Workforce Ready Grants. These grants facilitate the development of innovative education and training programs within the healthcare, manufacturing, and technology industry sectors. Future Ready Oregon has fostered collaboration and innovation within these industries by establishing industry consortia with the assistance of $1 million in HECC funding. In addition, the initiative has allocated $20 million to the state's Bureau of Labor and Industries (BOLI). This funding supports implementation of healthcare and manufacturing apprenticeships and the creation of pre-apprenticeship training programs across the healthcare, manufacturing, and construction fields. Future Ready Oregon also focuses on equity, by identifying historically underserved communities, including people of color, women, disabled individuals, veterans, LGBTQ+ individuals, and tribal communities, as priority populations for funding (Haluapo, et. al, 2023).

There is a large network of workforce, education, and training partners to serve Oregonians and support target industries.

Within Oregon, there is a significant network of workforce, education, and training institutions operating at various levels, all dedicated to meeting the state's workforce needs, particularly within its target industries. At the state level, key agencies such as HECC, BOLI, and the Oregon Department of Education (ODE) play pivotal roles in managing funding, overseeing program development, and shaping curricula. In addition to these state-level partners, regional and local partners like Regional Solutions, CTE coordinators, advisory boards, STEM hubs, and Local Workforce Investment Boards work closely with the state's 17 public community colleges and seven public universities. Together, they promote alignment and partnership between industry partners and educational and training providers. These local and regional partners actively contribute to curriculum development, facilitate equipment procurement, engage with communities, and undertake various activities to bolster workforce outcomes in their communities. Several of these workforce institutions and partners are already doing significant work to support the state's target industries. For example, K-12 and community college CTE programs across the state offer specialized opportunities for fields such as health science, IT & Analytical Instruments, construction, and wood products manufacturing (through manufacturing programs).

Oregon is a national hub for semiconductor and chip production.

Oregon's semiconductor manufacturing sector has grown rapidly, primarily due to the state's evolution into a national hub for semiconductor and chip manufacturing. Semiconductor manufacturing[III] is highly concentrated in Oregon, with an LQ more than 11 times greater than the national average, and it grew by 24% from 2017 to 2022.[IV] Key players in this sector include

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[III] There are two NAICS industries related to semiconductor manufacturing. Those are Semiconductor and Related Device Manufacturing (334413) and Semiconductor Machinery Manufacturing (333242).

[IV] Location quotient or LQ is an analytical statistic that measures a region's industrial specialization relative to a larger geographic unit (usually the nation).

renowned companies like Intel, Hewlett-Packard, Jireh Semiconductor, and Microchip Technology, all of which have contributed to Oregon's emergence as a major player in the IT & Analytical Instruments cluster for decades. To leverage its position as a national semiconductor and chip leader, Oregon has planned investments totaling $240 million to 15 semiconductor companies through the Oregon CHIPS Fund (VanderHart, 2023). In addition to high levels of state investment into the semiconductor and chip manufacturing industries, workforce and educational institutions across the state have developed programs that are highly responsive to the needs of these companies. For example, Intel, the state's largest chip and semiconductor manufacturer, has partnered with Portland PCC to develop the PCC Intel Quick Start Program. This program provides an intensive, two-week training curriculum designed to equip workers with the necessary skills for employment at Intel. Quick Start has a strong equity focus, as participants are recruited through social service agencies and workforce programs that primarily serve populations underrepresented in the technology sector, including women and racial and ethnic minorities (Rogoway, 2023).

Employer and industry-centered training programs have had success upskilling employees and supporting career pathways.

Oregon's industry and education sectors recognize that successful training programs hinge on robust employer participation and collaboration. The PCC Intel Quick Start Program exemplifies this synergy as a successful training program co-created by educational and industry partners. In its inaugural year, this program has already graduated about 200 individuals, underscoring its effectiveness in bridging the skills gap and meeting industry demand (Rogoway, 2023). Additionally, some K-12 CTE programs have achieved success when partnering with local businesses and educational institutions. A prime example is the collaboration between Roseburg Public Schools, Umpqua Community College (UCC), and Oregon Health & Science University to establish a licensed nurse practitioner program. This innovative initiative enrolled 25 11th grade students at UCC and Oregon Health & Sciences University while they simultaneously completed their high school education. Through partnerships with local healthcare institutions, Roseburg Public Schools ensured that program graduates had secured pathways to immediate career opportunities, thereby facilitating seamless transitions into the workforce. In addition to partner-developed programs, industry partners shared that manufacturing (including wood products manufacturing) employers who had the capacity and resources to develop internal training programs for incumbent and new workers have had successful outcomes. In addition to these training programs, several employers in the survey have highlighted the success of the Multiple Engineering Cooperative Program (MECOP), a pathways program driven by industry-academia partnerships that connects students from Oregon State University, Oregon Institute of Technology, Portland State University, and the University of Portland with leading manufacturing, electronics, and construction companies for paid internships.

The state's diverse recreational opportunities are appealing for many prime-age workers.

Industry and workforce partners express confidence in Oregon's ability to retain college graduates and attract prime-age workers to the area, attributing this advantage to the state's diverse recreational offerings. Oregon's mixed landscape of beaches, lakes, rivers, mountains, forests, parks, and trails allows for a variety of outdoor activities like skiing at Mt. Hood, hiking the Oregon Coast Trail, and rock climbing in Smith Rock State Park. Camping, kayaking, and mountain biking are widely enjoyed across the state. Outdoor recreation skyrocketed during the pandemic and continues to be incredibly popular with Gen-Z and Millennial workers (Bruton, 2023). Oregon also has several recreational opportunities that lend to the state's strong sense of culture. The city of Portland alone is home to the Oregon Zoo, Oregon Museum of Science and Industry, Portland Art Museum, Portland Rose Festival, and Oregon Brewers Festival. As

Oregon deals with its worker shortage, the state can leverage its various natural and cultural recreation opportunities to support worker attraction and retention efforts.

Weaknesses

Lack of a central state workforce authority lends to competing and misaligned initiatives amongst workforce development, education, and training providers.

A prevalent viewpoint among workforce and industry partners engaged for this report is the perceived absence of alignment within Oregon's workforce system, both at state and regional levels, due to the lack of a central or primary workforce authority. This misalignment has resulted in fragmented, competing, duplicative, and siloed workforce development efforts. One workforce partner shared that this lack of alignment has hampered opportunities for engagement and collaboration, especially between local workforce investment boards and higher education institutions. Additionally, state leaders in CTE shared concerns with SRI regarding the insufficient engagement between high schools and community colleges, leading to localized competition among CTE programs that may vary in curriculum and training equipment. Industry leaders also highlighted challenges arising from inconsistent regional structures, which present obstacles for business leaders to navigate workforce development support. Establishing a central workforce authority would provide the necessary coordination and alignment to streamline efforts, prioritize goals, and ensure consistency in workforce development strategies, ultimately leading to more effective and cohesive support for education, training, and industry needs.

Licensure processes in Oregon's health sciences industry is unusually burdensome compared with other states, disincentivizing people to pursue those credentials.

Workforce partners indicated the considerable challenges individuals face in obtaining licenses in the state's health sciences industry, which, they argue, serves as a deterrent to pursuing critical roles such as nursing. Regulatory processes were cited as a significant obstacle. Oregon workforce partners shared that within the licensing process it can take up to a month to onboard practitioners into health insurance systems to work in the state. Comparatively, in the neighboring state of Washington, it only takes about three to five business days for the state of Washington to review and approve licenses (Peyton, 2023). This gap in licensing timelines poses a significant barrier to entry for individuals seeking employment in Oregon's healthcare sector. Additionally, for rural workers, accessing training opportunities to obtain healthcare licensure presents additional challenges due to issues related to physical proximity. Once healthcare licenses are obtained, there strict rules about scope of practice. This means workers cannot get on the job training on skills outside their scope which are needed to advance. For example, CNAs cannot get on-the-job training for activities that are only in the scope of practice for RNs. While the regulations guiding what healthcare workers are allowed to have strong positive effects for patient safety, these rigid boundaries put more pressure on the educational pathways to train students in new skills than in other industries.

Oregon's K-12 system is not aligned with other workforce systems in the state to meet the needs of the state's target industries.

K-12 leaders and industry partners engaged for this assessment reported feeling disjointed from each other compared to other partners in state's workforce development ecosystem. Industry partners believe that Oregon's K-12 system is siloed from the rest of the workforce system. While some school districts and businesses have had success partnering on career engagement. CTE curriculum development, and post-high school career opportunities, several K-12 leaders indicated that they struggle to build meaningful employer or industry partnerships that would help address these challenges. Several factors contribute to this lack of partnership. First, K-12 leaders who have attempted to engage industry leaders believe there is a lack of

interest from businesses to collaborate. Second, rural school districts face challenges due to their distance from anchor employers, limiting opportunities for partnership development. In addition, K-12 education perpetually lags industry with respects to innovation and new technology adoption. Oregon updates its K-12 science standards on a seven-year cycle, which, industry partners consider too lengthy given the rapid pace of technological advancement in target industries and clusters such as health science and IT & Analytical Instruments.

Rural workers have less access to workforce development, training opportunities, and support services than their urban counterparts.

State workforce partners noted the disparities that rural and frontier communities in Oregon faced when accessing workforce support services. These challenges are primarily related to proximity issues. For example, Eastern Oregon's population is very spread out across a rather large geography, and many communities have limited transportation infrastructure to get from place to place. Workforce development partners shared that, in some instances, residents in rural communities must travel more than two hours to access training and professional development opportunities. Additionally, the accessibility of childcare and healthcare services significantly impacts individuals' ability to secure employment. Rural areas in the state have been described as childcare and healthcare deserts by workforce partners in the state, raising serious concerns about rural workers in Oregon and their ability to easily access career opportunities. Access to workforce development, training opportunities, and support services can be critical to fill labor shortages. In the employer survey, businesses located in rural regions reported a greater composition of "severe shortage" and far less of "no labor shortage" responses than urban respondents.

Lack of access to affordable childcare.

Childcare availability is a highly prevalent and substantial problem Oregon, creating potential negative implications for workforce participation. Discussions with workforce development partners in the state revealed a consensus that the lack of accessible childcare particularly burdens low-income and rural families. Most respondents from the employer survey agreed, with 55% identifying access to childcare services as a primary barrier to job access for underserved populations in Oregon.

The limited availability of childcare facilities throughout the state applies upward pressure on market prices, making it difficult for low-income families to afford quality care. Oregon's lack of affordable childcare is, in part, driven by the exceedingly low pay for childcare workers that does not meet the demand for these services.[V] This lack of access not only affects individual families, but also has ramifications on the overall economic landscape. When families face challenges in accessing childcare and healthcare services, it can deter parents from seeking or returning to employment. With limited options, families may have to travel longer distances from their work or home to find affordable childcare, adding to their time and transportation expenses. Moreover, those with non-traditional work hours may struggle to find suitable care that aligns with their schedules.

Lack of access to affordable housing.

Housing supply and affordability are challenging Oregon workers in urban, suburban, and rural areas across the state and have led to a pervasive homelessness problem. Oregon had the highest percentage of unsheltered, unaccompanied youth experiencing homelessness in

[V] Average wages for childcare workers in Oregon are $30,669.53. Wage estimates from Lightcast are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors).

January 2023 at nearly 70%, increasing by about one-third from the previous year. In 2023, 65% of Oregon's 20,000 residents experiencing homelessness were unsheltered — the second highest rate in the nation (Gebel & Hurt, 2024).

In the survey, Oregon employers rated access to affordable housing as the most prevalent barrier to job access for underserved populations in the state. Also, workforce partners shared that rising housing costs in certain communities, like in Portland, have increased due to the influx of highly skilled and well-paid workers in the state's IT & Analytical Instruments industry. Like a lack of affordable childcare, a shortage in affordable housing can discourage workers from staying in or relocating to the state for employment opportunities, having a trickle-down effect on workers in target industries with lower wages than those in the IT & Analytical Instruments industry like health sciences and wood products manufacturing.

Opportunities

More consistent workforce program data collection across regions will improve transparency and investment monitoring.

Many local workforce investment boards, K-12 school districts, community colleges, and universities collect data on their programs and participants. Despite the success of several statewide workforce partners with data collection, not all workforce organizations have the capacity to support meaningful data collection for training programs. Additionally, workforce partners shared that data sharing between workforce partners is often a significant challenge and they expressed a desire to standardize and centralize it at the state-level to make it more accessible. By implementing standardized frameworks and leveraging technology for data management, regions can enhance transparency and accessibility to vital workforce insights. This harmonization of data practices not only facilitates informed decision-making but also fosters collaboration among partners by providing a common understanding of workforce dynamics and needs. Ultimately, by seizing this opportunity to refine data collection and transparency efforts, regions can unlock the full potential of their workforce programs, driving sustainable economic growth and prosperity.

Growth of high-wage occupations in the IT & Analytical Instruments cluster and construction industry.

In Oregon, the state's target industries of IT & Analytical Instruments and construction have grown significantly in recent years and are expected to experience continued growth. The growth in IT & Analytical Instruments can be partially attributed by state investments such as Future Ready Oregon and the Oregon CHIPS Fund. For construction, industry growth can be tied to efforts and investments the state has made to address its housing crisis. Additionally, growth in the construction industry is also partially related to business and infrastructure development projects to support the state's IT & Analytical Instruments industry. Using part of the state's $240 million investment for its semiconductor industry, companies like Amazon and Intel are planning to construct large new data centers, providing jobs to both the IT & Analytical Instruments cluster and construction industry (Rogoway, 2024). These industries offer well-paying job opportunities that have the potential to give workers higher levels of disposable income, which stimulates consumer spending and boosts demand for goods and services across various sectors. This increased demand, in turn, can spur further job creation and business expansion, creating a positive multiplier effect throughout the economy. Additionally, high-paying opportunities, like the ones in these industries, are attractive to workers and can be leveraged to support talent attraction and retention efforts.

Key collaborations and partnerships could form the foundation for better aligned state and local workforce strategic vision, plans, and activities.
Collaborations between Oregon's workforce partners have been leveraged to support successful education and workforce development activities. For example, K-12 CTE leaders have discussed that their partnerships with STEM hubs and workforce advisory boards have been exceptionally fruitful for curriculum development. Additionally, community college leaders shared that industry partnerships have been crucial to creating direct employment pathways into Oregon careers, like PCC's Intel Quick Start program. Despite several examples of strong partnerships, many workforce partners have expressed challenges building relationships with employers and other key workforce development partners, both regionally and at the state-level. When asked about programming or resources that would help hire and retain skilled workers, employers from the business survey, two emergent themes included support forming partnerships (~24% of responses) and strengthening the connectivity between workforce assets in the state (~16% of responses).

Oregon should pursue strategies that encourage greater collaboration between these entities. By forging alliances between government agencies, educational institutions, nonprofit organizations, and private sector entities, partners can pool resources, expertise, and insights to address the multifaceted challenges of workforce development. These partnerships enable the sharing of best practices, the identification of emerging trends, and the implementation of innovative solutions tailored to the unique needs of communities. Through collaborative efforts, states and localities can align their priorities, leverage collective strengths, and create comprehensive strategies that promote economic growth, cultivate a skilled workforce, and enhance opportunities for all individuals to thrive in the ever-evolving labor market.

Existing industry-higher education training partnerships that can be scaled and adapted to other occupations and employers.
Portland Community College's Intel Quick Start semiconductor program which provides an intensive two-week training to workers for in the semiconductor industry, including Intel and other businesses in Oregon's IT & Analytical Instruments industry, can serve as a blueprint for similar initiatives. Quick Start organizers are focused on recruiting through social service agencies and workforce programs that primarily serve populations underrepresented in the technology sector, including women and racial and ethnic minorities. As a result of these intentional efforts, Quick Start has had two all-female cohorts. When speaking with workforce partners throughout the state, many of them expressed excitement over the model for rapid workforce development and training that PCC's Intel Quick Start program provides. The key to the success of Quick Start has been the partnership between PCC and Intel to co-develop curriculum, provide access to workplace technologies, and guaranteed job opportunities for program graduates. While replicating PCC and Intel's two-week training model may pose challenges, particularly in industries like health sciences with specific credential and degree requirements, these industries can still adopt Quick Start's strategy to support pathways for underserved communities.

Several K-12 CTE programs exist that can be better positioned to support direct career pathways in target industries and occupations after high school graduation.
Oregon workforce partners expressed great optimism over the potential that K-12 CTE programs support career pathways into the state's target industries and occupations. CTE programs are critical for workforce development efforts to provide less time- and cost-intensive training opportunities for residents. Throughout the state, there already exists a plethora of K-12 CTE programs that specifically focus on the state's target industries. School districts like Roseburg have had great success in developing direct post-high school career pathways for

students who participate in CTE. Roseburg's success has been driven by partnerships with industry to co-develop curriculum and provide equipment and space for hands-on training to occur. Despite the availability of CTE programs, many state CTE leaders indicated that gaps in their programming exist and could be made better through efforts that support industry-aligned curriculum development, equipment acquisition, and staff/educator training and support. Investments and initiatives, as well as industry and post-secondary partnerships that address the gaps faced by K-12 CTE programs are crucial to maximizing the potential of these programs.

Threats

Employers prioritize specific degree and credential rather than competencies for hiring.
Education leaders shared that developing new accredited degree programs is a time-intensive process that can take over 18 months. The time it takes to develop new accredited programs is too slow for the rapidly shifting needs of industry. To circumvent this timing challenge, many educational institutions are making small shifts in their curriculum rather than develop new degree programs. Shifting post-secondary curriculum for existing degree programs is faster than developing new accredited degree programs; however, employers have bias for specific degrees. By prioritizing credentials over competencies, employers risk overlooking highly skilled candidates who may lack formal degrees but possess valuable practical experience or alternative credentials. This bias can disproportionately impact individuals from marginalized communities, including those with limited access to higher education due to socioeconomic factors or systemic discrimination. Moreover, it can contribute to the devaluation of non-traditional educational pathways, such as vocational training or apprenticeships, which are critical for addressing skill shortages in various industries.

Oregon has a worker shortage, driven by an aging population and population loss since the pandemic, that limits the state's ability to "grow their own" talent.
As highlighted in the economic and workforce landscape, since the pandemic, Oregon is experiencing population loss along with an aging workforce. As the population ages and retirements continue to rise, a shrinking labor force creates significant challenges for businesses seeking to fill vacancies and sustain growth. Furthermore, the population decline resulting from the pandemic further exacerbates this issue, as fewer individuals are available to enter the workforce or replace retiring workers. While Oregon's college graduate migration patterns are comparable to national averages, Oregon is seeing about half of recent graduates relocate to other states, making it even more challenging for retirees to be replaced by incoming workers. This shortage not only hampers businesses' ability to meet demand but also impedes the state's capacity to "grow its own" talent through local recruitment and development initiatives. Without a sufficient pool of skilled workers, Oregon risks stagnating economic growth, reduced productivity, and diminished competitiveness compared to neighboring regions. Moreover, the shortage may exacerbate existing disparities in employment opportunities, particularly for vulnerable populations such as youth, minorities, and low-income individuals. Addressing this threat requires comprehensive strategies that prioritize workforce development, immigration policies that attract skilled workers, and initiatives to retain talent within the state. Failure to address these challenges could have long-term consequences for Oregon's economy and its residents' quality of life.

Across the nation, low wages for childcare workers do not match the high demand for those roles.
Oregon suffers from an extremely stark lack of affordable childcare. This weakness is exacerbated by the fact that wages for childcare workers in Oregon, and nationally, are incredibly depressed and do not match the demand for childcare services. The discrepancy

between the essential nature of childcare services and the inadequate compensation for those providing them not only undermines the quality of care but also jeopardizes the stability of Oregon's childcare infrastructure. Insufficient wages have contributed to high turnover rates and labor loss among childcare workers in the state through the pandemic. Between 2017 and 2022, Oregon's childcare workforce declined by nearly 40%. Moreover, the inability of childcare workers to earn livable wages exacerbates economic inequality, as many individuals in this profession struggle to make ends meet and contribute to the broader state economy. Without adequate compensation and support for childcare workers, Oregon faces the risk of a continuing dwindling childcare workforce, decreased availability of services, and adverse impacts on child development and family well-being.

Oregon's aging population will further increase demand and strain on the state's healthcare system.

As noted in the economic and workforce landscape, Oregon's elderly population is increasing, while the state's youth population has declined over the past five years. As the number of elderly residents continues to rise, so too does the demand for healthcare services, including long-term care, chronic disease management, and specialized geriatric care. This increased demand places considerable pressure on healthcare facilities, providers, and support services, leading to potential shortages in skilled healthcare workers, hospital beds, and medical supplies. Furthermore, state workforce partners shared that the state is already experiencing a significant shortage of healthcare workers. This shortage will be exacerbated by the state's declining pool of youth who will not be able to fill all the available and required healthcare jobs in the state. Without proactive measures to address these challenges, Oregon's healthcare system may struggle to meet the evolving needs of its aging population, resulting in disparities in access to care, compromised quality of services, and increased healthcare costs.

Environmental challenges related to climate change like wildfires will directly and indirectly impact target industries negatively and impede the state's ability to attract talent.

The state of Oregon faces significant threats from environmental challenges linked to climate change, like wildfires, flooding, and extreme storms, which have direct and indirect repercussions on target industries. The increasing frequency and severity of wildfires has the potential to disrupt wood product supply chains. Additionally, the state's IT & Analytical Instruments industry is dependent on a stable power supply. Wildfires can damage power distribution lines, leading to blackouts and brownouts. Furthermore, the resulting instability and uncertainty in these industries can deter potential talent from relocating to Oregon, as concerns about safety, air quality, and long-term viability may outweigh the benefits of employment opportunities. For example, Oregon's housing supply has already been impacted by climate-related events. In 2022, an increasing number of Oregonians had lost housing due to wildfires, flooding, heavy snowstorms, and tornadoes (Gebel & Hurt, 2024).

Possibility of a steepening skills gap among future Oregon-native workers since recent and soon-to-be high school graduates suffer from learning loss through the pandemic, which was worse in Oregon than the national average.

COVID-19 resulted in significant learning loss for students nationally; however, many states have demonstrated better progress than Oregon in recovering learning post-pandemic. Researchers found that the state's elementary and middle school students remain an average of about two-thirds of a year behind in reading compared to pre-pandemic levels and three-fourths of a year behind in math, more than two times the deficit faced by students nationwide (Kane et al., 2024). Oregon workforce partners expressed concerns that this learning loss not only impacts academic achievement but also hampers the development of critical skills and

competencies necessary for success in the workforce. As a result, incoming workers may lack the foundational knowledge and abilities required to meet the demands of evolving industries and occupations. This gap in skills could lead to decreased productivity, reduced innovation, and hindered economic growth across various sectors. Furthermore, testing from spring 2022 shows students who were already behind before the pandemic had the most learning loss (Los Angeles Times, 2022). The widening skills gap may exacerbate existing disparities in employment opportunities, particularly for marginalized communities already facing barriers to access education and training.

Employer Responses to Preliminary SWOT Findings

A complementary piece of the employer survey was soliciting feedback on the preliminary SWOT analysis through agreeability and ranking questions. Due to the timing of survey distribution and other partner engagement and quantitative research efforts, the survey could only evaluate preliminary SWOT items, further iterated in the primary SWOT section below. Figure 64 provides the distribution of agreeability rankings from 0 to 100 (strongly disagree to strongly agree) for two strengths (left side of the graphic) and two weaknesses (right side of the graphic). Starting with the top left, respondents generally agreed with the success of employer-led training programs, with an average score of 71 and a median score of 70.5. Below, respondents were generally more distributed than the employer-led training programs strength. However, in the aggregate, closer to neither agree nor disagree, providing an average score of 52 and a median score of 48 for Oregon's large network of assets as a strength. Moving to the top right, respondents slightly agreed with the weakness statement that Oregon's lack of a central workforce authority lends to competing and misaligned workforce development efforts, with an average score of 61 and a median score of 67. Finally, respondents generally agreed on a low level of engagement between employers and the K-12 talent pool as a weakness, resulting in an average agreeability score of 68 (second highest among strengths and weaknesses statements listed in the survey) and a median score of 64.

Figure 64: Please rate your agreeability with the following strengths and weaknesses on a scale of 0 to 100, from strongly disagree to strongly agree.

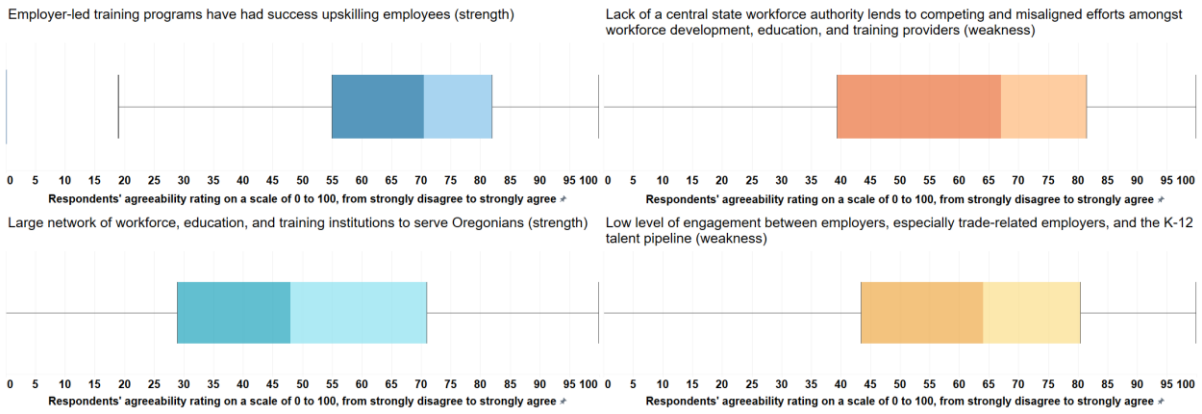


Figure 65 provides respondents' ranking of four critical opportunities for Oregon, including to centralize state workforce planning, coordinate local/regional workforce data collection efforts, identify new and scale existing industry-higher education training partnerships, and strengthen the talent pool by leveraging high-wage growth occupations in computer, information technology, and construction industries. Of these four opportunities, survey respondents rated them relatively evenly — all between the scores of 2 and 3 — with centralized workforce

planning and industry-higher education training partnerships being rated the highest priorities by a slim margin.

Figure 65: Please rank the following opportunities in order of priority, where 1 is the highest priority for Oregon's workforce environment

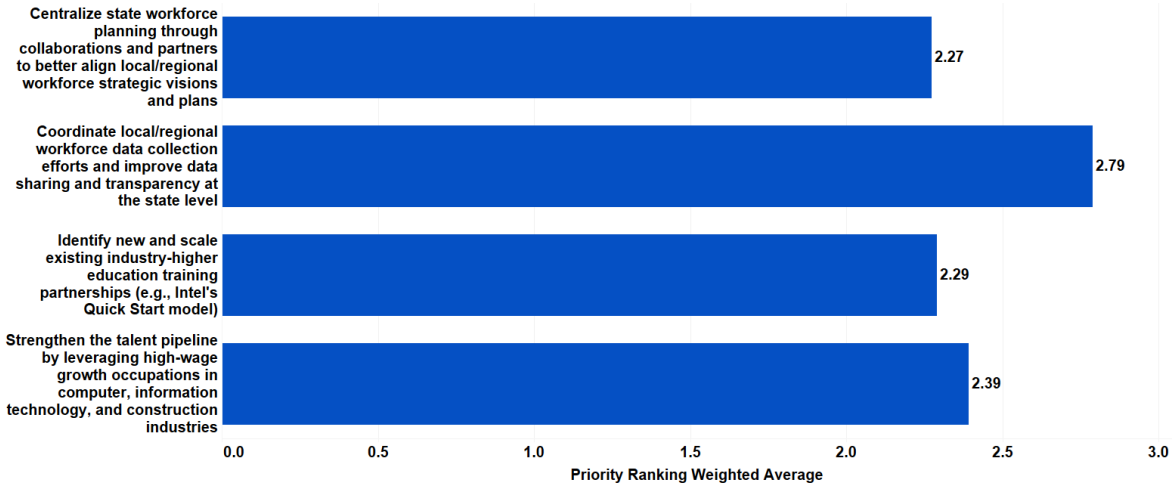
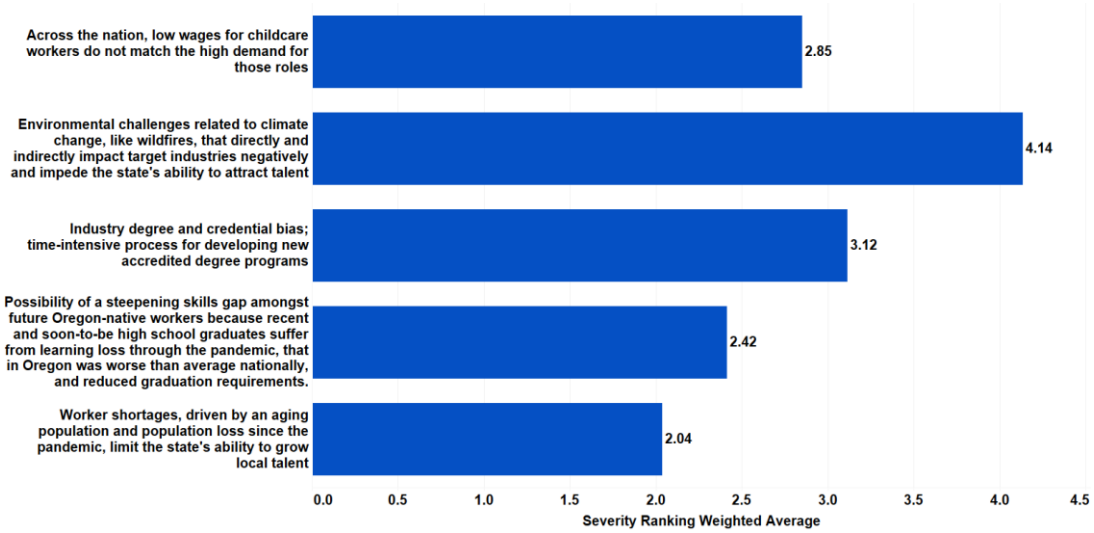


Figure 66 presents respondents' ranking of five identified threats to Oregon's workforce environment, including low wages for childcare workers, environmental challenges, industry degree and credential bias, steepening skills gaps, and worker shortages driven by an aging population and population loss. Of the five threats, respondents identified worker shortages, driven by an aging population and population loss since the pandemic, limiting the state's ability to grow local talent as the most severe threat, with a weighted average ranking of two out of five. Compared to the other threats, respondents ranked environmental challenges as the least severe by a meaningful margin.

Figure 66: Please rank the following threats in order of severity, where 1 is the most significant threat to Oregon's workforce environment.



Recommendations

Oregon has largely overcome cyclical labor market challenges resulting from the COVID-19 pandemic. Beyond recovery, the state has experienced significant growth in increasingly technology intensive industries that offer opportunities for upward mobility. The state is well-poised for long-term economic prosperity but faces headwinds that must be addressed. The recommendations presented support Oregon's workforce goals of ecosystem alignment, equitable prosperity for all Oregonians, and supporting individuals across the career pipeline.

Strategy 1: Align and Strengthen Oregon's Workforce Ecosystem—Oregon's workforce ecosystem includes several partners with various goals and needs. This strategy includes action items that bolster the alignment of these partners and improve the infrastructure of the workforce development ecosystem through key initiatives and collaboration.

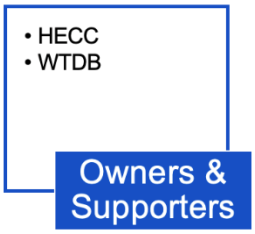
Strategy 2: Promote efforts that increase workforce development access and equity for all Oregonians—Workers across the culturally and geographically diverse state have regionally unique needs and challenges impacting their ability to further their education and career. This strategy includes action items that improve workforce development access and equity through thoughtful programs and investments.

Strategy 3: Support Oregon's target industries and occupations through attraction, retention, and life-long learning initiatives—As Oregon's economy continues its 21st century economic evolution, workforce needs are rapidly shifting, and the state is experiencing shortages in several key occupations. This strategy includes action items that support career pathways and transitions for learners and workers, as well as boost worker attraction and retention efforts for crucial industries and jobs.

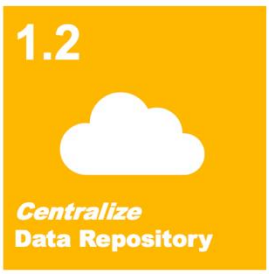
Action Items for Workforce Partners

Strategy 1: Align and Strengthen Oregon's Workforce Ecosystem.

Reinforce the WTDB as Oregon's centralized workforce authority that sets the vision, goals, and strategies for workforce development across the state and has the authority to hold multiple state, regional, and local level agencies accountable.



Several entities at the state, regional, and local levels support workforce development in Oregon; however, workforce partners throughout the state have described the workforce system as fragmented. To align Oregon's talent ecosystem, the WTDB should be reinforced as the state's centralized workforce authority. The WTDB is well-positioned as Oregon's centralized workforce authority that sets workforce vision, goals, and strategies throughout the state. The WTBD empowers Oregonians through increased education, training, and job opportunities. The board is mission-driven with a clear set of priorities following its 2023-2024 Strategic Plan. The WTBD is made up of leaders representing business, labor, local workforce development boards, community-based organizations, Oregon legislature, local government, and state agencies (WTBD, 2024). Sentiments from workforce and industry partners engaged through interviews, focus groups, and the survey support the concept of a centralized workforce authority in Oregon. With the proper authority and capacity, the state could reinforce the role of WTDB to help streamline efforts, prioritize goals, ensure consistency across workforce development strategies, and hold agencies and partners accountable. This increased authority would lead to more cohesive, effective and equitable support for education, training, and industry needs.



Develop and maintain a data repository for local and regional workforce partners to contribute collected program data and develop a statewide dashboard for sharing this information.

Data repositories are valuable tools for local and regional workforce partners to understand their workforce environments and improve decision-making. Oregon's workforce partners expressed a desire to centralize data collection and sharing at the state-level to enhance the accessibility of workforce data. Several local and regional workforce partners collect program and outcome data but may not have the capacity to analyze or externally report the data. Establishing a centralized data repository can help future workforce data efforts and improve transparency. Oregon's Employment Department (OED) can lead this effort, building off its Performance Reporting Information SysteM (PRISM) on the Quality Information site, which already collects and integrates job postings data, occupation profiles, some regional data, and other employment-related data.

The Colorado Talent Dashboard is another great example of how standardized data practices and reporting can support the information needs of workforce partners and workers. The

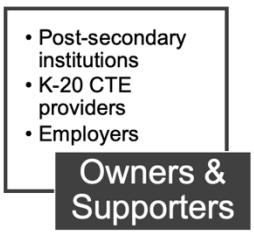
Colorado Workforce Development Council (CWDC), in partnership with other state and local agencies, publishes an annual report which explores issues related to the supply and demand of talent, and strategies for strengthening the state's talent pipeline. The report requires specific metrics be explored annually to support data tracking, and ultimately supporting the development of the Colorado Talent Dashboard website. The easy-to-navigate website hosts a series of dashboards related to supply and demand, including information on the workforce education pipeline, labor force participation, job trends, top jobs and careers, critical industries, skills and qualifications demanded, and population demographics. The website also provides links to additional dashboards and resources that have further data and information about the supply and demand of labor in Colorado (TalentFound, 2024).

Establish standardized frameworks and practices for data collection and reporting across workforce development programs.

In addition to a data repository and statewide dashboard for information sharing, Oregon should establish standardized frameworks and practices for data collection and reporting across workforce development programs. As described in the SWOT, many workforce partners do not have the capacity to support meaningful data collection for training programs. By implementing standardized frameworks and leveraging technology for data management, the state can reduce the burden data collection and reporting activities for regional partners.

Standardized metrics across workforce organizations will allow the state to better disaggregate data by geography, demographics, and other indicators. In addition standardized metrics, the framework should include best practices for data collection and provide information about how collected data will be used by the state. Some data-collection frameworks already exist in Oregon. For example, Oregon's 2020-2023 Workforce Innovation and Opportunity Act (WIOA) Combined State Plan describes data collection and reporting procedures for the WorkSource Oregon Management Information System, a statewide electronic information system used in one-stop centers. The guidance mandates extensive training to staff in one-stop centers and a common registration module all WorkSource Oregon customers must complete to receive services (WIOA, 2024). Oregon can also update existing data frameworks to include trauma-informed data collection practices. The International Republican Institute published a trauma-informed data collection framework that includes best practices like conducting a pre-collection trauma assessment and using inclusive, contextually appropriate language (Rumelt, 2023).

Promote greater engagement and collaboration between K-12, higher education, other local workforce development partners, and industry.

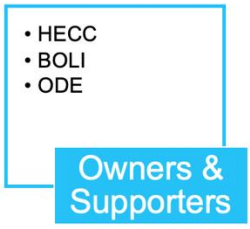


Greater engagement and collaboration between K-12, higher education, industry, and other local workforce development partners is an essential step to aligning the workforce system in the state. Meaningful connectivity is important regardless of the formality (e.g., Talent Submit, informal discussion of a new program), location (e.g., on-site, virtual), and format (e.g., standard meeting, information session, site visit, panel, workshop). There is an appetite for increased/improved engagement and collaboration among the workforce development ecosystem in the state. These needs range from improved engagement between high schools, community colleges, and CTE program offerings to better support offerings for business leaders navigating workforce development resources. Of survey respondents who completed the survey, 42% said they would be interested in participating in further discussions with other key industry partners related to Oregon's workforce landscape.

Working together and sharing information can lead to better decisions and problem-solving by aligning goals and strategies. The design and conduct of the Workforce and Talent Development Board is aligned with this action item and can be a driver for this type of activity in Oregon. The healthcare, manufacturing, and technology industry consortia established through Future Ready Oregon can operate as a medium for education, industry, and other workforce partners to engage and collaborate with each other. OED, HECC, and the Southern Oregon Education Service District, in partnership, run the Career Connected Learning (CCL) initiative, which includes resources and opportunities for educators, students, and industry that support collaboration and engagement (Southern Oregon Education Service District).

Performance Metrics: Number of new engagements between Oregon workforce partners, engagement outcomes (e.g., program innovation, data-sharing, curriculum co-development).

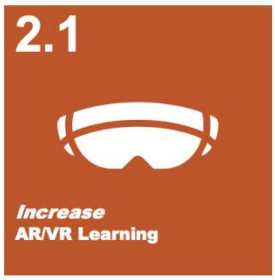
Provide training and resources for educators to stay updated on industry trends and technology.



In response to increasing technology integration into labor, students are relying on new technology-focused education. However, not all educators are fully equipped to teach students about computers, software, and other technological tools. Workforce partners expressed concerns over teachers' inability to train students on the latest industry technology, especially at the high-school level. For educators to offer students the technology learning experiences to succeed in future careers in Oregon's target industries, schools need to increase access to technology education and training for educators and training providers. By focusing funding on high-quality professional training to support the existing teaching workforce, rather than hiring new computer science teachers, Oregon can keep costs lower and scale more affordably. Some states have implemented similar strategies already. For example, in 2018, Indiana lawmakers passed a bill that required every Indiana school to offer computer science courses and created a grant program to help train teachers in computer science (Indiana Department of Education).

Performance Metrics: Educator proficiency in teaching new industry technologies and skills

Strategy 2: Promote efforts that increase workforce development access and equity for all Oregonians.



Explore augmented reality/virtual reality (AR/VR) learning models that would allow education and training institutions to bring in industry-experienced teachers to rural and underserved communities that struggle with access to equipment and educators.

- HECC
- ODE
- Post-secondary institutions
- K-12 CTE

Owners & Supporters

Severe proximity challenges and shortages of educators and trainers in rural and underserved regions suggest that HECC and ODE can invest in initiatives to improve role accessibility, such as AR/VR learning models. These would allow institutions to bring in industry-experienced teachers from other regions and to tap into a vast pool of industry-experienced teachers who may not be available locally. Traditionally, bringing in educators and trainers from out-of-state traditionally involves significant expenses, such as travel costs, accommodation, and relocation. AR/VR learning models significantly reduce these costs by operating remotely. In addition to these benefits that help address the shortage of educators and trainers, AR/VR technologies offer immersive and interactive learning experiences. Students can engage with realistic simulations, virtual environments, and 3D models, enhancing their understanding of complex concepts. For example, Nevada's Project SANDI offers virtual reality and 3D interactive training enhancements to provide short-term industry credentials in emerging industries such as healthcare, advanced manufacturing, information technology, and logistics (Project SANDI).

Performance Metrics: AR/VR programs launched; rural & underserved community enrollment

Educate employers on biases in hiring practices and promote inclusive recruitment and selection processes.

- BOLI
- Business Oregon
- Workforce Boards
- Employers

Owners & Supporters

Conversations with workforce partners and the DEI analyses revealed that there are significant gender and racial divides in target industries and key occupations that lead to inequitable economic and workforce outcomes for traditionally underserved communities. Educating employers on biases in hiring practices and promoting inclusive recruitment and selection processes can offer several benefits to employers in addition to underserved communities. A diverse workforce brings a variety of perspectives, experiences, and ideas to the table, fostering innovation and creativity. Educating employers on biases helps them understand and comply with anti-discrimination laws and regulations, reducing the risk of costly lawsuits and damage to the company's reputation. Companies that prioritize diversity and inclusion are often viewed more favorably by job seekers, customers, and investors. There are several inclusive hiring resources that Oregon can adapt and provide for employers in the state. For example, Harvard University's Inclusive Hiring Resources Guide provides recruiters and hiring managers with resources and tools to help mitigate biases in our hiring practices and create a more diverse and inclusive workforce (Harvard University Center for Workplace Development, 2022).

Performance Metrics: Number of employers participating in inclusive hiring and training

Expand financial assistance programs to help individuals cover training costs, tuition, and certification fees.

- Oregon Legislature
- Training & Certification Providers

Owners & Supporters

Oregon workforce partners cited education, training, and certification costs as a commonly shared barrier preventing many Oregonians already in the workforce from accessing pathway opportunities for career advancement. These financial barriers threaten to extend steep labor shortages facing key occupations in Oregon's target industries, like nursing and childcare. There are examples of the state supporting pathways access through financial assistance. The Oregon Promise Grant is a state grant that helps cover tuition costs at any Oregon community college for recent high school graduates and GED test graduates (Oregon HECC). Additionally, the Oregon legislature, to motivate interest in the truck-driving industry has invested over $600,000 in the Oregon Truck Driver Loan Program. This program provides loans of up to $3,000 to help new drivers cover some of the cost of training and certification (Oregon Trucking Association). This program can be replicated to aid individuals seeking career opportunities in Oregon's target industries and key occupations.

Performance Metrics: Financial aid distributed for training and certification, enrollment in training and certification programs

Establish workforce partnerships with grassroots and nonprofit entities to make connections with economically underrepresented Oregonians, providing touchpoints and access to careers in target industries in Oregon.

- HECC
- Workforce Boards
- Community-Based Nonprofits

Owners & Supporters

Roles in IT & analytical instruments, construction, and wood products in Oregon have traditionally been male dominated. Working with grassroots and nonprofit organizations will raise job and training awareness among underserved and underrepresented groups. Residents in underserved areas of Oregon often lack reliable broadband access, hindering access career information. Language barriers may prevent immigrant residents from accessing training and career resources. Grassroot organizations that help underrepresented residents are often trusted partners in those communities, making buy-in more likely. State and regional economic and workforce development organizations can facilitate these partnerships between grassroots, nonprofit and target industry businesses to prioritize reaching untapped labor segments. For example, the Women's Foundation of Oregon, is a great potential partner to further inclusivity and diversity in the state's target industries. HECC can also work with employers to identify student organizations and programs, such as the Women in Science and Engineering program at Oregon State University, to increase the diversity of the state's target industries talent pools. Oregon can also investigate strategies for building supportive pathways with national organizations like Women in Manufacturing (WiM) that provides year-round virtual learning,

career fairs, networking services, and professional development programs. Local workforce investment boards are well-positioned to lead this effort because of the $35 million investment through Future Ready Oregon into the Prosperity 10,000 initiative. This initiative allocates grants to Oregon's local workforce development boards to fund community-based organizations, schools, labor organizations and other workforce service providers to increase capacity and provide direct workforce development services to Oregonians (Haluapo, et. al, 2023).

Performance Metrics: Number of grassroots partnerships, and new hires facilitated by them

Offer transportation assistance programs to help rural workers access training and employment opportunities.

- ODOT
- Transportation Providers

Owners & Supporters

Rural Oregon workforce partners detailed significant transportation challenges for rural workers that limit their ability to access training and employment opportunities. The Oregon Department of Transportation (ODOT) Public Transportation Division (PTD) already operates a Rural Technical Assistance Program (TAP) that provides scholarships and financial assistance to public transportation professionals and other select transportation associates from Oregon transit agencies. However, these funds are not eligible to support salaries or operations for rural public transportation providers to increase services in their communities. Allocating additional funding to ODOT to specifically increase services by rural public transportation providers is a necessary step to helping rural workers overcome transportation barriers. Providing funding to ODOT to contract private transportation providers to operate in rural areas is another step the state can take to meet the unmet needs of rural workers.

Performance Metrics: Funding for rural public and private transportation providers, number of rural residents serviced by transportation providers

Implement strategies to increase affordable housing supply, including incentives for developers, rent control measures, and investment in low-income housing projects.

- OHSC
- Housing Authorities of Oregon
- WTDB

Owners & Supporters

This item focuses on improving access to affordable housing in Oregon. A lack of affordable housing is a key barrier to overall industry and workforce growth. Nearly 93% of housing units in Oregon are occupied. Further, renting is Oregon is increasing (up $291 from 2017 to 2022) and costs more than renting in the United States (median gross rent is $70 more). Of renter households, about 53% are rent-burdened, meaning 30% or more of household income goes to rent (U.S. Census Bureau, American Community Survey, 2022). Oregon Housing and Community Services should build off its existing portfolio of affordable housing programs by implementing additional strategies to incentivize housing developers, install rent control

measures, and invest in low-income housing projects. The WTBD should also work with Oregon Housing and Community Services and other organizations advocating for increased affordable housing, including the Housing Authorities of Oregon. These engagements can help identify pathways for workforce leaders to help increase affordable housing.

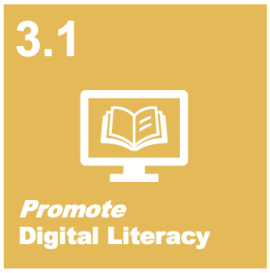
Develop policies and initiatives to increase access to affordable childcare, including subsidies for low-income families and support for childcare providers to expand capacity.

- Oregon DELC
- WTDB
- Employers

Owners & Supporters

As mentioned throughout this assessment, a robust childcare workforce is vital for economic prosperity, allowing parents and guardians to work and contribute to the economy. In interviews, focus groups, and surveys, Oregonians emphasized the need for formative policies that increase access to affordable childcare. The State should explore pathways to lower the cost of childcare services, including subsidies to low-income families or for childcare providers to offer free or reduced-cost services. New York State's Child Care Assistance Program (CCAP) epitomizes better childcare support for families in need by providing childcare funding based on gross monthly income and family size (New York State Office of Children and Family Services, 2024). To increase accessibility of the program, CCAP PDF and video resources are created in English and Spanish and the CCAP eligibility questionnaire is offered in 13 languages.

Strategy 3: Support Oregon's target industries and occupations through attraction, retention, and life-long learning initiatives.



Expand access to supplemental digital literacy, STEM, and employability education programs for K-12 students to combat pandemic learning loss and ensure a skilled workforce equipped to meet the skills demands of Oregon's target industries.

- ODE
- BOLI
- STEM Hubs
- Workforce Boards
- K-12 Schools

Owners & Supporters

Oregon target industry employers were concerned the state's poorer than average post-pandemic math, literacy, and science proficiency. Employers also expressed dissatisfaction with incoming workers employability skills, or soft skills. The state can support supplemental learning opportunities to fill these skills gaps. One way to achieve this is to promote work-based learning or earn-and-learn opportunities that emphasize these competencies and increase career pathways into the STW. For example, in Iowa, the governor issued an executive order to establish a virtual clearinghouse for high-quality, real-world work-based learning experiences for K-12 students. The state appropriated $250,000 to support the development of this clearinghouse. The clearinghouse allows employers to publicize opportunities for work-based learning and serves as a one-stop resource for students and educators to search for and apply to work-based learning opportunities (Iowa Department of Education). Oregon should consider

creating a similar platform for businesses in the state's target industries to increase work-based learning opportunities that advance students' digital literacy, STEM, and employability skills. This platform, which could potentially be hosted on the CCL website, would also allow employers to easily share opportunities with potential participants, and for students and educators to access information about opportunities all in one place. Supporting earn-and-learn initiatives that feed into the STW can also significantly impact workforce development equity, since the STW, a subset of the STEM workforce, has greater diversity than STEM fields overall (Consortium of Social Science Associations, 2020).

Performance Metrics: K-12 proficiency in digital literacy, STEM, and professional skills competencies.

Institute a talent attraction program with diverse strategies including marketing and incentives.

The state's growth in Health Sciences, IT & Analytical Instruments, and Construction offers opportunities for those with technical skills to grow and learn in their careers, earn competitive wages, and enjoy a high quality of life. However, lack of interest or awareness of the quality job opportunities available in Oregon's industries and outmigration of residents threatens the state's competitiveness. In response, Oregon should an ongoing talent and business attraction campaign for the state. The campaign should include a website with information about job opportunities in the state's target industries, highlight recreational offerings, and advertise other advantages to living and working in Oregon. Other states have launched similar campaigns with successful results, like Michigan's "You Can in Michigan" campaign, which focuses STEM jobs and industries specifically. The campaign utilizes social media, traditional media, and college campuses in target markets to run the campaign (Anderson, 2023).

As a compliment to the campaign, the state should also consider talent relocation incentives. The structure and offerings of relocation incentives vary significantly from place to place, but overall these programs offer benefits to out-of-state residents to encourage them to move to the state (or region or community) to strengthen the economy. While most programs target remote workers, many have a goal of filling existing workforce gaps in critical or target industries. Incentives include moving expenses, straight cash incentives (typically $5-15,000), cash rebates, lots to build housing, and additional "perks" such as transit passes, co-working space, and free outdoor recreation activities and discounts on gear rentals. Depending on the goals of the program, incentives are often tied to eligibility requirements such as those in tech jobs or other occupations, homebuying, living in or within a radius of certain communities, employer verifications, and minimum residency duration. For example, the state of Vermont offers the New Relocating Worker grant program. The program covers qualified relocation expenses, including closing costs for a primary residence or lease deposit and one month rent, hiring a moving company, renting moving equipment, shipping, and the cost of moving supplies, to those who relocate for full-time residency and full-time employment. The applicant much be employed in a target occupation and earn a wage that equals or exceeds the Vermont livable wage (Vermont Agency of Commerce and Community Development).

Performance Metrics: Campaign engagement (web-traffic, website clicks, etc.)

Work with target industry employers to develop and update industry-recognized credentials aligned with workforce needs to validate skills and competencies.

- BOLI
- WTDB
- Employers

Owners & Supporters

Due to technical expertise required for many of the occupations in Oregon's target industries, there is a significant need for Oregon to expand its STW. An important first step in this process is ensuring that credentialing and upskilling opportunities are aligned with industry demands by working with employers to develop and update industry-recognized credentials. An industry-recognized credential is typically defined as being exam-based, administered by third parties, supplemental to traditional postsecondary credentials, and sought or accepted by employers in an industry. Examples of industry-recognized credentials include Certified Information Systems Security Professional, Certified Welder, and Certified Medical Laboratory Assistant. Several states have already undertaken activities to facilitate the use of high-value, industry-recognized credentials in workforce training programs. For example, Alabama established the Alabama Committee on Credentialing and Career Pathways, a public-private entity that identifies credentials of value through dialogue with employers. The state uses this information to ensure that state investments prioritize programs that lead to these credentials (AlabamaWorks!).

Performance Metrics: Number of programs offering industry-recognized credentials, number of industry-recognized credentials awarded

Expand opportunities for degree and certification attainment.

- HECC
- Post-secondary institutions
- K-12 schools

Owners & Supporters

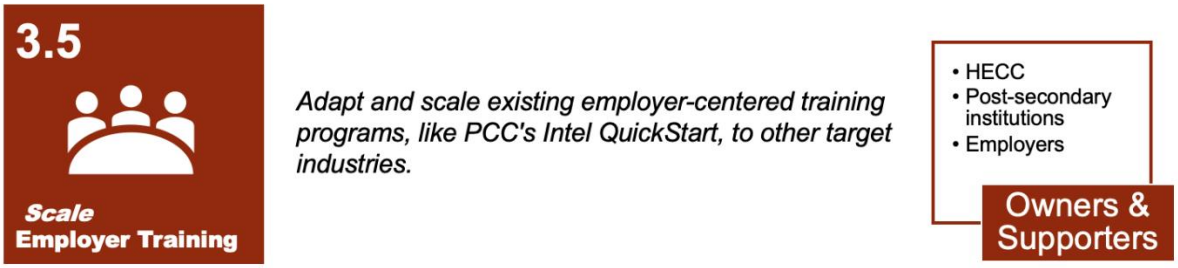
Expanding dual enrollment opportunities for high school students to earn college credits and industry certifications offers numerous benefits for Oregon employers and students. Dual enrollment programs allow students to earn college credits while still in high school, reducing the overall cost of post-secondary education and broadening access to higher education, particularly for low-income and underserved students who may face barriers to college enrollment. By completing college-level coursework early, students can potentially graduate from college in less time, saving money on tuition, fees, and other expenses. Providing a head start on college coursework through dual enrollment programs can also boost college completion rates.

In addition to college credits, dual enrollment programs offer opportunities for students to earn industry-recognized certifications in high-demand fields such as healthcare, information technology, and advanced manufacturing, providing a direct pathway to employment as a STW for those who do not continue their education post-high school. Oregon currently offers CTE in many of its target industries and key occupations for high school and post-secondary students; however, workforce partners expressed concerns related to access for students in underserved

and rural areas, as well as concerns related to the currentness of curriculum and technology being used to facilitate CTE. Oregon's local workforce investment boards operate the Oregon Youth Employment Program (OYEP); however, opportunities offered to students through OYEP do not necessarily provide students with academic credit or industry-recognized credentials. Oregon can benefit from a more integrated dual-enrollment system that ensures that all opportunities offer students high school and college credit and industry credentials. For example, Colorado launched CareerWise Colorado, a youth apprenticeship system that combines high school classes, college classes and on-the-job training over three years. Students can earn a high school diploma, a year of college credit and an industry credential simultaneously (CareerWise Colorado). Dual-enrollment programs can be further elevated in Oregon if community colleges work with feeder high schools to employ academic advisors that can encourage dual enrollment and pathways into post-secondary education.

Another alternative for expanding opportunities for degree and certification attainment is universities awarding credit for prior learning (CPL). CPL validates and credits college-level knowledge and skills acquired outside of the classroom to increase education attainment, especially among adult nontraditional students, such as workers seeking further education for career advancement or former military members (Ryu, 2013). Both dual enrollment and CPL offer opportunities for improved alignment and collaboration between K-12 institutions, post-secondary institutions, and other nontraditional training providers across Oregon.

Performance Metrics: Dual enrollment program participation, youth apprenticeship participation



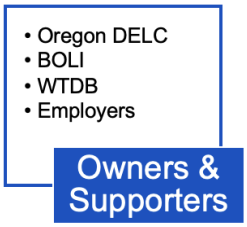
Portland Community College's Intel Quick Start semiconductor program provides two-week training to workers for in the semiconductor industry, including Intel and other businesses in Oregon's IT & Analytical Instruments industry. Through this program, participants can gain education and hands-on experience that leads to industry-recognized credential and job opportunities. The key to the success of Quick Start has been the partnership between PCC and Intel to co-develop curriculum, provide access to workplace technologies, and guaranteed job opportunities for program graduates. Another key feature of Quick Start is that participants are paid, making it a great recruitment tool for the state's semiconductor industry. Quick Start has an equity focus, as organizers recruit through social service agencies and workforce programs that primarily serve populations underrepresented in the technology sector, including women and racial and ethnic minorities. As a result of these intentional efforts, Quick Start has had two all-female cohorts. Workforce partners throughout Oregon expressed excitement over the model for rapid workforce development and training that PCC's Intel Quick Start program provides. Quick Start is being expanded, through Future Ready Oregon funding, to other communities to support the semiconductor industry. In Gresham, Mt. Hood Community College is planning to offer the program to support the workforce needs of the nearby Microchip and Onsemi semiconductor factories (Rogoway, 2023). While replicating PCC and Intel's two-week training model may pose challenges in industries with specific credential and degree

requirements, these industries can still adopt Quick Start's strategy to support pathways for underserved communities. Furthermore, Oregon can encourage employers to develop and facilitate credentialing and training programs without a post-secondary partner institution.

Anchor employers in other states have had great success with these programs, especially in rural areas. For example, in western North Carolina, CommScope is a large regional employer that has been able to make work opportunities more accessible to residents by developing internal education and training programs that remove post-secondary degree and certification requirements. These programs, CommScope University and CommScope Infrastructure Academy, cover a wide range of topics for entry-level workers, including wired, wireless, wireline, and fiber-optic technologies (CommScope). To encourage employers to independently develop training and credentialing programs, the state can incentivize companies through subsidies or tax credits.

Performance Metrics: Number of employer-post secondary partnerships that develop training and credentialing programs, number of employer-developed and facilitated training and credentialing programs

Advocate for policies to improve wages for childcare workers, including increasing public funding for childcare subsidies, employer-provided childcare incentives, and professional development programs



Similar in Action Item 2.7, Oregon can improve the help alleviate challenges over childcare affordability and accessibility but improving helping attract and retain childcare workers through increased compensation. Policies that increase wages for childcare workers, public funding for childcare subsidies, employer-provided childcare incentives, and professional development programs can help alleviate challenges over childcare affordability and accessibility by helping attract and retain childcare workers in Oregon. Several other U.S. states offer childcare policies that can serve as models for robust statewide childcare policies that increase childcare worker wages, including Alabama, Idaho, Illinois, Kentucky, and Washington (U.S. Department of Health & Human Services, 2024). For example, Idaho's Department of Health and Welfare offers several grants focused on maintaining the childcare worker supply, including the Child Care Grant, which provides funding for childcare providers (Child Care Grant), funding for organizations offering educational activities for children (Community Program Grant) and a temporary wage supplement for childcare workers (Idaho Child Care Wage Enhancement Grant). Also, as an example, in 2021, Washington State passed the Fair Start for Kids Act, which allocated over $66 million for childcare worker compensation and health coverage through federal relief funding dollars (Washington State Legislature, 2021).

Performance Metrics: Number of programs offering increased wages, benefits, and incentives for childcare workers

Appendix A: Methodology

Skills Analysis

SRI conducted the skills analyses of critical industries and occupations using job postings data from the National Labor Exchange (NLx) Research Hub, a central repository of labor market information and research data. It is designed to provide researchers, policymakers, and other partners with access to a wide range of data, including real-time and historical job postings, related to the labor market. The National Labor Exchange (NLx) Data Trust bears no responsibility for the analyses or interpretations of the data presented here. The opinions expressed herein, including any implications for policy, are those of the authors and not of the NLx Data Trust members.

SRI conducted the skills analysis using job postings data from the NLx research hub, covering the period from January 1, 2022, to November 30, 2023. We limited the analysis to the identified upward mobility industries and necessary occupations, identifying and analyzing all relevant postings. To extract required skills and duties, we employed supervised machine learning with an NLP model from the transformers family. The extracted sentences were subsequently inputted into a transformer-type topic model to identify skills, which were further grouped into categories such as Technical Skills and Business Skills.

Partner engagement

SRI's approach to strategy development is deeply partner driven. Talent and workforce recommendations must be built up from detailed local knowledge of the workforce ecosystem and draw on the experience and goals of the state's diverse workforce development partners. For this assessment, SRI conducted five focus groups and 21 interviews for a total of 64 total Oregon workforce partners engaged. These workforce partners included local, regional, and state-level workforce development, education, and industry professionals. Collaborating closely with HECC staff, Steering Committee members, and Workforce and Talent Development Board members, SRI identified and confirmed individuals and groups for targeted partner engagement.

Survey methodology

SRI conducted extensive industry engagement through an employer survey. The survey was deployed to over 1,300 employers in Oregon across industries, company sizes, and geographic locations. The survey aimed to gauge industry labor needs and capture employer perspectives on topics such as skills gaps, partnerships, and existing workforce development assets.

This survey was structured as an establishment survey, targeting a diverse range of Oregon employers across different industries, company sizes, and geographic locations within the state. Efforts were made to reach company executives, managers, and human resources/recruitment specialists who are most likely to be knowledgeable about the company's workforce needs. Special attention was given to oversampling employers in sectors such as healthcare, information technology, semiconductor manufacturing, construction, wood products manufacturing, transportation, and childcare to align with our selected industries for upward mobility and the essential occupations highlighted in this report.

The survey was shared through two primary recruitment methods. Initially, invitations were sent through the SurveyMonkey system to target employer contacts identified by SRI using market intelligence tools (e.g., Pitchbook, Database USA), as well as those identified by HECC. Prior to receiving the SurveyMonkey invitation, these contracts were provided with a warm survey primer from Todd Nell, describing the context for the survey effort and articulating the importance of their participation. Several invitations were also shared by our survey distribution partners, who directly emailed invitations to their business networks and mailing lists using a general link coded for their organization. This approach enabled SRI to monitor responses from different organizations effectively.

The survey opened on January 9, 2024, and received 201 total responses. The survey had a 65% completion rate (131 complete respondents). Qualitative findings from the survey are embedded throughout the report.

Appendix B: Artificial Intelligence & Machine Learning

Job postings data and business survey responses were also analyzed to better understand the workforce and economic impacts and employer perceptions of artificial intelligence (AI) and machine learning (ML).

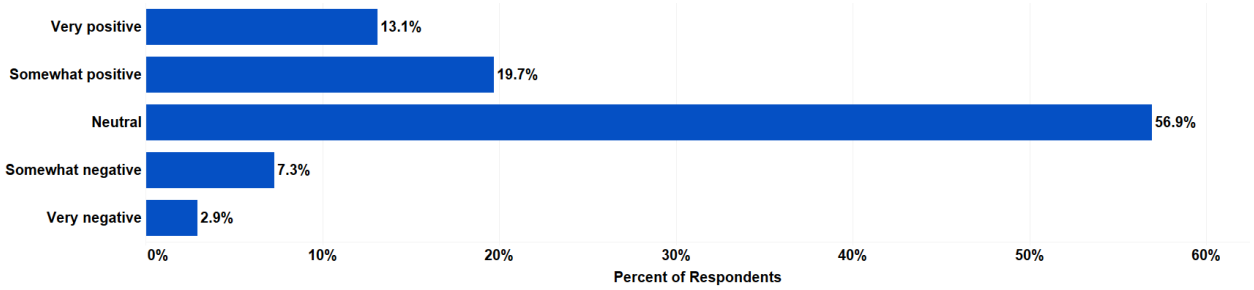
Key Findings

- Oregon businesses across firm sizes and industries are generally neutral towards the impact of AI technologies in the workplace.
- While it may be expected that IT & Analytical Instruments occupations have the highest share of postings requiring an AI or ML skill, health sciences postings also often required these skills.
- IT & Analytical Instruments job postings are more likely to require ML skills, while health sciences occupations are more likely to require AI skills.

Business survey

Oregon businesses were generally neutral towards the impact of AI technologies in the workplace. Figure 67 shows that nearly 57% of survey respondents rated the impact of AI and other advanced technologies as neutral. Almost 20% of respondents rated the impact as somewhat positive. Results do not vary substantially across industries or firm size. However, urban businesses are much more positively skewed than the total population with ratings of 18% very positive, 27% somewhat positive, 48% neutral, 6% somewhat negative, and 1.5% very negative.

Figure 67: Generally, what is the impact of artificial intelligence and other advanced technologies in the workplace?



Over 90 respondents provided open-ended feedback explaining their positive, neutral, or negative rating. Of these comments, five primary themes emerged: two positive-leaning, two negative-leaning, and one neutral theme. Twenty-seven responses were linked to efficiency or productivity gains from AI in the workplace, including increased access to information, expedited analysis for semiconductor device tests, and writing content. Eleven respondents discussed how AI is a key focus or aspect of their business offering. Most of these respondents are IT & Analytical Instruments and advanced manufacturing companies. Twenty-six respondents needed more time to figure out how to use AI or evaluate the impact of AI on their business. Fourteen responses related to quality concerns around AI technologies, including one respondent who mentioned how the abundance of AI applications “clog our applicant pool.”

Lastly, a handful of responses discussed job loss due to automation and advanced technology replacing manual or labor-intensive jobs.

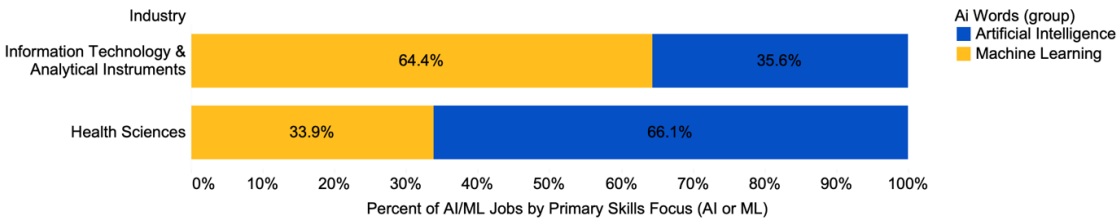
In addition to learning about business perspectives on AI, SRI also conducted an analysis of jobs requiring specific AI and ML skills across all the selected upward mobility target industry clusters and essential occupations to understand the need for AI and ML skills broadly. Figure 68 shows the percentage of postings in each industry cluster or occupation which specified an AI or ML skill requirement. While it may be expected that IT & Analytical Instruments has the highest share of postings requiring an AI or ML skill, health sciences also had several postings requiring one or more of these specific skills. The construction industry cluster and childcare occupation largely did not require AI or ML skills.

Figure 68: Industry Job Postings Requiring an AI/ML Skill

The previous charts grouped AI and ML skills together for the purposes of broader analysis but separating out job postings with requirements in this skill family into those which predominantly require AI and those which predominantly require ML led to notable differences between the examined industries and occupations. Though the two are related, with ML being a subset of AI, jobs that require workers to focus on one or the other often involve quite different tasks, goals, and form of value provided to the employer. Jobs in AI focus on developing systems that can simulate human intelligence across various tasks, where ML jobs tend to concentrate on creating specific applied algorithms and statistical models that enable machines to improve their performance based on data.

The requirements for AI versus ML skills varied substantially by industry. Comparing the industries overall, approximately two thirds of the IT jobs were focused on ML skills, but the same share of health science jobs instead required AI skills.

Figure 69: AI vs ML Primary Skill by Industry Cluster



Appendix C: Supplemental Figures

Figure 70: Destinations of graduates of Oregon higher education institutions, 2023. Source: Lightcast.

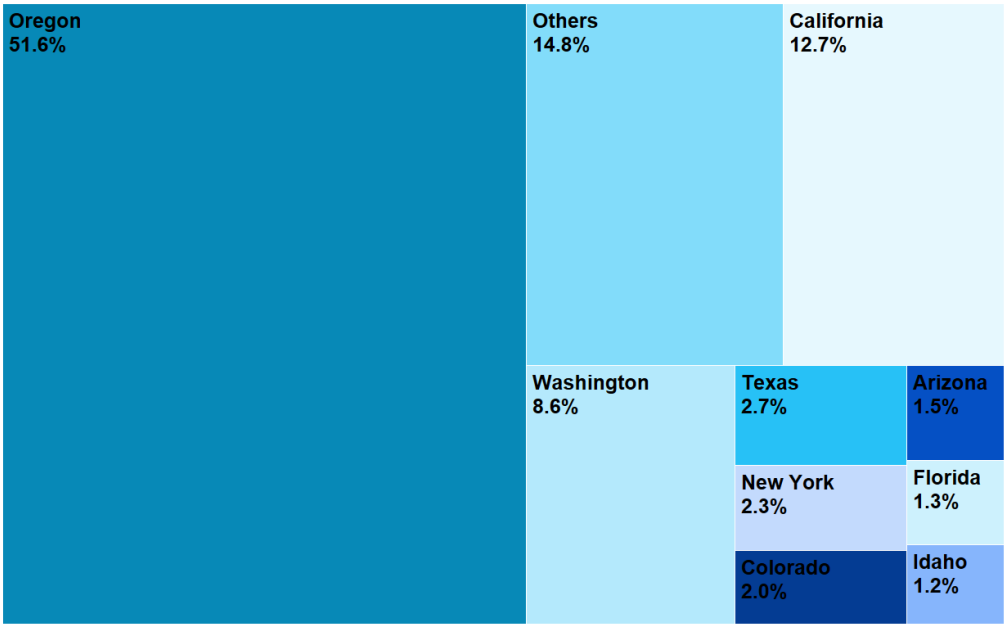


Figure 71: Skill intensity plot for business, employability, and technical skills across health sciences occupations. Source: National Labor Exchange.

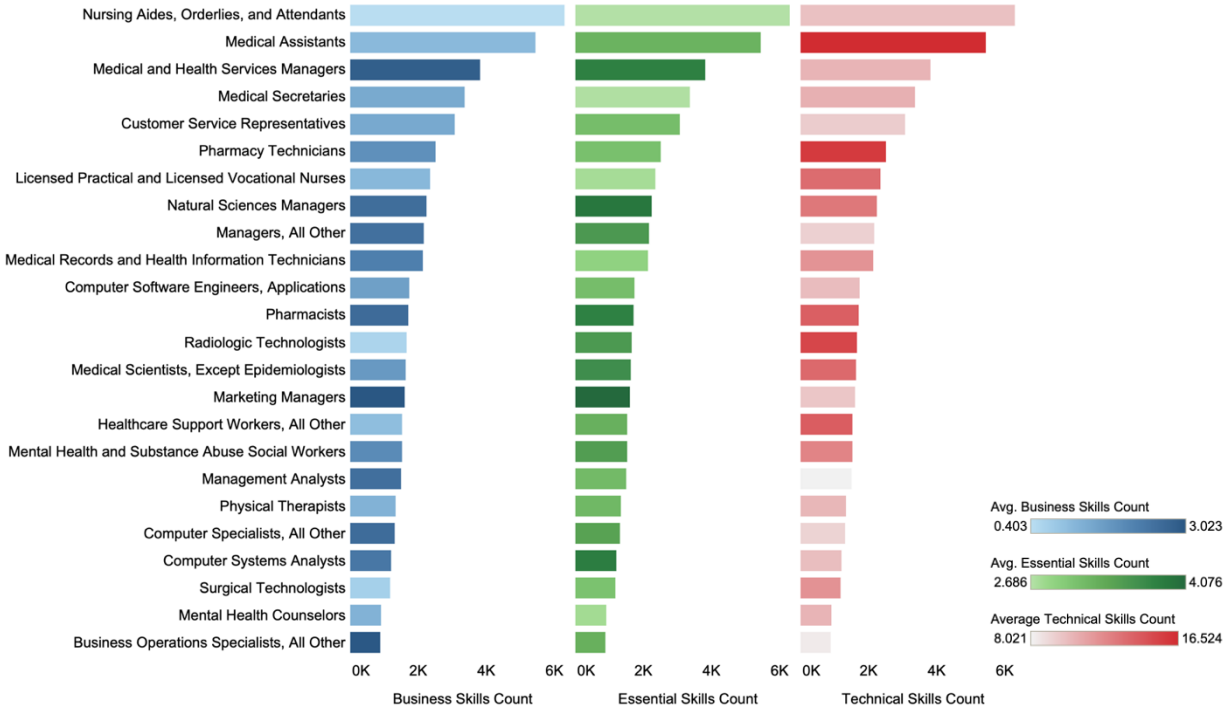


Figure 72: Job Postings in Career Pathways Sample by Occupation. Source: National Labor Exchange

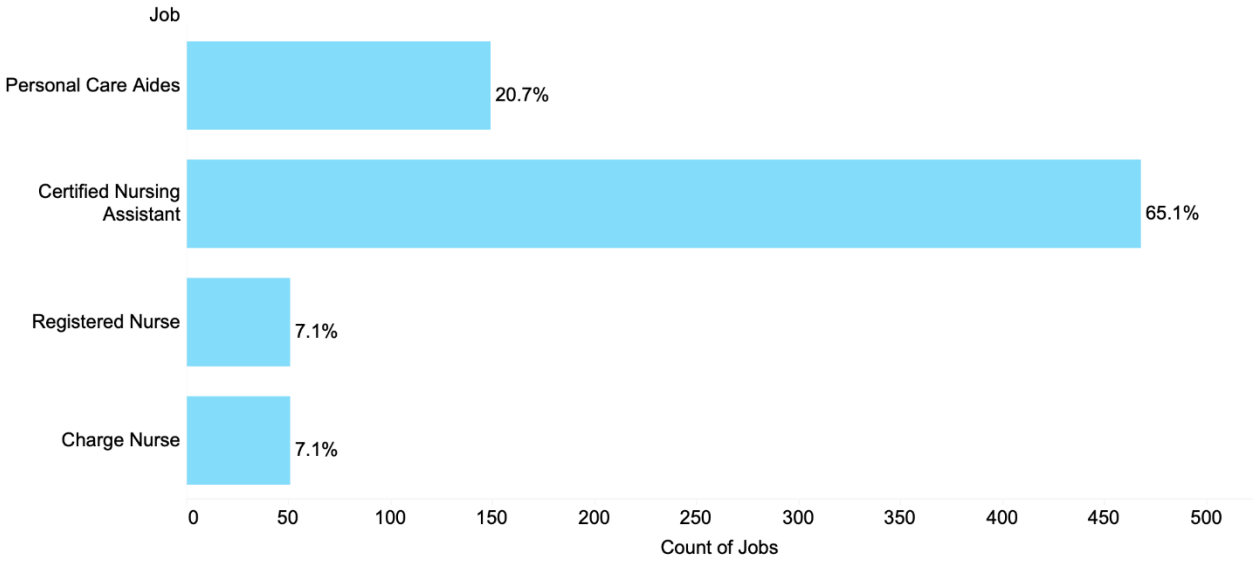


Figure 73: Specific skills in IT & Analytical Instruments job postings. Source: National Labor Exchange.

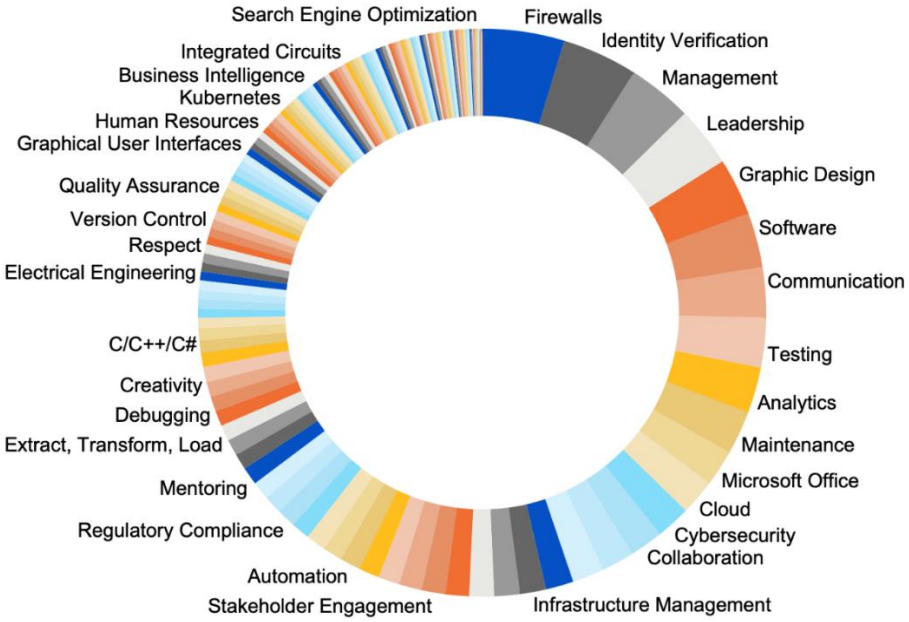


Figure 74: Specific skills in construction job postings. Source: National Labor Exchange.

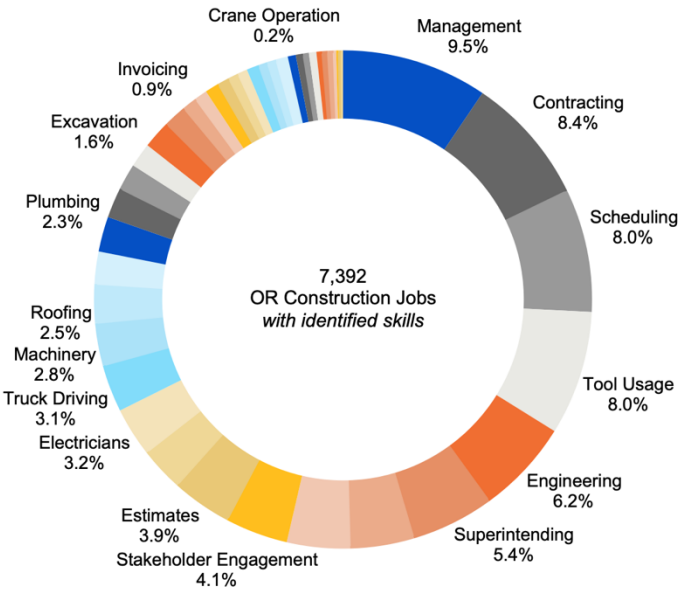


Figure 75: Business vs. technical skills by occupation. Source: National Labor Exchange.

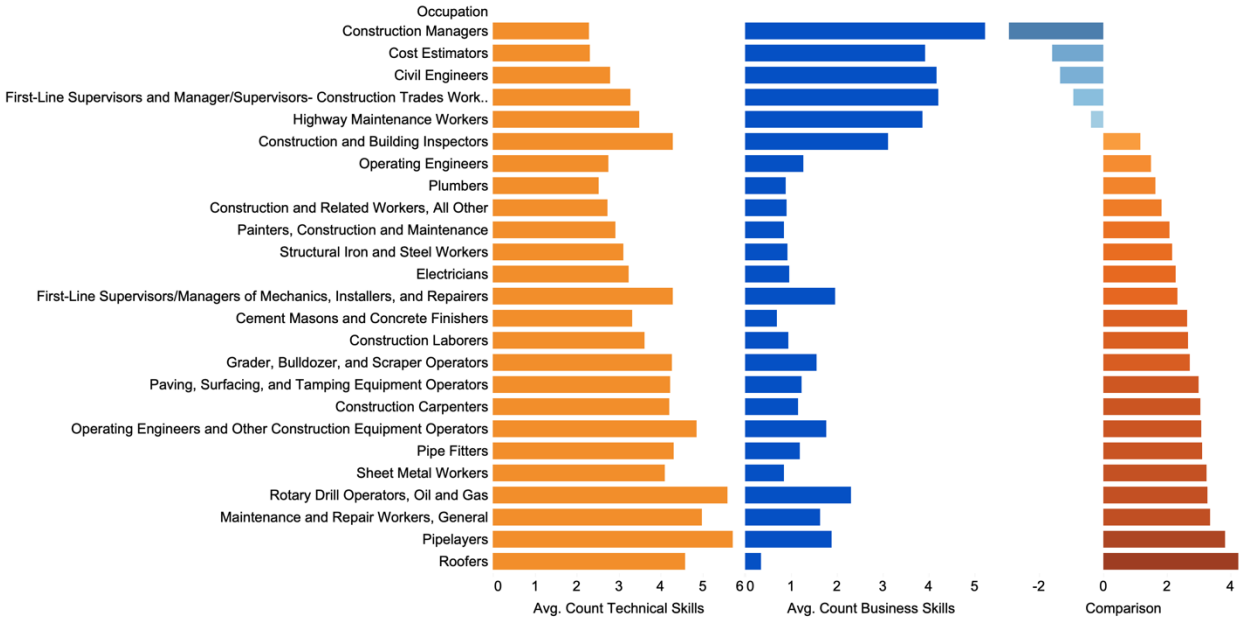


Figure 76: Top wood products manufacturing occupations skill mix. Source: National Labor Exchange.

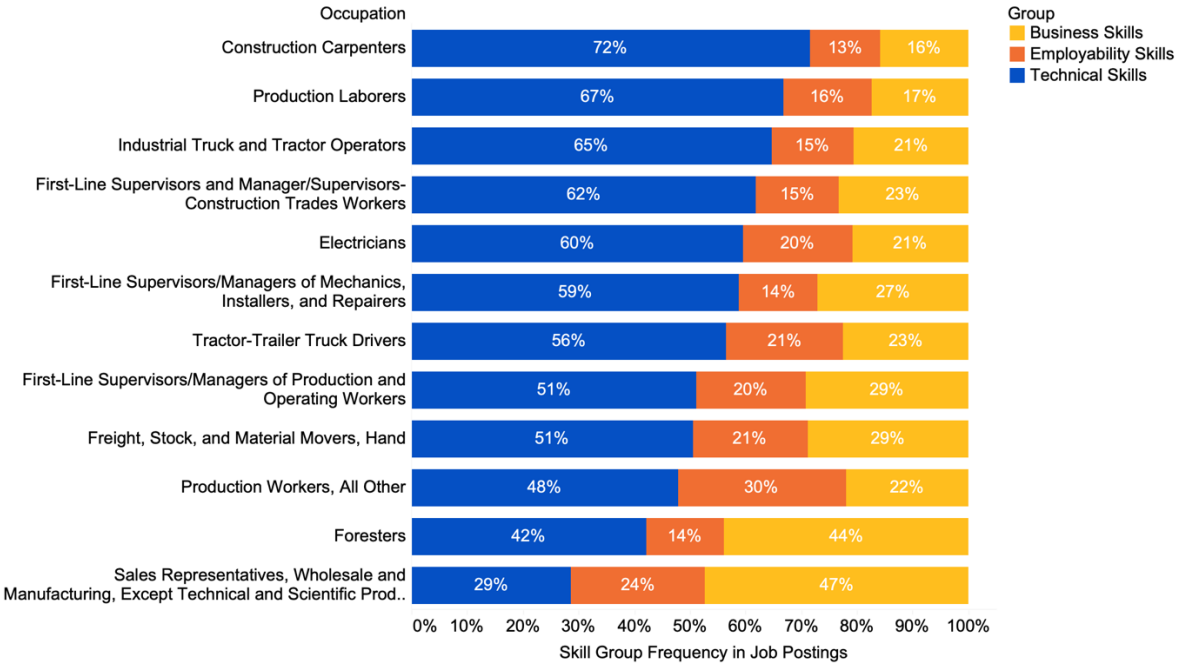
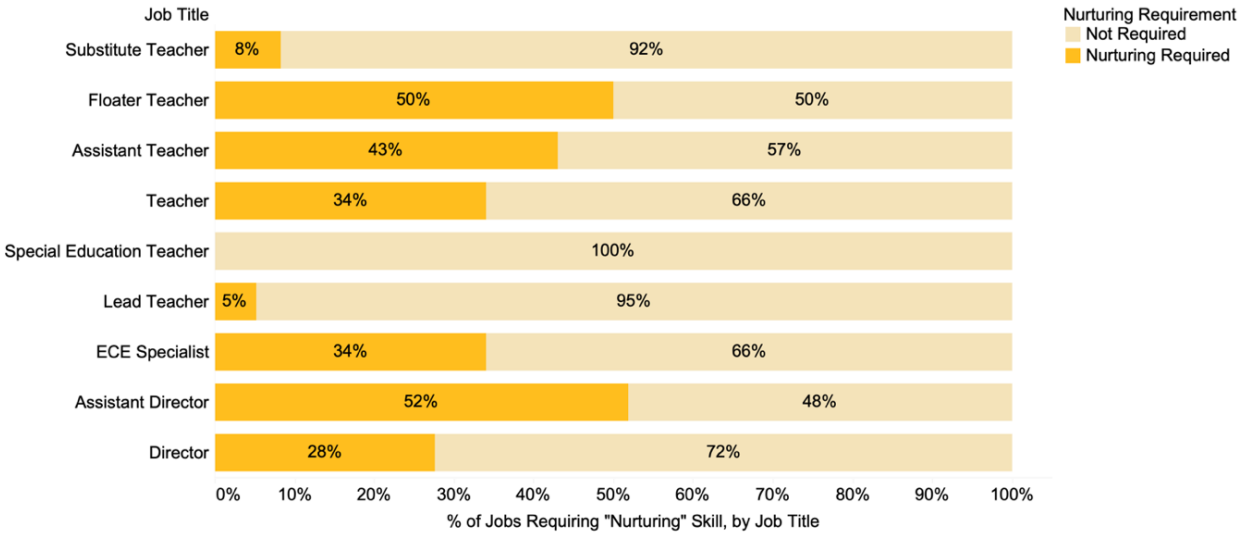


Figure 77: Share of childcare job postings requiring nurturing. Source: National Labor Exchange.



Appendix D: Survey Questionnaire

Section 1- Welcome and Consent Notice

Welcome! This survey was designed by SRI International's Center for Innovation Strategy and Policy in collaboration and partnership with Oregon's Higher Education Coordinating Commission (HECC) and Workforce and Talent Development Board (WTDB) to support the development of a detailed talent assessment.

Capturing employer perspectives is critical to understand the workforce landscape and guide the state's priorities and activities related to workforce development.

The survey will take approximately 20 minutes to complete. All information concerning individual respondents or survey identifiers will be kept confidential. By continuing with this survey, you are giving your consent for the project team to analyze your responses and anonymously report on trends. Your participation in this survey is voluntary, and you may stop at any time.

Section 2- Company Characteristics

1. [Drop down] What industry cluster does your company primarily fall into?
    a. Accommodation and Food Services
    b. Advanced Manufacturing (excluding semiconductors)
    c. Agricultural and Natural Resources (excluding wood products manufacturing)
    d. Arts, Entertainment, and Recreation
    e. Automotive
    f. Business and Finance
    g. Computers and Information Technology (including semiconductors)
    h. Construction
    i. Education
    j. Health Science
    k. Media
    l. Mining
    m. Social Assistance
    n. Transportation
    o. Utilities
    p. Wood products manufacturing
    q. Other (please specify):
2. [Multiple Choice] Does your company primarily hire or engage with any of the following job occupations? Please select all that apply.
    a. Assemblers and Fabricators
    b. Childcare Workers
    c. Farmers, Ranchers, and Other Agricultural Managers
    d. Heavy and Tractor-Trailer Truck Drivers
    e. Home Health and Personal Care Aids
    f. Janitors and Cleaners

g. K-12 Teachers
h. Light Truck Drivers
i. Mental and Behavioral Health Specialists
j. Nursing Assistants
k. Packaging and Filling Machine Operators and Tenders
l. Preschool Teachers
m. Refuse and Recyclable Material Collectors
n. Stockers and Order Fillers
o. Other (please specify):

3. [Fill in the blank] Where is your company primarily located in Oregon?
    a. City: _____
    b. Zip Code: _____
4. [Multiple Choice] What is your primary job role?
    a. Administrative Specialist
    b. Customer Service Representative
    c. Executive Leadership
    d. Human Resources Specialist/Director
    e. Operations/Logistics Coordinator
    f. Sales Representative
    g. Scientist/Engineer
    h. Staff Manager/Supervisor
    i. Other (please specify):
5. [Multiple Choice] Roughly how many workers are currently employed at your company in Oregon?
    a. 0 to 9 workers
    b. 10 to 49 workers
    c. 50 to 99 workers
    d. 100 to 249 workers
    e. 250 or more workers

Section 3- Baseline Workforce Conditions

6. [Fill in the blank] What three words would you use to describe Oregon's overall workforce environment?
    a. Word 1: _____
    b. Word 2: _____
    c. Word 3: _____
7. [Slider] Please rate the opportunities your company provides for career advancement based on **skills development** on a scale of 0 to 100, from no opportunities to many opportunities.
8. [Slider] Please rate the opportunities your company provides for career advancement based on **performance** on a scale of 0 to 100, from no opportunities to many opportunities.
9. [Open-ended] Can you share an example of the career advancement opportunities offered at your company?
10. [Fill in the blank] Does your company have reliable streams or sources of skilled labor with any of the following? If so, please identify relevant entities within the following workforce streams or sources.

a. Apprenticeship programs: _____
b. Career Centers at Community Colleges or Universities: _____
c. Community-based organizations: _____
d. Employee referrals: _____
e. High School CTE programs: _____
f. Postsecondary CTE programs: _____
g. Staffing agencies: _____
h. WorkSource Oregon: _____
i. 2-year educational programs: _____
j. 4-year educational programs: _____
k. Other (please specify): _____

11. [Multiple Choice] How aligned are Oregon's existing education and training programs with your company's needs?
    a. Very aligned
    b. Somewhat aligned
    c. Not at all aligned
    d. I don't know

If 11=d, hide #12, #13, and #14.

If 11=a, show #12

12. [Open-ended] Why do you believe that Oregon's existing education and training programs are "very aligned" with your company's labor needs?

If 11=b, show #13

13. [Open-ended] Why do you believe that Oregon's existing education and training programs are "somewhat aligned" with your company's labor needs?

If 11=c, show #14

14. [Open-ended] Why do you believe that Oregon's existing education and training programs are "not at all aligned" with your company's labor needs?
15. [Grid/Matrix] Have you used any of the following Oregon state workforce organizations or development programs to support your company's workforce needs? If so, how valuable was it?
    a. Rows:
        i. Future Ready Oregon program
        ii. Local Workforce Development Boards
        iii. WorkSource Oregon/iMatchSkills online system
        iv. Dislocated Worker Program/Rapid Response
        v. Incumbent Worker Training (Designed to help employers retain a skilled workforce by assisting workers in obtaining necessary skills)

vi. Sector Partnerships (Partnerships of companies in a shared labor market that work with regional partners to tackle common needs of the targeted industry)
vii. Oregon Apprenticeship
viii. Oregon Employment Department Workforce and Economic Research Division/QualityInfo.org
ix. Local Veterans' Employer Representatives/HIRE Vets Medallion Program
x. Job Plus Program
xi. Preferred Worker Program
xii. Work Share program
xiii. On-the-Job Training (Employed participants gain knowledge or skills essential to adequate job performance; employers are reimbursed up to 50% of the participant's wage rate)
xiv. Vocational Rehabilitation
xv. Oregon Commission for the Blind

b. Columns:
   i. No, don't know this organization/program
   ii. No, not relevant to my company
   iii. Yes, not at all valuable
   iv. Yes, somewhat valuable
   v. Yes, very valuable

16. [Open-ended] What other important assets in Oregon help your company meet your workforce needs?
17. Generally, what is the impact of artificial intelligence and other advanced technologies in the workplace?
    a. Very positive
    b. Somewhat positive
    c. Neutral
    d. Somewhat negative
    e. Very negative

    [Comment box] Why? Please tell us more.

Section 4- Workforce Gaps

18. [Multiple Choice] Is your company experiencing a labor shortage?
    a. No labor shortage (e.g., company is adequately staffed, workforce can meet current demand comfortably)
    b. Minimal shortage (e.g., company is understaffed, workforce can manage current demand with some stress)
    c. Moderate shortage (e.g., company is understaffed, workforce meeting current demand is somewhat challenging)
    d. Severe shortage (e.g., company is understaffed, workforce cannot meet current demand)

If 18=a, hide #19, 20, 21, 22, and 23

19. [Multiple Choice] Why may your company be experiencing a labor shortage? Please select all that apply.
    a. Challenges with hiring
    b. Challenges with reskilling and upskilling
    c. Challenges with employee retention
    d. Other (please specify):

If 19=a, show #20

If 19=b, show #21 and 22

If 19=c, show #23

20. [Multiple Choice] What challenges does your company face with **hiring**? Please select all that apply.
    a. Candidates do not have the needed work experience
    b. Candidates do not have the right technical skills
    c. Candidates do not have essential employability (soft) skills
    d. Candidate suitability (e.g., ability to complete a background check or drug test)
    e. Competition from other employers
    f. Effect of the COVID-19 pandemic
    g. Lack of work-based learning experiences at K-12 or postsecondary academic institutions
    h. Low engagement with education and training entities to develop talent
    i. Low number of applications or lack of interest in company
    j. Salaries and benefits are not competitive for the market
    k. Other (please specify):
21. [Multiple Choice] What challenges does your company face with **reskilling and upskilling programs**? Please select all that apply.
    a. Balancing the programs' needs with those of current business operations
    b. Finding the right type and/or level of support from third-party providers
    c. Funding the program's budget
    d. Gaining senior management buy-in
    e. Identifying which employees to engage
    f. Measuring the business impact from the program
    g. Measuring the organization's supply and demand of skills on an ongoing basis
    h. Motivating employees to participate
    i. Scaling the program
    j. Other (please specify):
22. [Open-ended] What specific skill, technology, or knowledge gaps would you like to address through a company training program?
23. [Multiple Choice] What challenges does your company face with **employee retention**? Please select all that apply.
    a. Ability to offer remote or flexible work options
    b. Competition from other employers
    c. Effects from the COVID-19 pandemic
    d. Retirement rates
    e. Rising employee burnout and turnover

f. Salaries and benefits are not competitive for the market
g. Other (please specify):

Section 5- Strengthening the Talent Pipeline

24. [Fill in the blank] Roughly, how does your company prioritize the following aspects of a candidate during the hiring process? Please provide a percentage (0%-100%) to each aspect, ensuring the total equals 100%.
    a. Culture fit/team dynamics: _____
    b. Education credentials: _____
    c. Essential employability (soft) skills: _____
    d. Technical skills: _____
    e. Work experience: _____
    f. Other (please specify): _____
25. [Multiple Choice] As an employer, what do you perceive as the primary barriers to job access for underserved populations in Oregon? Please select all that apply.
    a. Access to affordable housing
    b. Access to education and training programs
    c. Access to childcare services
    d. Access to health services
    e. Bias or discrimination in the hiring process
    f. English language barriers
    g. Outreach to underserved populations
    h. Transportation
    i. Workplace accessibility and accommodations for people with disabilities
    j. Workplace schedule flexibility
    k. Other (please specify):
26. [Open-ended] Does your company have any initiatives, programs, or resources to increase job access for underserved populations? If so, what barriers do they address?
27. [Open-ended] Related to strengthening the talent pipeline, what other types of resources or programming could your company benefit from?

Section 6- Reactions to Preliminary SWOT Findings

Please rate your agreeability with the following strengths and weaknesses on a scale of 0 to 100, from strongly disagree to strongly agree.

28. [Slider scale] Large network of workforce, education, and training institutions to serve Oregonians (strength)
29. [Slider scale] Employer-led training programs have had success upskilling employees (strength)
30. [Slider scale] Lack of a central state workforce authority lends to competing and misaligned efforts amongst workforce development, education, and training providers (weakness)
31. [Slider scale] Low level of engagement between employers, especially trade-related employers, and the K-12 talent pipeline (weakness)
32. [Open-ended] Do you have any additional thoughts on Oregon’s strengths and weaknesses related to the workforce development environment?

33. [Ranking] Please rank the following opportunities in order of priority, where 1 is the highest priority for Oregon's workforce environment.
    a. Coordinate local/regional workforce data collection efforts and improve data sharing and transparency at the state level
    b. Centralize state workforce planning through collaborations and partners to better align local/regional workforce strategic visions and plans
    c. Identify new and scale existing industry-higher education training partnerships (e.g., Intel's Quick Start model)
    d. Strengthen the talent pipeline by leveraging high-wage growth occupations in computer, information technology, and construction industries
34. [Ranking] Please rank the following threats in order of severity, where 1 is the most significant threat to Oregon's workforce environment.
    a. Industry degree and credential bias; time-intensive process for developing new accredited degree programs
    b. Worker shortages, driven by an aging population and population loss since the pandemic, limit the state's ability to grow local talent
    c. Across the nation, low wages for childcare workers do not match the high demand for those roles
    d. Environmental challenges related to climate change, like wildfires, that directly and indirectly impact target industries negatively and impede the state's ability to attract talent
    e. Possibility of a steepening skills gap amongst future Oregon-native workers because recent and soon-to-be high school graduates suffer from learning loss through the pandemic, that in Oregon was worse than average nationally, and reduced graduation requirements.
35. [Open-ended] Do you have any additional thoughts on Oregon's opportunities and threats related to the workforce development environment?

Section 7- Future Collaboration with HECC

36. [Fill in the blank] Are you interested in participating in further discussions with other key industry stakeholders related to the workforce landscape in Oregon? If so, please list your name, company, and email below.
    a. Name: _____
    b. Company: _____
    c. Email Address: _____

Appendix E: Survey Summary Results

Table 2: What industry does your company primarily fall into?

Answer Choices	Percent	Responses
Accommodation and Food Services	2.01%	4
Advanced Manufacturing (excluding semiconductors)	11.06%	22
Agricultural and Natural Resources (excluding wood products manufacturing)	2.51%	5
Arts, Entertainment, and Recreation	1.01%	2
Automotive	0.50%	1
Business and Finance	2.51%	5
Computers and Information Technology (including semiconductors)	7.04%	14
Construction	7.54%	15
Education	8.04%	16
Health Science	14.57%	29
Media	1.01%	2
Mining	0.00%	0
Social Assistance	2.51%	5
Transportation	5.03%	10
Utilities	1.51%	3
Wood products manufacturing	3.52%	7
Other (please specify)	29.65%	59

Table 3: Does your company primarily hire or engage with any of the following job occupations? Please select all that apply.

Answer Choices	Percent	Responses
Assemblers and Fabricators	25.37%	51
Childcare Workers	5.47%	11
Farmers, Ranchers, and Other Agricultural Managers	4.98%	10
Heavy and Tractor-Trailer Truck Drivers	10.45%	21
Home Health and Personal Care Aids	6.47%	13
Janitors and Cleaners	12.94%	26
K-12 Teachers	6.47%	13
Light Truck Drivers	6.97%	14
Mental and Behavioral Health Specialists	15.92%	32

Nursing Assistants	12.94%	26
Packaging and Filling Machine Operators and Tenders	6.47%	13
Preschool Teachers	3.98%	8
Refuse and Recyclable Material Collectors	1.49%	3
Stockers and Order Fillers	13.43%	27
Other (please specify)	46.77%	94
None of the above	16.92%	34

Table 4: What is your primary job role?

Answer Choices	Percent	Responses
Administrative Specialist	4.48%	9
Customer Service Representative	1.49%	3
Executive Leadership	57.21%	115
Human Resources Specialist/Director	17.91%	36
Operations/Logistics Coordinator	1.99%	4
Sales Representative	0.00%	0
Scientist/Engineer	1.00%	2
Staff Manager/Supervisor	4.48%	9
Other (please specify)	11.44%	23

Table 5: Roughly how many workers are currently employed at your company in Oregon?

Answer Choices	Percent	Responses
0 to 9 workers	25.87%	52
10 to 49 workers	26.87%	54
50 to 99 workers	12.44%	25
100 to 249 workers	12.44%	25
250 or more workers	22.39%	45

Table 6: Please rate the opportunities your company provides for career advancement based on skills development on a scale of 0 to 100, from no opportunities to many opportunities.

Average	Median	Responses
64	66	144

Table 7: Please rate the opportunities your company provides for career advancement based on performance on a scale of 0 to 100, from no opportunities to many opportunities.

Average	Median	Responses
68	64.5	140

Table 8: How aligned are Oregon's existing educational programs with your company's labor needs?

Answer Choices	Percent	Responses
Very aligned	6.16%	9
Somewhat aligned	60.27%	88
Not at all aligned	22.60%	33
I don't know	10.96%	16

Table 9: What three words would you use to describe Oregon's overall workforce environment? Words provided more than once shown.

Words	Responses	Words	Responses	Words	Responses
Limited	20	Old	3	Flexible	2
Challenging	18	Shortage	3	Growing	2
Unmotivated	12	Skilled	3	Inadequate	2
Competitive	11	Small	3	Insufficient	2
Lacking	10	Specialized	3	Lazy	2
Diverse	8	Talented	3	Misaligned	2
Difficult	7	Understaffed	3	Opportunity	2
Unskilled	7	Unprepared	3	Overtaxed	2
Expensive	6	Young	3	Political	2
Scarce	6	Burdened	2	Poor	2
Tight	6	Capable	2	Selective	2
Improving	5	Centralized	2	Stable	2
Entitled	4	Challenging	2	Struggling	2
Sparse	4	Competitive	2	Supportive	2
Stressed	4	Dedicated	2	Transitioning	2
Underpaid	4	Depressing	2	Unattractive	2
Constrained	3	Disconnected	2	Undereducated	2
Educated	3	Disengaged	2	Undertrained	2
Evolving	3	Education	2	Undiverse	2
Good	3	Expensive	2	Unreliable	2
Inexperienced	3	Experienced	2	Workers	2

Table 10: Have you used any of the following Oregon state workforce organizations or development programs to support your company's workforce needs? If so, how valuable was it?

Answer Choices	No, don't know this organization or program		No, not relevant to my company		Yes, not at all valuable		Yes, somewhat valuable		Yes, very valuable	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Future Ready Oregon	69.47%	91	12.21%	16	5.34%	7	11.45%	15	1.53%	2
Local Workforce Development Boards	61.07%	80	17.56%	23	5.34%	7	11.45%	15	4.58%	6
WorkSource Oregon/iMatchSkills online system	43.61%	58	15.79%	21	18.05%	24	18.80%	25	3.76%	5
Dislocated Worker Program/Rapid Response	74.05%	97	19.08%	25	1.53%	2	3.05%	4	2.29%	3
Incumbent Worker Training	65.41%	87	19.55%	26	1.50%	2	9.77%	13	3.76%	5
Sector Partnerships	63.49%	80	18.25%	23	3.17%	4	9.52%	12	5.56%	7
Oregon Apprenticeship	64.39%	85	20.45%	27	3.79%	5	5.30%	7	6.06%	8
Oregon Employment Department Workforce and Economic Research Division/QualityInfo.org	61.94%	83	14.93%	20	7.46%	10	11.19%	15	4.48%	6
Local Veterans' Employer Representatives/HIRE Vets Medallion Program	66.67%	88	12.88%	17	3.03%	4	12.12%	16	5.30%	7
Jobs Plus Program	79.37%	100	14.29%	18	0.79%	1	3.97%	5	1.59%	2
Preferred Worker Program	71.21%	94	16.67%	22	5.30%	7	5.30%	7	1.52%	2
Work Share	63.36%	83	19.85%	26	2.29%	3	7.63%	10	6.87%	9
On-the-Job Training	55.04%	71	18.60%	24	1.55%	2	8.53%	11	16.28%	21
Vocational Rehabilitation	62.12%	82	21.97%	29	3.79%	5	11.36%	15	0.76%	1
Oregon Commission for the Blind	63.36%	83	32.06%	42	2.29%	3	2.29%	3	0.00%	0

Table 11: Generally, what is the impact of artificial intelligence and other advanced technologies in the workplace?

Answer Choices	Percent	Responses
Very positive	13.14%	18
Somewhat positive	19.71%	27
Neutral	56.93%	78
Somewhat negative	7.30%	10
Very negative	2.92%	4

Table 12: Is your company experiencing a labor shortage?

Answer Choices	Percent	Responses
No labor shortage (e.g., company is adequately staffed, workforce can meet current demand comfortably)	24.11%	34
Minimal shortage (e.g., company is understaffed, workforce can manage current demand with some stress)	31.21%	44
Moderate shortage (e.g., company is understaffed, workforce meeting current demand is somewhat challenging)	30.50%	43
Severe shortage (e.g., company is understaffed, workforce cannot meet current demand)	14.18%	20

Table 13: Why may your company be experiencing a labor shortage? Please select all that apply. 107 respondents total.

Answer Choices	Percent	Responses
Challenges with hiring	89.71%	96
Challenges with reskilling and upskilling	34.57%	37
Challenges with employee retention	40.18%	43

Table 14: What challenges does your company face with hiring? Please select all that apply. 84 respondents total.

Answer Choices	Percent	Responses
Candidates do not have the needed work experience	55.95%	47
Candidates do not have the right technical skills	58.33%	49
Candidates do not have essential employability (soft) skills	46.43%	39
Candidate suitability (e.g., ability to complete a background check or drug test)	34.52%	29
Competition from other employers	50.00%	42
Effect of the COVID-19 pandemic	20.24%	17
Lack of work-based learning experiences at K-12 or postsecondary academic institutions	20.24%	17
Low engagement with education and training entities to develop talent	14.29%	12
Low number of applications or lack of interest in company	34.52%	29
Salaries and benefits are not competitive for the market	27.38%	23
Other (please specify)	19.05%	16

Table 15: What challenges does your company face with reskilling and upskilling programs? Please select all that apply. 34 respondents total.

Answer Choices	Percent	Responses
Balancing the program's needs with those of current business operations	32.35%	11
Finding the right type and/or level of support from third-party providers	23.53%	8
Funding the program's budget	58.82%	20
Gaining senior-management buy-in	5.88%	2
Identifying which employees to engage	11.76%	4
Measuring the business impact or return on investment from the program	32.35%	11
Measuring the organization's supply and demand of skills on an ongoing basis	20.59%	7
Motivating employees to participate	41.18%	14
Scaling the program	11.76%	4
Other (please specify)	17.65%	6

Table 16: What challenges does your company face with employee retention? Please select all that apply. 40 respondents total.

Answer Choices	Percent	Responses
Ability to offer remote or flexible work options	37.50%	15
Competition from other employers	62.50%	25
Effects from the COVID-19 pandemic	27.50%	11
Lack of childcare	42.50%	17
Retirement rates	17.50%	7
Rising employee burnout and turnover	52.50%	21
Salaries and benefits are not competitive for the market	37.50%	15
Other (please specify)	25.00%	10

Table 17: Roughly, how does your company prioritize the following aspects of a candidate during the hiring process? Please provide a percentage (0%-100%) to each aspect, ensuring the total equals 100%.133 respondents total. Respondents who provided percentages that added to over 100% were reduced proportionally. Blanks were assumed to be 0%.

Answer Choices	Average
Culture fit/team dynamics	25.8%
Education credentials	15.6%
Essential employability (soft) skills	16.9%
Technical skills	22.2%
Work experience	17.7%
Other (please specify)	1.8%

Table 18: As an employer, what do you perceive as the primary barriers to job access for underserved populations in Oregon? Please select all that apply. 132 respondents total.

Answer Choices	Percent	Responses
Access to affordable housing	62.88%	83
Access to education and training programs	40.91%	54
Access to childcare services	54.55%	72
Access to health services	14.39%	19
Bias or discrimination in the hiring process	11.36%	15
English language barriers	19.70%	26
Outreach to underserved populations	21.21%	28
Transportation	41.67%	55
Workplace accessibility and accommodations for people with disabilities	7.58%	10
Workplace schedule flexibility	18.18%	24
Other (please specify)	15.15%	20

Table 19: Large network of workforce, education, and training institutions to serve Oregonians (strength)

Average	Median	Responses
52	48	120

Table 20: Employer-led training programs have had success upskilling employees (strength)

Average	Median	Responses
71	70.5	124

Table 21: Lack of a central state workforce authority lends to competing and misaligned efforts amongst workforce development, education, and training providers (weakness)

Average	Median	Responses
61	67	116

Table 22: Low level of engagement between employers, especially trade-related employers, and the K-12 talent pipeline (weakness)

Average	Median	Responses
68	64	119

Table 23: Please rank the following opportunities in order of priority, where 1 is the highest priority for Oregon's workforce environment.

Answer Choices	1		2		3		4	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Coordinate local/regional workforce data collection efforts and improve data sharing and transparency at the state level	14.04%	16	14.91%	17	28.95%	33	25.44%	29
Centralize state workforce planning through collaborations and partners to better align local/regional workforce strategic visions and plans	27.35%	32	22.22%	26	19.66%	23	15.38%	18
Identify new and scale existing industry-higher education training partnerships (e.g., Intel's Quick Start model)	25.22%	29	26.96%	31	19.13%	22	15.65%	18
Strengthen the talent pipeline by leveraging high-wage growth occupations in computer, information technology, and construction industries	23.53%	28	22.69%	27	15.13%	18	20.17%	24

Table 24: Please rank the following threats in order of severity, where 1 is the most significant threat to Oregon's workforce environment.

Answer Choices	1		2		3		4		5	
	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number
Industry degree and credential bias; time-intensive process for developing new accredited degree programs	10.83%	13	16.67%	20	23.33%	28	23.33%	28	12.50%	15
Worker shortages, driven by an aging population and population loss since the pandemic, limit the state's ability to grow local talent	40.87%	47	23.48%	27	20.87%	24	7.83%	9	2.61%	3
Across the nation, low wages for childcare workers do not match the high demand for those roles	18.49%	22	18.49%	22	24.37%	29	18.49%	22	11.76%	14
Environmental challenges related to climate change, like wildfires, that directly and indirectly impact target industries negatively and impede the state's ability to attract talent	5.13%	6	5.98%	7	6.84%	8	18.80%	22	45.30%	53
Possibility of a steepening skills gap amongst future Oregon-native workers because recent and soon-to-be high school graduates suffer from learning loss through the pandemic, that in Oregon was worse than average nationally, and reduced graduation requirements.	22.69%	27	30.25%	36	16.81%	20	15.13%	18	4.20%	5

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