



Oregon Workforce and Talent Development Board (WTDB)

September 14, 2018

12:00 P.M. – 1:00 P.M. *WTDB Local Liaison's Meeting*

1:00 P.M. – 4:00 P.M. *Board Meeting*

Sentinel Hotel

Renaissance Room

614 SW 11th Ave

Portland, OR 97205

To listen, call: 877-810-9415, Access Code: 9550046

Members

Ken Madden, Chair, Owner, Madden Industrial Craftsman

Frank Wall, Vice Chair, Executive Director, Plumbing & Mechanical Contractors Association of Oregon

Elana Pirtle-Guiney, Workforce and Labor Policy Advisor, Office of the Governor

Ben Cannon, Executive Director, HECC

Kim Thatcher, Senator, Oregon Legislature, Dist. 13

Chris Harder, Director, Business Oregon

Cathy Reynolds, Employment Strategy and Workforce Planning Director, Legacy Health System

Joe Weber, Global Director of Sales, ESCO

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Paul Holvey, Representative, Oregon Legislature, Dist. 8

Shari Dunn, Executive Director, Dress for Success

Douglas Hunt, Lincoln County Commissioner

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Tony Rost, Chief Technology Officer, Metal Toad

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Matt Millard, OHSU-AFSCME

Debbie Radie, Vice President, Operations, Boardman Foods

Jeffrey Krolick, Options for Southern Oregon, Inc.

Trina Lee, Director, Vocational Rehabilitation, DHS

Gary Brown, Nvidia Corporation

Kristina Payne, Executive Director, Lane Workforce Partnership

Technical Advisors

Karen Humelbaugh, Director, Office of Workforce Investments, HECC

Jim Pfarrer, Director, Workforce Operations Division, Oregon Employment Department

Dacia Johnson, Executive Director, Commission for the Blind

Dan Haun, Deputy Director, Self Sufficiency, DHS

Pete Karpa, Deputy Director, Vocational Rehabilitation, DHS

Staff

Todd Nell, Director, WTDB

Clay Martin, WTDB and Workforce Analyst, WTDB

Jennifer Denning, Program Analyst, WTDB

Kelly Zinck, Program Analyst, WTDB

AGENDA

Persons wishing to testify during the public comment period should sign up at the meeting. Times approximate and order of agenda items may vary.

12:00		WTDB Local Liaison's Meeting	Todd Nell
		<i>Business, Industry, and Economic Development Meeting</i>	
1:00	1.0	Call to Order and Opening Remarks	Chair Madden
1:10	2.0	Consent Agenda	
	2.1	CONSENT ITEM: Approve June 2017 WTDB minutes	
	2.2	CONSENT ITEM: Approve August 2017 Executive Committee minutes	
1:15	3.0	Public Comment	
		<i>Each individual/group will have a time limit of three minutes.</i>	
1:30	4.0	Future Ready: A Plan for Oregon's Future	Governor's Office
1:50	5.0	Oregon's Current Workforce Gaps and Future Workforce Needs	Nick Beleickis, OED Gail Krumenauer, OED Jason Payton, OED
2:20	6.0	Oregon Talent Assessment	John Tapogna, ECONorthwest
		ACTION ITEM: Approve Oregon Talent Assessment	
2:50	7.0	Workforce Programs	
	7.1	Treehouse	Ryan Carson, CEO and Founder Chrystal McMahon, OSECE
	7.2	Oregon Supported Employment Center for Excellence	
3:30	8.0	Committee Updates	
	8.1	Executive Committee	Chair Madden
3:40	9.0	2018 National Governor's Association	Chair Madden
3:55	10.0	Upcoming Events	Todd Nell
4:00		Adjourn	

All meetings of the Workforce and Talent Development Board are open to the public and will conform to Oregon public meetings laws. A request for an interpreter for the hearing impaired or for accommodations for people with disabilities should be made to Kelly Zinck at (503) 947-1733 or by email at HECC_WTDB@oregon.gov. Requests for accommodation should be made at least 72 hours in advance. Staff respectfully requests that you submit 25 collated copies of written materials at the time of your testimony. Persons making presentations including the use of video, DVD, PowerPoint or overhead projection equipment are asked to contact WTDB staff 24 hours prior to the meeting.



Oregon Workforce and Talent Development Board (WTDB)

June 8, 2018

11:00 A.M. – 1:00 P.M. *Working Lunch (Room B112)*
1:00 P.M. – 4:00 P.M. *Business Meeting (Rooms B117-119)*

Oregon Convention Center
777 NE Martin Luther King Jr Blvd
Portland, OR 97232

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Kelly Zinck, Program Analyst, WTDB

MEETING MINUTES

Members Present: Ken Madden, Chair; Frank Wall, Vice Chair; Elana Pirtle-Guiney; Ben Cannon; Kim Thatcher; Cathy Reynolds; Ali O'Neill; Michael Dembrow; Barbara Byrd; Shari Dunn; Doug Hunt; Anne Mersereau; Kay Erickson; Patty Dorroh; Mark Mitsui; Soundharya Nagasubramanian; Debbie Radie; Jeffrey Krolick; Trina Lee; Gary Brown; Kristina Payne.

Members Excused: Chris Harder; Joe Weber; Paul Holvey; Tony Rost; Rod Belisle; Matt Millard.

Technical Advisors and Staff Present: Karen Humelbaugh; Todd Nell; Clay Martin; Kelly Zinck.

[Agenda and Materials Packet](#)¹

1.0 Call to Order and Opening Remarks

Chair Madden called the meeting to order at 1:26 P.M., provided an overview of the agenda, and facilitated an introduction of board members.

2.0 Consent Agenda

- 2.1 Approve March 2017 WTDB minutes
- 2.2 Approve May 2018 Exec. Committee minutes
- 2.3 Approve WTDB Bylaws

ACTION ITEM

Motion: Frank Wall moved to approve the consent agenda, 2.1 thru 2.3; Doug Hunt seconded the motion. Chair Madden called for a voice vote and the motion was approved unanimously.

3.0 Public Comment

None.

4.0 Future Ready: A Plan for Oregon's Future

Elana Pirtle-Guiney, Workforce and Labor Policy Advisor to Governor Brown, provided an overview of the Governor's [Future Ready Oregon](#) initiative. Discussion included wrap around services, career connected learning local programs, and the importance of partnerships between businesses and school districts.

6.0 Talent Summit, Talent Assessment, and WTDB Strategic Plan

(agenda item taken out of order)

Ben Cannon, Executive Director of the Higher Education Coordinating Commission, provided an overview of the [Oregon Talent Summit](#) held on

¹All materials can be found at <http://www.oregon.gov/WorkforceBoard/boardmeetingsandevents/Pages/boardmeetings.aspx>.
If you are unable to read the materials, please contact HECC_WTDB@oregon.gov.



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May 11, 2018. The Talent Summit convened leaders from business, workforce and talent development, higher education, K-12, and other key stakeholders to strategize how the education and training system can better provide training in a flexible, dynamic, and technical way. The importance of career connected learning at all levels, including connecting learning with current or future work, was another theme of the summit.

5.0 Industry Sector Partnerships

(agenda item taken out of order)

Kyle Stevens, Program Manager at the Southwestern Oregon Workforce Investment Board (SOWIB); Heather Ficht, Executive Director of East Cascades Works; and Kim Parker-Llerenas, Executive Director at Willamette Workforce Partnership led a panel discussion of industry sector partnerships in their respective areas of the state. Updates included expanding target sectors, barriers to convening businesses together, and launching medical and technology apprenticeships. The panelists also discussed strategies they use to maintain industry engagement, what resources the state could provide to support sector partnerships at the local level, and what the board could do to support this work.

7.0 Workforce System Budget Review

Karen Humelbaugh, Director of the Office of Workforce Investments at the Higher Education Coordinating Commission; provided an overview of the Workforce Innovation and Opportunity Act (WIOA) components and the WIOA Title 1B draft allocations for the 2018 Program Year. While listed on the agenda as an action item, this material was not presented to the board for action.

8.0 Overview of Oregon Employment Department Research Projects

Bob Uhlenkott, Research Director with the Oregon Employment Department (OED), presented an overview of upcoming research projects from the Oregon Employment Department, highlighting national long-term projections, Oregon long-term employment projections, and OED research publications forthcoming in the next few months.

9.0 Committee Updates

9.1 Executive Committee

Adjourn

Chair Madden adjourned the meeting at 3:50pm.



Oregon Workforce Talent Development Board (WTDB) Executive Committee

Members

Ken Madden, Chair, VP Sales and Marketing, Madden Industrial Craftsmen, Inc.

Frank Wall, Vice Chair, Executive Director, Plumbing & Mechanical Contractors Association of Oregon

Barbara Byrd, Secretary Treasurer, AFL-CIO

Patty Dorroh, Harney County Commissioner

Shari Dunn, Executive Director, Dress for Success Oregon

Anne Mersereau, VP Human Resources, Diversity & Inclusion, PGE

Matt Millard, AFSCME, System Application Analyst, Oregon Health and Science University

Mark Mitsui, President PCC

Soundharya Nagasubramanian, Director, Software Architecture and Cybersecurity, Welch Allyn

Elana Pirtle-Guiney, Labor and Workforce Policy Advisor, Governor Kate Brown's Office

Joe Weber, Global Director of Sales, ESCO

Non-Voting Members

Ben Cannon, Executive Director, HECC

Kay Erickson, Director, Oregon Employment Dept.

Karen Humelbaugh, Director, Office of Workforce Investments, HECC

Karen Litvin, CEO, Oregon Workforce Partnership

Staff

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Clay Martin, WTDB and WF Analyst, WTDB

Jennifer Denning, Program Analyst, WTDB

Kelly Zinck, Program Analyst, WTDB

August 8, 2018

1:30 P.M. – 3:00 P.M.
Madden Industrial Craftsmen
1800 NW 169th Place
Suite A200
Beaverton, Oregon 97006

MEETING MINUTES

Members Present: Ken Madden, Barbara Byrd, Anne Mersereau, Patty Dorroh, Soundharya Nagasubramanian, Karen Litvin, Shari Dunn, and Elana Pirtle-Guiney.

Members Excused: Joe Weber and Frank Wall

Non-Voting Members and Staff Present: Clay Martin, Kurt Tackman, Shalee Hodgson, Kay Erickson, Karen Humelbaugh, Jennifer Denning, Todd Nell and Karen Litvin.

Agenda¹

1.0 Ken Madden

Ken Madden opened the discussion and shared information about his place of business and some conversations he'd had with OSU Extension Service.

2.0 Call to Order

Chair Madden then called the meeting to order at 1:43 pm and provided an overview of the agenda.

3.0 Public Comment

None

4.0 Updates and Discussion

Shalee Hodgson gave an overview and update on the Governor's Future Ready Oregon initiative and on the Local Board Assessments.

Todd Nell gave an overview of Adult Education Attainment Goal and timeline for completion of the work. Todd also led recap of previous board meeting session led by Greg Bell, the upcoming strategic planning work, and shared information on JP Morgan Chase work nationally with youth through their foundation. Todd suggested possible funding opportunities may exist from Chase for LWDBs. Todd also provided an update on the Talent Assessment work.

¹All meeting materials can be found at: <http://www.oregon.gov/owib/committees/Pages/ExecutiveCommittee.aspx>.
If you are unable to read the materials, please contact jennifer.l.denning@oregon.gov.



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Shari Dunn and Kay Erickson addressed merits of hiring dedicated consultant to lead strategic planning. Barbara Byrd suggested internal staff could lead. Shari and Patty Dorroh stated that they liked the shorter, road map approach to strategic plan. Committee agreed to leaner road map strategy likely using preferred vendor(s) on statewide price agreement list.

Shari also suggested Todd reach out to Wells Fargo to present at Luncheon Series or at WTDB meeting. Shari discussed Dress for Success working with Ryan Carson and Tree House on training her women customers including guaranteed jobs when completed. It was unanimous decision Ryan be asked to present at board meeting or luncheon series.

Kurt Tackman provided an update on the OWI policy/guidelines related to Transfer of Funds.

5.0 Upcoming Events

Todd Nell provided updates on World Forestry Summit, October 2018, Healthcare Summit, November 2018, Talent Summit, April/May 2019 And Western Pathways Conference, May 2019.

6.0 Membership Opportunities

Ken Madden talked about opportunity to partner at local board level with OSU Extension Service. The extension service is involved in workforce development activities. Ken advised he would be meeting with extension leadership soon.

Ken also recommended that the board invite the new Oregon Commissioner of Labor & Industries, Val Hoyle, to become a member of the WTDB. Ken will work with Todd to craft invite letter in Dec/Jan.

7.0 Other Business

Barbara Byrd and Elana discussed Local Liaisons group that had met historically. Recommended that they start meeting 30-60 minutes before WTDB quarterly board meetings to provide more accessibility to local boards and ask for more accountability.

Ken provided information from the NGA on immigration reform.

Adjourn

Chair Madden adjourned the meeting at 3:02 pm.



A Plan for Oregon's Future

Overview and Update July 17, 2018

Launched by Governor Kate Brown in February 2018, Future Ready Oregon helps to close the gap between the skills that Oregon's workers have and the skills Oregon's growing businesses need. Closing this gap will be accomplished through a combination of initiatives and programs that provide skill and job training to youth, expand training opportunities and skill advancement for Oregonians already in the workforce, and identify projects designed to increase the housing supply in rural areas.

Leaving your community should not be the only path to a good job and a prosperous future for an individual or family. The programs developed and implemented through Future Ready Oregon will create equitable options for youth and adults that enable them to see and access opportunities that match their interests, are available in their communities and are supported with local education and work-based learning strategies. These programs will ensure that traditionally underserved people and populations are able to move to a place of access and outcomes through supports for individuals, families and communities, in partnership with businesses.

This work is guided by the following principles: transferable skills, self-sufficiency, connection to employers, career path, and equity. Programs included in Future Ready Oregon will be evaluated through criteria based on these principles to ensure alignment with the vision.

Goal: Prepare our future workforce by making investments in education that uses career connected learning strategies.

Strategies:

- Dedicate \$300 million to Career & Technical Education (CTE) and Science, Technology, Engineering and Math (STEM) in the 2019-2021 state budget.
- Ensure every student in Oregon has the opportunity to participate in career-connected learning programs, available in their community.

Goal: Prepare our current workforce by arming them with the skills they need to help Oregon's economy grow.

Strategies:

- Next-Gen Apprenticeships
- Turn wage earners into job creators (House Bill 4144)
- Rural Housing Accelerator
- Aligned community investments, creating jobs and supporting workers
- Expanding career paths in the healthcare industry
- Future Ready Summits in four to six economically significant industries in August/September.

Progress to date:

General Updates:

- *Higher Education Coordinating Commission (HECC) staff are collecting best practices across economic development, education and workforce development programs via online survey filtered by the Future Ready Oregon (FRO) Criteria Len. This data will be used to make recommendations for investment to replicate or scale successful models.*
- *Initiative Manager, Laura Foley from Department of Education and Rep. Sollman participated in the White House STEM Summit in June to provide input on the Federal STEM Plan.*
- *Initiative Manager continues to present information on Future Ready Oregon to various economic development, education and workforce stakeholder groups across the state.*

Goal: Prepare our future workforce by making investments in education that uses career connected learning strategies.

- Dedicate \$300 million to Career Technical Education (CTE) and Science, Technology, Engineering, Arts and Math (STEAM) in the 2019-2021 state budget.
 - *Convened a group of policy staff from Department of Education (including Youth Development Division) and the Higher Education Coordinating Commission to develop an inventory and conduct an evaluation of current priorities related to career-connected learning.*
 - *The education policy group has developed draft recommendations for policy changes and budget development that aligns and leverages these programs to improve outcomes at both the secondary and post-secondary levels.*
 - *Scheduled to conduct a listening session with CTE leaders at the ACTE conference in late July to gather feedback from local leaders and ideas related to this strategy.*
- Ensure every student in Oregon has the opportunity to participate in career connected learning programs, available in their community.
 - *Working with the Career Services Director at Southern Oregon University and the Deputy Director of Self-Sufficiency Programs at the Department of Human Services to determine how a SNAP 50/50 program might work to support their earn and learn program they are developing.*
 - *Setting up a small convening of state and local leaders to flesh out coordination and access of additional federal and community resources to support this type of work in Southern Oregon (likely in August).*
 - *Working with Local Workforce Development Boards to explore the possibility of using Badges to document career-connected learning.*

Goal: Prepare our current workforce by arming them with the skills they need to help Oregon's economy grow.

- Next-Gen Apprenticeships
 - *Continued implementation of Federal Grants and overall expansion vision.*
 - *Researching the requirements for Registered Youth Apprenticeship and BOLI approved Pre-Apprenticeship to better understand program parameters and standards.*
 - *Will use this information to make recommendations for policy and program changes that would streamline the process and expand the use of these tools.*

Progress to date:

- Turn wage earners into job creators (House Bill 4144)
 - *Working to support and coordinate as agencies develop administrative rules and an outreach strategy.*
 - *Future Ready Summit in Portland Metro will focus on this.*
 - *Working with Business Oregon to catalog entrepreneurship resources in rural areas to ensure the new businesses that are created have access to the resources available.*
- Rural Housing Accelerator
 - *Participated in the Policy session with the Governor's Institute for Community Design. Draft recommendations will inform agency budget requests.*
 - *Providing input on the role and resources of workforce development in supporting this work.*
- Aligned community investments, creating jobs and supporting workers
 - *Business Oregon, the Higher Education Coordinating Commission have recommended potential pilot sites, the projects selected will launch in August.*
- Expanding career paths in the healthcare industry
 - *Analyzing data collected on core competencies and training requirements for the entry level, non-certified non-licensed healthcare workforce.*
 - *The data will be used to vet core competencies across the industry and start the career pathway development.*
 - *An attraction strategy for these entry level positions is also being developed to increase the labor supply.*
 - *In the next several months, an analysis of bureaucratic processes that govern this workforce will be conducted to determine what is required by law and what is required by industry. Department of Human Services is starting this work.*
 - *The information gathered will be used to start a conversation with industry leaders about potential barriers to entry into these occupations.*
- Industry cluster strategies will be identified in at least three economically significant industries.
 - *Industries and locations have been chosen for Future Ready Summits:*
 - *Port of Morrow – Food Processing*
 - *Medford – Healthcare*
 - *Portland Metro – Construction*
 - *Columbia Gorge – Tech Cluster*
 - *Eugene – Advanced Wood Products Manufacturing*
 - *Bend – TBD*
 - *Most of these events will be scheduled in September.*
 - *Working with Regional Solutions, Business Oregon, Local Workforce Boards and others to nail down dates and flesh out the details.*

Contact:

Shalee Hodgson,
Initiative Manager, Future Ready Oregon,
Office of Governor Kate Brown
Shalee.hodgson@oregon.gov; 503-798-0142



Oregon's Current Workforce Gaps and Future Workforce Needs

Workforce and Talent Development Board

September 14, 2018



This Morning's Menu

- [Oregon's Current Workforce Gaps](#) (Nick B.)
 - Difficult-to-fill job vacancies
 - Educational requirements of vacancies defined by employers
- [Future Workforce Needs by Industry](#) (Gail)
 - Industries in 2017 and 2027
- [Future Workforce Needs by Occupation](#) (Jason)
 - Occupations in 2017 and 2027
 - Openings due to growth and replacements
 - Educational requirements of occupations defined by U.S. Bureau of Labor Statistics
 - Typical entry level and competitive educational requirements



Special Report June 2018

Oregon's Current Workforce Gaps



Difficult-to-Fill Job Openings
Oregon Job Vacancy Survey
June 2018



Key Findings

Snapshot of Oregon's Job Vacancies, 2017

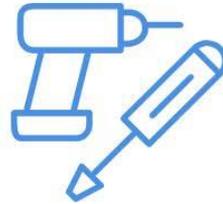
	Vacancies	Difficult to Fill	Not Difficult to Fill
Vacancies	60,718	38,691	22,027
Average wage	\$17.82	\$18.28	\$16.62
Full time	77%	77%	75%
Permanent	88%	85%	92%
Require education beyond high school	29%	29%	29%
Require previous experience	57%	67%	40%
Difficult to fill	64%	100%	0%



The Most Difficult-to-Fill Occupations



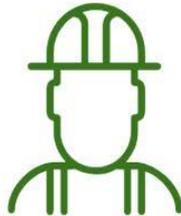
TRUCK DRIVERS
1,500



CARPENTERS
1,500



PERSONAL CARE AIDES
1,400



CONSTRUCTION LABORERS
1,100

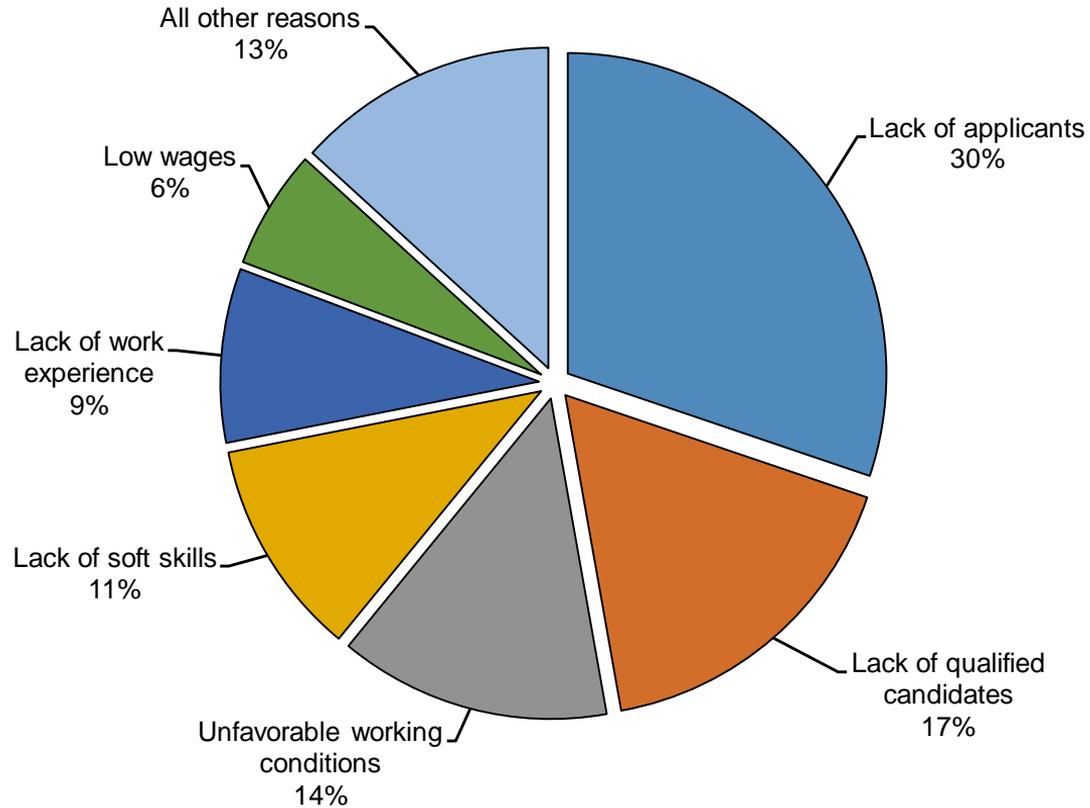


FARM WORKERS
1,000



RESTAURANT COOKS
900

Employer-Provided Reasons for Difficulty Filling Vacancies in Oregon, 2017



Educational Requirements

Characteristics of Difficult-to-Fill Vacancies by Education Level Requirement, 2017

	Difficult-to-Fill Vacancies	Average Wage	Full time	Permanent	Require Previous Experience
All Education Levels	38,691	\$18.28	77%	85%	67%
No requirement	12,889	\$14.57	73%	76%	49%
High school or equivalent	13,650	\$15.90	78%	86%	69%
Postsecondary or associate	7,644	\$22.60	82%	98%	84%
Bachelor's or advanced degree	3,411	\$35.43	85%	94%	94%
Unknown	897	\$20.49	59%	64%	38%



The Most Difficult-to-Fill by Education

Postsecondary or Associate

Bachelor's or Advanced

Occupation	Vacancies	DTF	Average Wage
Registered Nurses	801	65%	\$35.04
Electricians	584	86%	\$31.42
Truck Drivers	555	85%	\$18.94
Nursing Assistants	577	65%	\$13.71
Hairdressers and Cosmetologists	317	100%	\$10.73
Medical Assistants	360	64%	\$16.68
Surveyors	241	90%	\$28.41

Occupation	Vacancies	DTF	Average Wage
Sales Managers	232	95%	\$42.21
Software Dev.	222	97%	\$44.97
Physical Therapists	199	95%	\$31.41
Social Services Mgrs	229	82%	\$23.99
Civil Engineers	164	100%	\$29.44
General Mgrs	183	89%	\$44.91
Registered Nurses	146	96%	\$32.89

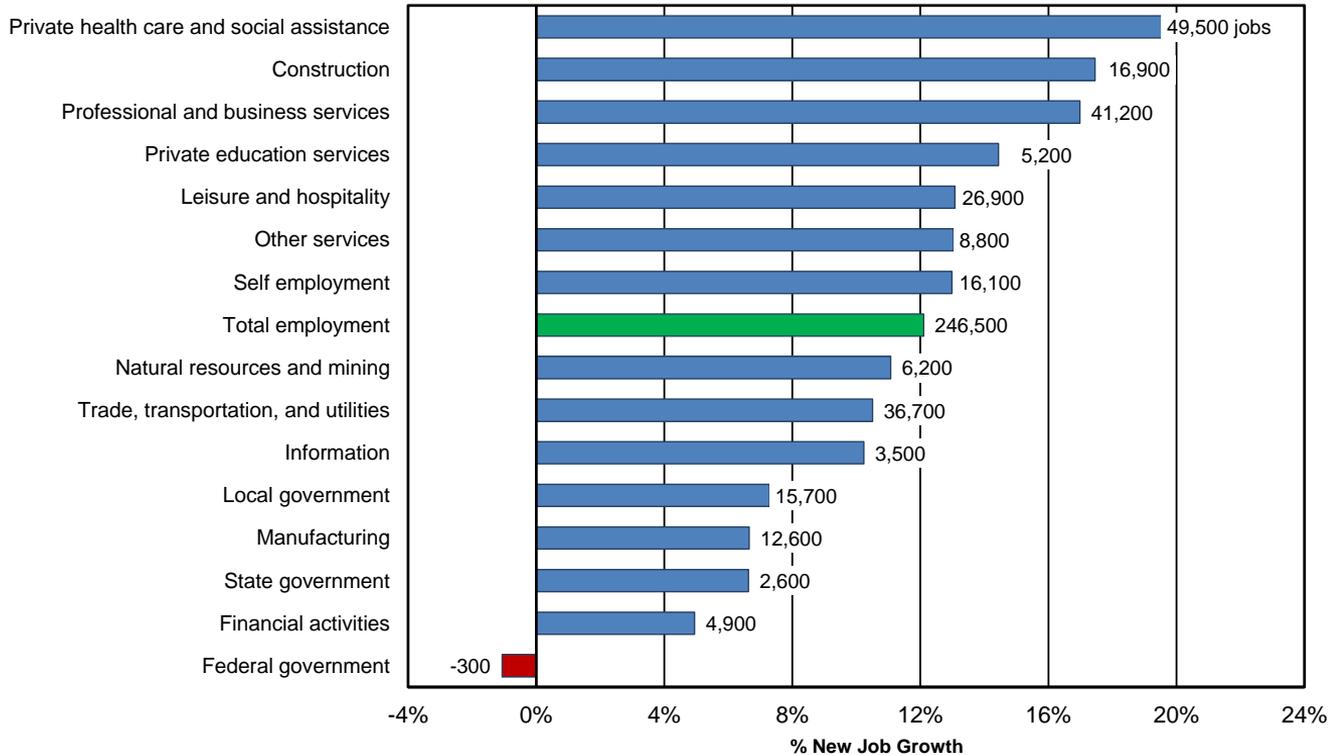


Future Workforce Needs



Health care leads future job growth in Oregon.

Health Care Leads Long-Term Employment Growth
Oregon Industry Projections, 2017-2027



Private health care and social assistance accounts for one-fifth of all new jobs by 2027.

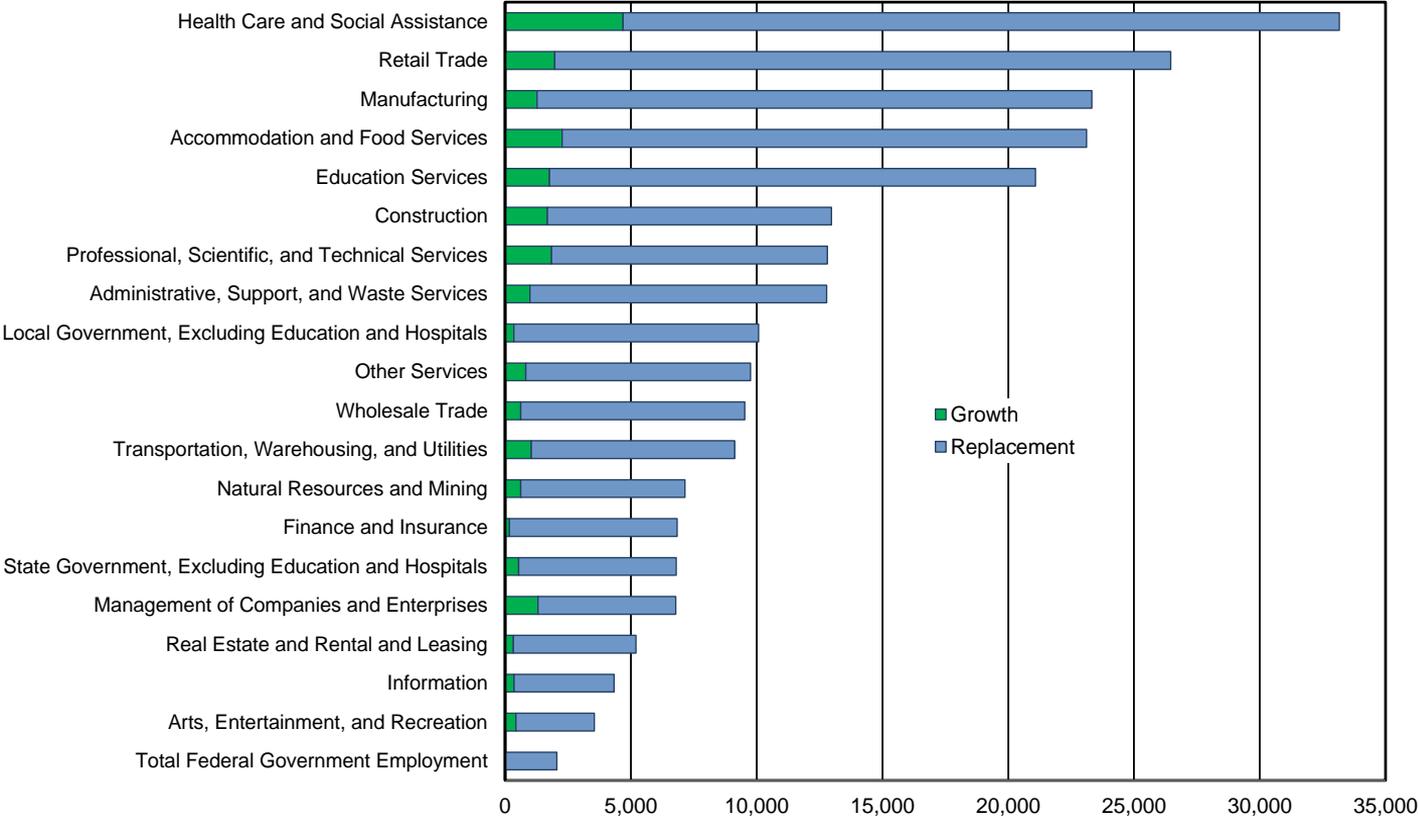
Construction will be the second-fastest growing sector (17%)

Federal government is the only broad sector expected to decline.



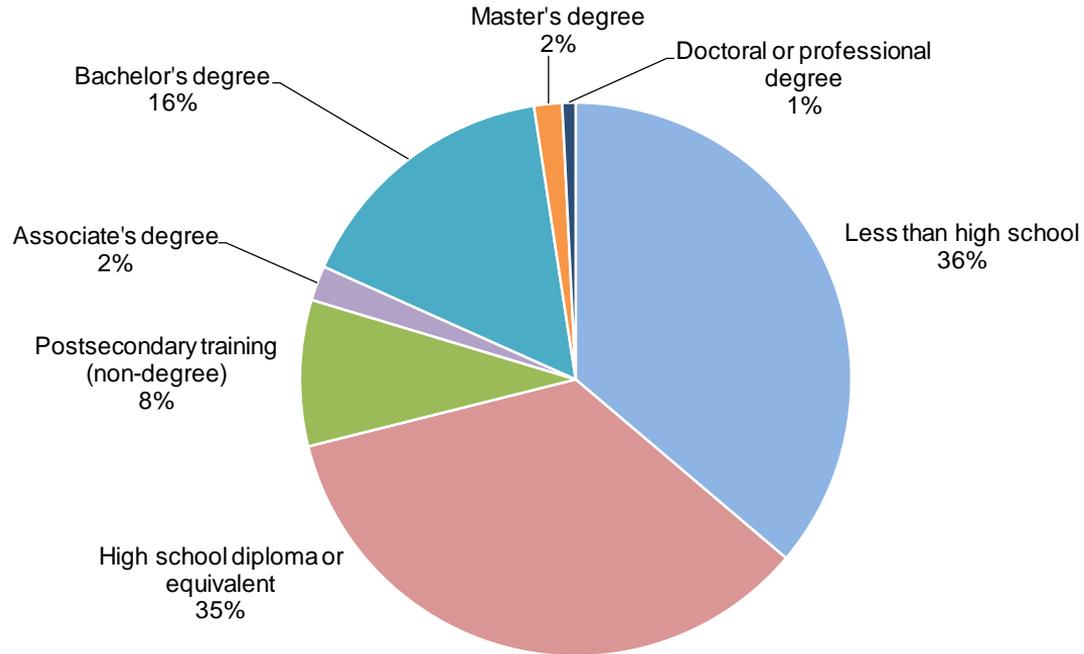
Widespread job opportunities are expected across Oregon's economy.

2017-2027 Average Annual Openings by Sector in Oregon



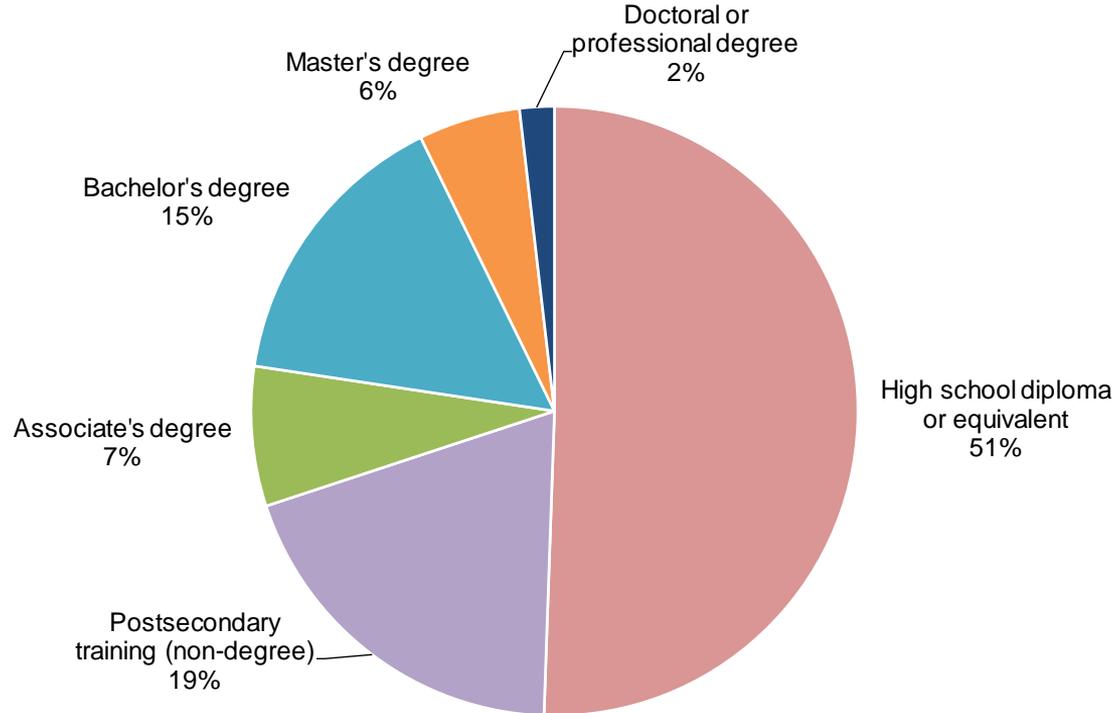
At the typical entry-level education, almost one-third of projected openings require education beyond high school.

Total Projected Openings by Typical Entry-Level Education, 2017-2027



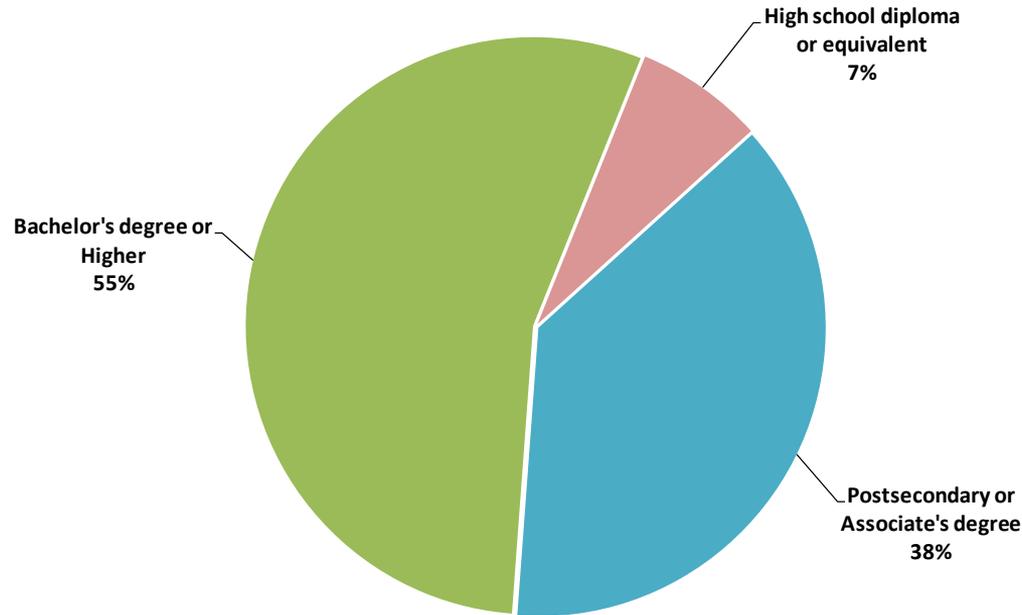
At the competitive level, nearly half of projected job openings require education beyond high school.

Total Projected Openings by Competitive Education, 2017-2027



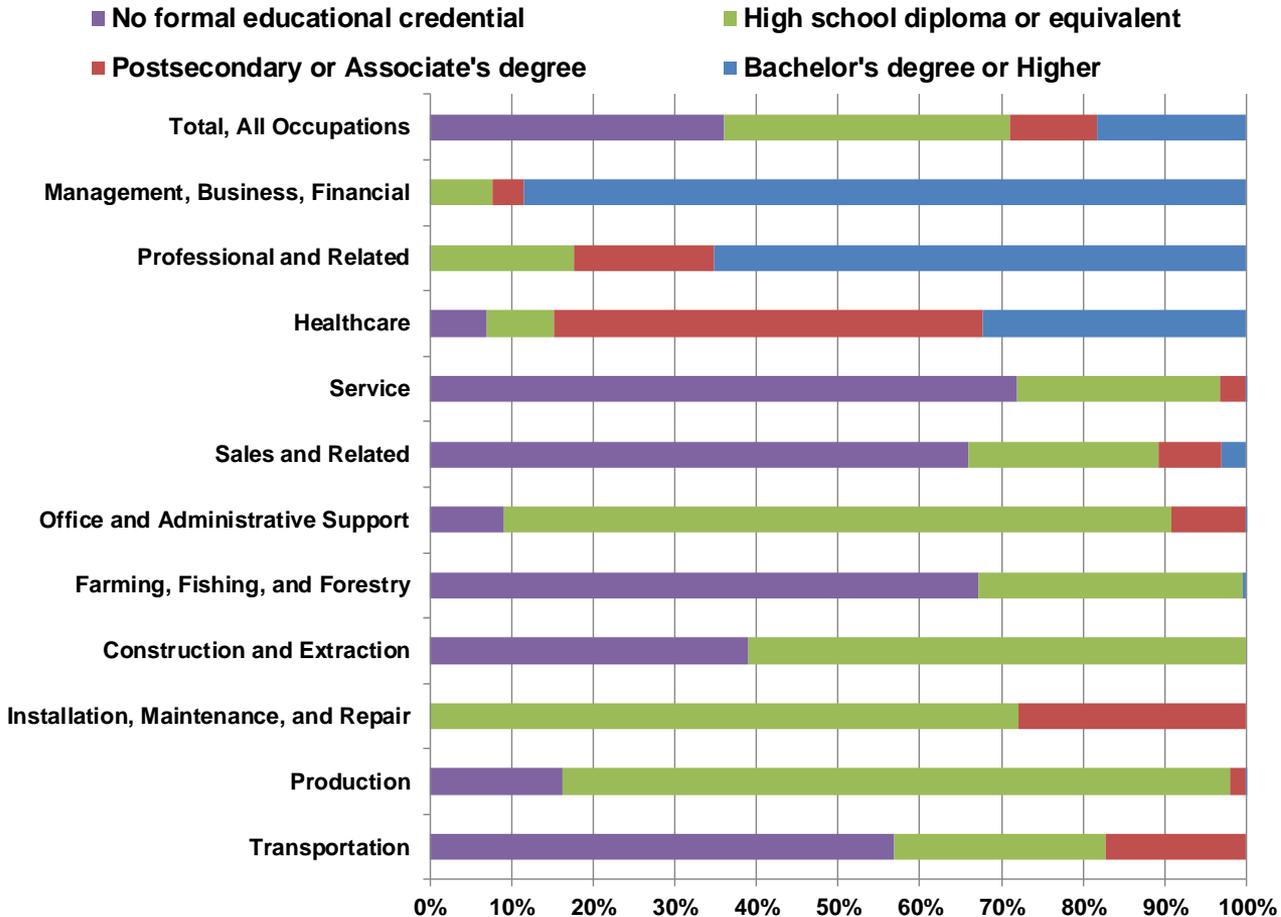
And over 90 percent of job openings that typically pay high wages require some type of education past high school to be competitive.

**Total Projected Openings for High-Wage Occupations
by Competitive Education level, 2017-2027**



Education Pays

- According to a 2017 report from the University of Washington the wage required to be self-sufficient for a single parent with two children in Multnomah County was \$31.57 per hour.
- Statewide, 83 percent of the jobs whose average wage was greater than \$31.57 have a competitive education level of Bachelor's degree or higher.



Job opportunities will be available for Oregonians with a wide range of education attainment.

For instance, about 85 percent of projected healthcare openings have a typical entry-level education requirement higher than a high school degree.

Variety among top occupations with higher education levels

Top Occupations by Total Projected Job Openings, 2017-2027 Typical Entry-Level Education More than High School Diploma

	2017 Employment	Percent Change	Employment Change	Replacement Openings	Total Openings	Typical Entry-Level Education
General and Operations Managers	33,577	14.8%	4,971	28,987	33,958	Bachelor's degree
Truck Drivers, Heavy and Tractor-Trailer	24,289	11.1%	2,699	26,977	29,676	Postsecondary training (non-degree)
Bookkeeping, Accounting, and Auditing Clerks	25,127	3.1%	766	28,054	28,820	Postsecondary training (non-degree)
Registered Nurses	37,353	16.7%	6,247	20,388	26,635	Bachelor's degree
Education, Training, and Library Workers, All Other	20,989	12.3%	2,583	19,716	22,299	Bachelor's degree
Nursing Assistants	13,269	12.1%	1,610	15,663	17,273	Postsecondary training (non-degree)
Business Operations Specialists, All Other	15,352	13.5%	2,073	14,596	16,669	Bachelor's degree
Medical Assistants	11,166	28.5%	3,187	13,437	16,624	Postsecondary training (non-degree)
Managers, All Other	18,485	14.8%	2,732	13,699	16,431	Bachelor's degree
Accountants and Auditors	13,613	16.5%	2,250	12,831	15,081	Bachelor's degree
Software Developers, Applications	13,253	32.6%	4,317	9,674	13,991	Bachelor's degree
Real Estate Sales Agents	12,881	8.2%	1,057	12,093	13,150	Postsecondary training (non-degree)
Substitute Teachers	10,907	7.2%	788	12,176	12,964	Bachelor's degree
Elementary School Teachers, Except Special Education	12,105	8.7%	1,055	8,846	9,901	Bachelor's degree
Preschool Teachers, Except Special Education	6,992	16.1%	1,122	7,287	8,409	Associate's degree
Market Research Analysts and Marketing Specialists	5,914	29.2%	1,724	6,448	8,172	Bachelor's degree
Financial Managers	7,340	26.7%	1,961	6,031	7,992	Bachelor's degree
Secondary School Teachers, Except Special and Career/Technical Education	9,462	9.5%	896	6,732	7,628	Bachelor's degree
Management Analysts	7,101	16.5%	1,174	6,442	7,616	Bachelor's degree
Automotive Service Technicians and Mechanics	7,423	5.8%	431	7,019	7,450	Postsecondary training (non-degree)



**Nick Beleiciks,
State Employment Economist**

Nick.J.Beleiciks@Oregon.gov

503-947-1267

**Gail Krumenauer,
Senior Economic Analyst**

Gail.K.Krumenauer@Oregon.gov

503-947-1268

**Jason Payton,
Occupational Economist**

Jason.M.Payton@Oregon.org

503-947-1233

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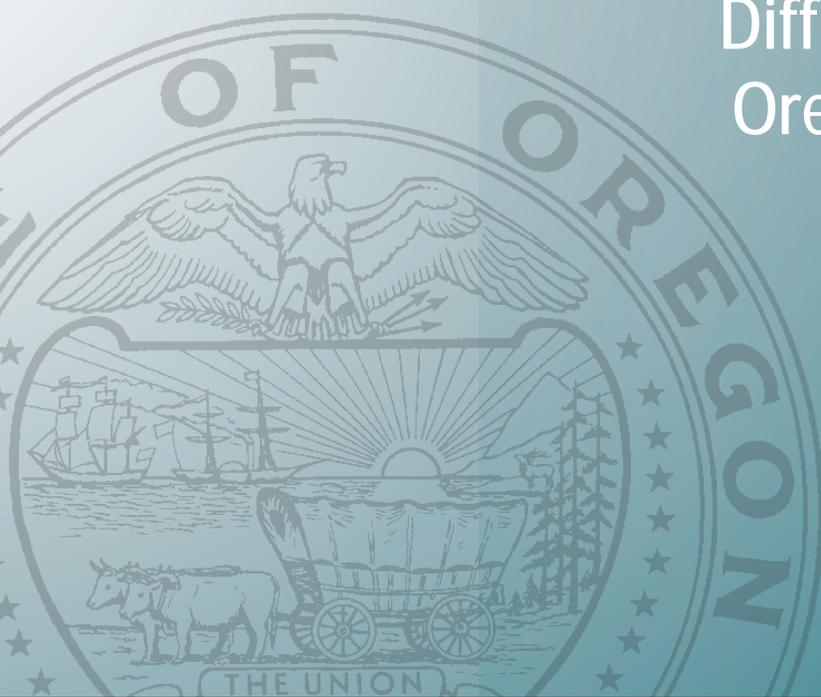
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Oregon's Current Workforce Gaps



Difficult-to-Fill Job Openings
Oregon Job Vacancy Survey
June 2018





For questions regarding the content of
this publication, contact Nick Beleiciks,
Nick.J.Beleiciks@oregon.gov,
(503) 947-1267

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Nick Beleiciks Will Burchard Chris Greaves Gail Krumenauer
Paul Marche Mark Miller Jessica Nelson Kathi Riddell
Bob Uhlenkott

...and the 5,100 Oregon businesses who responded to our survey.

Thank you!

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Identifying Current Workforce Gaps

Oregon has enjoyed solid job growth over the past few years, adding jobs faster than the nation and frequently ranking among the fastest-growing states. Oregon’s unemployment rate is at a record low and is essentially the same as the nation as a whole. This solid job growth and record low unemployment are signs of a tight labor market. There is a relative abundance of job opportunities and a relative scarcity of job applicants. It’s not surprising that vacancies have become increasingly difficult to fill for businesses in Oregon.

Oregon’s annual Job Vacancy Survey is designed to identify employers’ vacancies, which ones they have a difficult time filling, and to get a business perspective on why these jobs may be going unfilled. The Employment Department surveyed 13,600 private-sector employers over the course of the year and received responses from 5,100. Their responses were used to create estimates of job vacancies at Oregon businesses. The heart of this report was written by the Oregon businesses that took the time to respond to our surveys.

The findings of this report offer valuable information to job seekers, businesses, and workforce developers. Job seekers will be able to identify the types of jobs with the most vacancies and help prepare themselves for the expectations employers have of their applicants. Employers will be able to identify the common struggles they collectively face when trying to fill their vacancies, and how to make their recruitments attractive to today’s job seekers. Workforce developers will be able to identify gaps both overall and in specific areas of the workforce, helping to inform their efforts to close gaps and help Oregon’s economy grow.

What Do We Mean by a Vacancy?

The number of job vacancies used in this report is an estimate of the number of vacancies “at any given time” in 2017. Surveys are collected quarterly from a sample of businesses with two or more employees. Responses were pooled to create the annual figure of 60,700 vacancies.

Job vacancies are seasonal, with the number and types of jobs available changing during the course of a year. The estimated number of total vacancies by season in 2017 were:

Quarter	Vacancies	Percent
		Difficult to Fill
Winter	50,500	62%
Spring	62,600	68%
Summer	66,600	69%
Fall	54,300	62%

Seasonal Job Vacancy Survey reports are available at:

QualityInfo.org/pubs

Key Findings

The majority of Oregon’s current job vacancies are difficult to fill. Businesses reported 60,700 job vacancies at any given time in 2017. Of these vacancies, 38,700 job openings (64%) were reported as difficult to fill by employers. This is the largest number of vacancies and difficult-to-fill vacancies recorded since the current form of Oregon’s Job Vacancy Survey began in 2013.

- The occupations with the largest number of difficult-to-fill vacancies were heavy and tractor-trailer truck drivers, carpenters, personal care aides, construction laborers, farmworkers and laborers, and restaurant cooks. These occupations top the list of 354 occupations with difficult-to-fill vacancies.
- Vacancies were difficult to fill in all areas of Oregon. The highest shares of difficult-to-fill job openings occurred in Southwestern Oregon (74%) and in Clackamas and Northwest Oregon (73% in each). In Portland-Metro, 51 percent of vacancies were difficult to fill. While that represented the lowest share in any region, Portland-Metro had the highest number of difficult-to-fill vacancies with 7,900.
- A lack of applicants was the most common reason given for difficulty filling vacancies. That reflects the tight labor market. Still, there are thousands of job seekers in Oregon at any one time. These vacancies may not have been attractive enough to potential applicants, or potential applicants may not have known these job opportunities existed and therefore did not apply.
- Employers reported that 29 percent of vacancies required education beyond high school, and the share was the same for both difficult-to-fill vacancies and non-difficult vacancies. Vacancies with higher educational requirements were more likely to be difficult to fill due to a lack of qualified candidates. Those with lower educational requirements were more likely to report unfavorable working conditions or low wages.
- Difficult-to-fill vacancies were more likely to require previous work experience. Sixty-seven percent of difficult-to-fill vacancies required previous work experience, while just 40 percent of vacancies filled without difficulty required previous experience.
- Difficult-to-fill vacancies offered higher average wages than non-difficult vacancies. The average offered wage was \$18.28 per hour for difficult-to-fill vacancies and \$16.62 for non-difficult vacancies. By comparison, the median wage of already filled jobs in Oregon was \$18.59 per hour in 2017.

Snapshot of Oregon's Job Vacancies, 2017

	Vacancies	Difficult to Fill	Not Difficult to Fill
Vacancies	60,718	38,691	22,027
Average wage	\$17.82	\$18.28	\$16.62
Full time	77%	77%	75%
Permanent	88%	85%	92%
Require education beyond high school	29%	29%	29%
Require previous experience	57%	67%	40%
Difficult to fill	64%	100%	0%

The Most Difficult-to-Fill Occupations

Oregon businesses faced challenges filling vacancies in a variety of occupations in 2017. Occupations can be considered difficult to fill based on either the number or the share of job openings in that occupation that are difficult to fill. For example, retail salespersons is the largest occupation in Oregon (and the nation). There were a large number of vacancies for retail salespersons (1,896), and many vacancies for retail salespersons were difficult to fill (765). The share of difficult-to-fill vacancies for retail salespersons was a relatively low 40 percent, so these vacancies were relatively easier to fill than vacancies for other occupations.

Additional information about these jobs helps to show why vacancies for specific occupations are relatively difficult to fill or relatively easy to fill. Staying with the example of retail salespersons, 55 percent of all vacancies were full time, so there were full-time or part-time options available. Ninety percent of all retail salespersons vacancies were for permanent positions, making the job attractive to job seekers looking for job stability. There are low barriers to entry for retail salesperson vacancies; just 2 percent of vacancies required education beyond high school, and 47 percent of vacancies required previous experience.

By Number of Difficult-to-Fill Vacancies

The occupations with the largest number of difficult-to-fill vacancies were heavy and tractor-trailer truck drivers (1,538), carpenters (1,454), personal care aides (1,422), construction laborers (1,051), farmworkers and laborers (950), and restaurant cooks (921).



By Share of Difficult-to-Fill Vacancies

The occupations with at least 500 difficult-to-fill vacancies and the largest share of difficult-to-fill vacancies included security guards (98% difficult to fill), carpenters (94%), janitors and cleaners (87%), painters (86%), heavy and tractor-trailer truck drivers (85%), electricians (85%), and maids and housekeepers (80%).

Top 20 Occupations with Difficult-to-Fill Job Vacancies in Oregon, 2017

Occupation Title	Vacancies	Not Difficult to Fill	Difficult to Fill	Percent Difficult to Fill
Heavy and Tractor-Trailer Truck Drivers	1,799	261	1,538	85%
Carpenters	1,540	86	1,454	94%
Personal Care Aides	2,327	905	1,422	61%
Construction Laborers	1,406	355	1,051	75%
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1,392	442	950	68%
Cooks, Restaurant	1,174	253	921	78%
Maids and Housekeeping Cleaners	983	198	785	80%
Retail Salespersons	1,896	1,131	765	40%
Registered Nurses	1,130	403	727	64%
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	797	106	691	87%
Nursing Assistants	951	310	641	67%
Painters, Construction and Maintenance	671	92	579	86%
Laborers and Freight, Stock, and Material Movers, Hand	896	359	537	60%
Electricians	627	94	533	85%
Security Guards	515	11	504	98%
Production Workers, All Other	803	334	469	58%
Maintenance and Repair Workers, General	611	166	445	73%
Stock Clerks and Order Fillers	775	370	405	52%
Light Truck or Delivery Services Drivers	727	324	403	55%
Landscaping and Groundskeeping Workers	522	124	398	76%

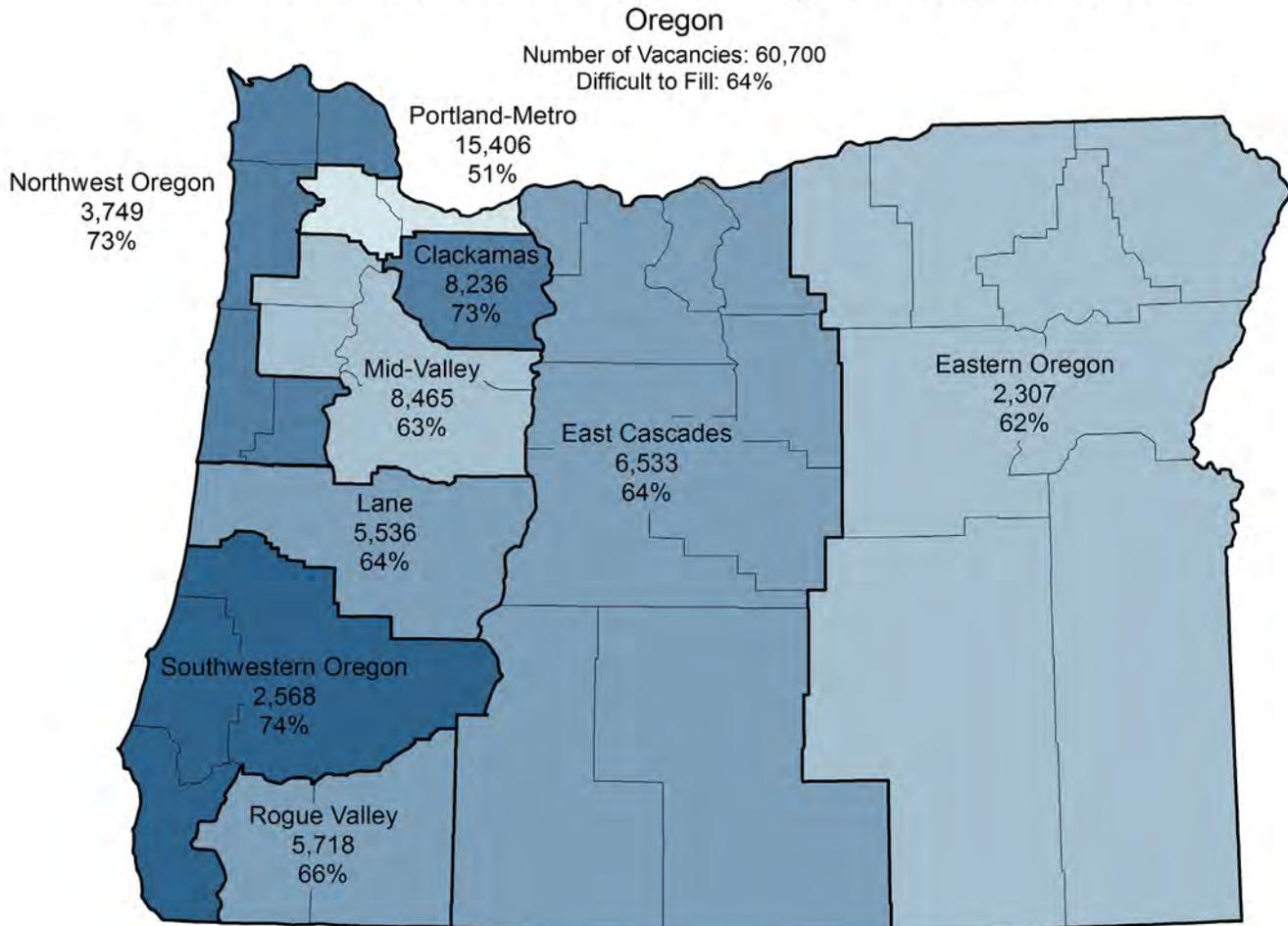
Businesses Across Oregon Have Difficulty Filling Vacancies

Vacancies are difficult to fill in all areas of Oregon. Businesses reported the highest shares of difficult-to-fill jobs in Southwestern Oregon (74%) and in Clackamas and Northwest Oregon (73% in each). The Portland-Metro area had the lowest share in any region, with 51 percent of vacancies reported as difficult to fill.

The Portland-Metro area had the most job vacancies. Even though the Portland-Metro area had a smaller share of difficult-to-fill vacancies than other areas, the large number of overall vacancies means it still had the highest number of difficult-to-fill job openings with 7,900.

Job vacancy survey data is available by local workforce areas, which often include combinations of rural and urban counties. This does not allow for a strict rural and urban discussion of difficult-to-fill vacancies, but it's clear that businesses in both rural and urban areas are having difficulty filling the majority of vacancies.

Vacancies and Share Difficult to Fill by Workforce Area, 2017



The average wage of difficult-to-fill vacancies was highest in the Portland-Metro area at \$22.96 per hour. Difficult-to-fill vacancies were more likely to be for full-time positions in Clackamas and Mid-Valley (83% each) and Rogue Valley (81%) than in other areas. Difficult-to-fill vacancies were more likely to be for permanent positions in Lane (97%) and Portland-Metro (95%).

The Portland-Metro area also had a higher share of difficult-to-fill vacancies that required education beyond high school (45%) or required previous experience (82%).

Northwest Oregon had one of the highest shares of difficult-to-fill vacancies. These vacancies had the lowest average offered wage for difficult-to-fill vacancies in any area (\$15.39), the smallest share that were for full-time positions (64%), and the smallest share for permanent positions (75%). Just 21 percent required education beyond high school and 52 percent required previous experience. This profile of difficult-to-fill vacancies in Northwest Oregon reflects the relative concentration of the travel and tourism industry. Leisure and hospitality and retail made up two-fifths of difficult-to-fill job openings in the region, compared with one-fifth statewide.

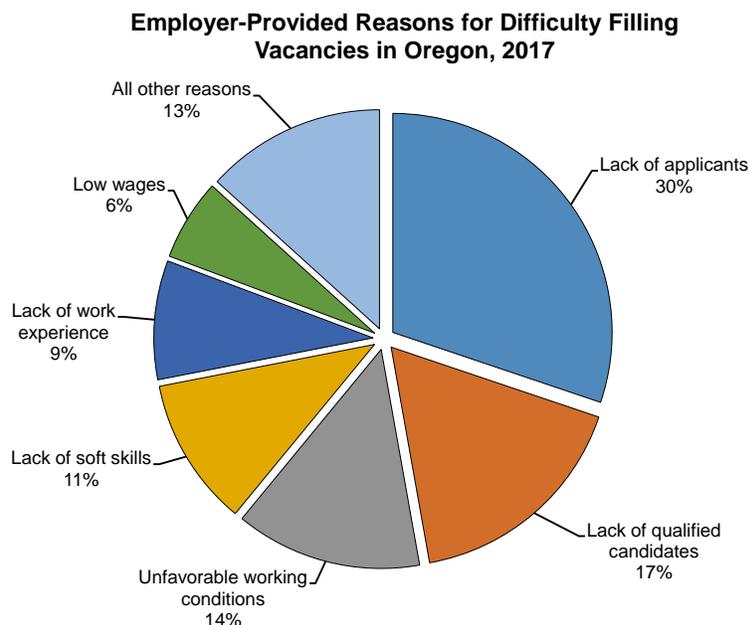
Difficult-to-Fill Vacancies by Region, 2017

Region	Difficult-to-Fill Vacancies	Average Wage	Full time	Permanent	Require Education Beyond HS	Require Previous Experience
Oregon	38,691	\$18.28	77%	85%	29%	67%
Portland-Metro	7,922	\$22.96	79%	95%	45%	82%
Clackamas	6,037	\$17.67	83%	92%	18%	72%
Mid-Valley	5,317	\$17.08	83%	81%	26%	66%
East Cascades	4,184	\$16.50	68%	66%	22%	52%
Rogue Valley	3,782	\$17.83	81%	82%	32%	66%
Lane	3,568	\$16.48	79%	97%	35%	60%
Northwest Oregon	2,748	\$15.39	64%	75%	21%	52%
Southwestern Oregon	1,907	\$15.76	70%	86%	32%	58%
Eastern Oregon	1,424	\$17.84	72%	85%	37%	63%
Multi-area or unknown	1,802	\$19.22	79%	79%	12%	68%

Reasons Employers Have Difficulty Filling Vacancies

Vacancies are difficult to fill for many reasons. For each of their difficult-to-fill vacancies, employers offered open-ended responses to identify what they thought was the primary reason for the unfilled opening. These responses were sorted into six main categories and a catch-all group for all other reasons.

The reasons given most often for employers' difficulties filling vacancies were a lack of applicants (30%), a lack of qualified candidates (17%), unfavorable working conditions (14%), a lack of soft skills (11%), a lack of work experience (9%), and low wages (6%). Other reasons given for the remaining 13 percent of difficult-to-fill vacancies included a lack of technical skills, the job location, a lack of training or certification, and an inability to find a candidate who's the "right fit" for the job.



A closer look at the main reasons employers struggle to fill vacancies will help job seekers prepare themselves to meet the expectations, it will help employers who struggle to fill vacancies improve their recruitment efforts, and it will inform the efforts of workforce developers preparing our current workforce with the skills they need to help Oregon’s economy grow.

Characteristics of Difficult-to-Fill Vacancies in Oregon by Primary Reason, 2017

Primary Reason	Vacancies	Average Wage	Full time	Permanent	Require Education Beyond HS	Require Previous Experience
All Reasons	38,691	\$18.28	77%	85%	29%	67%
Lack of applicants	10,891	\$17.31	82%	91%	28%	67%
Lack of qualified candidates	6,142	\$24.90	84%	94%	56%	88%
Unfavorable working conditions	4,969	\$15.22	61%	74%	10%	43%
Lack of soft skills	3,962	\$14.10	83%	79%	6%	54%
Lack of work experience	3,169	\$21.62	81%	90%	36%	90%
Low wages	2,170	\$12.13	75%	74%	11%	36%
All other reasons	4,792	\$20.54	80%	86%	41%	81%
No reason provided	2,596	\$16.34	56%	76%	29%	52%

Lack of Applicants

A lack of applicants was the most common reason businesses gave for difficulty filling vacancies. It was the primary reason given for 10,900 vacancies in 2017. Nearly one out of every three (30%) difficult-to-fill job vacancies had an insufficient number of applicants or no applicants at all. It’s not surprising there are not enough applicants in a fast-growing economy with unemployment rates at a record low. The point was made clear by the construction business that was having difficulty hiring heating, air conditioning, and refrigeration mechanics and installers because, “The heating industry is busy and anyone who has experience is already working elsewhere.”



Heavy and tractor-trailer truck drivers was the occupation with the most vacancies that were difficult to fill due to a lack of applicants (562 vacancies). Some employers also mentioned a shortage of truck drivers and the high demand for drivers with a commercial driver’s license. While truck drivers were found across many industries, Oregon’s fast-growing construction and health care sectors were represented by carpenters (505) and personal care aides (393). Occupations with the highest share of vacancies that were difficult to fill due to a lack of applicants were registered nurses (44%), heavy and tractor-trailer truck drivers (39%), and construction laborers (38%).

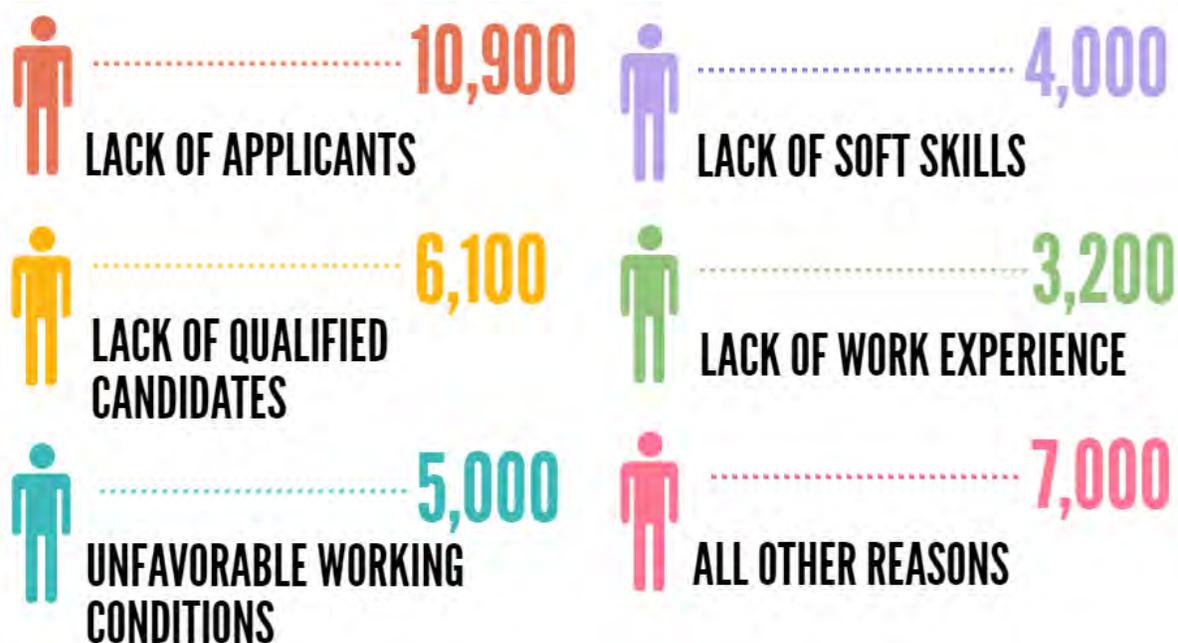
Areas of the state with the most vacancies that were difficult-to-fill due to a lack of applicants were Clackamas (2,378 vacancies), the Mid-Valley (1,847), and Portland-Metro (1,716). Areas with the highest share of vacancies that were difficult-

to-fill due to a lack of applicants included Northwest Oregon (42%), Clackamas (41%), and the Mid-Valley (36%). Some employers listed being in a “small town” or “lack of talent in area” as the reason their vacancies had too few applicants.

Knowing which occupations and areas commonly deal with a lack of job applicants can help a job seeker steer their search efforts toward jobs with less competition from other job seekers. One grocery store said they have had no applicants for more than six months! The lack of applicants can be a sign that opportunities are not being noticed by other job seekers. This makes it easier for the applicant who takes a chance on a nondescript help wanted ad that is passed over by others, or who contacts businesses directly because they might be hiring but not advertising their vacancies effectively. One manufacturer struggling to hire production workers expressed frustration that some “applicants don’t return calls,” or don’t show up for interviews or call when they’re not going to make it. Good communication skills will help a job seeker get noticed for a vacancy with few applicants.

Businesses hiring for occupations where the lack of job applicants is common, or businesses located in areas with a relatively high share of vacancies with a lack of applicants, will need to compete to find more applicants. Some employers see this clearly, such as the health care provider in Northwest Oregon who noted that “lots of competition with other types of work in the medical field” was the reason for the lack of applicants. Others report they “can’t figure it out” because they “advertise and recruit and offer multiple benefits and higher salary than competitors” but still do not have enough applicants for their personal care aide vacancies.

Workforce development programs that make it easier for job seekers to connect with employers who have vacancies can help close this gap. Some businesses provided thoughts related to their lack of applicants that seemed particularly aimed at workforce developers. One manufacturer



reported the demand for millwrights exceeded the supply and suggested promotion of trades positions and to “have training programs in college.” A veterinarian noted the lack of applicants for veterinary technologists and technicians was because there were more open positions statewide than there were graduates.

Lack of Qualified Candidates

A lack of qualified candidates was the second most common reason given by businesses for their difficulty filling vacancies. It was the primary reason given for 6,100 vacancies and represented 17 percent of all difficult-to-fill vacancies. Some cited a mix of education, skills, and experience that could be attained through education or training. Others referenced very specific qualifications or specialized knowledge within a particular occupation and specific setting, such as the bank with a difficult-to-fill loan officer vacancy that mentioned, “Mortgage underwriting with government loan experience is rare and in high demand.”



Heavy and tractor-trailer truck drivers (531 vacancies) was the occupation with the most vacancies that were difficult to fill in 2017 because of a lack of qualified applicants. A commercial driver’s license is a necessary qualification for these vacancies. Other occupations where a lack of qualified candidates made vacancies difficult to fill included surveyors (256) and registered nurses (202). Other occupations with a large number of vacancies, and where a lack of qualified candidates was the most common reason given were marketing managers (73%), mental health counselors (73%), wholesale and manufacturing sales representatives (58%), operating engineers and other construction equipment operators (55%), bus and truck mechanics and diesel engine specialists (53%), and physical therapists (53%).

Portland-Metro led among areas of the state with the largest number of hard-to-fill vacancies due to a lack of qualified applicants, with 2,068. That was quite a bit more than the next highest areas of the Mid-Valley (785) and Rogue Valley (734). Areas with the highest share of difficult-to-fill vacancies because of the lack of qualified candidates were Portland-Metro (27%) and the Rogue Valley (20%).

Results from the Job Vacancy Survey can help job seekers see the value of making their qualifications known when applying for a job. Job seekers can also use this information to see where gaining education, training, and relevant experience will give them an advantage when applying for positions where employers report a lack of qualified candidates. Some job seekers may notice the lack of qualified applicants for some types of jobs and decide to look into these opportunities. One construction company trying to hire an earth driller noted, “This is a very specialized job, not a lot of interest or qualified individuals.” Knowing these types of jobs are going unfilled could generate more interest from job seekers.

Maybe it's the challenge of filling jobs with rare or unique position requirements, but businesses seem to be looking for a sweet spot of qualifications when it comes to filling some vacancies. An example is the accounting firm who noted that applicants for bookkeeping vacancies were either underqualified for the position, or so overqualified they continued to interview at other businesses even after they were offered the job. A few businesses mentioned looking for candidates from out of state because of a lack of qualified applicants locally, such as the construction company looking to hire wallpaper hangers, and the health care office looking to hire a physical therapist.

A lack of qualified applicants provides a clear signal that workforce developers can use to target education and training programs to the needs of local businesses. Employers often offer specific needs when vacancies are difficult-to-fill due to qualifications. A private school mentioned that it's "very difficult to find qualified Spanish teachers" to fill their vacancies. One plumbing company said, "There is a significant lack of qualified candidates (licensed journeyman plumbers) in the region." These are a few examples where businesses specifically mention the qualification that not enough of their candidates have.

Educational Requirements

Educational attainment is essential for many jobs. Businesses with vacancies that had higher educational requirements were more likely to face a lack of qualified applicants. It was the primary reason behind 17 percent of all difficult-to-fill vacancies, the reason for 31 percent of difficult-to-fill vacancies with an educational requirement of postsecondary or associate degree, and the reason for 38 percent of vacancies requiring a bachelor's or advanced degree.

Difficult-to-fill vacancies with higher education requirements tend to pay more. The average wage offered for difficult-to-fill vacancies with postsecondary or associate degree requirements was \$22.60 per hour, and employers offered \$35.43 per hour for difficult-to-fill vacancies requiring a bachelor's or advanced degree.

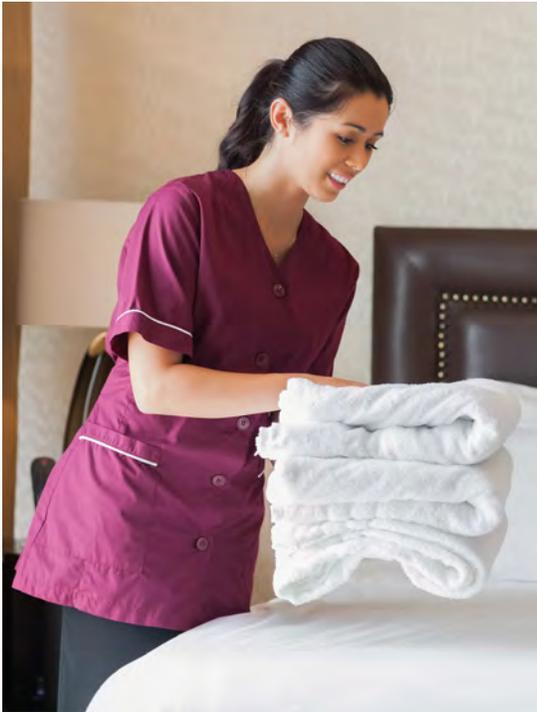
Characteristics of Difficult-to-Fill Vacancies by Education Level Requirement, 2017

	Difficult-to-Fill Vacancies	Average Wage	Full time	Permanent	Require Previous Experience
All Education Levels	38,691	\$18.28	77%	85%	67%
No requirement	12,889	\$14.57	73%	76%	49%
High school or equivalent	13,850	\$15.30	78%	86%	69%
Postsecondary or associate	7,644	\$22.60	82%	98%	84%
Bachelor's or advanced degree	3,411	\$35.43	85%	94%	94%
Unknown	897	\$20.49	59%	64%	38%

Unfavorable Working Conditions

Unfavorable working conditions was the main reason businesses reported difficulty filling nearly 5,000 vacancies, and represented 14 percent of all hard-to-fill vacancies. These vacancies were

for jobs that employers candidly reported were not the best working conditions for most people because they had inconsistent shifts, part-time only shifts, or were physically demanding jobs. Examples included a vacancy for a demonstrator and product promoter in Eastern Oregon that was only a “couple days a month so not enough hours” and the Mid-Valley farm where the job was physically demanding and the workers “must be comfortable working with chickens, around manure, etc.”



A lot of jobs are physically demanding or require working unusual hours. A few of the occupations where unfavorable working conditions were the main reason vacancies were difficult to fill were maids and house-keeping cleaners (292), nursing assistants (243), forest and conservation workers (242), and security guards (229). Other occupations with a large share of vacancies difficult-to-fill because of unfavorable working conditions included firefighters (100%), fallers (79%), and sewing machine operators (66%).

Unfavorable working conditions tend to be related to the occupation or specific demands of a particular job, so there is not a lot of variation in share of difficult-to-fill vacancies by area. Northwest Oregon had a slightly higher share, with 18 percent of difficult-to-fill vacancies caused by unfavorable working conditions. This seemed to be due to vacancies that were difficult to fill because they were seasonal jobs.

A lot of vacancies are difficult to fill because job seekers prefer or need full-time jobs working regular hours. This can provide an advantage to job seekers who are able and willing to work non-traditional shifts. The willingness to work nights, weekends, or holidays could be one way for a job seeker to get their foot in the door with a business that is struggling to fill vacancies.

Some employers readily acknowledged that less-than-ideal working conditions made their vacancies difficult to fill. A wage premium or other compensating differential may be needed to attract the right job applicants. This is common for shift work and holidays, but a wage premium may not be enough under such tight labor market conditions. Sometimes unfavorable conditions just seem to go along with the job. One business struggling to fill vacancies for loggers and fallers noted that it’s “very hard physical labor and much of the work is in remote locations.” A different business, struggling to hire for a marketing sales worker position, simply noted the vacancy is for a “boring job.”

Tough, dirty jobs and working the night shift are essential to keep Oregon’s businesses growing, but there is a workforce gap between these jobs and the people willing to work them. Jobs with unfavorable working conditions often don’t require a lot of training or experience. Workforce development can continue to help job seekers who don’t mind the physical nature of these jobs, or prefer alternative work schedules, connect with businesses struggling to fill these vacancies. In

many cases, job seekers in such jobs may need some job specific training or experience to show they can handle the working conditions.

Lack of Soft Skills

Businesses said the lack of soft skills among applicants was the primary reason for difficulty filling nearly 4,000 vacancies, which was 11 percent of all difficult-to-fill vacancies. Soft skills include professional competencies required for a job, such as communication, interpersonal, and social skills. In the Job Vacancy Survey it included employer responses related to subjective traits such as honesty, reliability, and motivation. It also included more quantifiable traits such as having a valid driver's license and clean driving record, passing a background check, and passing a drug screen.

Carpenters was the occupation with the most vacancies that were difficult to fill due to a lack of soft skills (475 vacancies). Soft skills were a difficulty with other construction occupations too, with construction laborers having the third-most vacancies that were difficult to fill due to a lack of soft skills (222). Employers mentioned a "lack of dependability," "can't pass a drug test," and the lack of transportation to work sites for why these vacancies were difficult to fill. Soft skills are also essential when it comes to caring for others. Personal care aides (267) had the second-most vacancies with difficulty due to a lack of soft skills because the job often required passing a background check and a drug test, and some required a driver's license. These three occupations also had the highest share of vacancies that were difficult to fill due to a lack of soft skills – carpenters (35%), construction laborers (22%), and personal care aides (19%).

Areas of the state with the most vacancies that were difficult to fill due to a lack of soft skills were Portland-Metro (931 vacancies), Clackamas (713), and Rogue Valley (478). Areas with the highest share of vacancies that were difficult to fill due to a lack of soft skills were Southwestern Oregon (17%) and the Rogue Valley (13%). Clackamas and Portland-Metro tied at 12 percent. The types of soft skills businesses reported as lacking did not seem concentrated in any particular region of the state.

Passing a Drug Test

Employers have increasingly reported that the inability of applicants to pass a drug test was the reason their vacancies were difficult to fill. This was considered a soft skill in the Job Vacancy Survey. The number of responses related to "must pass drug test" was 1 or 2 percent of all vacancies from 2013 through 2016, but increased to 4 percent in 2017.



Knowing what types of soft skills employers find lacking in applicants can help job seekers become more competitive in their job search. Being able to pass a drug test is an obvious advantage for a job seeker. Soft skills related to work ethic, such as reliability and honesty are always in demand. A job seeker who can demonstrate their work ethic to the manufacturer who was looking to hire a janitor but found it “hard to find trustworthy people who can work on their own” has an advantage.

Businesses that are having difficulty filling vacancies for reasons related to soft skills may want to re-evaluate what’s really required from a job candidate. Drug tests and background checks may be absolutely essential for some positions. Other barriers, such as an old criminal record that’s unrelated to the job, may need to come down during a tight labor market. Other screening techniques, such as typos on a résumé, might need to be overlooked in order to fill a position where that’s not an essential skill for the job.

Reports from employers about the lack of applicants with soft skills helps inform workforce development about workforce gaps that exist beyond professional competencies. For example, a construction company looking for a painter who was having difficulty filling vacancies because “The type of work it is brings in all types of people and we have had issues with reliability.”

Lack of Work Experience

A lack of previous work experience was given by business as the primary cause that 3,200 vacancies were difficult to fill, which totaled 9 percent of all difficult-to-fill vacancies. Most businesses value applicants with previous work experience and it is a big contributor in making vacancies difficult to fill. About two out of three (67%) difficult-to-fill vacancies required previous experience. That’s far more than the 40 percent of vacancies filled without difficulty that required experience.



There are far fewer experienced workers looking for jobs now than a few years ago when the unemployment rate was much higher, and this is making it difficult to fill vacancies across a wide variety of occupations. A lack of work experience was most often mentioned for construction and maintenance painters (279 vacancies), application software developers (172), and restaurant cooks (142). The lack of experienced workers was a big challenge in construction and IT. In addition to application software developers (68%) and painters (48%), other occupations with sizeable shares of hard to fill vacancies included other computer occupations (89%), cement masons and concrete finishers (53%), and construction managers (38%).

Areas of the state where a lack of work experience among candidates caused the largest number of vacancies to be difficult to fill were Portland-Metro (1,160 vacancies) and Mid-Valley (654). This was not just because of the large number of vacancies in these areas. They also had the largest shares of difficult-to-fill vacancies due to lack of work experience, with 13 percent in the Portland-Metro area and 13 percent in the Mid-Valley.

Employers value candidates with previous work experience. Job seekers should take this under consideration when mapping out their education and training goals because experience provides a tremendous advantage. It's not always obvious how to gain the experience required for a job, so it's a good idea to ask someone in the industry for advice. Experience can be gained working at other jobs, as suggested by a property management company who said that, "Finding people with property management experience or experience in a similar field is very difficult." Job seekers should also make sure they are demonstrating their experience they have to employers when applying for a position.

Businesses naturally want candidates that have experience doing the type of work required for a position. Specific experience can be hard to find, such as the health care provider looking for a counselor with "experience in correctional environment and actual licensed mental health provider." During and after the Great Recession, businesses could expect candidates with more work experience, and many job seekers five to seven years ago were experienced workers. If they haven't already, businesses may need to adjust their previous experience expectations in line with the current labor market in order to ease some of their difficulty filling vacancies.

Previous work experience is valued by businesses, and results from the Job Vacancy Survey provide insights on this type of workforce gap. Workforce developers can use this information to help make sure that job seekers understand that employers are looking for experience as well as training. It is one thing to know that there are a lot of job opportunities for mechanics right now, but it is another thing to realize that auto repair shops say their applicants "need proven experience as an automotive technician and must supply [their] own tools." Training to fill workforce gaps caused by a lack of previous work experience requires a component of on-the-job experience.

Low Wages

Businesses cited low wages for the job as the primary cause that 2,200 vacancies were difficult to fill, which was 6 percent of all difficult-to-fill vacancies. Difficult-to-fill vacancies tend to offer higher average wages than non-difficult vacancies. The average offered wage was \$18.28 per hour for difficult-to-fill vacancies and \$16.62 for non-difficult vacancies. That compared favorably with the wages of workers in filled jobs. The median wage of already filled jobs in Oregon was \$18.59 per hour in 2017.

Occupations with the largest number of vacancies that, according to businesses, were difficult-to-fill because of low wages, tended to be low-wage occupations. Personal care aides topped the list with 392 vacancies that were difficult to fill due to low wages. These were followed by farmworkers and laborers (276 vacancies), maids and housekeeping cleaners (175), and graders and sorters of agricultural products (120).

Low wages are a common reason vacancies were difficult to fill in Lane (568 vacancies), East Cascades (370), and Mid-Valley (362). Eighteen percent of difficult-to-fill vacancies in Lane were due to the low wages being offered. This was the highest for any area and seemed related to vacancies for personal care aides. The next highest was in East Cascades, where 10 percent of difficult-to-fill vacancies were due to low wages.

Job seekers who are early in their careers may look at the types of vacancies offering lower wages as a way to get their foot in the door and gain on-the-job experience. Many businesses struggle with the high turnover rates for low-wage jobs. One business trying to hire cleaners of vehicles and equipment said, “This position is a revolving door. It is very difficult to find an entry level person who wants to work.” The job seeker who will stick around has an advantage when applying for jobs with high turnover.

Many businesses provided candid responses about how the low pay available for their positions made it difficult to fill vacancies. A retailer having difficulty filling a variety of vacancies noted a “tight labor market at this wage,” which seems confirmed by the data. Raising wages to make it easier to fill vacancies seems like an obvious fix, but this is not easy for businesses who are already facing rising costs. Another retailer said, “Our wages cannot escalate any further due to all the other recent labor expenses in a low-margin business.” Similarly, some businesses mentioned their competitors for labor were able to offer higher wages than they could afford to pay.

Workforce developers are equipped with valuable labor market information about wages by occupation, industry, and region. Keeping businesses aware of what is being earned by similar workers in the area can help close the workforce gap caused by offering noncompetitive wages. Results from the Job Vacancy Survey suggest that many employers realize their low wages are making it difficult to fill vacancies. Knowing the going wage for an occupation in the area may help them determine the wage they would need to offer to fill those vacancies.

All Other Reasons

Not every reason businesses gave for their difficult-to-fill vacancies fit nicely into the six categories previously discussed. All other reasons were behind 4,792 vacancies, which was 13 percent of all difficult-to-fill vacancies. Some reasons were similar to reasons given by other businesses, but were not reported by enough businesses to have a separate category. These smaller categories included a lack of technical skills, location, a lack of certification, a “right fit,” and a lack of training. Some other reasons are truly miscellaneous.



A lack of technical skills was the primary reason why 1,152 vacancies were difficult to fill. The occupations where this was most common was for machinists (151 vacancies), carpenters (119), and welders (117).

The location of the job was the primary reason why 747 vacancies were difficult to fill. The largest number of these was for lifeguards, ski patrol, and other recreational protective service workers (180 vacancies). Many of these jobs were located in remote locations that required a significant commute distance.

A lack of certification was specifically mentioned for 693 difficult-to-fill vacancies. This was the primary factor for 129 heavy and tractor-trailer truck driver vacancies. A lack of certification was also frequently the rea-

son that vacancies for automotive service technicians and mechanics, insurance sales agents, and medical assistants were difficult to fill.

Businesses looking for someone with the “right fit” for a position accounted for 667 vacancies that were difficult to fill. It is hard to know what businesses are looking for when they cannot find the right fit, but they know it when they see it.

A lack of training was given as the reason behind 171 difficult-to-fill vacancies. Comments from businesses were counted in this category if they only mentioned the lack of local training for that occupation, or provided a general comment about training related to that occupation. For example, the lack of local training programs was mentioned by businesses trying to hire for a variety of jobs such as hairdressers, solar photovoltaic installers, and surgical technologists. Examples of general comments about training included the business looking to hire insurance sales agents who said, “To take someone through the licensing and training portions takes time and money. Most people are purely development costs for 2 years.” Another business looking to hire automotive service technicians and mechanics said, “The automotive industry is currently in a shortage of good technicians due to the trend of turning graduates to college instead of trade schools.”

Putting the Job Vacancy Survey to Work

Oregon has enjoyed solid job growth and record low unemployment over the past few years. This has led to a tight labor market where it is difficult for businesses to fill their vacancies, creating gaps in the workforce. Oregon businesses had 60,700 job vacancies at any given time in 2017, and 64 percent of these vacancies were described as difficult to fill.

While the headline numbers tell the story of Oregon’s overall workforce gap, the Job Vacancy Survey provides a wealth of specific information about current gaps in the workforce. Job seekers can see the types of jobs with the most vacancies and help prepare themselves for the expectations employers have of their applicants. Employers can see the common struggles they collectively face when trying to fill their vacancies, which can help them adjust their strategy to make them more attractive to today’s job seekers. Workforce developers can see gaps both overall and in specific areas of the workforce and inform their efforts to close gaps and help Oregon’s economy grow.

Appendix A: Occupations with 100 or More Vacancies

Oregon Job Vacancies by Occupation (with at Least 100 Vacancies), 2017

Occupation Title	Vacancies	Average		Full time	Permanent	Require	Require	Difficult to Fill
		Wage				Beyond High School	Previous Experience	
All Occupations with Vacancies	60,718	\$17.82	77%	88%	29%	57%	64%	
Personal Care Aides	2,327	\$11.46	68%	96%	5%	31%	61%	
Retail Salespersons	1,896	\$12.09	55%	90%	2%	47%	40%	
Heavy and Tractor-Trailer Truck Drivers	1,799	\$20.27	89%	92%	32%	90%	85%	
Carpenters	1,540	\$20.81	100%	97%	1%	97%	94%	
Construction Laborers	1,406	\$14.70	85%	87%	2%	57%	75%	
Farmworkers and Laborers, Crop, Nursery, and Greenhouse	1,392	\$12.51	71%	21%	4%	22%	68%	
Cooks, Restaurant	1,174	\$12.34	62%	91%	12%	74%	78%	
Registered Nurses	1,130	\$34.37	81%	99%	93%	50%	64%	
Customer Service Representatives	1,105	\$13.51	80%	84%	11%	69%	16%	
Maids and Housekeeping Cleaners	983	\$11.30	54%	69%	0%	23%	80%	
Cashiers	978	\$10.43	42%	98%	3%	13%	40%	
Nursing Assistants	951	\$13.45	72%	100%	61%	27%	67%	
Laborers and Freight, Stock, and Material Movers, Hand	896	\$11.79	82%	76%	0%	31%	60%	
Combined Food Preparation and Serving Workers, Including Fast Food	857	\$10.47	36%	96%	0%	2%	36%	
Automotive Service Technicians and Mechanics	823	\$17.58	94%	100%	57%	48%	45%	
Production Workers, All Other	803	\$12.46	89%	75%	2%	32%	58%	
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	797	\$11.55	53%	98%	0%	15%	87%	
Stock Clerks and Order Fillers	775	\$13.55	69%	81%	1%	62%	52%	
Light Truck or Delivery Services Drivers	727	\$13.26	93%	100%	0%	44%	55%	
Food Preparation Workers	691	\$10.79	48%	94%	0%	13%	38%	
Waiters and Waitresses	676	\$11.21	41%	63%	0%	49%	57%	
Painters, Construction and Maintenance	671	\$15.88	97%	60%	4%	69%	86%	
Electricians	627	\$32.88	100%	100%	95%	92%	85%	
Maintenance and Repair Workers, General	611	\$14.84	91%	89%	12%	60%	73%	
Hairdressers, Hairstylists, and Cosmetologists	588	\$10.85	62%	100%	87%	59%	62%	
Business Operations Specialists, All Other	560	\$25.26	96%	92%	86%	60%	29%	
Landscaping and Groundskeeping Workers	522	\$13.41	84%	68%	0%	44%	76%	
Security Guards	515	\$12.41	55%	77%	24%	28%	98%	
Roofers	495	\$16.46	100%	98%	28%	69%	73%	
Receptionists and Information Clerks	493	\$13.40	58%	92%	22%	55%	26%	
Medical Assistants	459	\$16.45	98%	96%	88%	75%	56%	
Social and Human Service Assistants	455	\$13.31	51%	90%	41%	56%	53%	
Bookkeeping, Accounting, and Auditing Clerks	441	\$16.94	97%	90%	33%	99%	37%	
Machinists	428	\$18.39	100%	100%	14%	100%	90%	
Bus and Truck Mechanics and Diesel Engine Specialists	391	\$25.26	92%	93%	49%	94%	87%	
Dishwashers	379	\$11.12	58%	84%	0%	23%	70%	
Surveyors	365	\$29.18	100%	100%	100%	70%	70%	
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	355	\$25.26	100%	100%	37%	89%	67%	
Forest and Conservation Workers	354	\$17.69	40%	40%	0%	68%	100%	
Office Clerks, General	349	\$12.66	64%	100%	0%	36%	18%	
Bus Drivers, School or Special Client	337	\$14.10	33%	85%	44%	23%	91%	
Parts Salespersons	326	\$14.37	100%	100%	0%	13%	6%	
Graders and Sorters, Agricultural Products	324	\$10.06	56%	19%	0%	6%	81%	
Office and Administrative Support Workers, All Other	324	\$16.76	63%	100%	9%	85%	67%	
Teacher Assistants	316	\$10.93	38%	69%	4%	41%	64%	
Team Assemblers	316	\$14.86	100%	100%	0%	55%	82%	
Managers, All Other	315	\$26.10	91%	100%	70%	91%	56%	
Tellers	306	\$12.40	74%	92%	0%	45%	5%	
Secondary School Teachers, Except Special and Career/Technical Education	301	\$28.13	62%	100%	11%	38%	2%	
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	299	\$21.93	100%	91%	24%	96%	100%	
Preschool Teachers, Except Special Education	284	\$13.19	73%	80%	71%	100%	57%	
Bartenders	282	\$10.69	63%	85%	0%	84%	75%	
Construction Managers	281	\$34.55	100%	95%	67%	100%	81%	
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	278	\$14.97	60%	100%	40%	81%	50%	
Lifeguards, Ski Patrol, and Other Recreational Protective Service Workers	277	\$11.50	5%	30%	19%	29%	91%	
Sales Managers	273	\$38.93	100%	100%	90%	100%	88%	
Installation, Maintenance, and Repair Workers, All Other	270	\$15.11	80%	91%	0%	68%	84%	
Licensed Practical and Licensed Vocational Nurses	267	\$22.25	75%	96%	100%	66%	84%	
Physical Therapists	262	\$32.99	65%	96%	100%	53%	89%	
Software Developers, Applications	260	\$42.25	100%	100%	100%	100%	98%	
Financial Specialists, All Other	259	\$20.26	100%	100%	44%	34%	15%	
Social and Community Service Managers	250	\$23.89	100%	94%	94%	100%	81%	
Sheet Metal Workers	248	\$21.45	100%	100%	5%	65%	100%	
Helpers--Installation, Maintenance, and Repair Workers	240	\$14.66	93%	100%	3%	42%	40%	
Welders, Cutters, Solderers, and Brazers	238	\$18.47	100%	100%	13%	96%	88%	
General and Operations Managers	238	\$38.15	100%	100%	84%	96%	84%	
Counter Attendants, Cafeteria, Food Concession, and Coffee Shop	238	\$10.14	22%	71%	0%	15%	70%	
Sewing Machine Operators	233	\$12.03	87%	100%	0%	30%	94%	
Cleaners of Vehicles and Equipment	228	\$12.03	100%	100%	0%	27%	45%	
First-Line Supervisors of Retail Sales Workers	228	\$13.80	74%	100%	19%	52%	21%	
Cooks, Fast Food	226	\$10.81	22%	100%	0%	15%	74%	
Operating Engineers and Other Construction Equipment Operators	225	\$21.78	100%	81%	10%	95%	82%	

Oregon Job Vacancies by Occupation (with at Least 100 Vacancies), 2017 - Continued

Occupation Title	Vacancies	Average		Permanent	Require	Require	Difficult
		Wage	Full time		Beyond High	Previous	
					School	Experience	to Fill
Civil Engineers	224	\$28.58	100%	100%	100%	100%	100%
First-Line Supervisors of Construction Trades and Extraction Workers	221	\$28.88	100%	90%	13%	100%	97%
Claims Adjusters, Examiners, and Investigators	210	\$16.85	100%	100%	0%	18%	0%
Plumbers, Pipefitters, and Steamfitters	210	\$35.34	100%	100%	76%	87%	87%
Rehabilitation Counselors	204	\$11.95	68%	100%	63%	66%	80%
Marketing Managers	202	\$55.85	100%	100%	96%	100%	82%
Automotive and Watercraft Service Attendants	200	\$13.47	100%	100%	0%	55%	65%
Financial Managers	196	\$35.06	97%	100%	93%	88%	34%
Cooks, Institution and Cafeteria	192	\$11.72	81%	83%	0%	74%	82%
Hotel, Motel, and Resort Desk Clerks	190	\$11.16	42%	87%	9%	24%	71%
Logging Workers, All Other	186	\$15.97	100%	68%	0%	58%	97%
Insurance Sales Agents	182	\$18.91	100%	100%	35%	77%	82%
Couriers and Messengers	182	\$12.00	53%	100%	5%	0%	95%
Chefs and Head Cooks	173	\$13.75	100%	100%	28%	100%	94%
Insurance Underwriters	172		100%	100%		0%	0%
Credit Authorizers, Checkers, and Clerks	169	\$15.06	100%	100%	0%	45%	0%
Executive Secretaries and Executive Administrative Assistants	169	\$18.23	33%	100%	69%	91%	37%
Computer-Controlled Machine Tool Operators, Metal and Plastic	167	\$15.35	100%	100%	11%	100%	94%
Food Batchmakers	163	\$10.26	100%	100%	0%	0%	100%
Computer Occupations, All Other	163	\$40.54	100%	100%	94%	100%	67%
Real Estate Brokers	163		100%	100%	100%	100%	0%
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	160	\$15.18	100%	53%	0%	100%	100%
Dispatchers, Except Police, Fire, and Ambulance	159	\$12.22	97%	100%	0%	70%	87%
Mental Health Counselors	158	\$24.76	96%	100%	100%	96%	92%
Market Research Analysts and Marketing Specialists	154	\$23.44	96%	100%	100%	100%	36%
Fallers	152	\$16.93	100%	21%	0%	100%	100%
Industrial Truck and Tractor Operators	150	\$16.83	85%	90%	7%	79%	97%
Human Resources Specialists	148	\$27.77	100%	100%	81%	96%	18%
Helpers--Production Workers	146	\$11.76	37%	63%	0%	34%	66%
Logging Equipment Operators	145	\$20.84	100%	96%	0%	41%	37%
Ophthalmic Medical Technicians	144	\$18.67	100%	100%	22%	92%	100%
Tire Repairers and Changers	141		100%	100%		0%	0%
Helpers--Carpenters	140	\$15.00	100%	100%	0%	100%	100%
Pharmacy Technicians	139	\$15.02	94%	100%	88%	10%	17%
Cement Masons and Concrete Finishers	137	\$17.21	100%	91%	0%	100%	100%
New Accounts Clerks	136	\$15.88	97%	100%	40%	74%	32%
Public Relations and Fundraising Managers	136	\$26.71	100%	100%	72%	100%	31%
Recreation Workers	136	\$10.67	81%	37%	2%	31%	50%
Interviewers, Except Eligibility and Loan	136	\$14.17	100%	100%	9%	49%	13%
Farmworkers, Farm, Ranch, and Aquacultural Animals	135	\$13.73	100%	100%	0%	56%	100%
Elementary School Teachers, Except Special Education	135	\$13.44	61%	89%	66%	83%	45%
Cabinetmakers and Bench Carpenters	135	\$12.00	100%	100%	0%	11%	33%
Accountants and Auditors	134	\$23.44	100%	89%	100%	88%	82%
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop	134	\$11.92	10%	64%	0%	22%	43%
Meat, Poultry, and Fish Cutters and Trimmers	132	\$13.44	79%	100%	0%	32%	100%
Purchasing Agents, Except Wholesale, Retail, and Farm Products	130	\$26.01	100%	100%	71%	100%	37%
First-Line Supervisors of Personal Service Workers	129	\$14.86	100%	100%	9%	82%	74%
First-Line Supervisors of Food Preparation and Serving Workers	129	\$12.51	64%	100%	0%	60%	65%
Computer User Support Specialists	126	\$20.58	100%	100%	40%	32%	5%
Engineering Technicians, Except Drafters, All Other	125	\$16.74	100%	88%	86%	90%	88%
Medical Records and Health Information Technicians	122	\$17.46	89%	100%	44%	87%	38%
Child, Family, and School Social Workers	121	\$17.37	100%	79%	26%	57%	57%
Firefighters	120	\$13.14	0%	0%	0%	0%	100%
Amusement and Recreation Attendants	120	\$10.94	92%	0%	0%	0%	92%
Massage Therapists	120	\$23.27	6%	97%	91%	76%	67%
Driver/Sales Workers	119	\$35.06	82%	100%	29%	38%	76%
Substitute Teachers	116	\$24.66	0%	34%	71%	100%	100%
Billing and Posting Clerks	115	\$15.68	94%	100%	0%	25%	25%
Compliance Officers	114	\$25.40	67%	100%	67%	100%	67%
Health Specialties Teachers, Postsecondary	114	\$40.00	0%	0%	33%	33%	67%
Cooks, All Other	112	\$9.23	100%	100%	0%	0%	100%
Electrical Engineers	111	\$39.98	100%	100%	100%	100%	55%
Tapers	110	\$30.91	100%	100%	67%	86%	100%
Coaches and Scouts	110	\$13.24	0%	91%	85%	100%	100%
Food Servers, Nonrestaurant	110	\$10.35	11%	100%	0%	4%	7%
Fence Erectors	109	\$15.84	100%	100%	0%	100%	100%
Food Service Managers	104	\$17.36	83%	100%	28%	86%	75%
Dining Room and Cafeteria Attendants and Bartender Helpers	104	\$10.46	40%	70%	0%	36%	60%
Drywall and Ceiling Tile Installers	103	\$22.28	100%	100%	41%	71%	100%
Transportation, Storage, and Distribution Managers	100	\$33.90	14%	100%	14%	14%	8%
Childcare Workers	100	\$12.26	86%	100%	6%	68%	68%
Physicians and Surgeons, All Other	100	\$52.85	24%	100%	100%	82%	82%

Appendix B: Vacancies by Industry

Oregon Job Vacancies by Industry, 2017

	Vacancies	Average			Require Education	Require Previous	Difficult
		Wage	Full time	Permanent	Beyond High School	Experience	to Fill
All industries	60,718	\$17.82	77%	88%	29%	57%	64%
Health care and social assistance	10,961	\$18.74	72%	96%	52%	56%	59%
Leisure and hospitality	7,469	\$11.94	53%	80%	8%	41%	66%
Construction	6,869	\$21.77	90%	88%	21%	81%	84%
Administrative and waste services	6,863	\$15.96	84%	87%	22%	56%	77%
Retail trade	5,665	\$13.30	68%	95%	16%	37%	43%
Manufacturing	4,419	\$19.84	95%	91%	24%	63%	73%
Natural resources and mining	3,309	\$15.08	73%	43%	7%	47%	80%
Professional and technical services	2,839	\$26.53	80%	91%	70%	76%	58%
Wholesale trade	2,800	\$17.27	92%	90%	23%	64%	48%
Financial activities	2,757	\$19.64	92%	99%	49%	50%	26%
Other services	2,589	\$17.54	79%	99%	44%	66%	58%
Transportation, warehousing, and utilities	2,507	\$18.27	75%	93%	17%	61%	78%
Private educational services	1,227	\$25.70	42%	64%	61%	67%	42%
Information	444	\$23.94	85%	96%	47%	74%	51%

Difficult-to-Fill Vacancies in Oregon by Industry, 2017

Industry	Difficult-to-Fill	Average			Require Education	Require Previous
	Vacancies	Wage	Full time	Permanent	Beyond High School	Experience
All Industries	38,691	\$18.28	77%	85%	29%	67%
Health care and social assistance	6,465	\$18.76	69%	96%	54%	63%
Construction	5,748	\$22.29	93%	89%	21%	88%
Administrative and waste services	5,291	\$16.18	86%	86%	21%	58%
Leisure and hospitality	4,961	\$12.38	59%	76%	11%	51%
Manufacturing	3,245	\$20.55	96%	90%	25%	67%
Natural resources and mining	2,647	\$15.77	73%	40%	7%	56%
Retail trade	2,454	\$14.05	68%	93%	18%	52%
Transportation, warehousing, and utilities	1,944	\$18.33	75%	95%	14%	60%
Professional and technical services	1,645	\$28.00	78%	91%	77%	92%
Other services	1,499	\$17.79	73%	99%	48%	93%
Wholesale trade	1,342	\$18.01	87%	87%	27%	74%
Financial activities	705	\$20.71	84%	98%	58%	84%
Private educational services	520	\$28.66	30%	52%	70%	75%
Information	225	\$23.33	81%	100%	44%	64%

Appendix C: Examples of Business Survey Responses

Categorized Reasons for Difficulty Filling Job Vacancies with

Lack of applicants: too few or no applicants for a vacancy

- Competition for limited supply
- Everyone is looking for help
- Narrow candidate pool
- No applicants
- Shortage of workers

Lack of qualified candidates: lacking necessary education or specific job requirements

- No well-qualified applicants
- Position with specific industry knowledge needed
- Specialized qualifications required
- Specific background and skill set required
- Unique experience

Unfavorable working conditions: inconsistent or part-time shifts, physical job demands

- Hard physical work in a variety of elements
- Night on-call shift
- Seasonal, part-time position
- Travel out of town 90% of the time
- Unable to guarantee hours

Low wages: low pay for job requirements or market conditions

- Budgeted pay scale may be too low
- Can't afford to pay a higher salary, so employee pool is small
- Job requirements are often hard to find for the hourly wage
- Offered pay rate is too low
- Want higher hourly wage than we can pay for the level of expertise

Lack of work experience: previous experience required

- Can't find anyone with experience
- Few trained applicants
- Finding someone with experience to limit training
- Lack of experienced applicants
- Those that have experience are already employed

Lack of soft skills: communication, interpersonal, or social norms for job

- Applicants lack work ethic
- Attention to detail
- Lack of commitment
- Many applicants lack transportation
- Unable to pass drug test

Illustrative Examples from Business Survey Responses

Other: miscellaneous; not able to be categorized elsewhere

- Cost of living
- No affordable housing in our community
- Obscure industry
- New recruitment
- Union only

Lack of certification: applicants lack necessary license or certification

- Commercial Driver's License needed
- Insurance certification required
- Not enough licensed people
- Plumber needs to be licensed
- Too few certified workers

Location: the geographic area of the job

- Can't compete with Eugene, Portland; not enough activities for spouses and children
- Hard to recruit to rural city
- Location of office in small rural town
- Our clinic is in a remote area of Oregon
- Rural location; few applicants

Lack of technical skills: measureable or tangible abilities or knowledge used on the job

- Engineer tech and management skills
- Difficult technical skill set
- Lack of technical skills
- Technical skill set is hard to find
- Unskilled applicants

Right fit: specific personality or personal qualities

- Blend of personality and skill set
- Culture, education, and experience
- Experience and team fit
- Not a "fit" for company
- Want the right person

Lack of training: few or no educational or vocational programs related to the job

- Lack of training
- Lack of vocationally trained candidates
- No school in area
- Training in this area is sparse
- Very steep learning curve and no local training programs

Appendix D: Oregon Job Vacancy Survey Form

CURRENT JOB VACANCIES

JOB TITLES OF VACANT POSITIONS		NUMBER OF CURRENT OPENINGS	LENGTH OF TIME JOB HAS BEEN OPEN	PREVIOUS EXPERIENCE REQUIRED
<p>Reply online at <<ONLINE_URL>></p> <ul style="list-style-type: none"> List positions for which you are actively recruiting. Include full time, part time, seasonal, temporary, and permanent positions. Exclude consultants, outside contractors, and others not considered employees. Include only vacancies for locations within Oregon. 		Enter number of openings for each position.	Enter one of the following codes: <ol style="list-style-type: none"> <30 days 30-59 days 60+ days Always Open If there are multiple openings, report for the oldest one.	Please indicate the previous experience, if any, required for this position. <ol style="list-style-type: none"> No experience required Less than 1 year 1 through 5 years More than 5 years
FULL TIME				
FULL TIME	Example: Registered Nurse	7	4	3
PART TIME				
PART TIME				

If more space is needed, please contact us for another copy or make a photocopy of this page. Oregon Employment Department; 875
 Questions? Contact our surveys team at: (855) 710-5500; (503) 947-1884; Fax: (503) 947-1210; E-mail: OED_SURVEYS@OREGON.GOV

EDUCATION LEVEL REQUIRED	STARTING WAGE OR SALARY	SEASONAL OR TEMPORARY	DIFFICULT-TO-FILL POSITIONS	
Enter one of the following codes: 1. None 2. High school diploma or equivalent 3. Postsecondary training 4. Associate's degree 5. Bachelor's degree 6. Graduate degree 7. Other (please specify)	Enter actual wage or wage range. Please indicate if monthly, hourly, or annual. If part time, enter hourly wages only.	Is this vacancy for a seasonal or temporary position? Please indicate with a check mark.	Is this position difficult to fill? Please indicate with a check mark.	If the position has been difficult to fill, please briefly describe the most important reason why.
5	\$65,000/yr	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Night Shift
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
		<input type="checkbox"/> Yes <input type="checkbox"/> No	<input type="checkbox"/> Yes <input type="checkbox"/> No	
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Union Street NE Salem, OR 97311-0024				



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RSPUB294(0618)

Oregon Talent Assessment

Prepared by ECONorthwest and Program and Policy Insight for
the Oregon Workforce and Talent Development Board

September 2018

ECONorthwest
ECONOMICS • FINANCE • PLANNING

Program and Policy Insight 

Executive Summary

U.S. business leaders have identified access to skilled labor as a competitive strength in the United States, but a deteriorating one. They and civic leaders point to an anomaly: persistent underemployment while employers struggle to match the right talent to open positions. Concerns have ranged from widespread skill gaps (e.g., too few workers with STEM or technical skills) to skill shortages in specific, in-demand occupations (e.g., welders) to too few applicants with requisite soft skills: work ethic, motivation, the ability to work in teams.

Some economists challenge the notion of gaps and shortages. They counter that if they existed, wages would have risen faster than they have in recent years. Absent strong wage growth, some economists contend the skills problem has more to do with a timing mismatch than chronic gaps or shortages. In short, employers, civic leaders, and economists acknowledge a U.S. skills problem, but frequently disagree on its nature.

The Oregon Higher Education Coordinating Commission (HECC) hired ECONorthwest and Program and Policy Insight to assess the market for skills from business and industry's perspective. Specifically, the *Oregon Talent Assessment* serves as business and industry's determination of in-demand occupations, skills, talent, gaps, and trends. Its goal is to elevate the understanding of Oregon's skills problem by creating common data and language that can be shared across employers, educators, and workforce intermediaries. The *Assessment* is one part of a fully integrated series of strategic plans aimed at strengthening workforce planning and execution. HECC's intention is to update the *Assessment* every two years.

The *Talent Assessment* draws on quantitative and qualitative research. It summarizes key occupational and wage trends found in a variety of federal and state data sources and reviews projections. The perspectives of employers are collected through surveys and focus group interviews. Employers' perspectives generally align with market data, and the report highlights the instances where they do not.

The timing of the *Talent Assessment* is notable in two regards. First, it comes in the latter stages of a long U.S. economic expansion. Oregon's job growth has outpaced the nation's, incomes are up, and employers are operating in an increasingly tight labor market. Second, technological progress, which is always evolving, appears to be accelerating. Advances in machine learning and artificial intelligence are disrupting work and putting a higher premium on skills that are uniquely human. An assessment performed two years from now, in a different economic and technological context, could yield significantly different findings.

The 2018 *Assessment's* key findings:

1. **Most employers do not report, and data do not suggest, widespread gaps in basic skills.** This report defines a skills gap as a widespread shortfall of basic skills that would be consistent with a broad failure of the education system. A majority (77 percent) of employers agreed that their applicants possessed the basic skills required for their vacant positions: the abilities to read for and locate information, to write for communication, and to apply mathematics. Those who identified deficiencies specified inadequate writing skills.

The employers' responses are supported by a flattening of the college wage premium since 2000. An emerging theory is that automation is disrupting previously high-wage jobs and forcing some well-trained graduates into lower paid occupations. Others argue that slow-growing business investment is limiting innovation and opportunity for high-end work. Whatever the cause, policymakers should keep close track of the college wage premium—especially in light of the increasing cost of attending college.

2. **About half of employers report a shortage of occupational skills required for specific occupations—with problem solving and critical thinking at the top of the list.** Our report characterizes a shortfall of hard skills—project management, problem solving, machine operation, software competencies, and the like—as a notable challenge in particular occupations. The skills could be learned through on-the-job training, internships, apprenticeships, or well-designed project-based activities in traditional education settings. While interviewees acknowledge the need to train individuals for tasks specific to the job, there was broad agreement that for nearly all levels of occupations, the labor pool was generally not equipped with baseline occupational skills, such as the ability to work with tools and machines, or knowledge of relevant computer software. Respondents in the outdoor gear/apparel, construction, bioscience, food and beverage, and wood products sectors reported the biggest challenges, with the absence of critical thinking and problem solving as the lead deficiencies.

3. **Employers signal a high demand for engineers, skilled tradespeople, and project managers.** While industries have specific employment needs, there are occupational needs that exist across sectors. The most frequently cited occupations across industries include engineers, skilled trades, and project managers. Nearly all sectors are in need of engineers, with the type of engineer dependent on the sector, such as marine engineer in the maritime sector, biomedical engineer in the biomedical sector, or software engineer in the technology sector. Electrical and mechanical engineers are in demand across sectors.

Several interviewees across multiple sectors cited the need for managers to oversee complex business and technical operations or products. Applicants need a broad range of skills, including data analysis, critical thinking, interpersonal and leadership skills, and knowledge of business operations.

4. **Employers recruit out-of-state to meet talent needs.** Several key stakeholders indicated that they needed to recruit and hire out-of-state to meet their employment needs for specific occupations: utility line workers, electricians, millwrights, engineers (particularly bachelor's or master's level mechanical, industrial, electrical, computer, and chemical engineers), UX/UI (user experience/user interface) managers, and middle-level project managers. With respect to recruiting electricians and millwrights, employers cited barriers to hiring out-of-state due to Oregon's strict licensing standards.

5. **Interpersonal skills are lacking while also growing in importance.** The skills are called by many different names: interpersonal, soft, essential, social. They are the skills associated with an individual's habits, personality, and character, including dependability, leadership, honesty, and the ability to work in teams.

Only a narrow majority of employers (55 percent) agreed that applicants possessed the interpersonal skills required for their vacant positions. When employers were asked what skills applicants lacked, communication skills, motivation, dependability, and time management all elicited high responses.

The employers' responses are echoed in recent research that tracked skills associated with growing and shrinking occupations over the past three decades. Occupations that required a mix of high social and high math skills grew at the fastest rate followed by occupations that required high social skills. Occupations that required high math skills and low social skills shrank as a size of the labor market, while occupations that required low social and low math skills fared the worst of all. The conclusion: the labor market has been rewarding humans for performing tasks that computers cannot do.

6. **Modest wage growth tempers declarations of widespread skill shortfalls.** The traditional relationship between unemployment rates and wage inflation is broken in this economic expansion. Nationally, low unemployment rates would suggest an economy near full employment, which typically triggers higher wages and inflation concerns. In this business cycle, wages have yet to accelerate. The relatively modest wage growth makes economists question employers' calls of skill gaps and shortages.

Oregon's experience is somewhat different than the nation's. Recovery and wage growth at the state level has outpaced the U.S. average. However, Oregon's average wages are still below national levels. Pay in Oregon's rapidly expanding professional and business services sector, which increased at an annual rate of 4.2 percent between 2007 and 2017, could support a story of shortages. It's hard to find similar evidence in other sectors. Even in construction, where anecdotes of cost overruns are common, wage growth corresponds to broad economy averages. Employer survey responses align with this wage story. When asked how they overcome hiring difficulties, only 35 percent identified wage increases as a remedy.

7. **Populations that remain outside the labor force, late in this economic expansion, warrant priority consideration under the forthcoming adult workforce goal.** This economic expansion, at the time of publication, is the second longest in the post-World War II era. Yet labor force participation rates (i.e., the share of the population working or seeking work) are still below those recorded in the early 2000s and 1990s. For the expansion to continue, more people will have to be pulled off the sidelines. Sizable, traditional working age populations are still without work. Almost half have a high school degree or less. And among that population, half receive federal food assistance and 40 percent have children. These late-expansion, non-workers—especially those with limited education—are obvious candidates for a full suite of basic skills training, supportive work environments, and job search assistance programs.
8. **Demography and automation play the leading roles in job projections.** The Oregon Employment Department's recently released 10-year projections boil down to several broad themes: an aging population will demand more healthcare and caregiving; automation will continue to erode employment in all sectors related to paper, from papermaking to publishing; today's low residential

and commercial vacancy rates (and high prices) suggest strong growth in the construction sector; and the government—at all levels—is positioned for slow growth. Five of the top ten fastest growing occupations are health-related: physician assistants, home health aides, nurse practitioners, health specialties teachers, and health diagnosing practitioners. With the leading edge of the Baby-boom generation entering their mid-70s, these projections seem like a reasonable scenario.

The scope and pace of technological progress is the big question mark. In the near term, most observers anticipate continued destruction of routine work tasks, with disproportionate impacts in food service, office and administrative, sales, and production occupations. Most affected occupations won't disappear entirely, but the nature of the job will change, and workers will have to adapt accordingly. Artificial intelligence experts anticipate even more disruption and see technology outperforming human labor at higher points on the skill ladder (e.g., disease diagnosis, creative writing, clothing design). The trends warrant close monitoring.

9. **Employer forecasts of talent needs are common, short-term, and largely unshared.** Almost all (97 percent) survey respondents and the majority of interviewed stakeholders note that they primarily use internal company data and analysis to guide forecasting and planning. Most industry stakeholders suggest forecasting timeframes ranging between 3 and 12 months, with ongoing weekly discussions. Respondents described rapidly changing information and the need to be responsive and nimble to changing conditions.

The majority of stakeholders indicate that they limit their forecasting analysis to internal use only and do not share with other firms, training providers, or educational or workforce institutions.

10. **Employers report progress on strengthening the talent supply chain through externships, internships, apprenticeships, and reinvigorated career technical education programs.** Respondents described a number of recruiting mechanisms designed to attract prospective employees at a younger age. Educator externships expose K-12 teachers, administrators, and counselors to the work they do, and the skillsets required to be successful in these careers. This in turn influences how young people learn about workplace skills and engage with career path options. CTE programs are expanding in high schools, allowing students to get hands-on experience in a wider variety of career options and skill areas. Industries are working closely with postsecondary institutions to develop and support curricular options to train their future workforce. Businesses and education institutions are supporting work-based learning opportunities for future potential employees, such as apprenticeships and internships. Industries are collaborating with associations and workforce development to invest in augmenting displaced workers' skillsets to support them in transitioning to careers in new sectors. Some industries are working to diversify their workforce by targeting women, minorities, and veterans in their training and recruitment efforts.

Chapter 1: Introduction

U.S. business leaders have identified access to skilled labor as a competitive strength in the United States, but a deteriorating one. They and civic leaders point to an anomaly: persistent underemployment while employers struggle to match the right talent to open positions. Concerns have ranged from widespread skill gaps (e.g., too few workers with STEM or technical skills) to skill shortages in specific, in-demand occupations (e.g., engineers, welders). Employer surveys also routinely report too few applicants with requisite soft skills: work ethic, motivation, the ability to work in teams.

Some economists challenge the notion of gaps and shortages. They counter that if they existed, wages would have risen faster than they have in recent years. Absent strong wage growth, some economists contend the skills problem has more to do with a mismatch than gaps or shortages. Workers are acquiring skills, but the timing is off and the skills don't match today's market demand. Consequently, for too many workers, skill investments aren't translating into higher wages.

In short, employers, civic leaders, and economists acknowledge a U.S. skills problem, but frequently disagree on its nature.

Stepping into the middle of the debate, workforce strategists—led by Harvard University's Joseph Fuller—contend the problem is created by a broken supply chain for labor. Employers do a poor job of communicating skill needs to educators, and educators fail to communicate opportunities to students. The dysfunctional supply chain overproduces some skills and under-produces others. Their proposed remedies fall into four broad categories: 1) improved coordination and communication between employers and workforce educators; 2) better data and consistent language about the nature of the skills problem; 3) clearer, structured career paths for aspiring workers; and 4) aligned monetary incentives to improve system performance.

Oregon workforce agencies, colleges, and businesses are working along all these fronts. This report focuses primarily on the second of the four remedies: better data about the nature of the skills problem. The *Oregon Talent Assessment* serves as business and industry's determination of in-demand occupations, in-demand skills, talent gaps, and trends. Its goal is to elevate the understanding of Oregon's skills problem by creating common data and language that can be shared across employers, educators, and workforce intermediaries. The *Assessment* is one part of a fully integrated series of strategic plans aimed at strengthening workforce planning and execution.

The *Assessment* is organized as follows:

- **Chapter Two: The Condition of Oregon's Market for Skills** begins to frame the skills problem in Oregon. It introduces the concepts of skill gaps, shortages, and mismatches and uses market data to determine whether any or all of the conditions exist. Analyses also investigate labor underutilization and populations that remain outside the workforce late in this economic expansion.
- **Chapter Three: The Future of Work** discusses how automation has and will continue to disrupt work, alter tasks within occupations, and put a higher premium on interpersonal skills. The chapter then takes a new look at the Oregon

Employment Department’s projections for in-demand occupations and skills. A related analysis organizes in-demand jobs by their associated skills (e.g., communication/critical thinking, physical work, clerical/service, machine operation/processes) to highlight clusters of related occupations, which could point to skill profiles that foster flexible job transitions.

- **Chapter Four: Employers’ Perspectives on In-Demand Skills and Occupations** draws on surveys, interviews, and focus groups to summarize recent hiring experiences. Employers from ten key industrial sectors reflect on their success in finding basic, occupational, and interpersonal skills in their applicant pools. They also discuss the occupations required for business success.
- **Chapter Five: Employers’ Responses to Skill and Occupational Needs** characterizes how businesses—in collaboration with educators and workforce developers—identify and strengthen the skills and talent in Oregon’s labor force. It discusses the condition of supply chain relationships in which employers share information on their needs, educators and workforce intermediaries adjust outreach and programming, and trainees prepare to enter the workforce.
- **Chapter Six: Conclusions** reflects on the *Assessment’s* quantitative and qualitative findings and highlights implications for public policy. Findings from the *Assessment* should inform strategies across the education continuum from early childhood education and Measure 98’s high school focus to the 40/40/20 and new adult workforce goals.

Chapter 2: The Condition of Oregon’s Market for Skills

Introduction

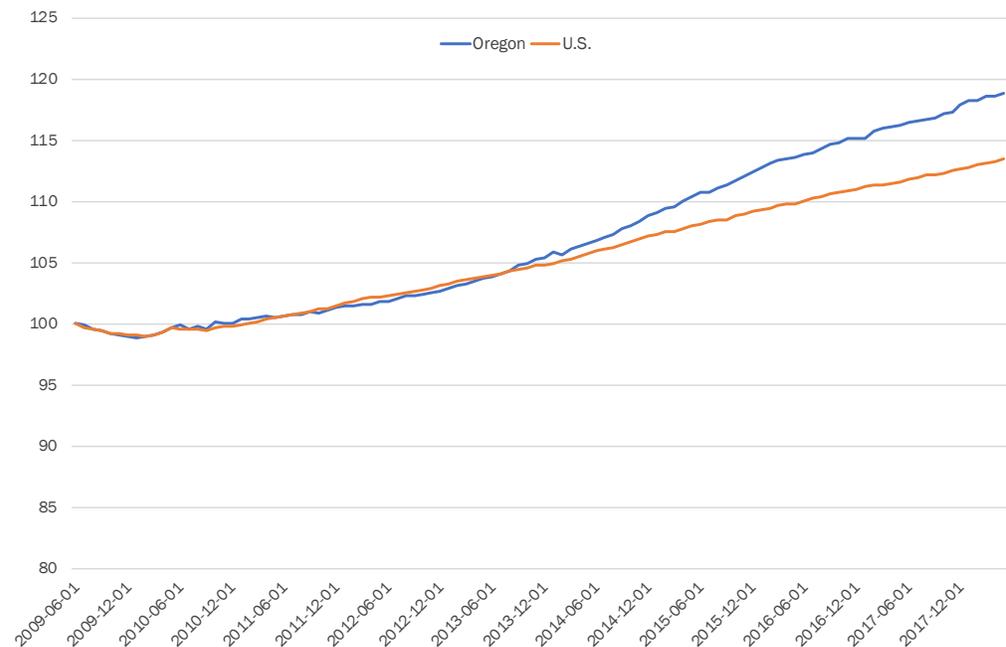
This study assesses Oregon’s talent in a variety of ways, with this chapter relying on data routinely collected by federal and state agencies. It defines and reviews potential skill problems and then provides an in-depth review of populations that remain jobless late in this economic expansion.

The assessment of skill problems and joblessness should be considered in the broader context of Oregon’s economic performance. Human capital—the stock of knowledge and skills of a working population—sits at the foundation of regional and state economies. So a state’s economic performance is, in no small part, a reflection of its workforce’s talent.

Oregon’s performance during this economic expansion suggests a capable talent pool. Job growth has largely outpaced the nation’s since 2009 (see Figure 2.1). Per capita income, while still below the U.S. average, is growing faster than in most states. Median household incomes are up (adjusted for inflation), and the share of Oregonians living in poverty is down. In short, Oregon has enjoyed one of the stronger economic recoveries in the country, and it has its talent to thank for that.

That said, the recovery hasn’t reached all households or geographies and considerable distance still exists between Oregon and the nation’s top economic performers. Uncovering and addressing the remaining workforce challenges is a key step to a more prosperous and inclusive economic future.

Figure 2.1. Total nonfarm employment, indexed (June 2009 = 100), Oregon and U.S.



Data source: U.S Bureau of Labor Statistics

Skill gaps, shortages, and mismatches

Labor policy discussions often conflate different kinds of problems that relate to worker skills. With a goal of clarity, this report will discuss skill problems in three categories¹:

- **Skill gaps:** Widespread shortfalls in basic skills, usually associated with a failure of the education system. Oregon’s adoption of the 40/40/20 postsecondary attainment goal is predicated in large part on an assumption that Oregon has—or will have—a skills gap.
- **Skill shortages:** Shortfalls of skills required by specific occupations. For example, it’s possible that the education system has succeeded in delivering basic skills but has fallen short on producing a number of specialized skills required at a particular point in time (e.g., engineers or welders).
- **Skill mismatches:** The supply and demand for skills is out of sync in either direction—oversupply or undersupply. For example, potential workers are entering a labor market with good hard and soft skills that do not match the needs of a local economy.

The balance of the section investigates possible gaps, shortages, and mismatches in Oregon.

Skill gaps

Harvard University economists Claudia Golden and Lawrence Katz made a compelling case of widespread U.S. skill gaps in their seminal book *The Race Between Education and Technology*. Their research charted the college wage premium throughout the 20th Century and asserted that when the skills of the labor force didn’t keep pace with technological improvements, the college wage premium tended to rise. That’s because wages would be bid up for the relatively scarce skills of those who could develop and interact with increasingly sophisticated technology on the job.

They found that labor skills—thanks to post World War II investments in education—kept pace with technological change between 1940 and 1980. But, beginning in the 1980s, graduation rates for U.S. high schools plateaued, and the rate of growth in postsecondary attendance and graduation slowed. Meanwhile, technological progresses continued, and wages accelerated for college degree holders, especially those who designed new technologies or leveraged them in their work. By 2005, the U.S. college wage premium was as large as it has been in the early 21st Century.

Golden and Katz’s early 2000s findings were consistent with a skill gap: a broad underproduction of the cognitive and soft skills that are generally associated with college graduates. Based on their findings and those of others, 42 states, including Oregon, have set goals to improve rates of postsecondary attainment.

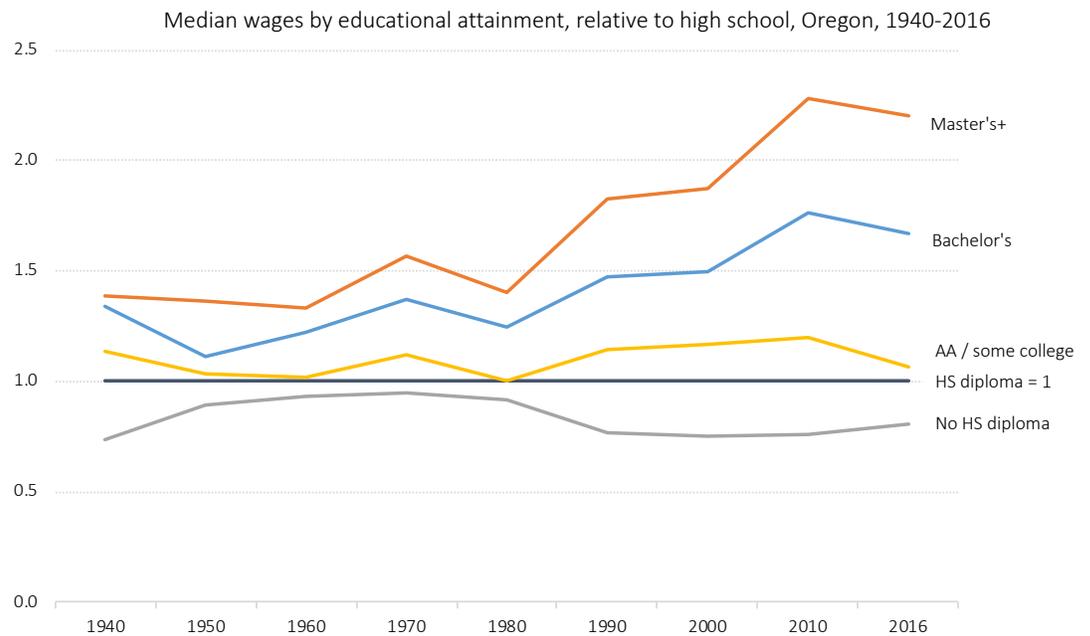
¹ The categories are drawn from Cappelli, Peter. (August 2014). *Skill Gaps, Skill Shortages, and Skill Mismatches: Evidence for the US*. National Bureau of Economic Research. Cambridge, MA.

Nationally, evidence suggests the college wage premium has flattened since 2000. Potential causes include the slow growth of middle-skill jobs once performed by college graduates or a decline in the demand for cognitive skills because of a slowdown in technology investment.²

College wage premiums in Oregon are broadly consistent with the larger U.S. story (see Figure 2.2). Bachelor’s and graduate degree holders saw large wage gains relative to high school diploma holders between 1980 and 2005. Somewhat contrary to the national narrative, Oregon’s premiums for bachelor’s and graduate degrees show continued growth after 2005, with flattening in later years.

Both the Oregon and U.S. trends suggest that a skill gap persists but isn’t growing at the rates measured in the 1980s and 1990s. Postsecondary education remains a sound financial investment but, with the wage premiums flattening, students—and the institutions that serve them—will need to be more conscious about the cost of education.

Figure 2.2. Oregon’s college wage premium



Data source: US Census; American Community Survey PUMS data

² See Valletta, Robert. (October 17, 2017). *Recent Flattening in the Higher Education Wage Premium: Polarization, Skill Downgrading, or Both?* Federal Reserve Bank of San Francisco. San Francisco, CA.

Skill shortages

Reports of skill shortages were common early in this economic expansion when unemployment rates were high and have increased as the labor market has tightened. When economists hear reports of skill shortages, a first instinct is to investigate wages. Basic economic theory concludes that if a shortfall of a good or service exists, its price should rise. If the price isn't rising (in this case, employers aren't offering higher wages), then it suggests that the advertised positions may not be critical to the employers' business strategies.

Up to this point in the economic recovery, wage trends do not signal widespread skill shortages in U.S. labor markets. Typically, low unemployment is coupled with wage inflation, but that hasn't been the case in this expansion. Economists have advanced a variety of theories for the break in the historic low unemployment-inflation relationship. One leading theory involves a larger-than-usual population of traditional-working-age residents (ages 25-54) who, until recently, remained outside the labor force and were not counted as unemployed. As the economy has continued to expand, they have been gradually assimilated into the labor market, providing additional supply of new hires for employers and helping keep wages down.

Oregon's wage growth has outperformed the nation's during this recovery. Nonetheless, average wages remained below the U.S. levels in all but two private industries: manufacturing and education/health services. Relative to Oregon wage growth overall, the Oregon industry with the most growth between 2007 and 2017 was the professional and business services sector (see Figure 2.3). With average pay increasing at a 4.2 percent annual rate during the period (and 5.5 percent annually in the last five years), the sector could make a persuasive case for shortages. Other sectors with above-average growth in recent years include natural resources, financial activities, and information. Concerns about rising construction budgets triggered a review of construction-related occupations by Oregon's Office of Economic Analysis (OEA), which found that wages for those occupations were growing no faster than wages in other industries.³

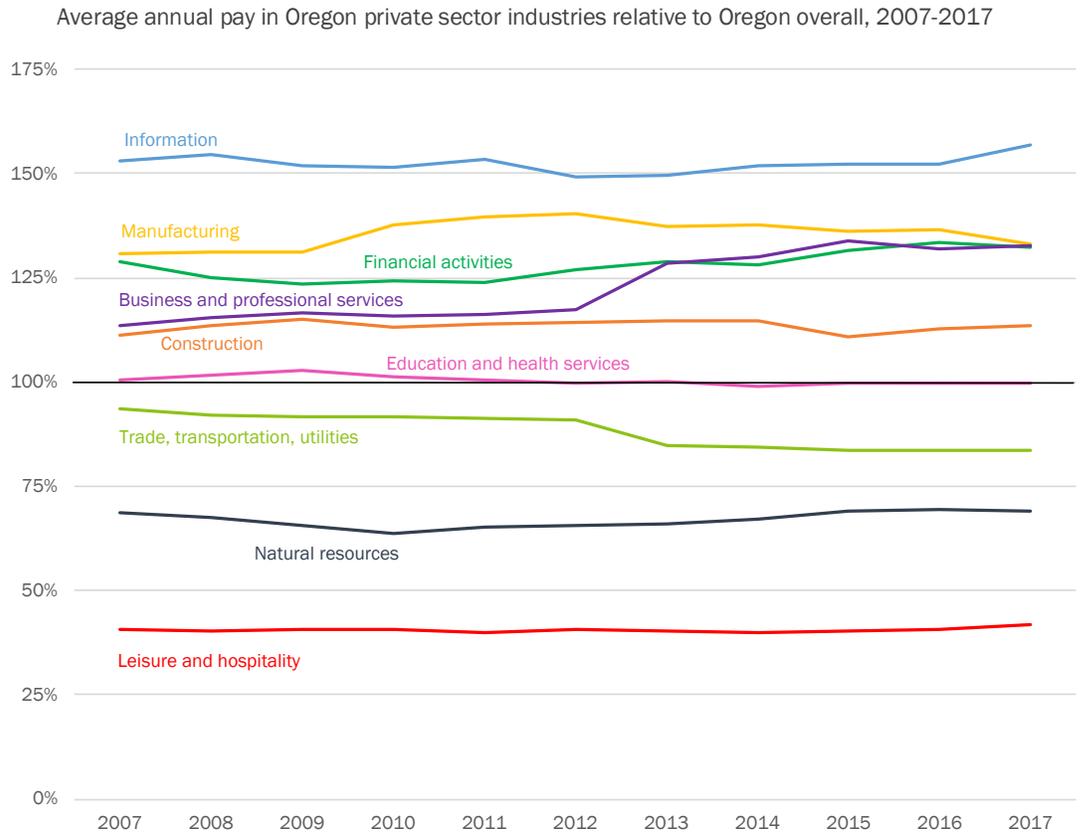
Wage trends overall do not point to widespread shortages: Oregon's growth in real median hourly wage from 2016 to 2017 was just 0.1 percent. However, some occupations do exhibit the defining characteristic of a current shortage, with year-over-year wage growth far exceeding the statewide average. In Figure 2.4, these jobs lie in the right tail of the distribution and include occupations such as metal and plastic workers; extruding, forming, pressing, and compacting operators; paper goods machine setters, operators, and tenders; and drywall and ceiling tile installers. The observed outliers in wage growth can be short-lived, due in part to small sample sizes, but also due to rapidly changing market conditions, as supply and demand reach more stable equilibria.

The Oregon Employment Department's (OED) difficult-to-fill jobs report also presents evidence of potential shortages. The report highlights a number of occupations to watch: truck drivers, carpenters, personal care aides, construction laborers, farm workers and

³ See <https://oregoneconomicanalysis.com/2018/06/20/construction-wages-graph-of-the-week/>

laborers, and restaurant cooks. Notably, the majority of difficult-to-fill jobs (71 percent) required no more than high school diploma.⁴ Considering wages and vacancies in combination can provide useful evidence about occupations in short supply, at least in the short-term.

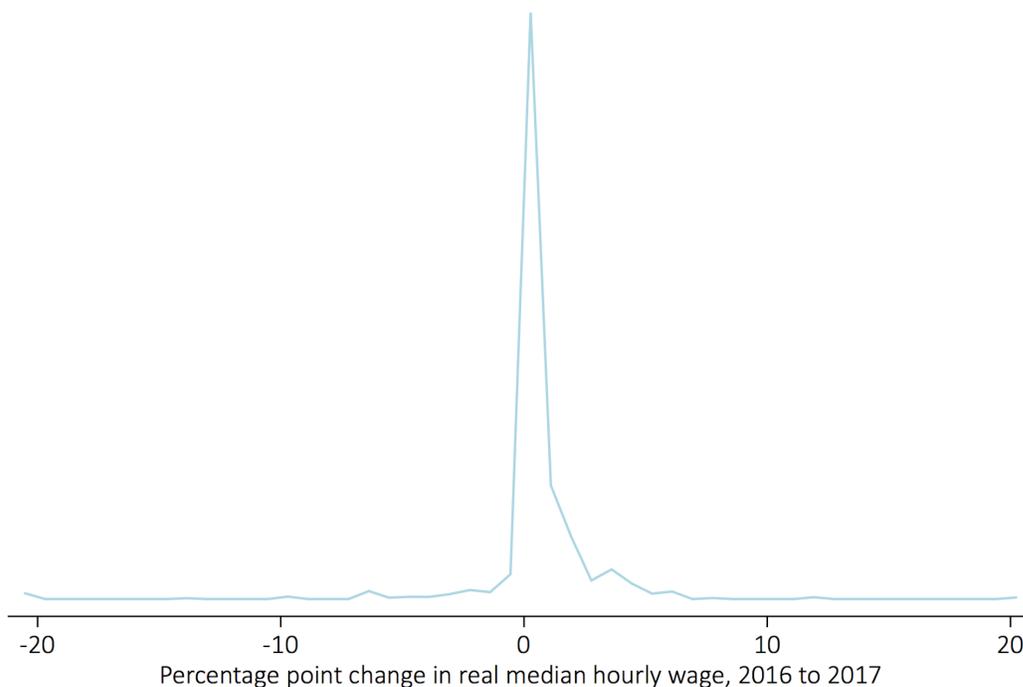
Figure 2.3. Wage growth in most Oregon industries is in line with overall Oregon wage growth (Oregon overall = 100%)



Data source: Quarterly Census of Employment and Wages

⁴ Oregon Employment Department. (June 2018). *Oregon's Current Workforce Gaps: Difficult to fill job openings*. Based on the Oregon Job Vacancy Survey.

Figure 2.4. Distribution of Oregon occupations by percentage point change in real median hourly wage, 2016 to 2017



Data source: U.S. Bureau of Labor Statistics. Includes occupations with total employment of 1,000 or more.

Skill mismatches

The recent flattening of the college wage premium has triggered concerns about skill mismatches. In this case, the concern relates to college-educated workers who occupy jobs that do not require a college degree (see Figure 2.5). As a result, the college degree holder will see lower returns on her educational investment to the extent that her earnings would have been higher in a job that required more advanced training. This suggests the possible need for (1) better education of students and prospective students about potential labor market outcomes for their chosen field of study and/or (2) credential pathways that are better aligned with labor market needs.

For some occupations these apparent mismatches might be the result of official job categorizations that have not kept pace with actual occupational and employer needs. An emerging body of research, however, suggests that these mismatches increasingly result from employers unnecessarily “up-skilling” job requirements (e.g., requiring a bachelor’s degree of administrative secretaries, an occupation in which only one in four incumbents holds a bachelor’s degree⁵).

⁵ Fuller, Joseph B., Jennifer Burrowes, Manjari Raman, Dan Restuccia, and Alexis Young. (November 2014). “Bridge the Gap: Rebuilding America’s Middle Skills.” Report, U.S. Competitiveness Project, Harvard Business School. Report authored jointly by Accenture, Burning Glass Technologies, and Harvard Business School.

Figure 2.5. About half of Oregonians with a bachelor’s degree are in a job requiring one



Data source: American Community Survey PUMS data and Oregon Employment Department

Oregonians who are still out of work

The timing of this talent assessment provides a unique opportunity to investigate the characteristics of individuals who have not experienced the effects of the economic recovery. This economic expansion is a long one by historic standards, but labor force participation rates (i.e., the share of the population working or seeking work) have still not returned to levels of the early 2000s or 1990s. An aging population plays a role, but participation rates are subpar for the so-called prime-age population (25-54) as well. For the expansion to continue into 2019 and beyond, employers and workforce developers would have to engage this remaining out-of-work population.

In 2016, 27 percent of Oregon’s 25-64 population did not work, compared with a U.S. rate of about 26 percent. Following the methodology of a recent Brookings Institution report, we excluded students, pensioners, the disabled, and stay-at-home parents from the out-of-work population and segmented the remaining population into seven clusters⁶:

1. **Less-educated young.** People in their late 20s or early 30s with no postsecondary credential; about one-third are married and a slight majority have children; about one-in-five are foreign born.

⁶ Ross, Martha and Natalie Holmes. (June 2017). *Meet the out-of-work. Local profiles of jobless adults and strategies to connect them to employment.* The Brookings Metropolitan Policy Program. Washington, DC

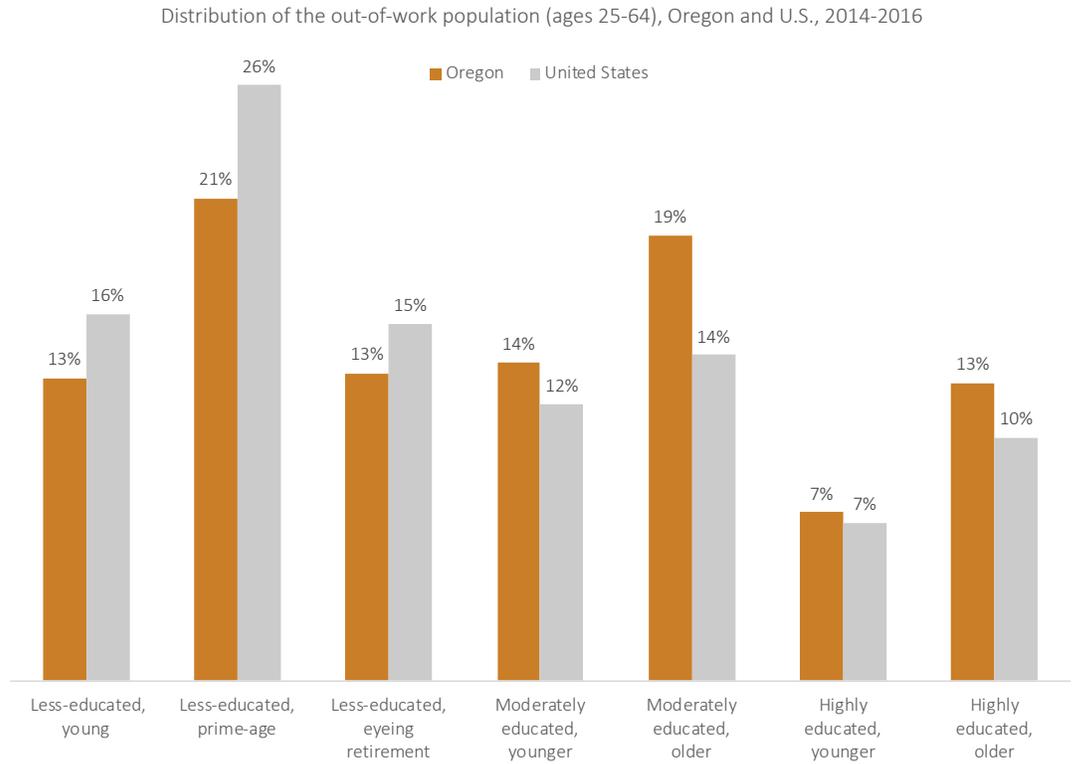
2. **Less-educated prime age.** People in their 40s with no postsecondary credential; about half are married and half have children in the household; about one-in-five are foreign born.
3. **Less-educated, eyeing retirement.** People in their late 50s with no postsecondary credential; two-thirds are married and relatively few have children in the household.
4. **Moderately educated younger people.** People in their late 20s or early 30s with some experience in two-year colleges; roughly half are married and half have children in the household.
5. **Moderately educated older people.** People in their late 50s with some experience in two-year colleges; two-thirds are married and relatively few have children in the household.
6. **Highly educated younger people.** People in their 30s with a bachelor's degree or higher; about half are married and half have children in the household; about one-in-five are foreign born.
7. **Highly educated older people.** People in their late 50s; more than two-thirds are married; few have children in the household; almost 90 percent are non-Hispanic White.

Overall, Oregon's out-of-work population is better educated than the nation's (see Figure 2.6). That finding is consistent with Oregon's lower exposure to China's emergence in world trade, which disrupted labor markets in Midwest and Southeastern states.⁷

The seven out-of-work clusters are especially relevant as the state implements a new adult attainment goal. The majority of these non-workers are beyond traditional school enrollment ages. If labor force engagement is the goal, each cluster requires a unique strategy and policy response. The less educated populations may benefit from a full suite of basic skills training, supportive work environments, and job search assistance programs. For those with children, programming may extend into parental coaching, prekindergarten, and childcare. People with some college experience are more likely to benefit from industry sector strategies, on-the-job training, and apprenticeships that accelerate transitions to occupations that roughly align with their past work experience.

⁷ Autor, David et al. (January 2016). *The China Shock*. National Bureau of Economic Research. Cambridge, MA.

Figure 2.6. Oregon's out-of-work population is better educated than the nation's



Data source: American Community Survey PUMS data; Ross & Holmes (2017), The Brookings Institution. Includes individuals aged 25-64 who were not in the labor force or who were unemployed, excluding students, pensioners, the disabled, and stay-at-home parents.

Chapter 3: The Future of Work

Introduction

A talent assessment necessarily looks beyond the next 6 to 24 months. Employers and educators have longer horizons and must prepare their businesses, workers, and students for a rapidly evolving labor market. Producing a reliable job outlook, which is always a challenge, is getting harder. Computers will continue to eliminate routine work and require humans to focus on uniquely human tasks.

This chapter opens with a discussion of the central workforce topic of the day: the anticipated acceleration of technological progress. If technologists' most aggressive predictions come true, computerization will unfold so abruptly that governments will either have to invent new jobs or pay some people not to work. But even under more modest predictions, the future will require workers with durable basic skills and an ethic of lifelong learning to adapt to new occupations altered by technology.

The chapter then looks to the past to predict the future. Technology's disruption of work is not a new phenomenon and, over the past several decades, the labor market has rewarded workers with strong social skills. That trend is almost certainly going to continue. The chapter concludes by reviewing the Oregon Employment Department's recently released 2017-2027 employment projections and what they imply for in-demand skills.

The age of accelerating automation⁸

Technology and automation have been with us for centuries and yet, as economies transformed from agrarian to industrial and industrial to digital, humans always managed to find work to do. But, technologists believe this time will be different. They see an unprecedented wave of automation that will disrupt our physical and digital worlds.

In the physical domain, autonomous vehicles, drones, robots, 3D printers, sensors, and wearables will affect how we move around, how we manufacture goods, how we get goods to market, and more. The startup Otto delivered 50,000 beers with an autonomous truck in 2016.⁹ Meanwhile, carmakers, ride-sharing services, and technology firms are locked in a race to bring autonomous passenger vehicles to complex urban settings.

On the digital side, recent advances in artificial intelligence (AI) have been impressive. To get a better handle on possible impacts of AI on modern life, a team of researchers at

⁸ The discussions on automation draw on research commissioned by the Portland Business Alliance and funded by the Bank of America. The full report is found at: <https://portlandalliance.com/automation/>

⁹ <https://www.wired.com/2016/10/ubers-self-driving-truck-makes-first-delivery-50000-beers/>

Oxford and Yale universities surveyed 352 AI experts from across the world and asked them to predict when AI would outperform humans on a range of tasks. Their findings: AI could outperform humans in language translation by 2024, high-school essay writing by 2026, truck driving by 2027, retail activities by 2031, writing a best-selling book by 2049, and surgery by 2053. The respondents saw a 50 percent chance that AI could outperform humans on all tasks within 45 years and could automate all jobs in 120 years.¹⁰

Along a similar line of inquiry, two Oxford University engineers assessed a risk of computerization for 702 detailed U.S. occupations.¹¹ They looked within occupations for tasks that were “computerization bottlenecks,” those that required social intelligence (e.g., social perception, negotiation, persuasion, caregiving), creative intelligence (e.g., originality, fine arts), or perception and manipulation (e.g., finger dexterity, manual dexterity, working in cramped/awkward positions). Occupations with none of these so-called bottlenecks had a higher risk of computerization.

The distribution of risk predictions—shown for Oregon occupations circa 2016—makes some intuitive sense (see Figure 3.1). Most transportation occupations fall in the high-risk category—unsurprising given the recent attention and investment paid to autonomous vehicles. Sales work, also on the high end, has seen recent losses as brick-and-mortar retailers give way to online shopping. Low-risk occupations consist of tasks that humans are uniquely able to do: persuasion and negotiation in legal matters; compassion and caring in healthcare; creativity and originality in engineering and design. Automation is a bigger threat to occupations that pay low- and middle-wages with a few exceptions: health care support, building and ground maintenance, and installation and repair work are at the lower ends of both the wage and risk scales.

Automation will be limited by Polanyi’s paradox, named after the economist/philosopher Michael Polanyi, which asserts that many tasks draw on tacit, intuitive knowledge that is difficult to write down or codify.¹² Human drivers use judgment and common sense when they encounter surprises on a roadway—for example, different reactions for a downed power line than for a tree branch. The qualities of leadership are hard to teach or fully explain, but we know it when we see it. We can identify great teachers but would have a hard time documenting all the specific qualities and actions it takes to create one. Architects, designers, and artists rely on an aesthetic sense to build and create work that is appealing to others. Body language can be as important as the spoken word in communication but is hard to train. Emotional intelligence is critical in all work settings but is difficult to document. Computerization and robotics have begun to infiltrate tasks previously believed to be off-limits, and technologists believe that machines will

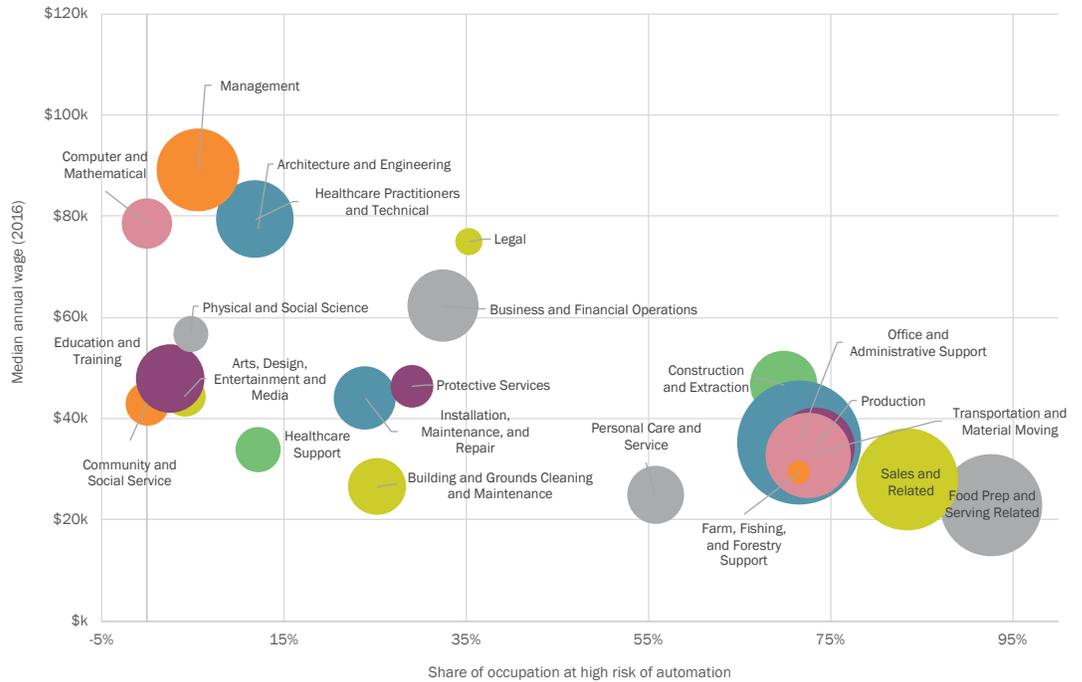
¹⁰ Grace, Katja et al. (May 2018). *When Will AI Exceed Human Performance? Future of Humanity Institute*. University of Oxford. Oxford, UK.

¹¹ Frey, Carl and Michael Osborne. (September 17, 2013). *The Future of Employment: How Susceptible are Jobs to Computerisation?* University of Oxford. Oxford, UK.

¹² Autor, David. (2014). *Polanyi’s Paradox and the Shape of Employment Growth*. Massachusetts Institute of Technology. Cambridge, MA.

eventually develop tacit knowledge through massive amounts of testing, trial, and error. How far they get will determine the degree of labor market disruption.

Figure 3.1. Occupational group size by median annual wage and share at high risk of automation, Oregon, 2016



Data source: Frey et al. and Bureau of Labor Statistics data

The growing importance of social skills

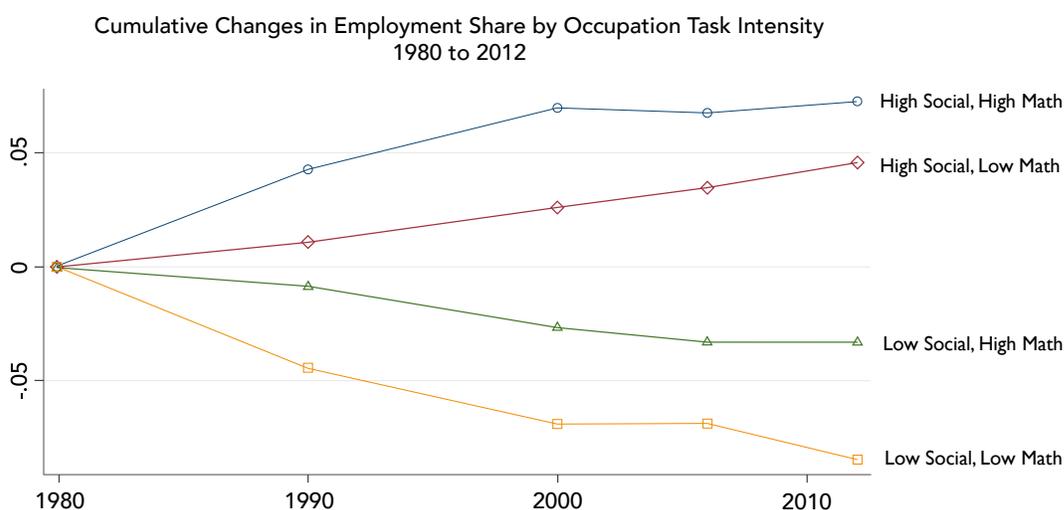
Automation's impact on the labor market is not a new phenomenon. Technological progress has changed the nature of work for centuries, and new research has shed light on the impacts of the past few decades.

Since 1980, economists have measured a decline in routine work and associated job polarization. Job polarization refers to the relatively strong growth of low- and high-skilled occupations combined with slower growth in the middle. Economist David Autor and others have found that disproportionate shares of middle-skill occupations consisted of easily documented, rule-based tasks that lent themselves to automation.¹³ Production work on factory floors (e.g., automobile assembly) were early examples. But, gradually, automation entered offices and overtook tasks previously performed by bank tellers, architectural drafters, paralegals, and medical technicians.

¹³ Autor, David H. et al. (2006). The Polarization of the US Labor Market. *The American Economic Review*, 189-194.

New findings deepen our understanding of technology’s impact on the workplace and underscore the increasing importance of social skills. Harvard University’s David Deming tracked the skills used in growing and shrinking occupations since 1980.¹⁴ He found that occupations requiring both social and math skills grew as a share of all jobs, as did occupations that require social skills alone (see Figure 3.2). Occupations requiring math skills but no social skills declined as a share of all jobs. Occupations requiring neither social nor math skills fared the worst of all.

Figure 3.2. Humans are being awarded for being human



Source: Deming, D.J. (2017). *The Growing Importance of Social Skills in the Labor Market*.

Deming also uncovered some possible explanations for the post-2000 flattening of the college wage premium. Jobs in science, technology, engineering, and mathematics (STEM) declined as a share of the labor force between 2000 and 2012. Computers are moving up the skill ladder and competing for tax preparation, wealth management, cancer diagnosis, and other previously well-compensated tasks. Meanwhile, the cognitive occupations that require significant interpersonal interaction continue to grow: managers, teachers, nurses, physicians, lawyers, and economists.

Part of the economic value of social skills may come from the facilitation of team-based “task trading.” Successful work products demand a complex mix of tasks from a team. Teammates with strong social skills are more likely to figure out their comparative advantage, organize tasks accordingly, and maximize the team’s—and company’s—productivity.

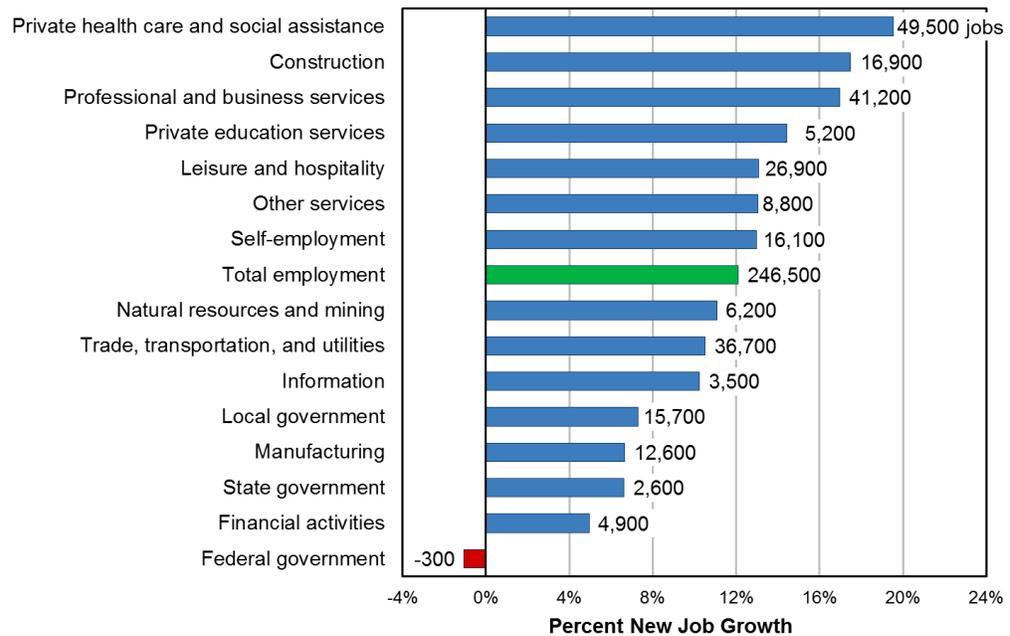
¹⁴ Deming, David. (May 2017). *The Growing Importance of Social Skills in the Labor Market*. Harvard University. Cambridge, MA.

The ten-year employment projections

The Oregon Employment Department (OED) publishes ten-year employment projections every two years. The projections tie back to long-term economic forecasts and assume that a number of key demographic trends continue, and that the public policy environment is stable (e.g., no abrupt expansion or contraction of government activity). Economists combine econometric and qualitative methods and, for the latter, attempt to anticipate how technological innovation, changes in production methods, product substitutability, and offshoring could affect the demand for specific occupations.¹⁵ The projections provide a plausible scenario of employment outcomes given underlying assumptions about the economy.

OED's 2017-2027 projections, released in June 2018, show a 12 percent employment increase over the decade—or 245,800 jobs¹⁶ (see Figure 3.3). OED shows one-in-five of those new jobs (49,500) will be in the healthcare and social assistance sector, given the aging of the population. Professional and business services has the next largest number of new jobs (41,200), driven by computer system design and company management activities, followed by trade, transportation, and utilities (36,700 new jobs). The economists also anticipate strong growth in residential and commercial construction (16,900 new jobs), given today's low vacancy rates and elevated prices.

Figure 3.3. Health care leads long-term employment growth, Oregon industry projections, 2017-2027



Source: Oregon Employment Department

¹⁵ United States Bureau of Labor Statistics. Employment Projections. *Handbook of Methods*. U.S. Department of Labor. Washington, DC.

¹⁶ <https://www.qualityinfo.org/projections#1>

The data in OED ten-year projections can be reorganized to illustrate combinations of four broad skill competencies that will underlie new jobs:

1. Clerical and service work
2. Physical work
3. Operating machines and processes
4. Communication and critical thinking

For example, financial activities combine critical thinking with service work while computer programming sits at the intersection of critical thinking and operating processes (see Figure 3.4). The data visualization co-locates occupations that draw from similar skill sets (e.g., bookkeepers with insurance claim agents, computer operators with sound engineer technicians, architectural drafters with interior designers). Seemingly dissimilar occupations can have a lot of skill overlap, which provides opportunities to transfer skills between occupations if needed.

The size of the bubbles represents the number of job openings from 2017-2027 based on OED's ten-year projections. Many openings sit in the upper right quadrant, at the intersection of clerical, service, and physical work. Occupations combining clerical/service and communications / critical thinking (upper left quadrant) are also projected to have a large number of openings.

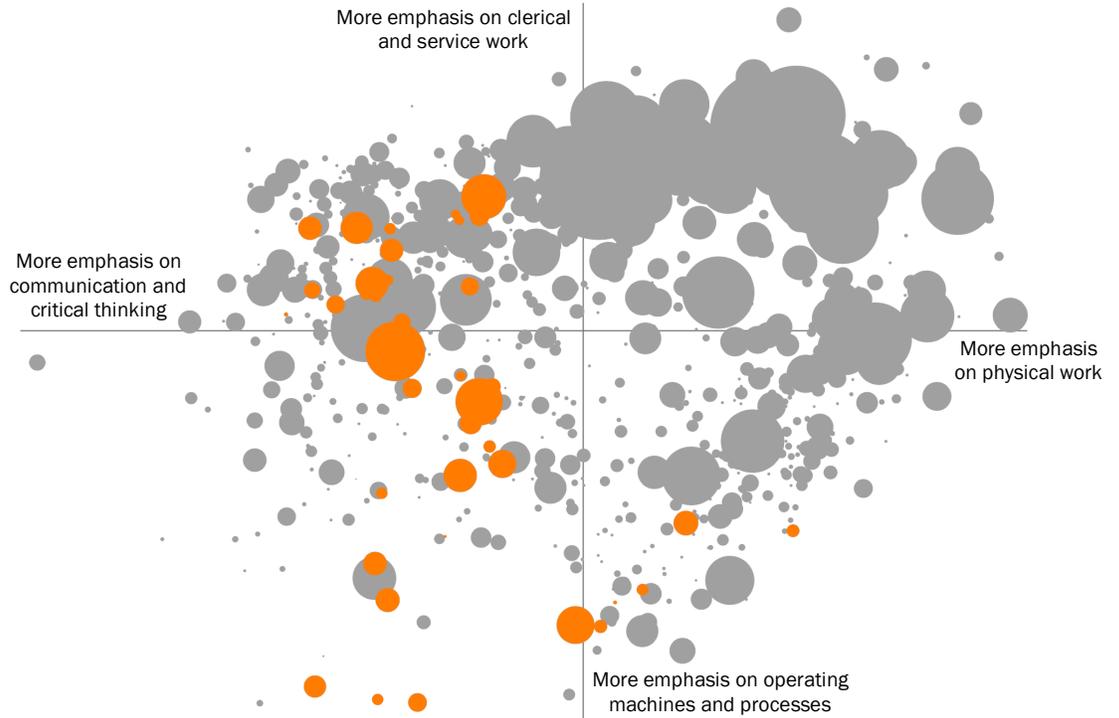
The occupations highlighted orange are those deemed critical to the growth of Oregon's key industries by the 2017 *Oregon Talent Plan*. These include accountants and financial analysts in the upper left quadrant; registered nurses, therapists, and pharmacists in the middle left; programmers and engineers in the lower left; and machinists, millwrights, electricians, and maintenance technicians in the lower right. The *Talent Plan* identified occupations that drive the growth of other jobs, taking into account demand factors such as job concentrations in Oregon compared to the U.S., projected new and replacement openings, growth rates, retirement exposure, wage premiums, and industry competitiveness.¹⁷

Occupations with the largest number of projected openings differ somewhat from the key occupations that drive growth in Oregon's traded sector. The *Talent Plan's* critical occupations sit mostly at the intersection of clerical/service skills, communication / critical thinking skills, and operating machines and processes, with relatively less emphasis on physical work. While these high-multiplier occupations deserve special attention and focus, the majority of Oregon's projected job openings are likely to be in a somewhat different set of occupations, with relatively more emphasis on physical and clerical/service work.

¹⁷ *The Oregon Talent Plan: A Needs Assessment and Investment Strategy*. (June 2017).

Figure 3.4. Oregon jobs on a skills spectrum¹⁸

Oregon occupations by number of projected openings in 2017-2027 (size of bubbles) and skills characterization; key occupations from the *Oregon Talent Plan* are highlighted orange



Data sources: O*NET, Bureau of Labor Statistics, Oregon Employment Department, the *Oregon Talent Plan*

¹⁸ O*Net scores hundreds of jobs on dozens of characteristics. Using a technique known as principal components analysis, these characteristics are distilled into four general categories: clerical and service work; physical work; operating machines and processes; and communication and critical thinking.

Chapter 4: Employer Perspectives

Introduction

The 2018 *Talent Assessment* included diverse data collection and analysis tasks, with a focus on ten key industries identified by HECC prior to the study:

- Advanced manufacturing
- Bioscience
- Construction
- Energy
- Food and beverage manufacturing
- Healthcare
- Maritime
- Outdoor gear and apparel
- Technology and software development
- Wood products

In addition to a review of statewide administrative and economic indicators, we collected descriptive data through individual stakeholder interviews, focus groups, and an online stakeholder survey. In this section, we summarize stakeholder input across all qualitative and descriptive data sources. In total, 37 interviews, five focus groups, and 363 survey responses were incorporated into this summary.

Methodology

We used diverse outreach methods to solicit industry participation in engagement opportunities. Stakeholder engagement methods, including the online survey, were not intended to collect a representative or generalizable sample of industry contacts, but instead to provide broader descriptive stakeholder feedback on key research questions. We consulted with several statewide business and industry associations for initial key contacts in each of the focus industries. These contacts provided additional references to individuals or associations with relevant industry workforce knowledge. In total, 58 stakeholders participated in interviews or focus groups:

- Bioscience: 4
- Construction: 7
- Energy: 4
- Food and Beverage: 8
- Healthcare: 5
- Manufacturing: 3
- Maritime: 3
- Outdoor Gear and Apparel: 14
- Technology: 6
- Forest and Wood Products: 4
- **Total: 58**

In addition to interviews and focus groups, we engaged stakeholders through an online survey collecting information on hiring, training and productivity, and workforce planning and forecasting. Stakeholders that participated in interviews and focus groups were asked to complete the survey and share the link broadly with their industry networks for greater stakeholder engagement. Where possible, we directly distributed the survey link to industry associations. The survey was also publicized at the 2018 Talent Summit to facilitate participation.

In total, 363 individuals completed the stakeholder survey. Among those, 134 survey respondents identified his or her sector as “Other.” During data analysis, “Other” responses were post-coded to identify additional key respondent categories by sector. The table below illustrates survey participation among the 10 industries of focus in the *Assessment* (identified with an asterisk), as well as the additional sectors identified during analysis.

	Number of survey respondents	Percent of survey respondents
Accounting/finance and professional services	23	6.3
Advanced manufacturing*	25	6.9
Bioscience*	7	1.9
Construction*	21	5.8
Education	24	6.6
Energy*	6	1.7
Food and beverage manufacturing*	24	6.6
Government	17	4.7
Healthcare*	31	8.5
Hospitality	7	1.9
Human Resources	13	3.6
Maritime*	3	0.8
Nonprofit	21	5.8
Outdoor gear and apparel*	6	1.7
Technology and software development*	89	24.5
Wood products*	13	3.6
Other, please specify	29	8
Sector missing	4	1.1
Total	363	100

It is important to note that the survey methodology was not developed to collect a representative sample of industry in general or by sector, thus findings may not be generalizable to the larger population. Instead, the descriptive data and associated analysis provide targeted, explanatory input to supplement broader talent development trends and support development of workforce system response. The appendices provide industry-specific profiles with additional detail about survey results and interview / focus group findings.

Hiring and in-demand occupations and skills

Industry stakeholders provided extensive input on general hiring conditions, in-demand occupations, and in-demand skills.¹⁹ In this section, we discuss employers' difficulty in finding qualified applicants and how this experience varies from previous years; how employers have responded to difficulty in hiring; occupations that are in demand across and within key Oregon industries; and in-demand skills, including education level, basic skills, hard or occupational skills, and soft or interpersonal skills.²⁰

Industry experience with hiring

In today's job market, employer survey results indicate that hiring difficulties are widespread and as bad as or worse than the previous year. In response, most employers are increasing their recruiting efforts, and some are increasing wages, but over a third report they are hiring a less qualified applicant or leaving the position open.

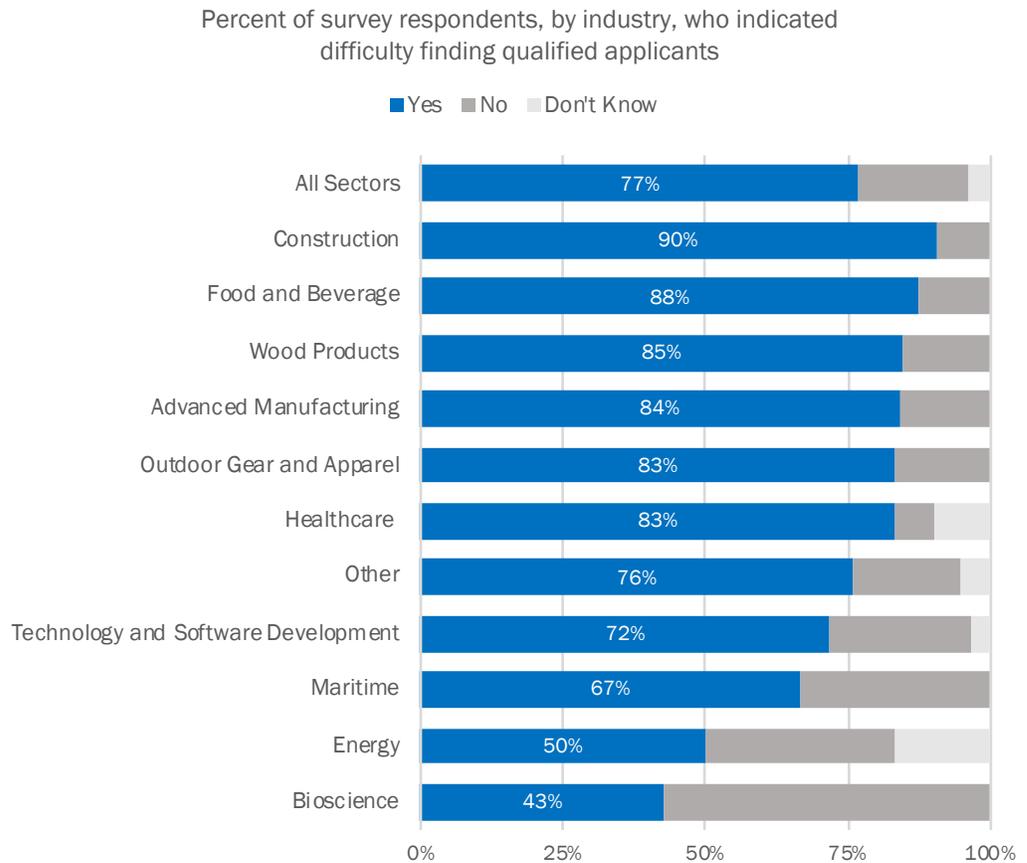
- **Pace of hiring is strong, and difficulty in hiring spans across industries.** Almost all survey respondents (92 percent across all sectors) indicated that they had hired new employees over the preceding 12 months. Seventy-seven percent of respondents across all sectors noted difficulty in finding qualified applicants for the jobs they were trying to fill (see Figure 4.1). Reports of hiring difficulties were highest within food and beverage, wood products, and advanced manufacturing.

Most respondents indicated that their experience filling positions over the last 12 months was harder than or comparable to the previous year. The industries most likely to report increased difficulty hiring were food and beverage (63 percent), outdoor gear and apparel (67 percent) and construction (48 percent).

¹⁹ In-demand occupations include jobs with a high number of jobs and job openings, and low unemployment or excess supply. Similarly, in-demand skills are those in greater demand among employers, with low availability or excess supply of skilled workers.

²⁰ Definitions of basic, occupational, and soft or interpersonal skills vary in the field. For the purposes of the *Oregon Talent Assessment* we drew on existing definitions used in similar assessments (e.g., the Iowa Workforce Development's 2014 Workforce Needs Assessment Survey). For greater definition on each skill category, please see the text box on page 28.

Figure 4.1. Stakeholders across industries note difficulty in finding qualified applicants



Percent reporting hiring is more difficult than in the last 12 months:

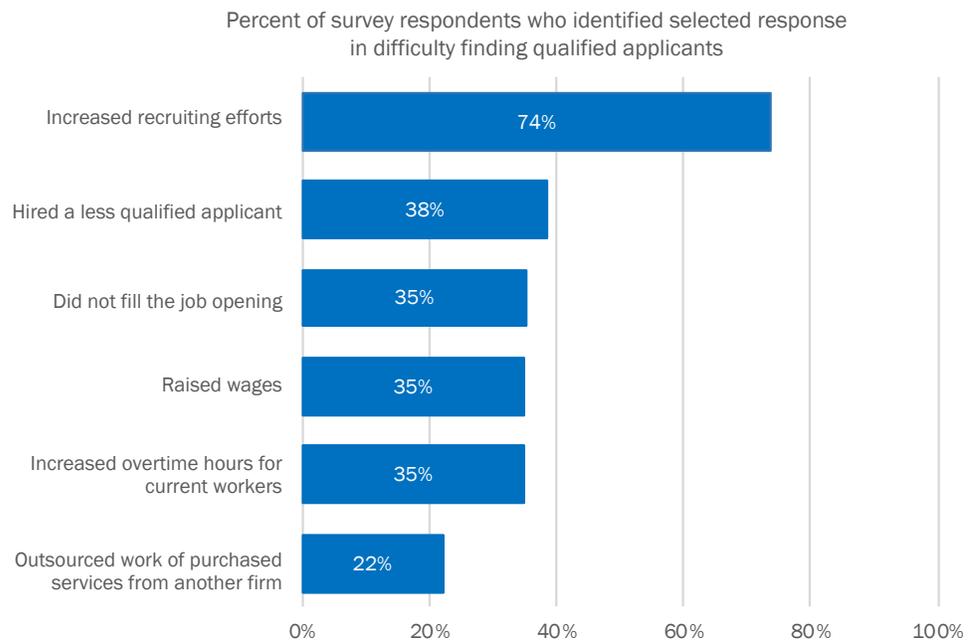
38%

Percent reporting that hiring is about the same as the last 12 months:

44%

- Employers increased recruitment efforts in the face of hiring difficulties.** In response to difficulty in finding qualified applicants, most employers (74 percent) increased their recruiting efforts (see Figure 4.2). Overall, employers also frequently cited hiring a less qualified applicant (38 percent), not filling the position (35 percent), raising wages (35 percent), and increasing overtime for current workers (35 percent). Adoption of these strategies varied across industries. For example, raising wages was most frequently cited by respondents within the outdoor gear and apparel (100 percent), wood products (64 percent), advanced manufacturing (62 percent), and food and beverage (57 percent) industries. Similarly, relatively more food and beverage respondents indicated that they increased overtime for current workers (67 percent) and hired a less qualified applicant (62 percent) as a result of difficulty in finding workers.

Figure 4.2. Employers increased recruitment efforts in response to difficulty in hiring



In-demand occupations

While industries have specific employment demands, certain occupational needs exist across sectors. Interview and focus groups participants across industries frequently cited the need for engineers, skilled tradespeople, and project managers.²¹

- **Engineers and skilled trades are in broad demand.** Nearly all sectors are in need of engineers, with the type of engineer dependent on the sector, such as marine engineers in the maritime sector, biomedical engineers in the biosciences sector, and software engineers in the technology sector. Multiple industries identified the following engineering specialties as in-demand: electrical engineers (energy and technology sectors) and mechanical engineers (wood products, outdoor gear and apparel, and technology sectors). Additionally, the growing use of automation and mechanization is driving the need for electricians and mechanics in several industries.
- **Managers are needed to keep projects and operations on track.** Several interviewees across sectors cited the need for managers to oversee complex business and technical operations or products. Applicants need a broad range of skills, including data analysis, critical thinking, interpersonal and leadership skills, knowledge of business operations and, ideally, a technical understanding of the

²¹ See Appendix A (industry profiles) for lists of in-demand occupations identified by key stakeholders from individual industries.

product or type of operation (e.g., a manager with a software engineering background, or a production line manager with mechanical skills).

- **Employers pursue out-of-state recruitment to meet talent needs.** Several key stakeholders indicated that they needed to recruit and hire out-of-state to meet their employment needs for specific occupations. For example, stakeholders reported shortages of utility line workers, electricians, engineers (particularly bachelor's or master's level mechanical, industrial, electrical, computer and chemical engineers), UX/UI (user experience/user interface) managers, and middle-level project managers. With respect to recruiting electricians, employers cited barriers to hiring out-of-state due to Oregon's strict licensing standards.

In-demand skills

Across industries, most survey respondents agreed that applicants had the education level and basic skills required for the job, but they were less positive about soft skills and hard or occupational skills. Largely similar themes were expressed in interviews and focus groups with employers across industries.

- **Most applicants had the education needed.** The vast majority of survey respondents thought that applicants had the appropriate education levels to fill their vacant positions (81 percent overall; see Figure 4.3). Interviews and focus groups revealed that employers seek out targeted training or a bachelor's degree or higher within industries requiring highly skilled labor, including the healthcare industry and higher-level positions in technology and software development, energy, bioscience and other industries in need of engineers. Associate degrees or certificates and on-the-job apprenticeships in skilled trades, in particular, are preferred within construction, advanced manufacturing, energy, and wood products.

Just 12 percent of survey respondents disagreed that applicants have the needed education levels. All 13 survey respondents from the forest and wood products

Skill definitions

The following skill categories and examples were used in the survey, interviews, and focus groups during the employer engagement process.

Education level, including high school diploma or GED, some college coursework, CTE diploma or certificate, CTE associate degree, academic associate degree, bachelor's degree, master's degree, and doctorate.

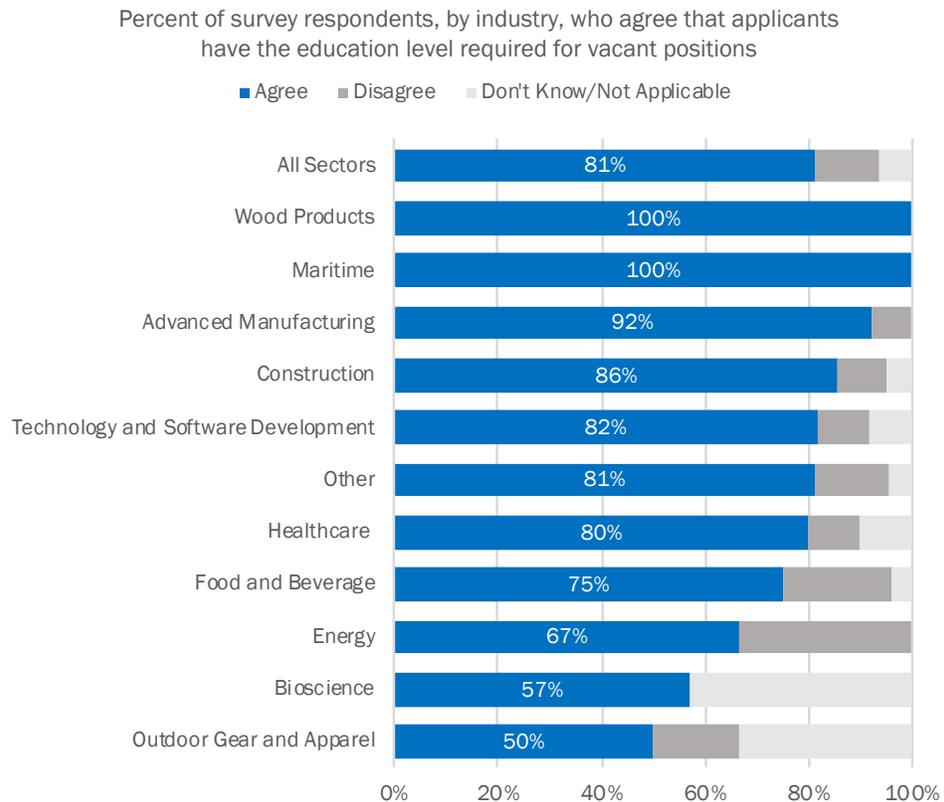
Basic skills, including locating information, reading for information, applied mathematics, and written communication.

Hard or occupational skills, technical and know-how skills that apply directly to the job, including basic computer literacy, basic communication/writing, computer software, critical/analytical thinking, machine operation, and project management.

Soft or interpersonal skills, skills associated with an individual's habits, personality, and character, including communication skills, dependability, honesty, leadership, motivation, teamwork, and time management.

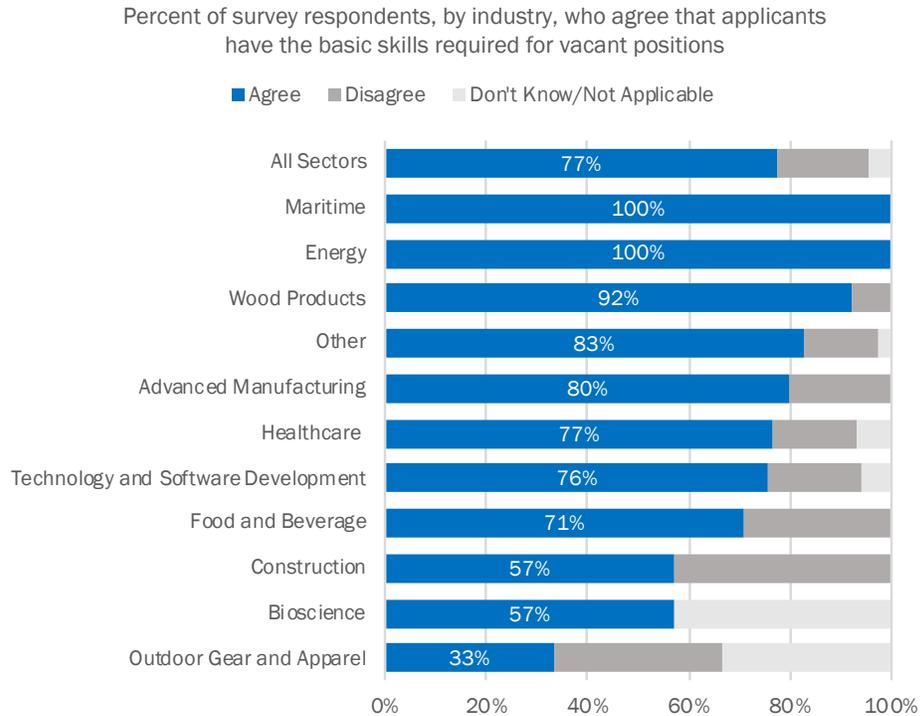
and the three maritime industry survey respondents agreed that applicants have the needed education levels. For these industries, as well as advanced manufacturing and construction, most interviewees felt that education level was subordinate to hard and soft skills and work experience. In the healthcare sector, the consensus among interviewees was that level of education drives hiring more than hard skills, suggesting that education levels may serve as a better proxy for skills in the healthcare industry than in other industries. In advanced manufacturing and construction, on the other hand, hard skills may be prioritized over education level.

Figure 4.3. Most thought applicants have the appropriate education level



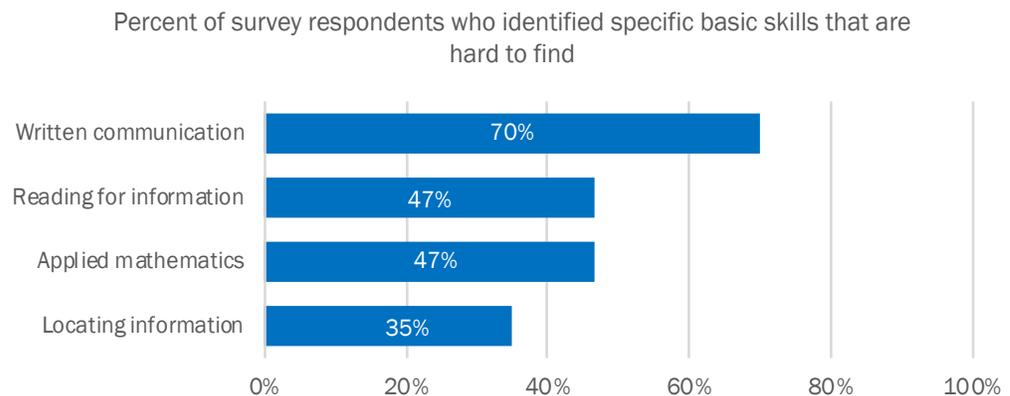
- Most applicants have the basic skills required, with some variation across sectors.** Across industries, most respondents (77 percent) agreed that applicants have the basic skills required for vacant positions, while 18 percent disagreed with this statement (see Figure 4.4). The industries that were more likely to disagree that applicants had the needed basic skills were construction (43 percent of 21 survey respondents), outdoor gear and apparel (33 percent of six survey respondents), and food and beverage (29 percent of 24 survey respondents). Interview participants provided input on shortages in specific basic skills. Construction and advanced manufacturing respondents, for example, seek kinesthetic learners who have shown they can work with their hands and are competent in reading tape measures and other essential construction and manufacturing skills.

Figure 4.4. Most believe applicants have the basic skills required for vacant positions



Among respondents who disagreed that applicants had the required basic skills, 70 percent identified written communication as a hard-to-find skill among applicants (see Figure 4.5). This was the basic skill selected by the largest proportion of respondents to this question, followed by applied mathematics and reading for information (both 47 percent). Among interview and focus group respondents, mathematics and basic data analysis (e.g., reading a chart or spreadsheet) were cited most frequently as in-demand across nearly all 10 focus industries.

Figure 4.5. Written communication is the basic skill most in-demand



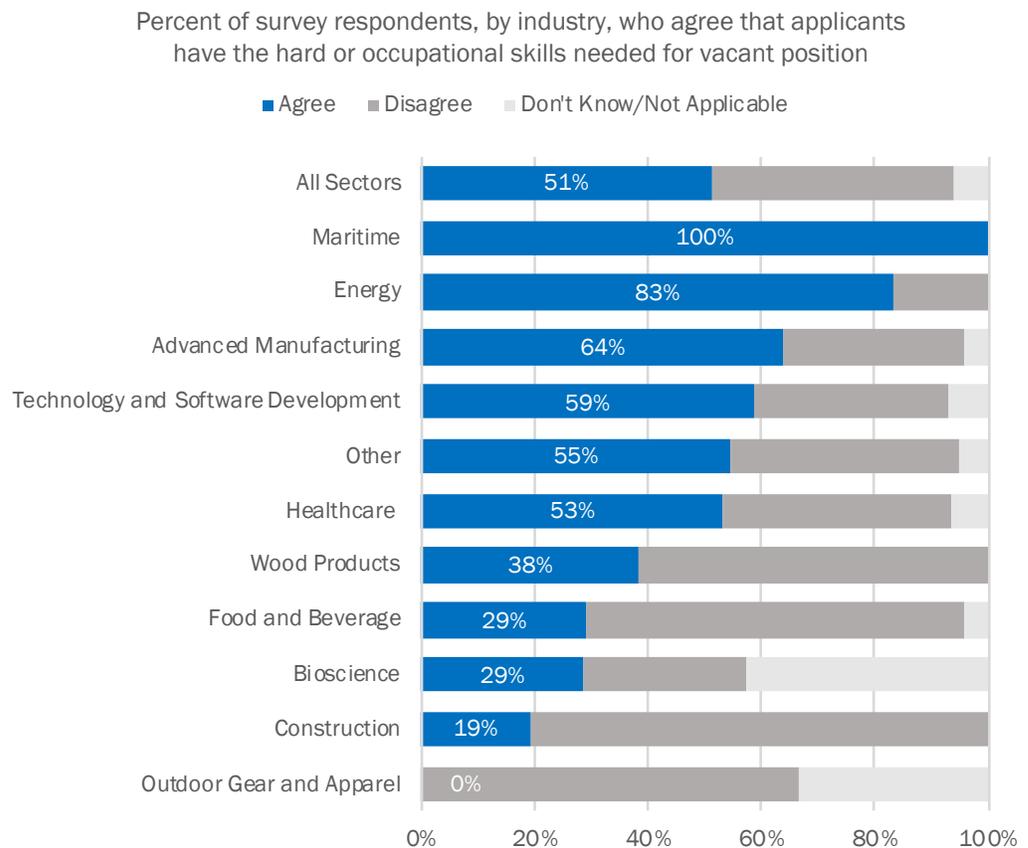
Note: Results reflect survey respondents who disagreed with the statement that job applicants have the basic skills required for vacant positions.

“Skilled labor is really crazy – people are retiring and we’re all fighting for the people to replace them.”

—Forest-wood products stakeholder

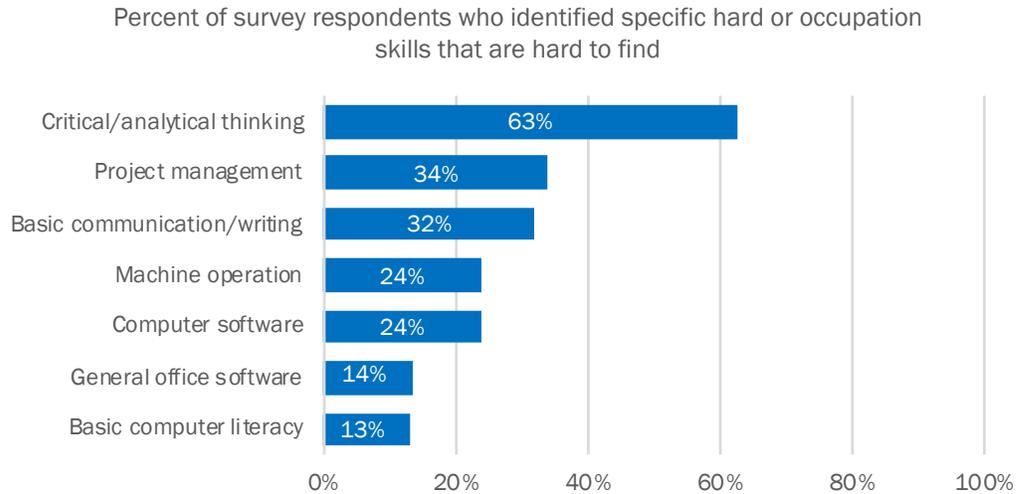
- Hard skills are in-demand, particularly critical thinking.** Compared to education level and basic skills, fewer survey respondents across all sectors (51 percent) agreed that applicants have the hard or occupational skills needed for vacant positions, suggesting that although applicants may have appropriate education levels, their education may not have equipped them with the needed skills (see Figure 4.6). Only one in five construction respondents (19 percent of 21 survey respondents) agreed that participants have the occupational or hard skills required for vacant positions. This was followed by food and beverage (29 percent of 24 survey respondents) and wood products (39 percent of 13 survey respondents). The construction industry, as well as the manufacturing and processing side of the food and beverage and wood products industries, depend in large part on the skilled trades and people who are able to work with automation and machines. Interviewees indicated they sought applicants with these skills, but that they were willing to train a motivated and promising applicant, if needed.

Figure 4.6. Hard skills are lacking, according to many industry employers



Among respondents who did not feel applicants had the required hard or occupational skills, nearly two-thirds (63 percent) identified critical/analytical thinking as a difficult skill to find among applicants (see Figure 4.7). The need for critical thinking and problem-solving was also a common theme among interview and focus group participants in nearly all industries. For example, stakeholders in industries as diverse as healthcare and wood products cited critical thinking as necessary for all jobs, from medical assistants to specialized physicians, or hourly mill workers to administrators with bachelor’s degrees.

Figure 4.7. Critical thinking is the hard skill most in-demand



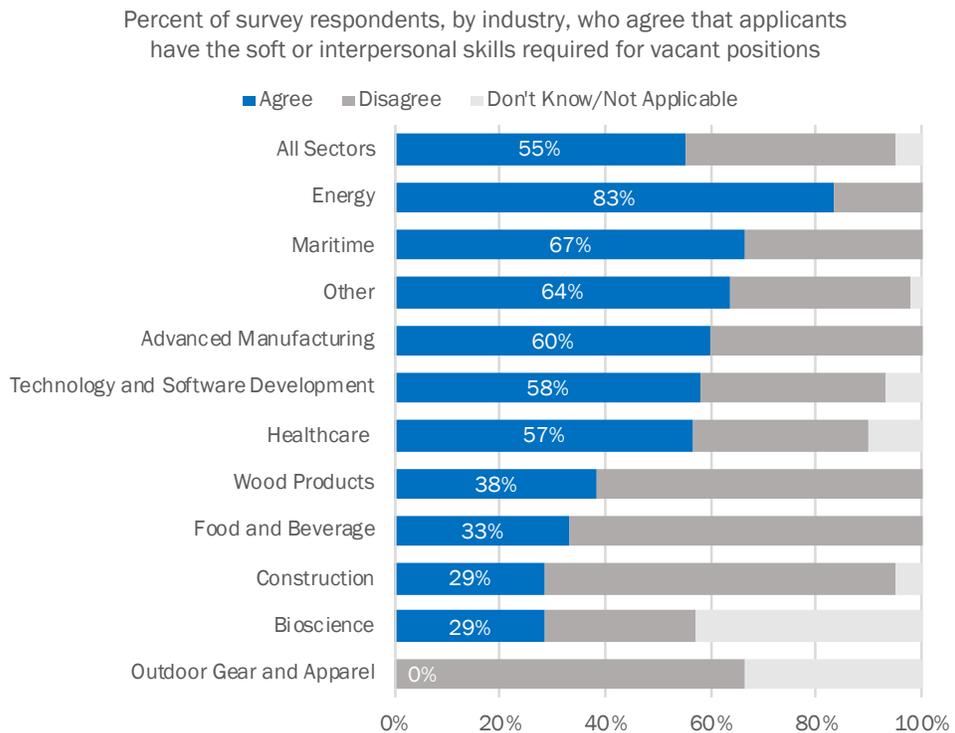
Note: Results reflect survey respondents who disagreed with the statement that job applicants have the hard or occupational skills required for vacant positions.

“If I have a person capable of showing up for work, with a pleasant attitude and ability to be on a team – I am going to grab them and try to find a place for them in my organization.”

— Food and beverage stakeholder

- **Soft skills are broadly in-demand, and hard to find.** Compared to education level or basic skills, fewer survey respondents across all sectors agreed that applicants had the soft skills (55 percent) needed for the job (see Figure 4.8). Like hard or occupational skills, this suggests that education level may not be a suitable proxy for skills in certain industries, and that certain essential skills may not be universally taught in K-16 education.

Figure 4.8. Respondents were split on whether applicants have the needed soft skills

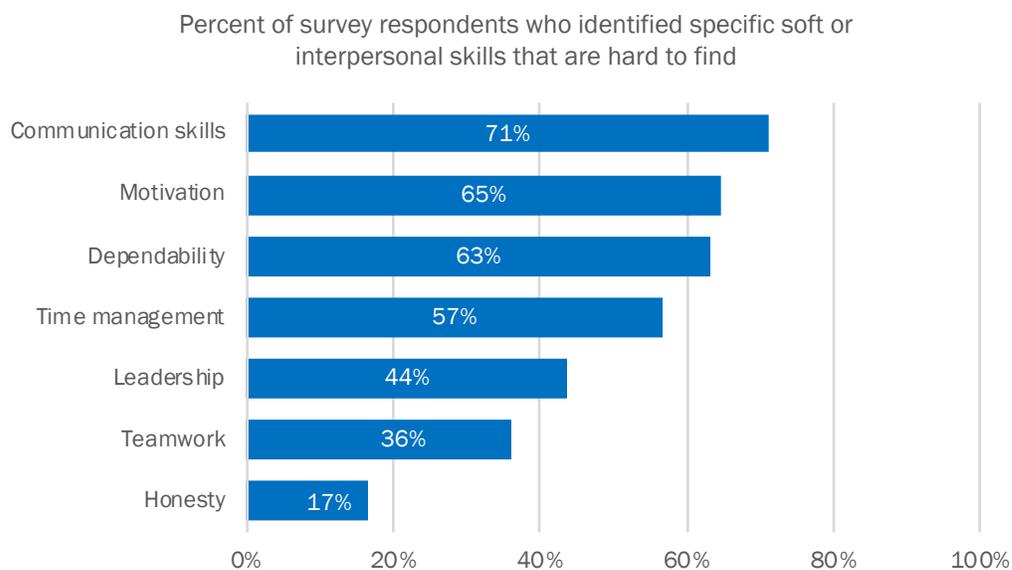


“We’ve adjusted toward hiring for fit first because it can be harder to find leadership skills, written and oral communication. We assess for strengths and needs, and train on an employee’s needs.”

— Forest-wood products stakeholder

Among the 40 percent of respondents who disagreed that applicants had the needed soft or interpersonal skills, the specific soft skills most often identified as hard to find were communication skills, motivation, dependability, and time management (see Figure 4.9). The demand for the same soft skills were identified across most industries in the interviews and focus groups. In many industries and for many types of jobs, interviewed employers indicated they prioritize soft and basic skills over hard skills and work experience. Interviewees and focus group participants in food and beverage, advanced manufacturing, wood products, and outdoor gear and apparel indicated that hiring for fit can often trump, or at least be on par with, hard skills. However, not all soft skills are essential in lower-skilled, entry-level positions. While dependability and motivation are key on the manufacturing floor, advanced manufacturing employers reported they can be somewhat lenient on requirements for strong communication skills, which are viewed as less critical in those positions. Wood products stakeholders, on the other hand, indicated that while it can be hard to find people with the necessary hard or occupational skills to operate a mill, it is harder to find entry-level laborers with the motivation to work.

Figure 4.9. Communication skills, motivation, and dependability are in-demand soft skills



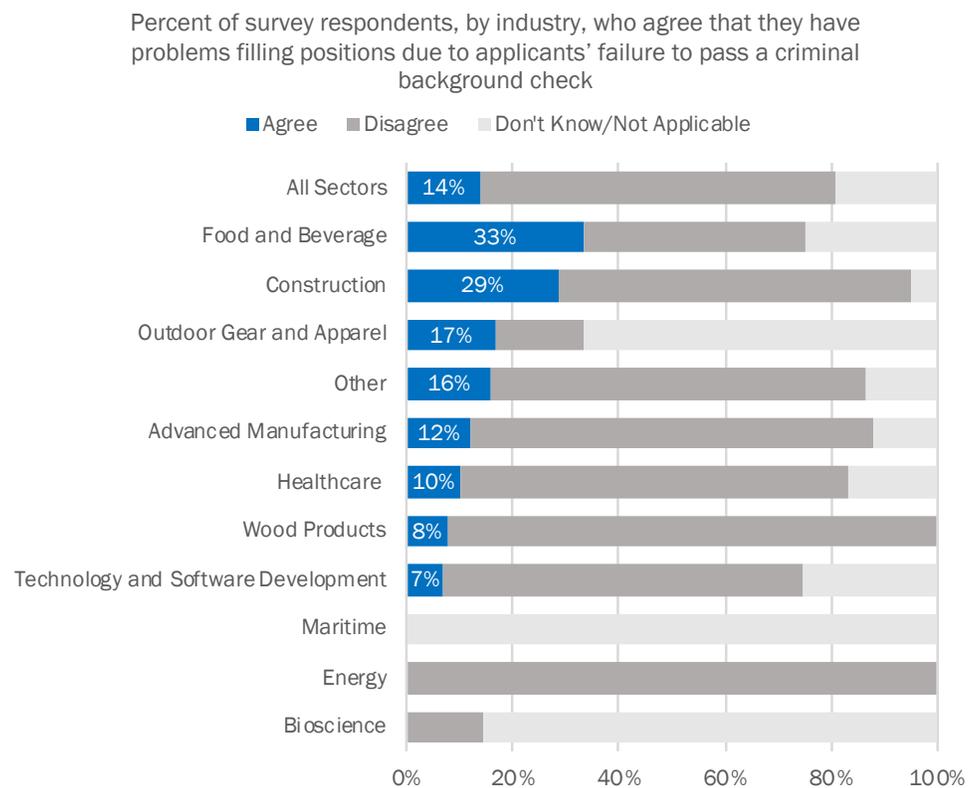
Note: Results reflect survey respondents who disagreed with the statement that job applicants have the soft or occupational skills required for vacant positions.

“Education and schooling is great, but what employers really want to see is apprenticeships and certificates.”

—Advanced manufacturing stakeholder

- **Work experience is essential for developing the talent pool.** Work experience, either through previous relevant employment or through internships or apprenticeships, was universally valued by employers interviewed. Smaller employers, in particular, cited challenges hiring recent graduates without work experience because they could not afford the investment of time to bring the candidate to a productive level. Within advanced manufacturing, technology, and construction, apprenticeships and internships were considered highly beneficial to the industry. For example, graduates of MECOP (Multiple Engineering Cooperative Program) – a partnership of OSU, Oregon TECH, PSU and University of Portland – were cited as in high demand.
- **Criminal background doesn’t pose widespread difficulty in hiring.** Most respondents across sectors did not cite problems in filling positions due to an applicant’s difficulty in passing a background check. Two-thirds (67 percent) of respondents across all sectors disagree that they have problems filling positions because of applicant difficulty in passing a background check (see Figure 4.10). Many more participants responded Don’t Know or Not Applicable to this question compared to the other skills. The high number of Don’t Know or Not Applicable responses is likely indicative of the type of jobs for which respondents are hiring. According to interview results, criminal background checks were primarily conducted by employers seeking laborers, and for most of these employers, it was not a substantial issue. For example, some stakeholders within advanced manufacturing or energy reported they only do felony background checks or that they are “second-chance” or “felony-friendly” employers – policies that are largely adopted in order to fill positions.

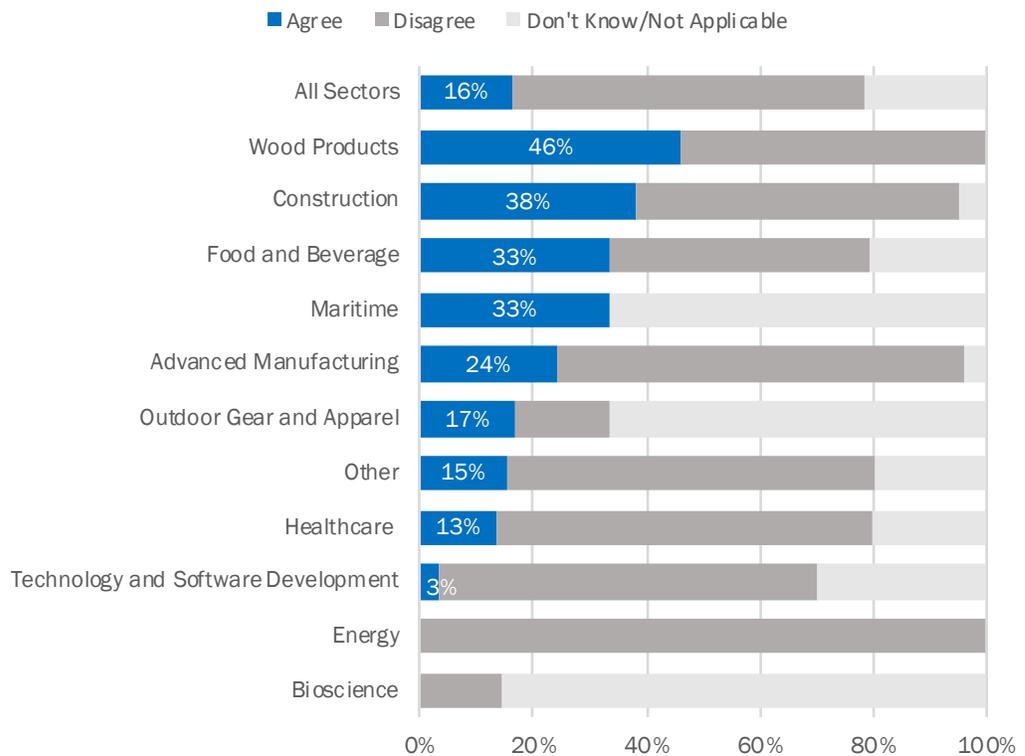
Figure 4.10. Most do not cite problems in filling positions due to criminal background



- Failure to pass a drug screen is not a substantial issue.** Most respondents (62 percent) across all sectors did not have problems filling positions due to applicant failure to pass a drug screening (see Figure 4.11). Similar to the question regarding criminal background, many more participants responded Don't Know or Not Applicable to this question compared to the other skills, suggesting they do not require drug tests for their positions. According to interview and focus group participants, a clear drug screen was not a significant issue for most industries, but within advanced manufacturing, participants indicated a clear drug screen was a substantial issue. For example, a central Oregon company recently omitted marijuana from its drug screen in order to fill positions. They report the challenge is explaining to applicants that despite Oregon law, marijuana is still illegal at the federal level, which is relevant for national companies with facilities in Oregon. A clean drug screen was also cited by interviewees as an issue in the construction and wood products industries.

Figure 4.11. Failure to pass a drug screening not an issue for most industries

Percent of survey respondents, by industry, who agree that they have problems filling positions due to applicants' failure to pass a drug screening



Contextual considerations

Throughout the process of engaging industry and business leaders for the talent assessment, stakeholders discussed a number of contextual factors influencing talent development. Although these factors are not in the direct purview of the workforce development system or associated partners, they affect talent development in the state. Collective focus or advocacy may improve conditions and facilitate greater talent development.

- **High cost of living (housing and transportation).** Business owners throughout the state commonly discussed the high cost of living as a root cause of skill gaps and shortages. Salaries are not able to keep pace with the rising cost of housing. A business owner discussed how the high cost of housing is pricing out the young, creative class in Portland, which is their workforce. Expensive rents often mean employees have to live further from where they work and commute by car rather than walk, bike, or take mass transit. The costs associated with commuting by car are high for individual workers in terms of health, quality of life, and cost, as well as for the community at large in terms of road usage and congestion. One employer noted that they recently paid \$14,000 in parking fees for their employees. Likewise, healthcare and maritime representatives noted that the high cost of living along the Oregon coast limits the number of skilled applicants for in-demand positions throughout the region. Stakeholders discussed the broad recognition of these problems, but felt viable solutions were elusive.
- **High cost of Public Employees Retirement System (PERS).** Many stakeholders reflected that the high cost of PERS was a primary driver of the state’s budget. Stakeholders reported feeling that the public education system is insufficiently funded as a direct result of the cost of funding PERS. One stakeholder said, “PERS is killing the education system; we don’t have money to pay for teachers. That is a big issue. Until that is solved, we have a big problem.” Another observed that PERS is “an existential crisis for the state.”
- **Underperforming public education system.** Business/industry stakeholders discussed several related issues with the state’s public K-12 education system. Individuals were concerned that the education system’s poor reputation makes it hard to attract talent to the state. Families generally do not want to relocate to a region with poor schools. The current education system is perceived as underfunded, which makes investment in talent development initiatives like increased work-experience opportunities challenging. Underfunding also affects diversity. Exclusion from opportunity early in a student’s educational career has a negative effect on talent development. Talent needs the opportunity to grow and thrive.¹

“To get people to come to Oregon, having a great school system and a better university system can do more to attract talent than anything else we can do.”

—Outdoor gear and apparel focus group stakeholder

- **Changing social norms.** People reflected on the reasons for the perceived growing gaps in essential skills like communication, conflict resolution, accountability, and collaboration, particularly in younger workers. Many believed issues related to shifts in technology use, the emergence of social media as a dominant communication mechanism, changing family structures, and broader cultural changes have collectively influenced expectations and norms.
- **Immigration system.** Businesses commented on the impact of federal immigration policies on their ability to hire and retain foreign students who are educated in the U.S., which, in some cases, resulted in their sending jobs overseas.

¹Merisotis, Jamie. (2015). *America Needs Talent: Attracting and Deploying the 21st Century Workforce*. RosettaBooks.

Chapter 5: Employer Responses

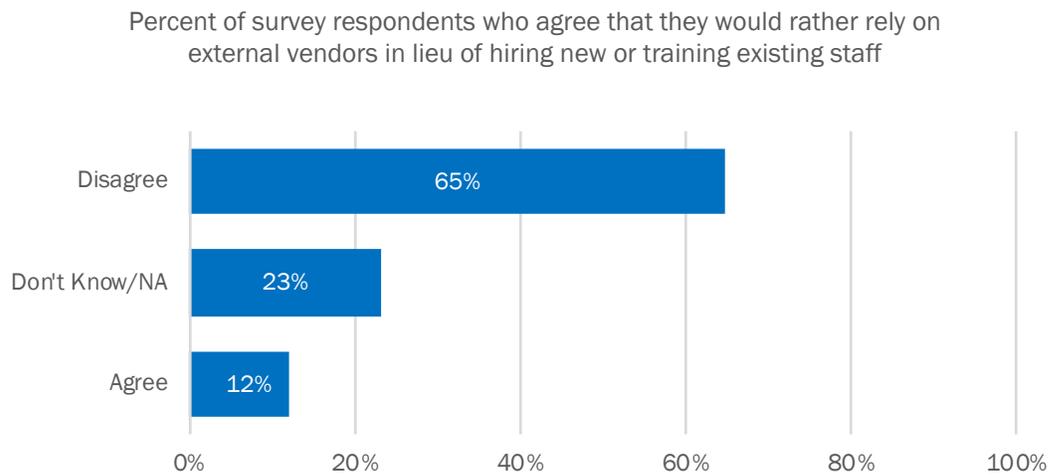
Industry response to occupation and skill needs

Industry stakeholders—in collaboration with educational institutions, governmental workforce development programs, and others—are endeavoring to develop skills and talent in Oregon’s workforce. This chapter focuses on what is presently being done to recruit and train talent in current and future workers according to industry stakeholders who participated in the survey, focus groups, or interviews.

Approaches to hiring decisions

More than two-thirds of survey respondents noted a preference for hiring and training workers rather than relying on external vendors or contractors (see Figure 5.1). Interviewees generally concurred, reporting feeling that using external contractors costs more and produces lower quality outputs.²²

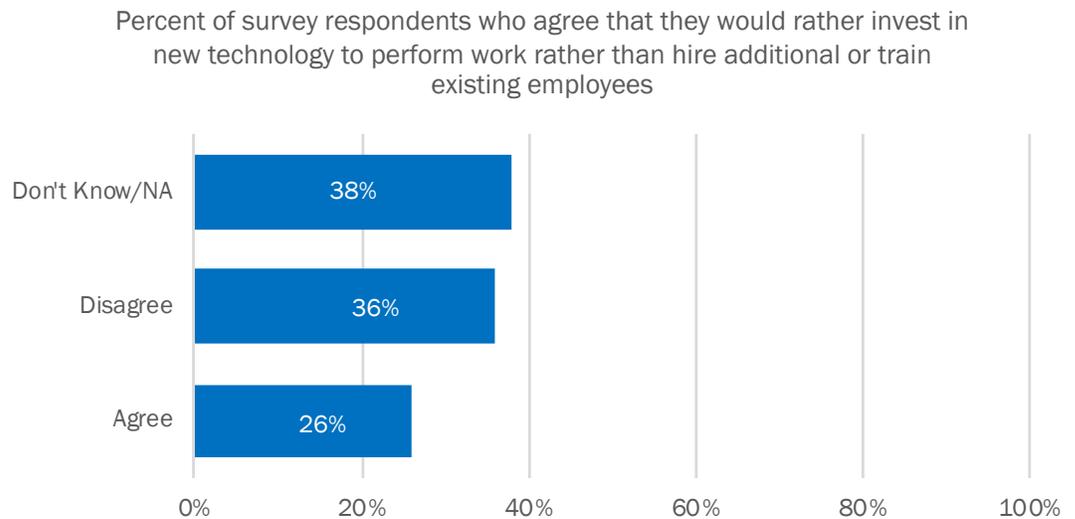
Figure 5.1. Businesses prefer to hire or train workers, versus use external vendors



²² This question was drawn from the Harvard Business School’s Survey on U.S. Competitiveness. To avoid influencing responses based on the phrasing of the survey question, the Harvard Business School randomly split survey respondents into two groups. Similarly, in the Oregon Talent Assessment Survey, half of survey respondents were presented the statement, “My firm prefers to hire additional employees or train existing employees rather than rely on external vendors.” and the other half read, “My firm prefers to rely on external vendors rather than hire additional employees or train existing employees.” In the narrative of the survey responses, The Harvard Business School averaged those who agreed with the former statement and those who disagreed with the latter. We have adapted the survey question for the Oregon context, and adopted the same survey, analysis, and reporting methodology in this report. Compared to respondents to the Harvard survey, of which 49 percent preferred relying on external vendors that can be outsourced rather than hire additional employees, Oregon respondents are more favorable toward hiring additional or training existing employees (see *Bridge the Gap: Rebuilding America’s Middle Skills*).

When posed a similar question to compare hiring new or training existing employees to investing in new technology, the response was less clear (see Figure 5.2).²³ This may be because the question is less dichotomous in nature; evolving technology requires having a workforce skilled enough to use the technology well. Technology is often a complement to worker skillsets and is not simply a replacement of unskilled workers.²⁴ Interviewees spoke to this issue in terms of the need for continued skill augmentation over an individual’s working lifetime.

Figure 5.2. Businesses do not have clear preference for new technology in lieu of new or more-trained staff



Recruitment practices

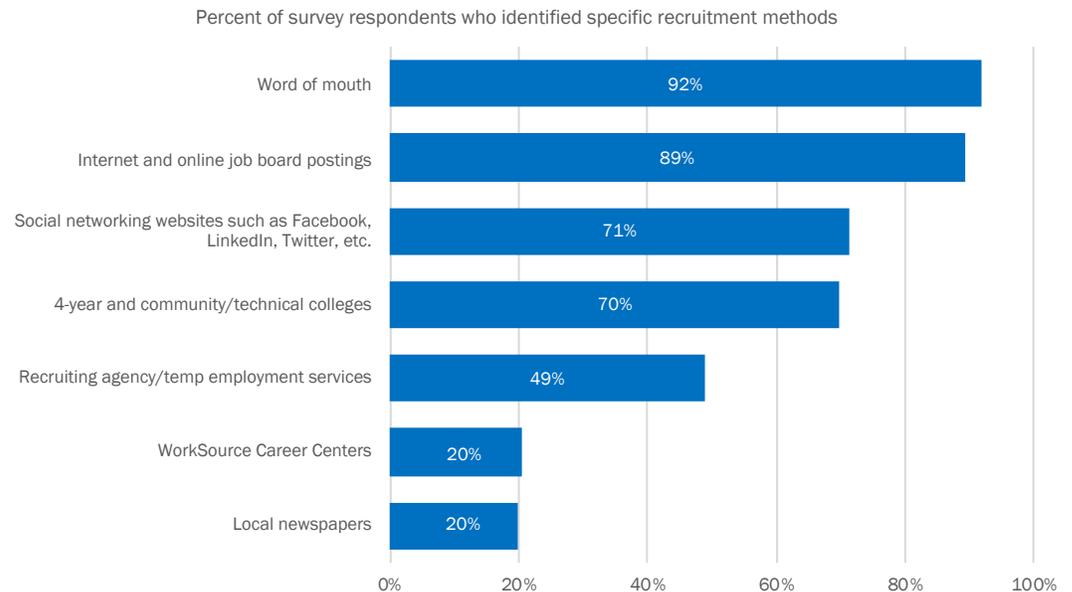
Stakeholders across industries uniformly reflected on the increasing difficulty of hiring and retaining skilled workers. In response to this challenge, most survey respondents (74 percent) reported increasing their recruiting efforts. To recruit workers, the most frequently cited strategy was word of mouth (92 percent; see Figure 5.3). According to interviewees and focus group attendees, word of mouth may include relationship-

²³ This question was drawn from the Harvard Business School’s Survey on U.S. Competitiveness. To avoid influencing responses based on the phrasing of the survey question, the Harvard Business School randomly split survey respondents into two groups. In the Oregon Talent Assessment Survey, half of survey respondents were presented the statement, “My firm prefers to invest in new technology to perform work rather than hire additional or train existing employees,” and the other half read, “My firm prefers to hire additional employees or train existing employees rather than invest in new technology to perform work.” In the narrative of the survey responses, The Harvard Business School averaged those who agreed with the former statement and those who disagreed with the latter. We have adapted the survey question for the Oregon context, and adopted the same survey, analysis, and reporting methodology in this report. Compared to respondents to the Harvard survey, of which 46 percent preferred investing in new technology to perform work rather than hire or retain employees, Oregon respondents are more favorable toward hiring additional or training existing employees (see *Bridge the Gap: Rebuilding America’s Middle Skills*).

²⁴ Merisotis, Jamie. (2015). *America Needs Talent: Attracting and Deploying the 21st Century Workforce*. RosettaBooks.

building through work-based training experiences like internships, apprenticeships, onsite dislocated worker training, or through the social, professional, and educational connections of current employees. Businesses also posted openings in various online resources and recruited through postsecondary education and training institutions. Twenty percent of survey respondents said they used WorkSource career centers as a recruitment resource, with energy (50 percent), advanced manufacturing (40 percent), and construction (38 percent) respondents more likely to use WorkSource for recruitment.

Figure 5.3. Recruiting mostly occurs through relationships (personal, educational, and training) and online



Interviewees shared additional outreach mechanisms, including the example of Lane County’s Technology Association of Oregon’s (TAO’s) Elevate programming, which helps students get exposure to local career options in technology, advanced manufacturing, and healthcare through organized bus tours of local businesses. Stakeholders also discussed rebranding efforts to decrease the stigma of certain industries, such as wood products and construction, as well as career and job fairs.

Additional themes include the following:

- **Businesses vary in their ability and willingness to pay high salaries and provide benefits.** Interviewees reflected that good wages and benefits are an important component of recruiting and retaining talent. One third (35 percent) of survey respondents said they had raised wages to find qualified workers. Some business stakeholders bemoaned their inability to raise wages or provide benefits for a variety of reasons, including the demand for cheap products by consumers (e.g. food and beverage, forest and wood) and competition within their industry, whether from international companies with lower labor costs (e.g. advanced manufacturing) or from domestic companies. Others felt it was their duty as business owners to pay employee salaries commensurate with the cost of living and let the price of their product reflect this value.

“I believe everyone should be able to put their kids in school and drive a decent car. If we’re going to make a commitment to someone, we want to make sure we’re doing it right.”

—Outdoor industry stakeholder

- **Stakeholders in the healthcare industry discussed the use of loan repayment as an approach to recruiting workers in rural areas.** Interviewees remarked that although successful, loan reimbursement is also very costly to employers, and were interested in greater federal or state support to continue this practice. Interviewees also noted interest in exploring additional, less expensive recruitment approaches to supporting rural healthcare access.
- **Some industries are targeting diverse prospective employees in their recruiting efforts.** The technology and outdoor industry associations shared explicit goals and strategies to increase diversity in their workforces. TAO in Portland, in collaboration with local businesses and partners, developed an in-depth plan to focus on diversity throughout the talent recruitment pipeline, including working on internal culture, increasing outreach and education about tech-related careers, reducing education costs, influencing curricular choices, increasing work experience opportunities, and coaching, mentoring, and upskilling under-represented employees.²⁵

Training practices

Across industries, businesses are investing in training their current workforce. Ninety percent of survey respondents indicated their business had paid for classroom training, workshops, or seminars lasting at least four hours for any employee over the last 12 months. Across all sectors, almost half of survey respondents (49 percent) reported that the number of employees who received training provided by the firm had increased over the last three years. Nearly 40 percent indicated that the number of employees receiving training had stayed about the same over that time period. A substantial proportion of respondents across sectors identified the development of a more skilled, flexible, versatile, or productive workforce as a training motivation (89 percent; see Figure 5.4).

Industry and business leaders provided insight into the types of training used to strengthen the skills of their workforce. To build their current workforce, survey respondents and interviewees were most likely to turn to on-the-job training (OJT), use of in-house staff or expertise, and industry, business, or professional associations (see Figure 5.5). Interviewees in all sectors reflected on the importance of OJT, particularly in occupations requiring the use of safety protocols, heavy machinery, complex equipment and technology, or other specialized skillsets. Respondents from energy, healthcare, food and beverage, construction, and manufacturing sectors all cited above-average use of OJT compared to all sectors. Survey respondents were overwhelmingly satisfied with all modes of training provided, which suggests that once a good training fit is established, employers are satisfied with the product.

Survey respondents also noted broad use of tuition reimbursement programs (45 percent) to support current workforce training. Most tuition reimbursement programs (67 percent) are limited to job-related training.

²⁵ 2017-2019 Talent Strategy Plan, Techtown PDX Partnership.

Figure 5.4. Businesses are investing in enhancing skills of the existing workforce

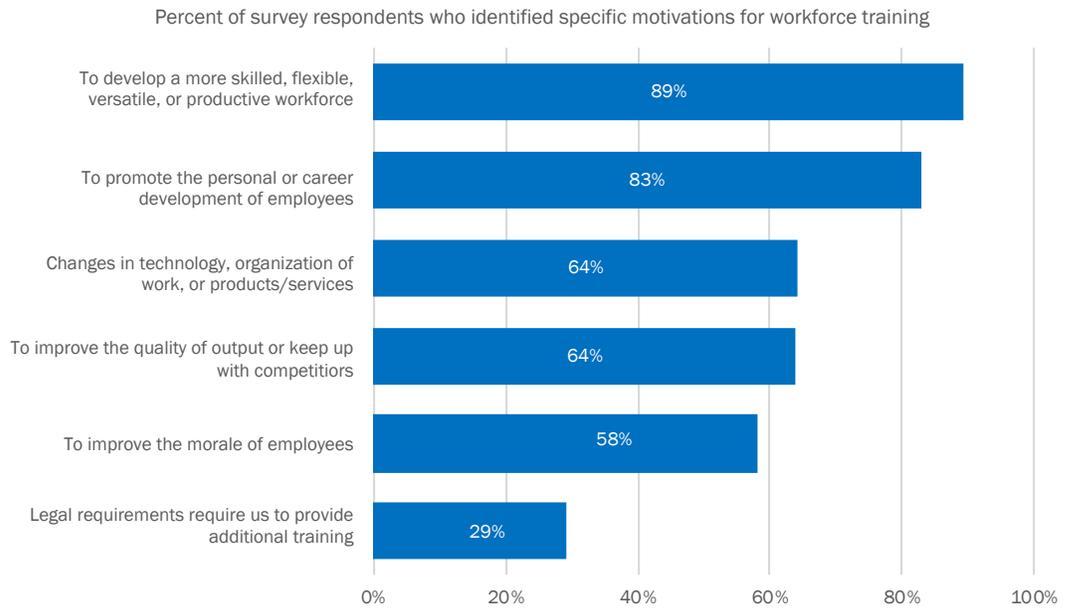
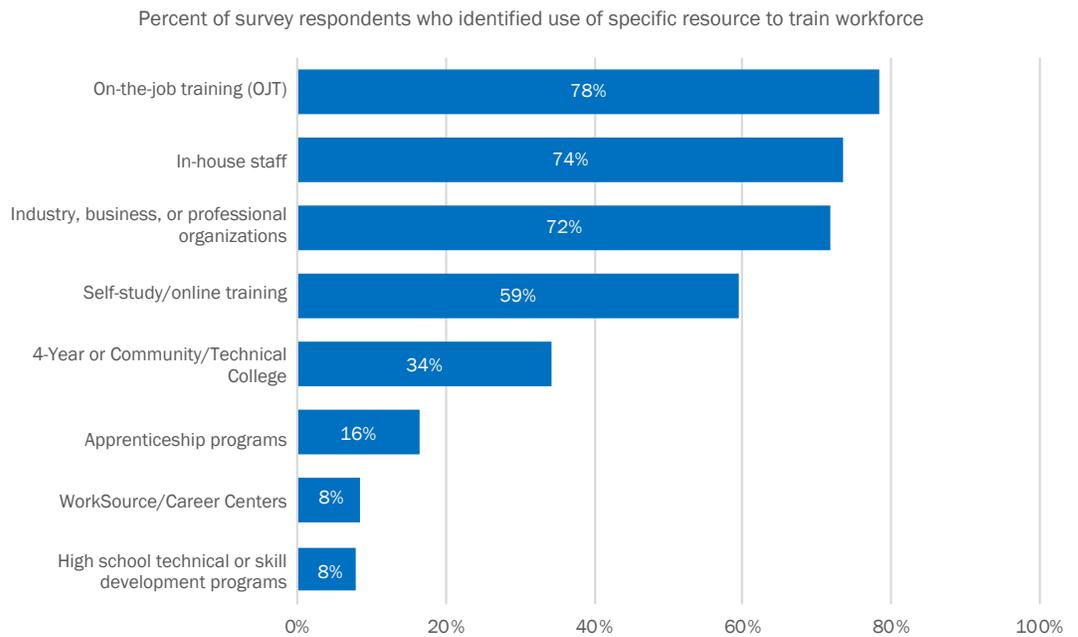


Figure 5.5. Businesses primarily use on-the-job and internal training to strengthen the skills of their workforce



Stakeholders stressed the importance of skill building throughout individuals' working careers, augmenting skillsets to enable growth and shifts in career paths. Stakeholders also expressed a desire to see work experience opportunities universally provided at younger ages to support students in connecting to meaningful career paths and associated skill development early in their lives.

Additional points about training practices included the following:

- **Educator externships and business tours expose students to more career paths.** Increasing awareness of career paths and their associated skills (essential and occupational) allows educators to develop curricula to support industry needs and expose students to more diverse career options. Stakeholders in many industries discussed the success of the high school educator externship programs.

- TAO in Lane County piloted an externship with 10 teachers and one counselor from 10 communities last summer. The educators and counselors brought their knowledge of technology industry roles and skills to high school students. Teachers are paid as part of this externship program.

- Associated General Contractors has extensive educator externship programs in Portland, Salem, Medford, and Pendleton, which include exposure to safety, job sites, project management, estimating, and other career skills. Teachers then connect these topics to lesson plans. The program has grown from 10 educators in the first year to almost 100 in the third year (summer 2018). Teachers are paid as part of this externship program.

- Oregon Freeze Dried Foods invited high school principals in the region to tour their plant, and discussed skills needed by their workforce. Worker absenteeism was one topic discussed; as a result, one principal revised student attendance expectations to respond to this skill development need.

Stakeholders suggested that increased communication between industry and educators can also address ongoing stigma prevalent in the manual trades. Businesses employing tradespeople commonly associated such stigma with the demise of career and technical education (CTE) programs. The stigma may also contribute to the tendency of educators, counselors, family members, and even people currently employed in the trades to provide little support for young people to pursue these careers. In response, stakeholders discussed rebranding efforts to decrease the stigma of certain industries, such as wood products and construction, and encourage greater participation in externships and career and job fairs.

- **CTE programs are expanding in high schools.** Eight percent of survey respondents overall used CTE programs to strengthen the skills of their workforce, with variation in use by sector, including greater use among advanced

Business associations were generally viewed as effective collaborators and connectors for industry because they are able to support employers' quickly evolving training needs at the speed of business.

The Oregon Bioscience Association was commended by interviewees for the work they do with businesses to train the existing workforce through their BioPro programming. Classes are business-defined and delivered on site.

Also discussed were the Oregon Forest Resources Institute, the Technology Association of Oregon, Associated General Contractors, the Oregon Outdoor Association, Food Northwest, OHSU continuing education, and others.

“The path to success is a great education, but we have to redefine what an education means; there’s not just one road to Rome.”

—Construction industry stakeholder speaking to need for CTE

manufacturing (32 percent), wood products (23 percent), and outdoor products (20 percent). CTE examples held up by interviewees as successful models include:

- ***Career and Technical Education Center (CTEC) in Salem*** is a partnership between the Mountain West Career Technical Institute, the Salem-Keizer School District, and local industries and offers a wide array of career and technical learning opportunities for high school juniors and seniors.
- ***Regional STEM Hubs***, including Elevate Lane County, are partnerships between school districts and workforce teams. Elevate Lane County runs Experience Oregon Tech, Experience Oregon Manufacturing, Experience Oregon Health, and Experience Oregon Food and Beverage programs for high schoolers.
- ***Benson High School*** polytechnic school in Portland, with its focus on technology, engineering, and bioscience, is reported to do a good job of providing students with hands-on experience with equipment.
- **Industries are defining postsecondary degree and certificate programs.** At the postsecondary level, many Oregon industries work closely with community colleges and universities to make curricula responsive to workforce skill needs. Survey respondents across industries use both four- and two-year colleges as training resources: one in five survey respondents said they rely on four-year colleges to strengthen workforce skills, and 24 percent use community or technical colleges. Promising practices described by stakeholders include the following:
 - The outdoor gear and apparel industry has recently worked collaboratively with a number of education institutions to establish several workforce development programs: Portland State University’s Athletic and Outdoor Industry Certificate; University of Oregon’s Sports Product Management programs; the Pensole Footwear Design Academy; Oregon State University (OSU) Cascades Tourism, Recreation, and Adventure Leadership program; and OSU Cascades Outdoor Products degree.
 - Wood products stakeholders discussed skills-based training provided at North Idaho College, based on an industry-education partnership. The program has been successful at increasing the wood products workforce in the region; industry leadership expressed a desire to see similar programs in place in Oregon to expand the effect of college education on industry-specific skills.
- **Apprenticeships are key for skilled trades, and increasingly more popular broadly.** Among survey respondents, apprenticeships were most used in energy (67 percent among 6 survey respondents), construction (57 percent among 51 survey respondents), and wood products (46 percent among 13 survey respondents). Interviewees and focus group participants discussed the crucial importance of apprenticeships for people training to work in the trades, such as electricians, millwrights, and carpenters. Because of the longstanding nature of trade apprenticeships, stakeholders observed that apprenticeships generally work well, with a few caveats related to capacity limitations and the transition of high school CTE and pre-apprenticeship credits to postsecondary education and training institutions. Other stakeholders expressed how the current system does

not support ongoing skill augmentation over a working lifetime. Credits do not consistently transfer between institutions, making it hard for individuals to pursue skill development courses in multiple organizations, without having to repeat classes. A related issue was discussed in terms of differing state requirements for licensure. Oregon generally has higher requirements than other states, making it unattractive for licensed skilled trades people to relocate to Oregon from other states because they have to take a pay cut while they work towards Oregon licensure.

Interviewees noted efforts to use apprenticeships in other, non-trade industry sectors. One example was the Apprenti program, which is focused on training displaced workers for technology occupations across multiple industries in Lane and Deschutes counties. The effort to expand the use of apprenticeships beyond the trades has uncovered constraints in Department of Labor supervisory requirements, which mandate one-on-one supervision that interviewees feel makes less sense for other, non-trade occupations.

- **Internships are seen as valuable work-based learning opportunities.** In addition to work-based learning through apprenticeships, interviewees and focus group participants across industry sectors remarked on the value of internships for aspiring workers and for businesses. Respondents reported that internships enhance essential and technical/occupational skills in students, clarify education, training, and career tracks for students and businesses, and allow students and businesses to assess mutual fit for future employment. Companies discussed the benefits of hiring previous interns, and some also remarked on their civic duty to invest in the workforce through investing in training interns. Specific examples of internship programs include the following:
 - *Better Together*, a nonprofit that works with area school districts and industry/business partners to enhance the K-16 experience, with every high school junior or senior having a paid internship or work experience.
 - *MECOP* (formerly known as Multiple Engineering Cooperative Program), which coordinates engineering internships from Oregon's four large universities.
 - *Emerging Leaders Internship Program*, which supports internship programs focused on underserved communities.
 - *Saturday Academy*, which runs 10-week summer apprenticeships embedding high school and college students in science and engineering companies.
 - *Community College Cooperative Education Agreements*, in which community colleges send students out into the field as part of their studies.
 - *Kaiser Permanente-Portland Leadership Foundation*, in which scholarship recipients are supported to be more interview-ready so they can get an internship with Kaiser.

Some industry stakeholders, including some bioscience and outdoor industries representatives, discussed the need for more organization in internship pathways to better support students and businesses. Success stories were referred to as

“labors of love” on the part of the student and the business to make internships happen, rather than a systemic process. Others talked about the rigidity and cost of organized internship programs, making it a poor fit for certain companies.

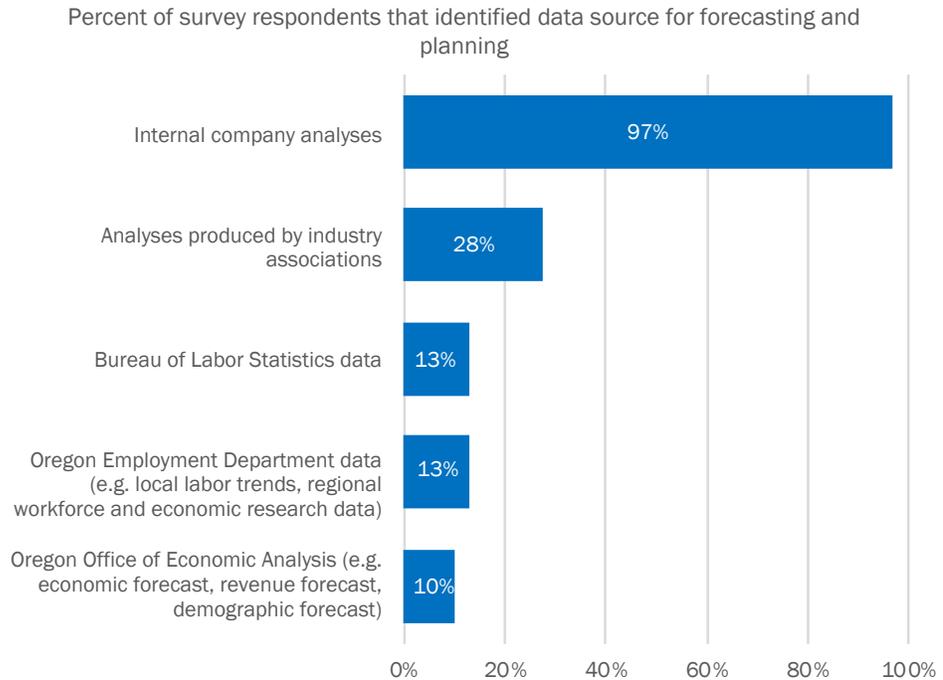
- **Use of WorkSource training was limited.** Business stakeholders reflected on the complexity of the workforce development system, describing it as hard to navigate and engage. Many remarked on its slowness, inefficiencies, and lack of clarity regarding funding opportunities. However, several stakeholders discussed targeted success in partnering with WorkSource for training. Although nine percent of survey respondents overall said they used WorkSource or Career Centers to provide training for their employees, a larger share of respondents from construction (24 percent of 21 survey respondents), and advanced manufacturing (20 percent of 25 survey respondents) identified using WorkSource in this capacity. Interview participants provided examples of WorkSource training support, including incumbent worker grants to uptrain workers in specialized skills, and grant funding to support an instructor and certification opportunities for existing staff.
- **Industries, associations, and workforce development are investing in upskilling for displaced workers.** Stakeholders shared collaborative approaches to augmenting workers’ skill sets to help them transition between industry sectors. Interviewees indicated that this was most successful when similar skills and aptitudes are required in the two industries.
 - The Oregon Bioscience Association established BioCatalyst training, with a focus on re-employing workers laid off from the technology sector into bioscience and life science companies. This training program was started with a grant from the Oregon Talent Council to establish a certificate program for dislocated workers. Participants attended classes onsite with businesses statewide, allowing workers and businesses to assess mutual fit and create relationships throughout the training process. The training resulted in a placement rate of more than 70 percent.
 - TAO is doing similar work in collaboration with industry, workforce investment boards, and other local stakeholders through the Apprenti program. Apprenti is focused on quickly upskilling women, minorities, and veterans and then connecting them to apprenticeships with technology companies, which ideally translate into ongoing employment.
 - The Military to Manufacturing (M2M) program is focused on augmenting the skills of veterans for private sector, manufacturing work.

Forecasting

Survey respondents and interview participants were asked about their forecasting and planning practices, including data used, frequency of planning, and collaboration with other business or organizations. Respondents overwhelmingly use internal data for internal analysis and planning, without considerable collaboration across employers or associations.

- **Employers primarily use internal data for business forecasting and planning.** Ninety-seven percent of survey respondents identified internal company analysis for business planning and forecasting, followed by 28 percent that use analysis produced by industry associations (see Figure 5.6). Fewer than 13 percent of survey respondents overall indicated using other data, such as Oregon Employment Department or Bureau of Labor Statistics data, for business planning. However, more survey respondents from the healthcare, construction, and energy industries reported using these data for forecasting and planning, relative to overall respondents.

Figure 5.6. Employers rely on internal company data and analyses for business forecasting



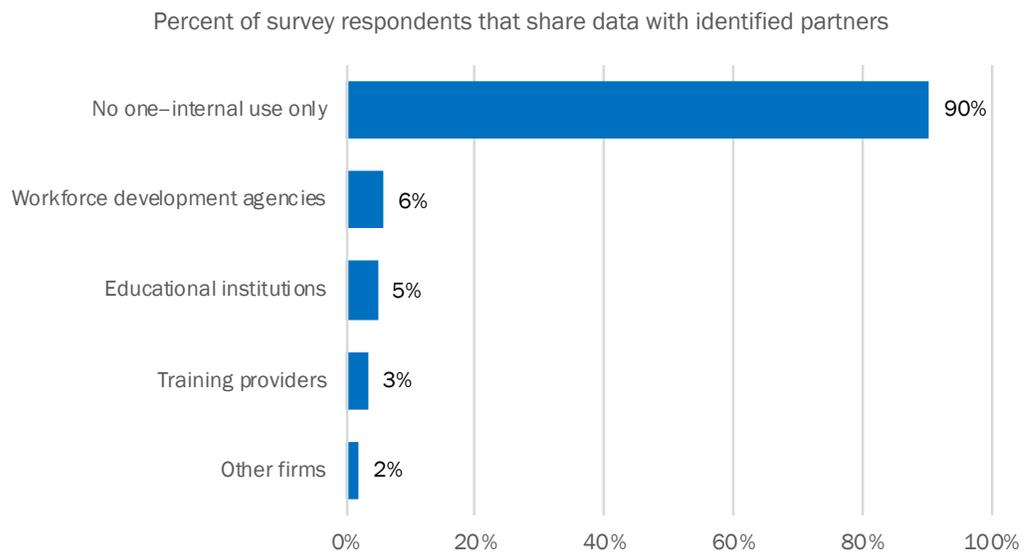
Stakeholder interview respondents provided greater detail on key internal company metrics used in analysis:

- **Projected retirements.** Many interview respondents described retirement analysis as a critical component to their staffing forecast. Several industry respondents, including those in construction, manufacturing, and healthcare, noted demographic shifts as an important factor. These industries reported that as their workforce ages, jobs open up and targeted training needs to replace experienced workers are identified.
- **Historical staff turnover.** Some companies use historical analysis on staff turnovers to predict typical hiring needs separate from larger demographic, industry, or economic changes.
- **Historical product or production demand.** Similarly, industry representatives use historical product or production demand to predict ongoing personnel needs and hiring response.

- **Awareness of client needs.** Stakeholder representatives noted the importance of communicating with clients to anticipate changes in product demand. Several manufacturing representatives, for example, discussed requesting six-month projections from clients to inform contracting or expansion decisions.
- **Increased product or production demand.** New clients, increased orders, and other demand factors influence hiring decisions. Companies use their historical production and personnel data to determine expanded staffing needs for increased products or production.
- **Impact of automation.** Some industry stakeholders include the impact of automation or capital improvements in their internal staffing and planning analysis. Automated capital improvements, such as a robotic packer, could decrease staffing needs. However, employees who can manage a robotic packer will need a different skill set than those who were doing manual packing, which requires either a skills upgrade for existing employees or new hires proficient in the required automation.
- **New economic indicators.** Industry stakeholders include broader economic trends and indicators in their internal analysis, including new forecasting metrics responding to emerging economic trends. Retail products such as some food and beverage, technology, and outdoor gear and apparel products, for example, may track engagement (increased traffic to online sites or brick-and-mortar shops), retainment (holding engagement in the site or store with sustained interest), and conversion to sales (how to convert the engaged, retained consumer into a customer) as key indicators of product growth. Similarly, technology companies are often forecasting in uncertain and new markets, where estimating total and serviceable available market metrics are not supported by existing external data, but instead by informed guesses based on the size of the market and likely rate of market capture.
- **Change in bellwether allied industries.** Several companies rely on market forecasts from allied industries to predict business demand within their own sector. For example, both construction and wood product representatives look to architecture forecasting to predict growth in their respective industries. Construction stakeholders indicated that they regularly call their colleagues in architecture for forecasting information or reference the Federal Reserve's Beige Book to glean current and predictive industry trends. For commercial construction, they rely on the state Department of Transportation budget and plan for indication of public works and large-scale construction projects, including roads and infrastructure.
- **Business forecasting tends to be short-term and ongoing.** Most industry stakeholders report forecasting timeframes ranging between three and 12 months. Respondents described rapidly changing information, particularly in technology and other burgeoning sectors, and the need to be responsive and nimble to changing conditions. Even respondents who indicated forecasting at the six-month interval noted that they discuss related planning implications on an ongoing weekly basis. The timeframe of forecasting is determined by the availability of evolving internal business data rather than intermittent data releases from external sources.

- Forecasting data are primarily for internal use only.** Ninety-percent of survey respondents across sectors indicate that they limit their forecasting analysis to internal use only and do not share with other firms, training providers, or educational or workforce institutions (see Figure 5.7). However, construction and advanced manufacturing respondents were more likely than the average of all industries to indicate that they shared forecasting data with training providers, educational institutions, and workforce development agencies. More food and beverage respondents said they shared data with educational institutions compared to all sectors, and more healthcare respondents said they shared data with workforce development agencies compared to all industries, suggesting stronger data sharing networks among certain industries.

Figure 5.7. Employers overwhelmingly retain forecasting data for internal use only



Broadly, interview respondents noted that the competitive nature of most industries severely limits data sharing and transparency; employers may be more likely to share forecasting data with allied industries than with direct peer competitors. However, some stakeholders did describe their current data sharing practices. For example, industry representatives that serve on workforce boards indicated that they share data with peers and training centers. One outdoor gear and apparel company described coordination with area high schools and OSU Cascades for talent development efforts based on forecasting data. Companies may also be more willing to share data or forecasting status when looking to hire. For example, one manufacturing stakeholder described outreach to other area manufacturers focusing on different products to see if they had any excess staff capacity that would be a good fit for their needs. Although they were not producing the same product, the employees had transferable skills and the company was able to recruit roughly 20 workers to their facility.

- Rural regions noted more collaboration around forecasting and recruitment.** The cost of recruitment visits, overlapping needs for skilled labor across employers, and limited supply of local talent with targeted skills has encouraged cross-competitor collaboration in rural regions. One stakeholder from the food and

beverage industry noted, for example, that these factors facilitate greater collaboration among food processors—even if they are competing for labor—to jointly address the skill needs in their community. Healthcare providers in rural areas also described collaborative efforts to share data on staffing needs and recruitment plans. For example, one healthcare stakeholder described joint efforts by a local hospital, coordinated care organization (CCO), and providers who were collectively seeking medical staff that could increase access to Medicaid patients. They strategized on how to share recruitment costs, who could provide funds for a signing bonus, who could contribute towards the state loan repayment program, and other opportunities to delegate resources for the hire. In another rural community, a healthcare stakeholder described sharing recruitment visit costs, arranging visits with multiple providers during the visit, and hosting joint dinners across interested providers. Because one hire, regardless of the home organization, affects call capacity for the whole community, there is greater willingness to share forecasting and recruitment information and resources.

Talent development opportunities

Stakeholders generally agreed that it is the collective responsibility of all talent development partners—industry, education, and government—to invest in and develop talent in Oregon’s workforce. To this end, stakeholders expressed a desire to define outcomes and performance measures collaboratively among partners to provide a structure for ongoing engagement and continuous improvement. Many noted a need to incorporate equity and diversity measures to work actively toward reducing inequality in Oregon.

Oregon has many examples of innovative talent development initiatives, and stakeholders encourage broader systems change to develop consistent, systematic opportunities and outcomes for Oregon workers. The following sections articulate stakeholder feedback on talent development activities and opportunities to build a more cohesive workforce system.

System-building opportunities

- **Identify talent development partner roles and responsibilities.** Stakeholders provided input on the role that industry, education, and government can play in developing workforce talent.
 - **Industry.** Beyond creating the opportunities for individuals to work, most stakeholders feel that private businesses should actively collaborate with educators and workforce development agencies to develop talent. This collaboration includes defining skillsets and career paths, communicating talent needs, providing material support to educators and trainers, offering work experience opportunities, and facilitating ongoing learning opportunities for employees.
 - **Education.** Stakeholders broadly viewed education as the foundation for developing a wide range of essential skills in young people, including soft skills like communication, teamwork, and reliability, as well as basic skills such as reading, math, data analysis, problem solving, and computer skills.

Participants were interested in seeing education's role in the cradle-to-career progression be more deliberately coordinated with the broader talent development ecosystem.

- **Government.** The government has an important role in the talent development system. The public workforce system operates as an educator and skill developer, a convener, a funder, and a policymaker.
- **Prioritize ongoing learning and skill augmentation.** Stakeholders are interested in seeing people's skills and learning outcomes recognized, not just traditional degrees. A shift toward a system that supports learning along a career pathway would allow a person-based approach, where individuals could be recognized for learning different skills in different programs at different points in their lives. The resulting versatile workforce would continue to learn new skillsets over a working lifetime. Changes could include systemic transference of high school CTE skills to apprenticeship programs, recognition of skills learned through work experience opportunities, and stackable credits in broad postsecondary learning environments.
- **Identify strategic opportunities for collaboration across businesses.** Associations and organizations do provide opportunities for effective cross-industry collaboration. However, stakeholders also acknowledged that competition for employees and customers can limit information and resource sharing between businesses. Survey respondents reflected this mixed assessment of cross-industry collaboration, with roughly equal proportions (34 percent each) of respondents across industries disagreeing or agreeing that employers and workforce intermediaries in Oregon communicate and collaborate in ways that benefit employers and employees. Interviewees cited examples of when they felt comfortable collaborating, and times when they felt their approach (e.g., rebranding of an older industry to show the high level of technology and sophistication in the company) was a strategic advantage over their competition.
- **Increase postsecondary education and training access and affordability.** Many business leaders discussed the incredible burden of large college debts that their employees shoulder. Some shared how the emotional toll of this debt affects worker productivity and creativity. Stakeholders expressed concerns about equity of opportunity, and how the high cost of postsecondary training and education exacerbates inequality.
- **Improve talent development infrastructure and system building.** Stakeholders repeatedly discussed the important role their local workforce investment boards played in getting industry and education stakeholders to the table to analyze and respond to talent development needs. Businesses felt that the public workforce system has a role in sharing information about available workforce development resources, including tax subsidies, transportation infrastructure, and training options.

In addition, stakeholders discussed the role government can play in helping to fund updated technical equipment needed in high school and postsecondary CTE programs. Government statutes, regulations, policies, and processes can also be reviewed and refined to ensure they support talent development across industry

sectors. Stakeholders suggested using key performance indicators in this process of analyzing government infrastructure's impact on talent development outcomes. Business leaders specifically discussed the need for the following: reduced supervisory requirements for non-trade apprenticeships; labor laws that support work experience opportunities for young students; alignment of licensure requirements for trades with more states; and certification or recognition of safety-related skill building in work experiences. On a broader level, interviewees discussed the government's role in shaping market decisions such as the location of manufacturing.

Training development opportunities

- **Increase communication regarding talent needs.** Businesses know the occupations and associated skillsets they need to be successful. Many stakeholders felt that businesses need to speak up more and relay to K-12 and postsecondary educators, as well as policymakers, the skillsets needed and the skill gaps, shortages, and mismatches they experience in their workforce. Businesses also need to articulate and share career paths for prospective employees in their industry, including requisite skills necessary for success and any associated pathways.
- **Increase collaboration between industry, education, and training providers to develop responsive curricula.** Stakeholders observed how current approaches to teaching in K-16 education focus primarily on academics, and how social competencies and career skills are less coherently provided. Industry and business leaders consistently shared how important essential skills are to the success of workers, and how younger applicants and employees are more likely to lack them. Stakeholders discussed how they wanted to see young people learning how to communicate clearly, think critically, work in teams, solve problems creatively, analyze data, and use software both individually and collaboratively. Respondents encouraged industry input in curriculum development to ensure skill gaps are systemically addressed. A more responsive education sector and deeper industry collaboration would allow students to be trained for the jobs of the future, not just the jobs of today.
- **Adjust curriculum development timeframes to meet real-time industry demand.** While there are many examples of businesses successfully shaping postsecondary education and training programs to support talent development needs, there is a general consensus that accredited postsecondary curriculum development and approval takes too long to meet industry demand. Some stakeholders described even more fundamental divides between businesses and education institutions, such as unresponsiveness of postsecondary educators and trainers to business needs (e.g., "They wanted to give me welders, but I don't need welders."). In light of these limitations, some industries have worked directly with community colleges to adjust curriculum development schedules or have found other organizations more able to provide responsive, on-demand training. For example, when bioscience businesses had to implement new International Organization for Standardization (ISO) standards within months of release, the Oregon Bioscience Association was able to work with businesses to deliver this curriculum in real-time.

- **Increase collaboration with CTE programs.** Industry leaders were enthusiastic about the expansion of high school CTE programs; many said this is precisely what industries and students need. Stakeholders felt that having more CTE programs statewide increases student exposure to a broader array of career paths, which is a first step in growing talent pipelines. Stakeholders encourage ongoing business support of burgeoning CTE programs, including financial support to purchase needed equipment and technology.
- **Actively support work-based learning opportunities.** There is near-universal agreement among stakeholders that work-based learning opportunities are vital to an effective talent development system. They provide valuable insight for prospective employees and businesses and help engage students in learning. Interviewees discussed a variety of successful work experience approaches they thought should be continued and expanded, including internships, apprenticeships, innovation programs, maker centers, and CTE programs. Work-based learning opportunities allow businesses to actively shape the talent development of the workforce rather than rely solely on the education system. In addition, industry stakeholders commented on the importance of a variety of work experience methods in recruiting. Internships, apprenticeships, and work experience opportunities associated with incumbent/displaced worker training were all cited as effective recruitment mechanisms.

Chapter 6: Conclusions

This report represents business and industry's determination of in-demand occupations and skills and future trends that will shape Oregon's labor market. Its findings must be considered in the context of current economic conditions. The U.S. economy is in the latter stages of a prolonged economic expansion. Unemployment is low, labor force participation is on the rise, and federal policies have recently added stimulus.

Oregon has outperformed the nation in this cycle, with above-average rates of job and income growth. The economic performance was built on a foundation of a solid labor pool. However, Oregon average incomes and wages are still below U.S. levels. So, if broad economic performance were the measure of talent, one could conclude Oregon's workforce is a competitive strength that has improved during this recovery but has plenty of additional room for growth. If employers had their way, that growth would come in the forms of stronger interpersonal skills, more sophisticated writing ability, and an array of job-specific technical and management skills.

This *Talent Assessment* is diagnostic rather than prescriptive. With this assessment in hand, employers, educators, and workforce developers can better understand Oregon's talent and then design and fund strategies that propel that talent to top-tier status. The report concludes with a number of observations to guide strategy development.

First, the pace of technological progress is likely to accelerate. Technologists describe an inflection point where progress transitions from a linear to an exponential path. The labor market already rewards workers with strong social and interpersonal skills, and those skills will become increasingly valuable as automation evolves. Improving social and interpersonal skills is an only partially known territory and will require initiatives along the education and workforce continuum. Prekindergarten programs, which show long-term impacts on graduation, employment, and earnings (often without test score improvement), appear to be an important start. Beyond that, the K-16 education system will need to offer more experiences that mimic work: project-based assignments that require students to work in teams, solve problems, persuade, negotiate, trade tasks, and lead.

Second, stakeholders should pay close attention to the college wage premium. The trends measured and reported in the early 2000s justified calls for big increases in postsecondary attainment. Since then, the premium appears to have flattened. Automation may be finding its way into higher-paying work or a lack of business investment could be limiting opportunities for college graduates. That said, the premium remains sizable, and postsecondary attainment is still a good investment for most students. But the cost of postsecondary attendance is rising. The flat premium / rising cost scenario requires a much deeper understanding of productivity in higher education. Guided pathways, intrusive advising, stackable credentials, and STEM initiatives are designed to improve returns on an increasingly expensive investment. Those are good starts, but the research on higher education productivity is still in its early stages. There's much to be learned.

Third, Oregon appears to have answered the call for a stronger investment in career technical education (CTE). Here, employers' perspectives and general public support, as demonstrated in the passage of Measure 98, are in unusually strong alignment. The challenge going forward is implementation: ensuring that lawmakers appropriate funds

consistent with Measure 98's intent and that educators invest in productive programs. Measure 98 gives employers a platform to scale their recruitment efforts—internships and externships—and expose more students to lower-cost paths to the middle class.

Fourth, delivering on the adult workforce goal is a joint education-business responsibility. The education system has a lead role to play with an increasingly important population: people who are prime working age and unemployed or out of the labor force entirely. Automation could put additional pressure on this population and, in many cases, reconnection to work will require more than business-provided internships and on-the-job training.

But a lot of lifelong learning is going to take place inside companies themselves. Employer needs are urgent and idiosyncratic and will always be hard to convey to educational partners. When new demand hits or processes change, the best source for talent is typically existing employees who are already familiar with the company's mission, culture, and products. While existing employees might be missing specific technical skills, employers already have valuable insight into their motivation, dependability, and willingness to learn new skills.

Oregon is well-positioned to continue to grow its talent base and develop innovative solutions for potentially weak points in the supply chain for labor. This report contributes to those efforts by presenting business and industry's assessment of in-demand occupations and skills as well as data and consistent language about the nature of the skills problem.

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Appendix A: Industry profiles

Industry: Advanced manufacturing

Key findings

While most survey and interview respondents from advanced manufacturing felt that candidates had the education level needed to fill vacant positions, many cited deficiencies in hard skills that increased education and training could provide, such as the skilled trades and general engineering and technical training. Many expressed that they felt the loss of career and technical education (CTE) in high school was negatively affecting the availability of skilled labor. Work experience, particularly experience working with hands, machines, and tools, was viewed as an essential quality that job candidates lacked, particularly early-career candidates. Employers rely heavily on internal training resources to train their workers. They would like to see CTE become a mandatory graduation requirement in high schools to increase work-based learning opportunities. Industry employers see the development of soft skills as the highest priority for the public workforce system, followed by hard or occupational skills.

The survey respondent sample of 25 may not represent broader industry trends. An additional three individuals were interviewed, and other industry leaders were engaged at the talent summit.

ADVANCED MANUFACTURING

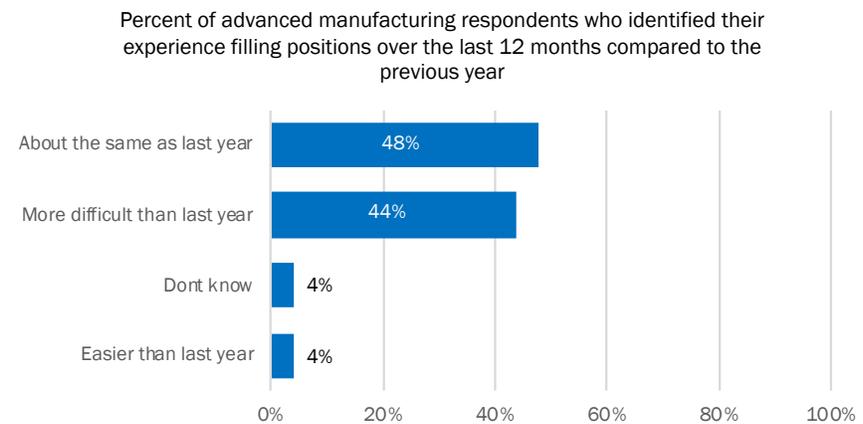
Percent reporting they had **hired new employees** in last 12 months:

88%

Percent reporting they had **difficulty finding qualified applicants** in last 12 months:

72%

Figure 1. Compared to last year, most advanced manufacturing survey respondents cite the same level of or more difficulty in finding qualified applicants



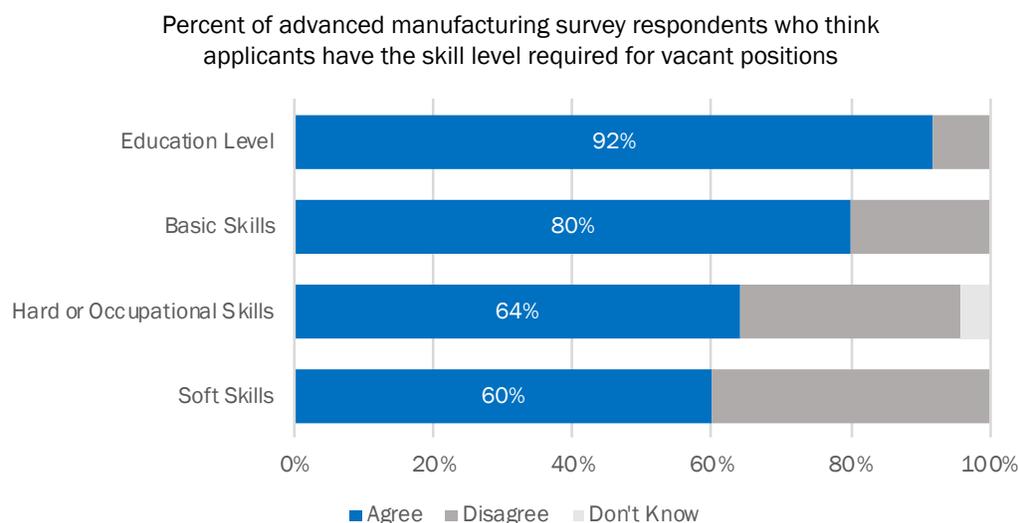
Key occupations in demand

Business leaders interviewed in the advanced manufacturing industry cited the following occupations as in-demand:

- Sanitation/maintenance workers
- Production line laborers
- Skilled trades/maintenance:
 - Machinists
 - Welders
- Drafters
- Warehouse operators
- Heavy machinery operators (e.g., fork lift)

Key skills in demand

Figure 2. Most advanced manufacturing survey respondents think applicants have the required skills, especially education level and basic skills



Employer interviews and the key stakeholder survey revealed the following in-demand skills and/or shortage of skills in the advanced manufacturing industry:

- **Education level.** Nearly all advanced manufacturing survey respondents (92 percent) felt that applicants had the education level needed for vacant positions. As one interviewee expressed, education level is less important in hiring, although an AA or AS degree is desirable when all else is equal. This stakeholder perceived a moderate shortage of applicants with one to two years of community college coursework. Other stakeholders indicated that the technical skills needed within their facility were so specific (e.g., gel coating or laminating) that they did not expect candidates to come equipped with a degree in that skill; there is not enough demand for those specific skills in the job market to absorb a classroom of graduates. Stakeholders look for basic vocational skills and provide the training themselves. Interviewees consistently expressed that the labor pool did not have sufficient, if any, CTE courses in high school.
- **Basic skills.** While 80 percent of survey respondents thought their applicants had the basic skills needed, basic math and reading skills were cited as in-demand by several interviewees.
- **Hard skills.** Approximately two thirds of survey respondents felt candidates had the appropriate hard skills to fill vacant positions. There was broad agreement among advanced manufacturing interviewees that general vocational skills—such as operating power tools or working with hands—were in high demand, but hard to find. Students may graduate from high school with a high GPA but lack practical skills. For companies producing limited-run, high-end products, craftsmanship and attention to quality were desired hard skills.
- **Soft skills.** Survey respondents were least likely to agree that candidates had the soft skills necessary for vacant positions. Interviewees elaborated that certain soft skills are prioritized over others. Several stakeholders indicated that they are willing to overlook deficits in communication skills, particularly for early-career applicants, and will train motivated and dependable employees on the manufacturing floor. Later-career applicants may have some experience working with their hands but are more likely to have a spotty work history or fail to pass a drug screen.

- **Work experience.** Work experience in the form of apprenticeships or internships, like MECOP (Multiple Engineering Cooperative Program), was cited as in high demand within the advanced manufacturing sector. Interview stakeholders indicated that MECOP graduates are immediately placed and often have several offers.
- **Clear criminal background.** Most advanced manufacturing survey respondents (76 percent) do not identify difficulty filling positions due to an applicant’s criminal background. Interviewees indicated this was only a moderate issue. Some companies do felony-only background checks and many are “second chance” or “felony-friendly” employers.
- **Clean drug screen.** Most advanced manufacturing survey respondents (72 percent) do not identify difficulty filling positions due to drug screening issues. However, interview results suggest this finding may depend on the region and type of job. For low-skilled, entry-level jobs, a Bend-area employer cited marijuana as a substantial challenge. This stakeholder reported that a Central Oregon company recently removed marijuana from their drug panel in order to fill positions. Companies that must comply with federal law face difficulties educating employees about the difference between Oregon and federal law.
- **Other.** Advanced manufacturing employers in rural areas have some difficulty finding applicants with adequate transportation to and from remote manufacturing plants.

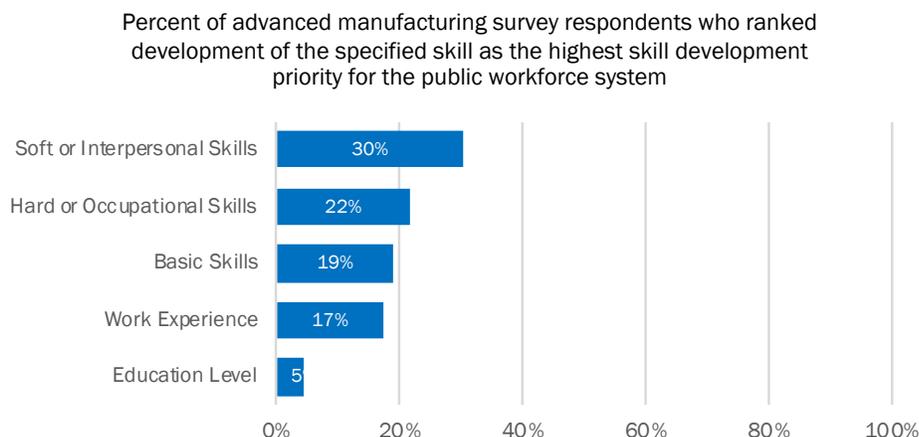
Responses to skill development needs

The advanced manufacturing industry relies heavily on internal training to develop the specialized skillsets needed in their workforce. Almost all survey respondents use on-the-job training (96 percent), in-house staff (88 percent), and industry, business, or professional organizations (84 percent).

Industry stakeholders want to see educators and businesses collaborate to support more work-based learning opportunities for students at younger ages. Interviewees emphasized the importance of CTE programs, as well as internships and apprenticeships, and indicated a desire for such programs to be incorporated into every child’s education. Business leaders discussed a need to reduce the negative stigma associated with manufacturing and hoped that increased exposure to the industry would reduce the stigma.

Advanced manufacturing survey respondents identified soft or interpersonal skills and hard or occupational skills as development priorities in the public workforce system. Interviewees mentioned that the quickly evolving manufacturing industry requires an evolving skillset. Thus, training incumbent workers is important. Interviewees cited incumbent worker grants from WorkSource as valuable in training efforts.

Figure 3. Advanced manufacturing respondents identify development of soft and occupational skills as public workforce priorities



Industry: Bioscience

Key findings

Bioscience stakeholders generally perceived skill issues related to both hard/occupational and soft skills. Their trade organization plays a leading role in responding to the skill needs in the incumbent workforce by providing training options that are responsive to industry demand. The assessment of the bioscience industry comprises seven survey respondents and four interviewees. We also engaged with bioscience stakeholders at the talent summit breakout sessions. Because of the small sample size, our findings are not necessarily representative of or generalizable to the broader bioscience industry in Oregon.

BIOSCIENCE

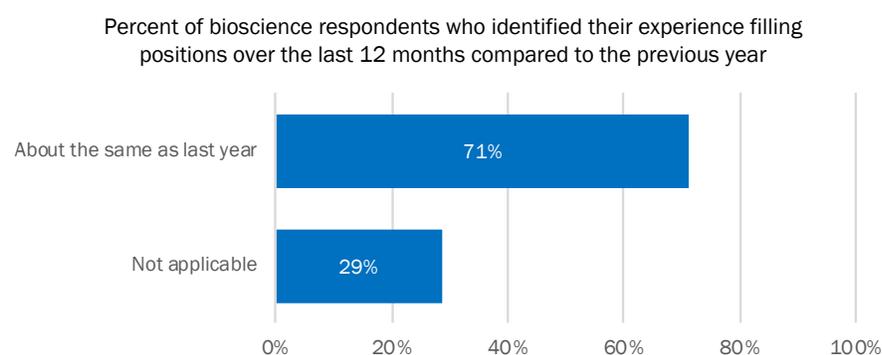
Percent reporting they had **hired new employees** in last 12 months:

43%

Percent reporting they had **difficulty finding qualified applicants** in last 12 months:

43%

Figure 1. Compared to last year, most bioscience survey stakeholders cite the same level of difficulty in finding qualified applicants



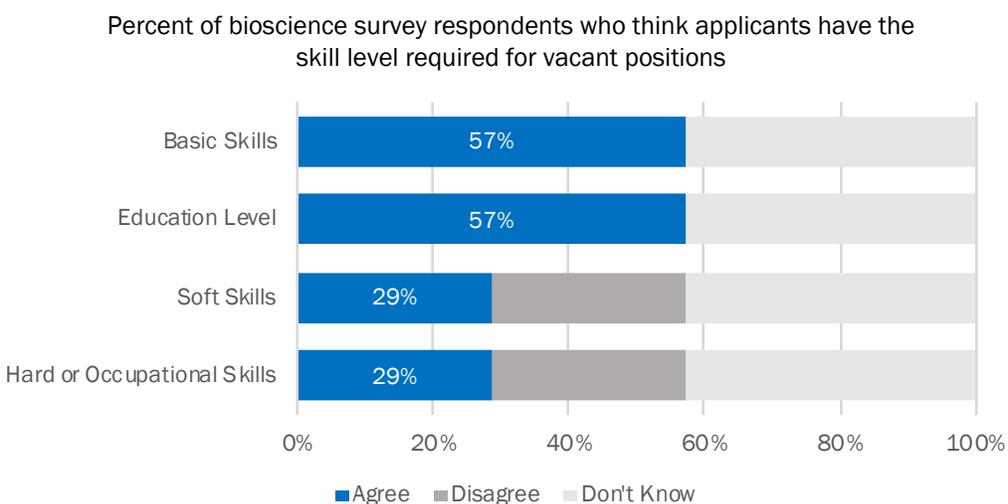
Key occupations in demand

In interviews, business leaders in the bioscience industry cited the following occupations as in-demand:

- Research assistants
- Lab technicians
- Biomedical engineers
- Quality assurance and compliance (e.g. FDA regulatory knowledge)
- Project managers
- Advanced manufacturing

Key skills in demand

Figure 2. Bioscience respondents think applicants have the required education levels and basic skills, but lack soft and occupational skills



Employer interviews and the key stakeholder surveys revealed the following in-demand skills and/or shortage of skills in the bioscience industry:

- **Education level.** Most survey respondents felt that applicants had the education needed to fill vacant positions.
- **Basic skills.** Interviewees cited demand for basic math, data analysis, and written communication skills but did not indicate a shortage of these skills among their applicants. Survey responses align with these impressions, with most respondents agreeing that applicants have the basic skills required for the job.
- **Hard skills.** In light of growth in digital health products, bioinformatics, and interfacing with medical devices, the industry is in need of people with skills in computer science, cybersecurity, IT, and data analytics. FDA regulatory knowledge and experience is also highly valued. Interviewees cited the need for, and lack of, critical thinking and office software knowledge (e.g., Excel, Word), particularly among early-career applicants. Survey respondents were split on whether applicants had the necessary hard skills to fill vacant positions, with half agreeing and half disagreeing (a substantial proportion of respondents indicated they didn't know or the question was not applicable).
- **Soft skills.** Bioscience employers value soft skills, including communication and leadership skills. However, survey and interview results were mixed as to whether prospective and current employees lacked these skills. Survey respondents were split on whether applicants had the needed soft skills, with half agreeing and half disagreeing (a substantial proportion of respondents indicated they didn't know or the question was not applicable). In interviews, the lack of soft skills was seen as more of an issue with early- and mid-career employees than with more experienced applicants or employees.
- **Work experience.** Stakeholders within bioscience emphasized the value of practical skills, including lab experience and gowning practices, and indicated that it is not enough to understand the science taught in 4-year colleges. The challenge is learning the real-world application of science.
- **Clear criminal background.** Most bioscience respondents (86 percent) did not know of the impact or found the impact of criminal background results not applicable to their situation.

- **Clean drug screen.** Interviewees and survey respondents did not view this as a concern with their workforce.
- **Other.** Stakeholders did not discuss other skillsets perceived as missing in the bioscience workforce.

“For our industry specifically, we are really leaning toward personalized medicine and a lot of data analysis. I’m concerned we are not going to fill that skill set. Our ability to keep up and fill pipelines of talent is a concern. I’m worried we aren’t being proactive enough and working with industry enough to fill the need in a timely manner.”

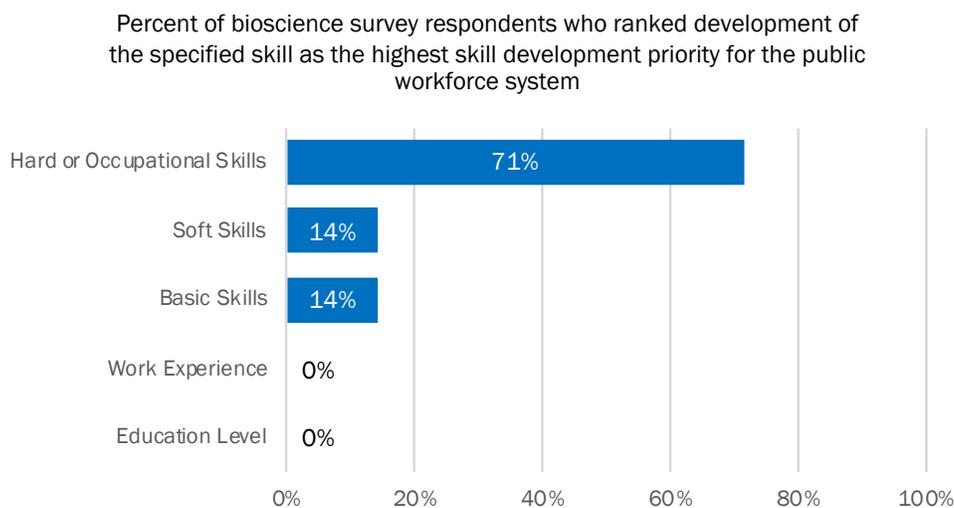
Responses to skill development needs

Industry stakeholders recognized the good work being done to develop skills in the bioscience workforce at the community college and university level and the need for additional training to help students translate what they learn in school to the workplace. Additionally, stakeholders reported that the bioscience workforce needs skill augmentation throughout a career: “An initial education at a university won’t take you through a lifetime. We need to invest in incumbent work training.”

Training efforts in the bioscience industry are led by the Oregon Bioscience Association and focus on incumbent and displaced worker training through the BioPro and BioCatalyst training programs. Training is industry-led and industry-vetted, with the industry association facilitating the process, including finding trainers (industry-level consultants), convening training on-site at businesses, and evaluating training outcomes with businesses. Training topics are generally focused on enhancing soft/essential and hard/occupational skillsets.

Oregon’s workforce system collaborated in the development and implementation of the BioCatalyst program for displaced workers, with some WorkSource clients finding employment through program participation. Seventy-one percent of bioscience survey respondents identified development of hard or occupational skills as the development priority for the workforce system, and 14 percent identified soft skills and basic skills each as the priority.

Figure 3. Hard or occupational skills identified as public workforce priority



Industry: Construction

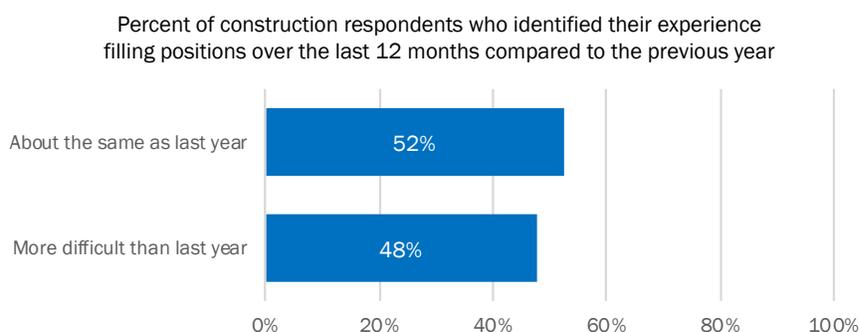
Key findings

According to construction industry stakeholders, hard skills are highly valued and in short supply, particularly among recent high school graduates. Stakeholders discussed recruitment limitations associated with a broader culture of under-valuing work in the trades and capacity constraints in apprenticeship programs. Construction industry representatives hope the growing focus on career and technical education (CTE) programs will help address persistent skill issues in the industry.

The construction survey respondent sample size of 21 may not represent broader industry trends. An additional seven individuals were engaged through a focus group and interviews. We also engaged with construction stakeholders at the talent summit breakout sessions.



Figure 1. Compared to last year, most construction survey stakeholders cite the same level of or more difficulty in finding qualified applicants



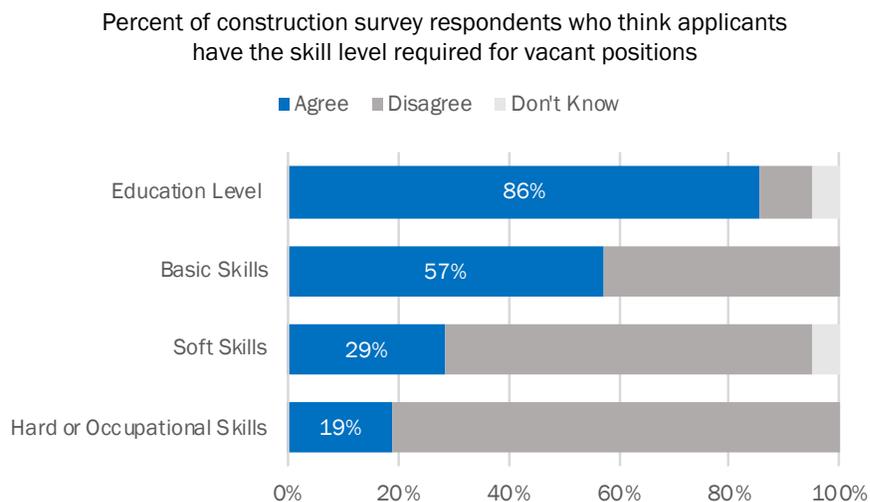
Key occupations in demand

In interviews, employers in the construction industry cited the following occupations as in-demand:

- Construction project managers
- Engineers
- Skilled trades:
 - Sheet metal workers
 - Plumbers
 - Drywallers
 - Glaziers
 - Cement workers
 - Electricians
 - Mechanics
 - Carpenters

Key skills in demand

Figure 2. Most construction respondents think applicants have the required education levels, but lack hard or occupational skills



Interview participants and the key stakeholder surveys revealed the following in-demand skills and/or shortage of skills in the construction industry:

- **Education level.** Most construction industry survey respondents felt that applicants had the required education level for vacant positions. Construction industry interviewees report that there is no shortage of college degree holders on the job site. Some college degree holders find their way into construction after reportedly struggling to find the right fit in the workforce. Employers indicate that most apprentices or new hires in the industry are in their mid-to-late twenties, and attribute this to a failure to expose students to construction trades and the merits of the industry in high school. Construction employers cite a need for more construction management degree holders.
- **Basic skills.** Over half of survey respondents (57 percent) thought that applicants had the necessary basic skills for the job. Interviewees did not cite basic skills as a key in-demand skill set.
- **Hard skills.** Construction industry employers were most likely to cite hard skills as lacking among applicants; only 19 percent of respondents thought applicants had these skills. According to construction industry interviewees, over the last 15 years fewer applicants are able to work with their hands. Interviewees also cite shortages in the skilled trades and a need for safety protocol training and awareness.
- **Soft skills.** Similar to hard skills, only 29 percent of survey respondents felt that applicants had the necessary soft skills. Interviewees report that soft skills, like leadership and management, are hard to find in the market.
- **Work experience.** Several interviewees cited the value of work experience, including both practical experience doing a specific skill and general knowledge of the construction industry.
- **Clear criminal background.** Most survey respondents (67 percent) did not think that applicants' failure to pass a background check made it harder for them to fill positions, while 29 percent of construction respondents did. The issue of criminal background checks did not come up as an issue in the interviews with construction industry stakeholders.

"Most people can learn their craft after four years in an apprenticeship or on the job, but soft skills take a while. We need a balance between soft skills and skilled trades."

- **Clean drug screen.** As with criminal background checks, many respondents did not know about the impact of drug screens or did not find the question applicable, but of those who did, just over half (57 percent) did not think that applicants' failure to pass a drug screening made it harder for them to fill positions. More than one third of respondents (38 percent) did identify problems in hiring related to drug screening. Interviewee input indicates that construction jobs require a clean drug screen. Marijuana legalization was discussed as a complicating issue.
- **Other.** Construction employers cite a need for job seekers who are willing to temporarily relocate to be near a construction site, or who have transportation to get to remote jobsites. Some also discussed desire for a more diverse workforce, including increased representation of women and minorities.

Responses to skill development needs

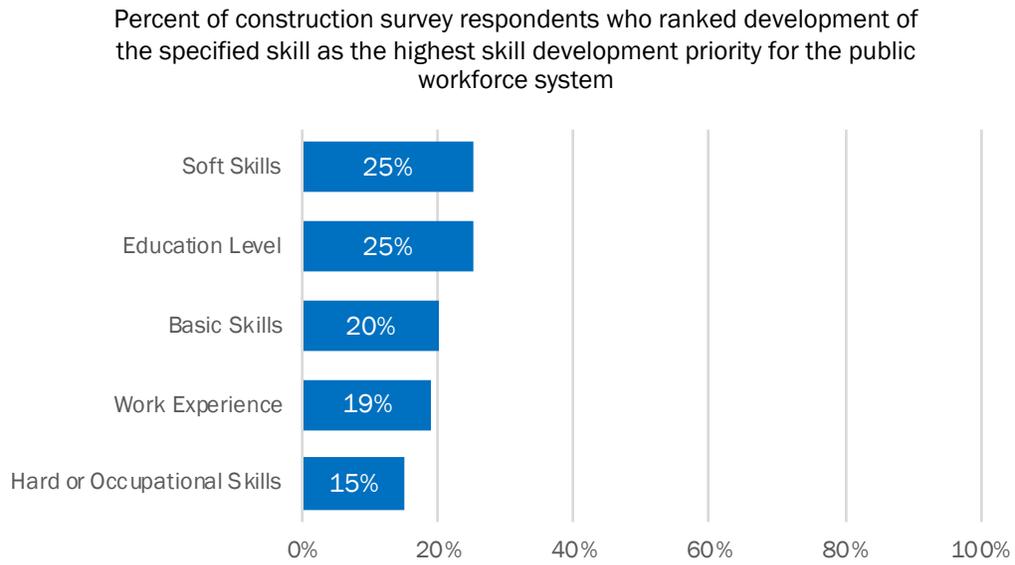
Construction companies rely heavily on on-the-job training, with 95 percent of survey respondents citing this as a training resource. The second most used resources were apprenticeships and in-house staff (57 percent each). Interviewees agreed, discussing how they are internally building their own leaders from skills to management.

Construction stakeholders viewed the need for a collaborative approach to building social capital in the state's workforce. Businesses felt that education should focus on developing soft skills and informing students of career opportunities outside of college. Interviewees and focus group attendees wanted to see a reduction in the negative stigma associated with construction and working in the trades by broadening educators' and students' understandings of career path options. Associated General Contractors-Oregon has implemented extensive educator externship programs to support increased awareness of construction career opportunities and associated skill needs.

Interviewees cited the importance of growing career and technical education (CTE) programs in high schools. Stakeholders were glad to see the recent transition back toward CTE programs. Stakeholders noted the greater success the construction industry has had working with postsecondary schools. Stakeholders reported that OSU has a good construction management program. Many reflected on the need for continuity of skill development recognition between high school and postsecondary programs, with possible solutions including dual credits or other approaches to recognizing pre-apprenticeship credits when applying for apprenticeships. Interviewees discussed promising work in developing career pathways for trades occurring in the Mid-Willamette Education Consortium.

Stakeholders generally did not see a lot of value in working with the public workforce system to develop talent for the construction industry. They cited the complexity and slowness of the system as barriers to collaboration. Stakeholders reported that government responses were uncoordinated, with every county's workforce system trying to recreate the wheel. One-quarter of construction survey respondents identified development of soft skills or education level as the first skill development priority for the workforce system. These responses were followed closely by basic skills, work experience, and hard or occupational skills.

Figure 3. Construction respondents were fairly evenly split in identifying the number one skill development priority for the public workforce system.



Industry: Energy

Key findings

Energy sector representatives generally indicate that candidates have the skills they seek, but representatives also report a severe shortage of utility line workers. They also cite a need for experienced engineers, particularly electrical and chemical. To fill both line worker and engineer positions, employers are recruiting and hiring out-of-state. A small number of energy stakeholders participated in the assessment, with six survey respondents and three interviewees. We also engaged with energy stakeholders at the talent summit breakout sessions. Because of the smaller sample size, our findings may not represent broader energy industry trends.

ENERGY

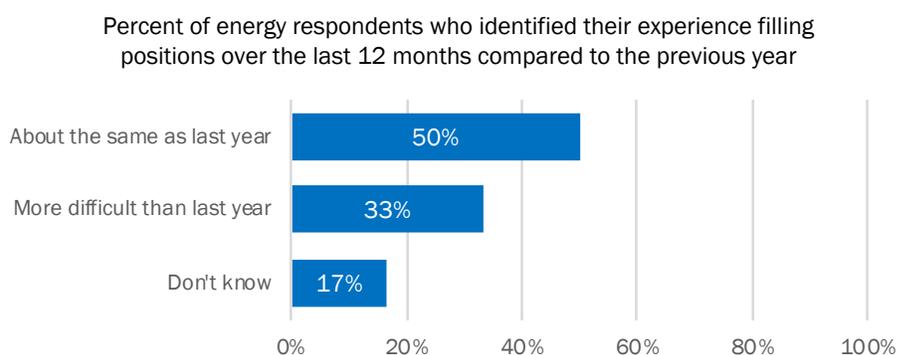
Percent reporting they had **hired new employees** in last 12 months:

83%

Percent reporting they had **difficulty finding qualified applicants** in last 12 months:

50%

Figure 1. Compared to last year, most energy survey stakeholders cite the same level of or more difficulty in finding qualified applicants



Key occupations in demand

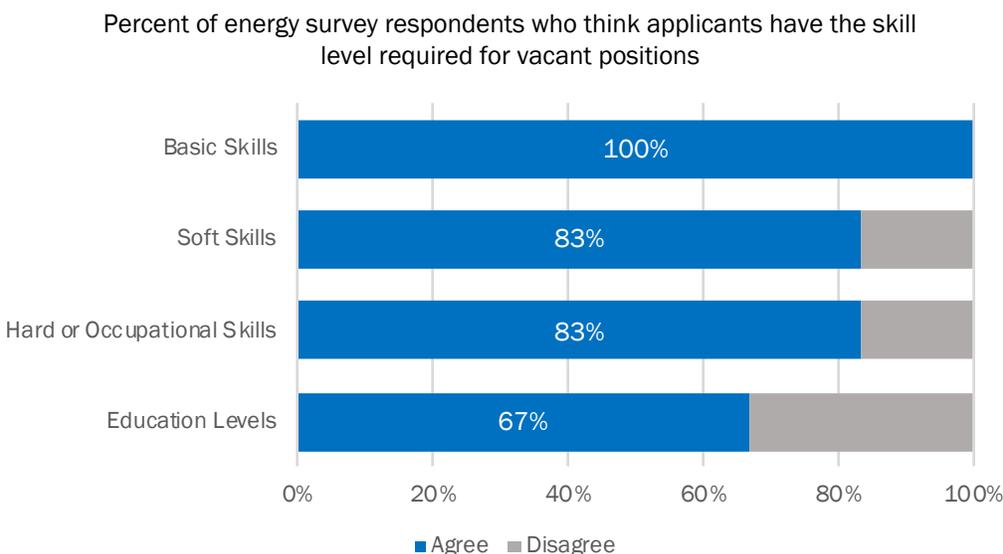
Business leaders interviewed in the energy industry cited the following occupations as in-demand:

- Utility line workers
- Engineers:
 - Chemical
 - Electrical
- IT/cybersecurity workers

“If you are a certified licensed line worker, you can pretty much write your own ticket.”

Key skills in demand

Figure 2. Energy survey respondents noted that applicants have the required skills for vacant positions



Interviews and survey results revealed the following in-demand skills and/or shortage of skills in the energy industry:

- **Education level.** While most (67 percent) energy industry survey respondents felt that applicants had the necessary level of education, this was the lowest performing skill set among the four surveyed. Interviewees indicate that they seek out engineers with college degrees or higher, as well as work experience, but find that they sometimes have to go out-of-state to find a qualified candidate. Within the energy industry trades, interviewees cited a dramatically insufficient supply of apprentice and journeyman utility line workers.
- **Basic skills.** All six survey respondents within the energy industry felt that the applicants for their vacant positions had the necessary basic skills. Interviewees did not cite problems finding candidates with basic skills.
- **Hard skills.** Nearly all survey respondents felt that applicants had the required hard skills for the job. Interviewees indicated that the hard skills most in demand were critical thinking and problem-solving, cybersecurity, computer science, and computer-aided machinery.
- **Soft skills.** Similar to hard skills, nearly all survey respondents felt that applicants had the needed soft skills. Interviewees reported that soft skills are in demand but are usually present in later-career applicants, which is the preferred labor pool for the energy sector employers interviewed.
- **Work experience.** Small energy firms may avoid hiring new graduates because they lack practical experience and require a significant investment before they are productive. Large utilities rarely hire recent graduates because they don't have to; large utilities are a desirable workplace and typically receive more experienced applicants for their needs. The exception is line workers, which are in high demand. However, line workers must come in licensed, so they arrive with several years of experience as an apprentice and journeyman.
- **Clear criminal background.** No energy survey respondents thought that applicants' disqualification due to failure to pass a background check made it harder for them to fill positions.

- **Clean drug screen.** No energy survey respondents thought that applicants’ disqualification due to failure to pass a drug screening made it harder for them to fill positions.
- **Other.** Energy sector representatives within public utilities cited demand for increased racial, ethnic, and gender diversity within the labor pool.

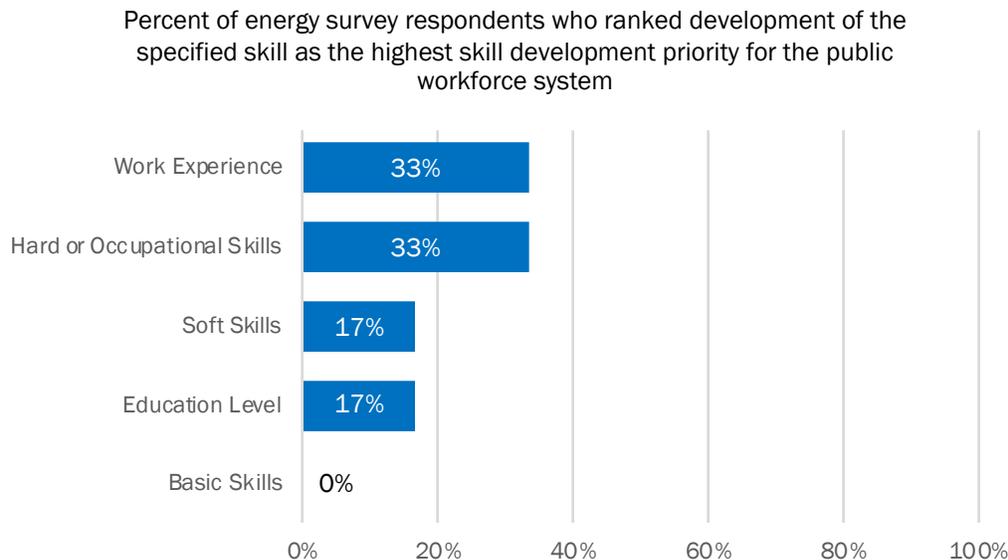
Responses to skill development needs

Energy stakeholders reported heavy reliance on internal training to develop the hard or occupational skills needed in their workforce, with most citing on-the-job training and industry, business, or professional organizations. Businesses felt it was their job to support their employees’ skill development in this area because of the specialized nature of their business.

Business leaders felt the education sector’s role is to develop work-ready workers with essential skills, basic math and writing, computer skills, and the ability to work on teams. Students need to graduate knowing how to transfer their learned skills to the workplace. Interviewees discussed examples of collaboration between industry and postsecondary institutions including shaping curriculum to meet industry needs and internship programs.

In terms of the government’s role, survey respondents wanted to see the public workforce development system prioritize work experience and hard or occupational skill development. Interviewees discussed integrating work experience at younger ages so high school graduates have work experience on their resumes, which would also build hard/occupational skills. Interviewees also reflected on the need to invest more funding into K-16 public school options and want to see governmental leadership in the collaborative effort to develop talent in Oregon’s workforce.

Figure 3. Work experience and hard skills were ranked as the highest skill development priority for the public workforce system



Industry: Food and beverage

Key findings

The food and beverage industry, similar to advanced manufacturing, requires a mixed skillset for its workforce, including people adept in skilled trades, equipment use, and administrative work. Negative stigmas associated with working in the trades and relatively low wages create challenges in recruiting employees. Employers rely heavily on internal training mechanisms for their employees.

The food and beverage survey respondent sample size of 24 may not represent broader industry trends. An additional eight individuals were engaged through a focus group and interviews. We also engaged with food and beverage stakeholders at the talent summit breakout sessions.

FOOD AND BEVERAGE

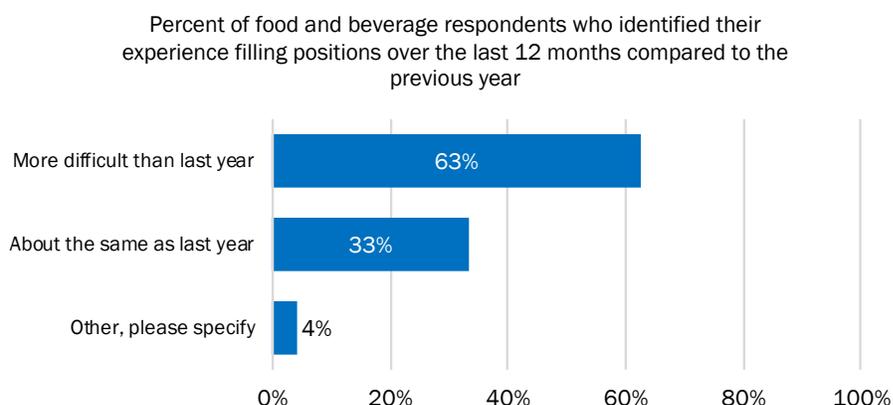
Percent reporting they had **hired new employees** in last 12 months:

96%

Percent reporting they had **difficulty finding qualified applicants** in last 12 months:

88%

Figure 1. Compared to last year, most food and beverage survey stakeholders cite more difficulty in finding qualified applicants



Key occupations in demand

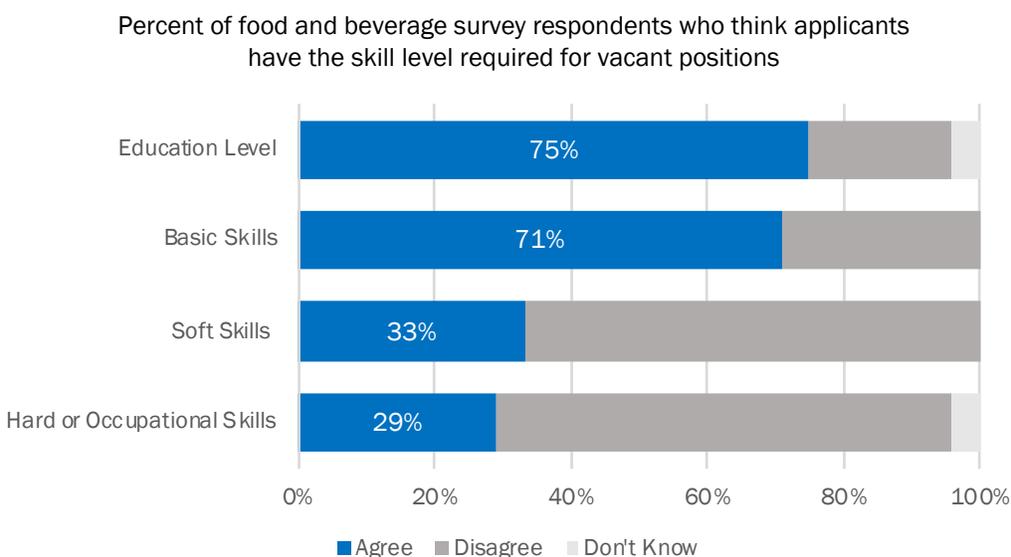
Business leaders interviewed in the food and beverage industry cited the following occupations as in-demand:

- Heavy machinery operators (e.g., fork lift)
- Production line and machine operators
- Maintenance supervisors
- Truck drivers
- Human resources admins
- Marketing & sales admins
- Skilled trades/maintenance:
 - HVAC workers
 - Electricians
 - Mechanics
 - Millwright
 - Machinist
- Accountants
- Engineers (food science)
- Managers (food processing and quality assurance)
- Sanitation workers
- Food safety workers
- Warehouse operators
- Field laborers

“Automation is huge – from robots, to speaker systems, automatic doors, infrared systems, hands-free restrooms, conference calls, etcetera. We need people who understand how the technology operates, how we can maintain it, how can we troubleshoot, how do we use it.”

Key skills in demand

Figure 2. Food and beverage survey respondents noted that applicants have the education level and basic skills required, but lack hard and soft skills



Interviewees, focus group participants, and the key stakeholder survey results revealed the following in-demand skills and/or shortage of skills in the food and beverage industry:

- **Education level.** High school education is viewed as the baseline, with trade school for engineering or a National Career Readiness Certificate regarded as value added. Bachelor's degrees were not viewed as needed for most jobs. The quality of graduates for jobs in the wine industry requiring a bachelor's—such as a viticulture degree from Oregon State—is high and the number of graduates matches demand. The wine industry sees a shortage of local graduates in marketing, administration, and sales; they need to import these workers from California. Survey responses largely reflect these sentiments as well, with most responding that applicants had the education level needed for vacant positions.
- **Basic skills.** Seventy percent of survey respondents felt that applicants had the basic skills needed for vacant positions. Interviewees did not indicate that basic skills were an issue.
- **Hard skills.** Survey respondents generally did not feel applicants had the hard skills needed to fill vacant positions. Interviewed stakeholders shared that production line work is increasingly analytical, often requiring the ability to operate automated machinery, conduct quality control, prioritize sanitation, and interpret charts and graphs. Specialized skills for particular food and beverage industries are also in demand, such as viticulture, skilled field labor, and business management. Employers thought recent high school graduates lacked critical thinking and problem-solving skills, and had limited exposure to diverse career opportunities in various industries.
- **Soft skills.** Most survey respondents did not think applicants had the soft skills needed to fill vacant positions, and this finding is supported by the interviews and focus group with representatives from this industry. Employers cited a need for motivation, customer service, communication, dependability, teamwork, and grooming, indicating that these skills and traits are so important and hard to find that they may trump training in some circumstances; they will train the right person.
- **Work experience.** Some interviewees indicated that they look for relevant work experience first, including some experience in warehousing and grocery distribution. While most applicants have

experience, employers encounter “job-hoppers” and are wary of investing in an employee who won’t stay. Internships, job shadowing or mentorships are also valued in the industry.

- **Clear criminal background.** Fewer than half of food and beverage survey respondents thought that applicants’ disqualification due to failure to pass a background check (42 percent) made it harder for them to fill positions. Approximately one third thought these issues did make it harder to fill positions, and one quarter did not know or the question was not applicable.
- **Clean drug screen.** Less than half of food and beverage survey respondents thought that applicants’ disqualification due to drug screening (46 percent) made it harder for them to fill positions. Approximately one third thought these issues did make it harder to fill positions, and one quarter did not know or the question was not applicable.
- **Other.** Some employers cited difficulties attracting employees to rural areas.

Responses to skill development needs

Food and beverage industry stakeholders discussed recruitment challenges associated with relatively low wages paid in their sector because of consumer demands for low food prices. Survey respondents said that in response to their difficulty finding qualified applicants, they most commonly increase recruiting (91 percent), increase overtime hours for current employees (67 percent), and/or hire a less qualified applicant (62 percent). This represents the highest industry response for using overtime or hiring less qualified applicants.

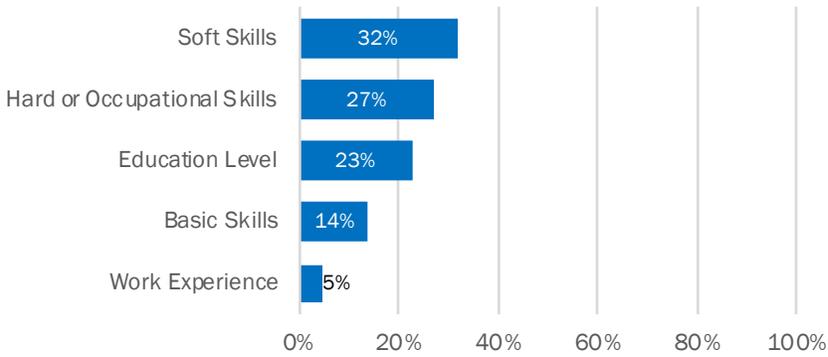
Business leaders discussed the need to reduce the negative stigma associated with working in the trades and manufacturing and hoped that increased exposure could reduce the stigma. Some businesses are implementing externships and plant tours to educate educators about the work they do in the food and beverage industry. One high school principal who toured a plant reinvented school attendance expectations as a result of hearing about absenteeism issues in the workforce.

The food and beverage industry relies heavily on internal training to develop the specialized skillsets needed in their workforce, with almost all survey respondents using on-the-job training (92 percent), 79 percent using in-house staff, and three quarters using industry, business, or professional associations. Stakeholders wanted to see a stronger focus on developing hard or occupational skills and work experience through career and technical education (CTE) programs, trade schools, and work-based learning opportunities. Some businesses are focusing on internships with postsecondary education programs, including the Portland State University Food Leadership Program and the University of Portland.

Survey respondents reflected on the desire to see the public workforce system focus on developing soft and hard/occupational skills in their workforce.

Figure 3. Development of soft skills, occupational skills, and education level were selected by the most food and beverage respondents as the first skill development priority for the public workforce system

Percent of food and beverage survey respondents who ranked development of the specified skill as the highest skill development priority for the public workforce system



Industry: Healthcare

Key findings

Healthcare industry stakeholders cite a shortage of healthcare providers at all levels, particularly in rural areas and certain specialties, such as general surgery and primary care. Employers are seeking candidates with strong critical thinking skills, communication skills, and the necessary training and degree for the job.

The healthcare survey respondent sample of 30 may not represent broader industry trends. An additional five individuals were engaged through interviews. We also engaged with healthcare stakeholders at the talent summit breakout sessions.

HEALTHCARE

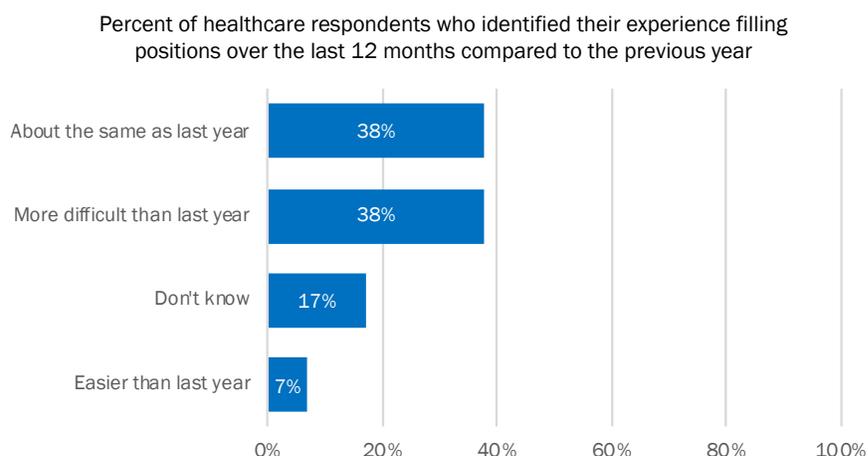
Percent reporting they had **hired new employees** in last 12 months:

97%

Percent reporting they had **difficulty finding qualified applicants** in last 12 months:

83%

Figure 1. Compared to last year, most healthcare survey stakeholders cite about the same level of or more difficulty in finding qualified applicants



Key occupations in demand

Business leaders interviewed in the healthcare industry cited the following occupations as in-demand:

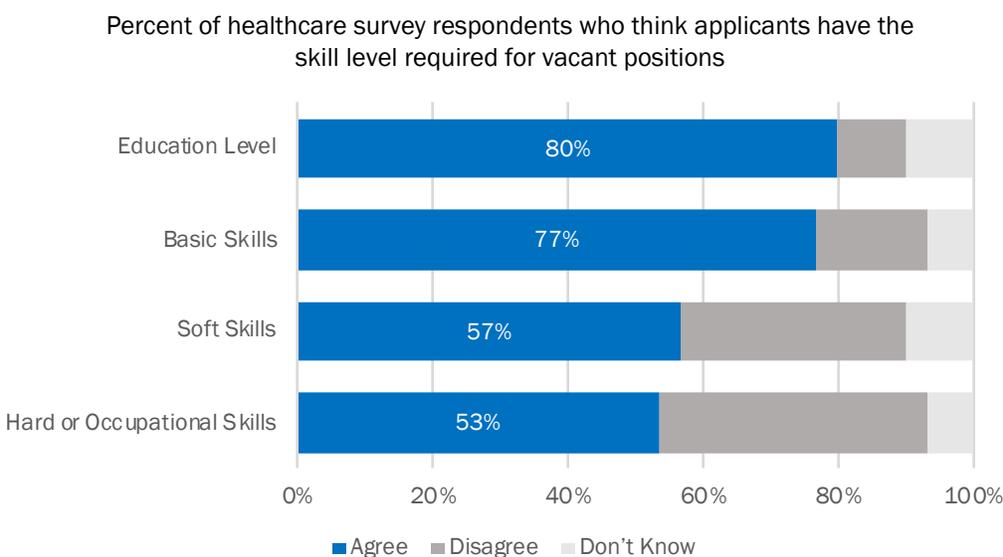
- Medical assistants
- Certified nursing assistants
- Registered nurses (RN/BSN)
- Nurse practitioners
- Physician assistants
- Psychologists/counselors
- Home health specialists
- Medical billing/collections
- Pulmonary specialists/respiratory therapists
- Occupational therapists
- Physical therapists
- Catheterization lab techs
- Physicians:
 - General Practitioners
 - Psychiatrists
 - General Surgeons
 - Obstetricians
 - Intensivists
 - Hospitalists
 - Oncologists

Nearly all levels of healthcare practitioners are continuously in demand, from medical assistants to physicians with hard-to-find specialties. Specific specialized skills are also in demand, such as catheterization lab technicians, respiratory therapists, and occupational or physical therapists.

Healthcare employers face challenges finding experienced medical assistants and certified nurse assistants because many view the degree as a stepping stone to nursing school. Consequently, many recent community college graduates in these professions do not have hands-on experience.

Key skills in demand

Figure 2. Most healthcare survey respondents noted that applicants have the skills required for vacant positions, especially related to education level and basic skills



Employer interviews and the key stakeholder survey revealed the following in-demand skills and/or shortage of skills in the healthcare industry:

- **Education level.** Healthcare interviewees reported that education level drives hiring within their industry. While most (80 percent) healthcare survey respondents felt that their applicants had the necessary education for vacant positions, 83 percent reported they had difficulty finding qualified applicants, pointing to a shortage of trained healthcare providers. Driving some of the demand for nurses with bachelor's degrees (BSN) is the Joint Commission on Accreditation of Healthcare Organizations and U.S. News and World Report rankings that weight a BSN over a nurse with an associate degree, as well as the Institute of Medicine's Future of Nursing report, which has been backed by the Organization for Associate Degree Nursing (OADN) and the American Nurses Association (ANA), recommending that 80 percent of nurses be educated to the Bachelor of Science in Nursing (BSN) degree level by 2020. Consequently, nurses with associate degrees (Registered Nurses) are now incentivized by their employer to get a BSN.
- "Employers are looking for nurses that have a high level of education and a high level of critical thinking skills. Ideally, they are looking for 'plug and play' new hires."
- **Basic skills.** In general, stakeholders did not view basic skills as problematic in new hires.
 - **Hard skills.** Survey respondents were most likely to indicate that hard skills were the skill set most lacking in applicants for vacant positions. Healthcare interviewees emphasized the value of critical thinking skills in all health-related occupations. They also emphasized the value of trained, competent candidates with a working knowledge of medical vocabulary, information technology systems, and who are ready to work.
 - **Soft skills.** Nurses with the ability to manage complex needs are in demand. Interviewees indicated only moderate challenges finding candidates with the needed soft skills.

- **Work experience.** Interviewees indicated that nurses with surgical experience and medical assistants and certified nursing assistants with work experience were in demand.
- **Clear criminal background.** Most healthcare survey respondents (73 percent) did not think that applicants' disqualification due to failure to pass a background check made it harder for them to fill positions. Approximately ten percent thought these issues did make it harder to fill positions, and roughly 20 percent did not know. Issues with criminal background did not come up in interviews with healthcare industry interviewees.
- **Clean drug screen.** Most healthcare survey respondents (67 percent) did not think that applicants' disqualification due to a failed drug screening made it harder for them to fill positions. Approximately ten percent thought these issues did make it harder to fill positions, and roughly 20 percent did not know. A clean drug screen was identified as a moderate issue by one healthcare industry interviewee.
- **Other.** Stakeholders discussed challenges associated with recruiting and retaining talent in rural areas.

Responses to skill development needs

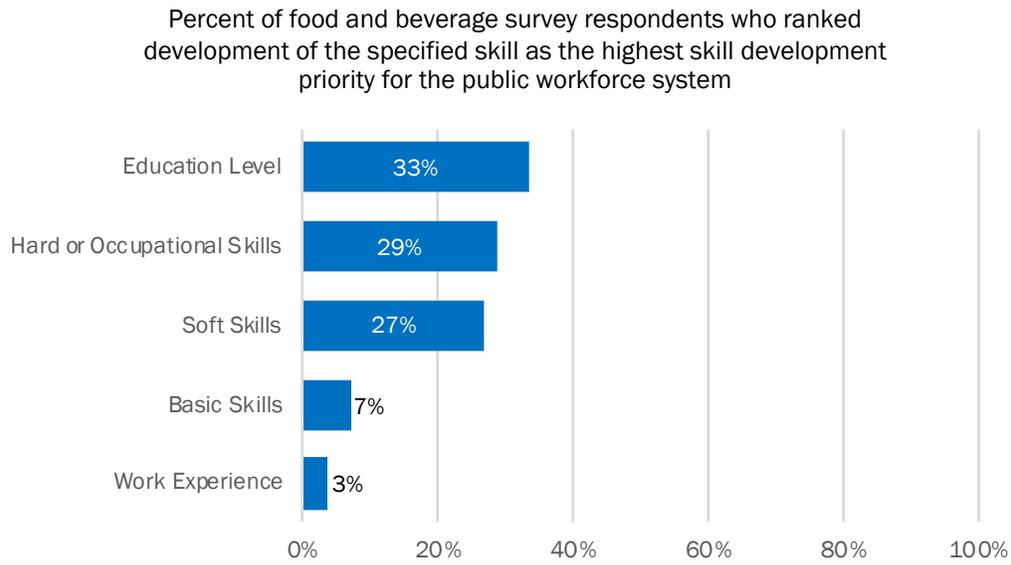
Healthcare survey respondents cited internal training in terms of on-the-job training (83 percent) and in-house staff (80 percent) as well as self-study/online training (70 percent) as the most common resources used to strengthen their workforce's skills. Stakeholders felt that employers had to play a larger role in educating healthcare workers to alleviate the deficits found in higher education. Finding faculty and clinical placements is the challenge for nursing programs. To teach at the BSN level, individuals must have an advanced degree (master's or PhD). Educational institutions are not able to compensate faculty comparably to salaries made working in the healthcare industry, resulting in faculty shortages and fewer "slots" available in nursing school. In part to address this issue, the Oregon Consortium of Nursing Education (OCNE) developed a program to help RNs with associate degrees reach the BSN level by taking senior-level coursework required for the degree through the OHSU Portland campus or via online delivery. With the online options, OCNE students can complete the coursework for the BSN without leaving their home community.

"Employers need to start investing even more in education. Employers need to be involved in addressing student costs, faculty issues, and clinical placements. Employers need to get really involved."

Oregon Health and Science University is also working with employers in rural areas to bring providers in training or recently out of school to underserved, rural areas. Employers and government are also using loan repayment programs and signing bonuses to incentivize healthcare professionals to live and work in rural areas.

Survey respondents felt the public workforce system should focus on developing soft and hard/occupational skills in the healthcare workforce. Interviewees discussed successful conversations facilitated by WorkSource regarding medical assistants and certified nurse assistants, to learn from employers about changing hard/occupational skills needed, so they could respond with appropriate training.

Figure 3. Development of education level, occupation skills, and soft skills were selected by the most healthcare respondents as the first skill development priority for the public workforce system



Industry: Maritime

Key findings

While stakeholders find that applicants generally have the needed skills, the industry faces a shortage of talent because of competition from oil rigs in the Gulf of Mexico, which can pay much more for fewer weeks of work. Similarly, research vessels can struggle to find talent because seaman jobs on commercial fishing boats have more competitive pay and schedules.

The maritime survey respondent sample of three may not represent broader industry trends. An additional three individuals were engaged through interviews.

Key occupations in demand

Business leaders interviewed in the maritime industry cited the following occupations as in-demand:

- Seamen/fishermen
- Welders
- Engineers (marine)
- Mechanics (diesel)
- Supply chain and logistics managers

Key skills in demand

Employer interviews and the key stakeholder survey revealed the following in-demand skills and/or shortage of skills in the maritime industry:

- **Education level.** All three maritime survey respondents felt that applicants had the education level required for open positions. Interviewees reported that the in-demand education level within the maritime industry included Coast Guard certifications and bachelor's degrees for survey technician positions and marine engineers. Interviewees reported that Washington-trained seaman are more common because there is a community college program in Washington.
- **Basic skills.** All three maritime survey respondents felt that applicants had the basic skills required for open positions and it did not come up in interviews as an in-demand skillset.
- **Hard skills.** All three maritime survey respondents felt that applicants had the hard skills required for open positions. However, interviewees expressed difficulty finding boat operators. Employers face substantial competition for skilled seamen and other on-boat positions with employers on oil rigs in the Gulf of Mexico. Research vessel operators have trouble competing with the pay and schedule offered by fishing vessels. The hard skills identified as most in-demand by maritime interviewees included boat skills, seamanship skills, fishing skills, and firefighting. An interviewee also discussed the need for financial management skills to help the workforce manage the cyclical nature and finances of the work.
- **Soft skills.** Finding applicants with the necessary soft skills was generally not an issue for most maritime stakeholders. Two out of three survey respondents felt that applicants also had the required soft skills and interviewees viewed it as not a problem or only a moderate problem.
- **Work experience.** Interviewees reported difficulties retaining people with commercial fishing experience, but otherwise work experience was not cited as a key in-demand attribute.

MARITIME

2 out of 3 survey respondents reported they had **hired new employees** in last 12 months

2 out of 3 reported they had **difficulty finding qualified applicants** in last 12 months

- **Clear criminal background.** Maritime survey respondents did not know about the impact of disqualification due to criminal background on hiring. It was also not identified as an issue in interviews.
- **Clean drug screen.** Maritime survey respondents did not know about the impact of disqualification due to drug screening issues on hiring. It was also not identified as an issue in interviews.
- **Other.** Industry respondents noted the challenge of attaching maritime workforce to an address, and the implications for both workers, who are not recognized by Workforce Investment if they report to work out of state, and for the economic and workforce departments, who can count the maritime employers, but do not have a method for counting maritime employees working for out of state companies. Additionally, stakeholders noted that most of the clusters in the sector are not recognized in the industry codes and are therefore undercounted in workforce figures. Finally, maritime work is seasonal and cyclical, which affects a worker's ability to sustain a salary over the course of the year, and an employer's ability to retain skilled staff during the off-season.

Responses to skill development needs

Community or technical colleges were the most commonly cited recruiting resource by survey respondents (67 percent). In-house staff was the most commonly used training resource (67 percent). Interviewees spoke about the need for in-house training on safety and specialized maritime procedures.

Interviewees discussed the need for young people to understand the pathway associated with a career in the maritime industry. Stakeholders feel responsible for telling students and educators about the career options, associated pay, necessary skills, and the pathway to connect to a job in the industry. Interviewees discussed relationships at the postsecondary level with the Oregon State University (OSU) marine operations program, OSU's Hinsdale Wave Facility, OSU's Marine Studies Initiative, and the Clatsop Community College's Marine and Environmental Research and Training Station. Some expressed a desire to see credits more easily transfer between educational institutions and programs to better support skill development over a lifetime.

Two out of three maritime respondents felt the public workforce system should prioritize hard or occupational skills, and one person identified soft skills as the highest priority skill development service for the system. Interviewees felt that workforce development agencies do not know the skills needed in the maritime industry.

Industry: Outdoor gear and apparel

Key findings

Hard/occupational and soft skills were broadly considered to be lacking among applicants within the outdoor gear and apparel industry. The industry seeks candidates that have both creative and technical skills: designers, engineers, people who can work with their hands, and people who have training or experience in manufacturing. They look for employees who will be team players, motivated, self-directed, and contribute positively to the company culture. Significant work has been done by businesses to shape postsecondary programs to support outdoor industry talent development.

The outdoor industry survey respondent sample of six may not represent broader industry trends. An additional 14 individuals were engaged through interviews and focus groups. We also engaged with outdoor industry stakeholders at the talent summit breakout sessions.

OUTDOOR GEAR AND APPAREL

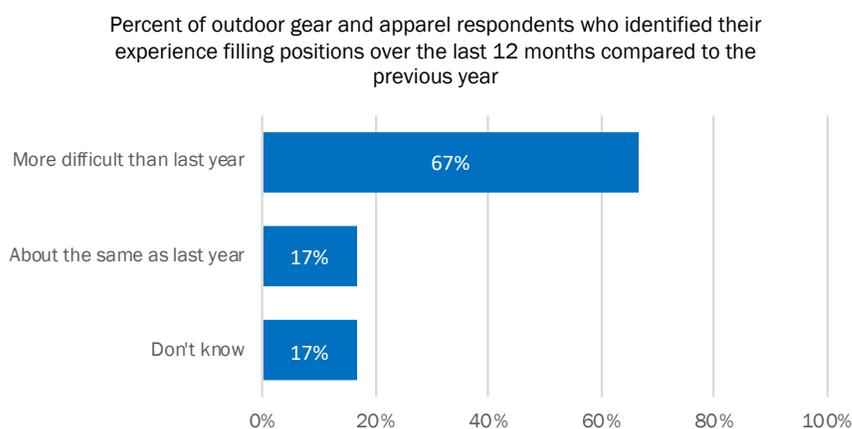
Percent reporting they had hired new employees in last 12 months:

83%

Percent reporting they had difficulty finding qualified applicants in last 12 months:

83%

Figure 1. Compared to last year, most outdoor gear and apparel survey stakeholders cite more difficulty in finding qualified applicants



Key occupations in demand

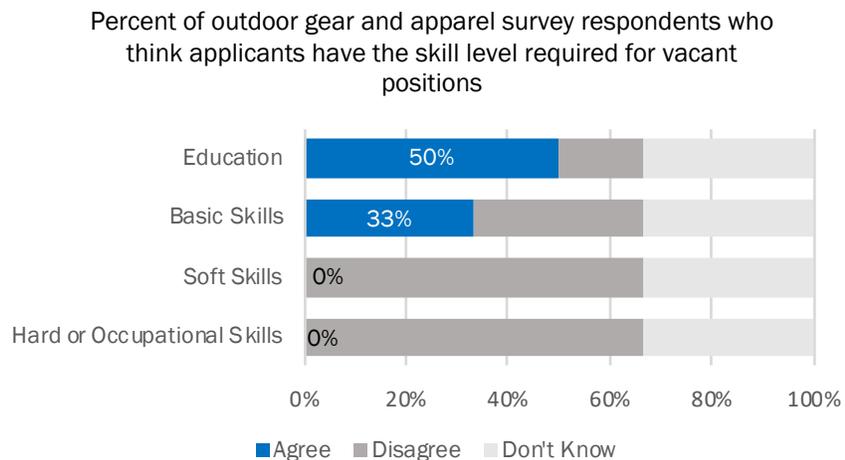
Outdoor gear and apparel industry business leaders engaged through interviews and focus groups cited the following occupations as in-demand:

- Project managers
- Production line managers
- Production line laborers
- Sustainability managers
- Human resources admins
- Supply chain and logistics analysts
- Engineers:
 - Mechanical
 - Industrial
 - Material/Textile
- Mechanics (diesel)
- Data analysts
- Industrial/product designers
- Marketing administrators
- Customer service professionals
- Drafters
- Inventory managers
- Event coordinators

Outdoor gear and apparel stakeholders indicated a growing demand for workers versed in environmental and civic sustainability business practices. The retailers selling their products, as well as some consumers, are wanting reports on production sustainability, including labor practices and material sources.

Key skills in demand

Figure 2. Most outdoor gear and apparel survey respondents noted that applicants lack the soft skills and occupation skills required for vacant positions



Interview and focus group participants and the key stakeholder survey revealed the following in-demand skills and/or shortage of skills in the outdoor gear and apparel industry:

- **Education level.** Of the four skill sets surveyed, outdoor industry respondents were more likely to think that applicants had the appropriate education for vacant positions than the other three skill sets. However, education was identified as in-demand by some stakeholders, particularly mechanical and industrial engineering degrees. Some industry representatives report they currently recruit out-of-state for engineers.
- **Basic skills** About half of survey respondents felt applicants had the necessary basic skills. Math and science skills were cited as in-demand.
- **Hard skills.** No survey respondents felt applicants had the hard skills needed for vacant positions. Interviewees cited the desire for “makers” – people who can create things with their hands, using skills such as sewing, or more generally “jacks of all trades.” Employers in the outdoor industry indicated they commonly have to go off-shore for these skills. Specialized skills for particular companies were also hard to find, such as optical manufacturing and fabrication skills. Broader cross-industry skillsets that were cited as hard to find include inventory management, front line production, OSHA training, supply chain analytics, and lean production training. Employers in this industry also value general problem-solving skills.
- **Soft skills.** Similar to hard skills, no survey respondents felt that applicants had the needed soft skills. Interviewees and focus group participants highlighted hiring for the right fit or good chemistry, which in this industry generally translates to collaboration, teamwork, and motivation. Production line managers that have leadership and communication skills, as well as the needed technical skills, are in-demand and hard to find.
- **Work experience.** Many stakeholders felt that people with work experience were valued and hard to find, particularly people with manufacturing experience.
- **Clear criminal background.** Regarding applicants’ disqualification due to failure to pass a drug screening, most outdoor gear and apparel survey respondents (67 percent) did not know or viewed the question as not applicable to their situation.
- **Clean drug screen.** No outdoor gear and apparel survey respondents thought that applicants’ disqualification due to failure to pass a drug screening made it harder for them to fill positions.

- **Other.** Industry representatives expressed that racial and ethnic diversity is lacking in the field.

Responses to skill development needs

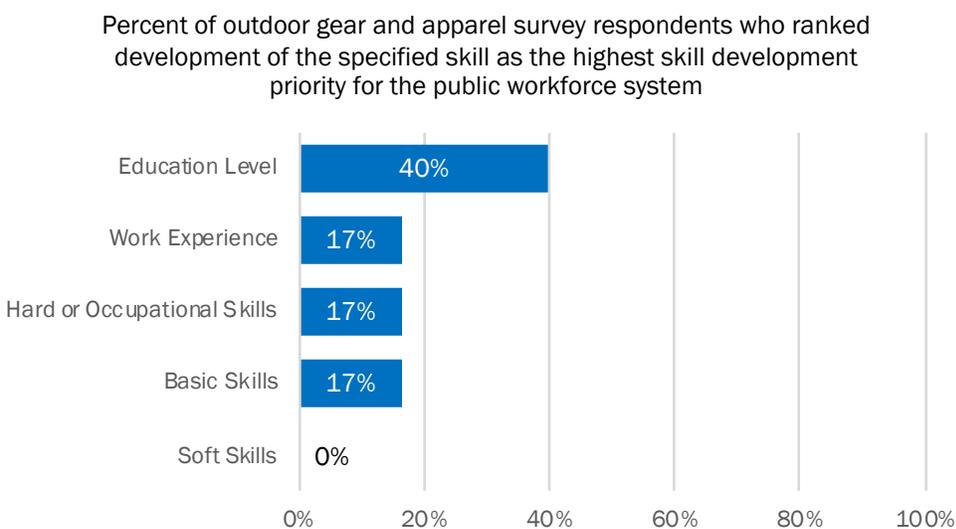
Survey respondents cited in-house training and industry, business, or professional organizations as the most commonly used resources to strengthen workforce skills (80 percent each). Interviewees and focus group participants concurred that internal resources were used widely, particularly for specific manufacturing skills, as well as emerging and quickly evolving skillsets. Industry leaders also see it as their role to define what opportunities exist and the associated skills and career path.

Stakeholders discussed the increasing use of postsecondary education and training resources in the outdoor industry, especially in specialized skillsets such as athletic footwear design. Programs include Portland State University’s Athletic and Outdoor Industry Certificate; University of Oregon’s Sports Product Management programs; the Pensole Footwear Design Academy; and OSU Cascades Tourism, Recreation, and Adventure Leadership program. Business leaders also talked about the OSU-Cascades outdoor products’ major launching in fall of 2018, as focusing on more generalizable skills needed in the outdoor industry. Businesses actively collaborate with postsecondary institutions to define curriculum and support work-based learning opportunities for students participating in these programs.

Many stakeholders wanted to see work-based learning opportunities earlier in a student’s learning career. Some business owners are actively working with high schools to implement internship programs. Others would like to, but feel they need support to effectively plan and implement internship programs.

The outdoor industry is increasing its visibility with the public workforce system as it grows as an economic driver in the state. The recently established Oregon Outdoor Alliance and the Oregon Office Outdoor Recreation are organizing collaborative efforts between industry, government, and the education sector. The largest proportion of survey respondents felt the public workforce system should focus on helping to support education in the outdoor industry workforce. This aligns with the significant work being done to shape postsecondary programs to support talent development for the outdoor sector.

Figure 3. The largest share of outdoor gear and apparel survey respondents identified development of education level as the highest skill development priority for the public workforce system



Industry: Technology and software development

Key findings

The technology and software development industry is seeking employees with all skill sets, ranging from basic skills in math, to hard skills in computer science, user interface/user experience (UI/UX), and network administration. Higher level education in software engineering and technology fields, in general, are also in demand, especially coupled with business operations knowledge (Dev-Ops). Business leaders saw the importance of work-based learning opportunities, ongoing incumbent worker training, and displaced worker training in continuing to develop talent in the technology workforce.

The technology and software development survey respondent sample of 89 may not represent broader industry trends. An additional six individuals were interviewed, and other technology industry stakeholders were engaged at the talent summit.

TECHNOLOGY AND SOFTWARE DEVELOPMENT

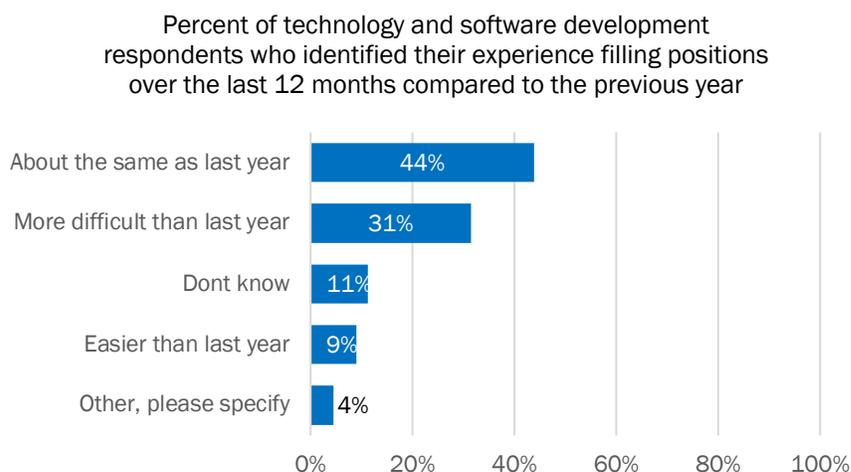
Percent reporting they had hired new employees in last 12 months:

88%

Percent reporting they had difficulty finding qualified applicants in last 12 months:

72%

Figure 1. Compared to last year, most technology survey stakeholders cite about the same level of or more difficulty in finding qualified applicants



Key occupations in demand

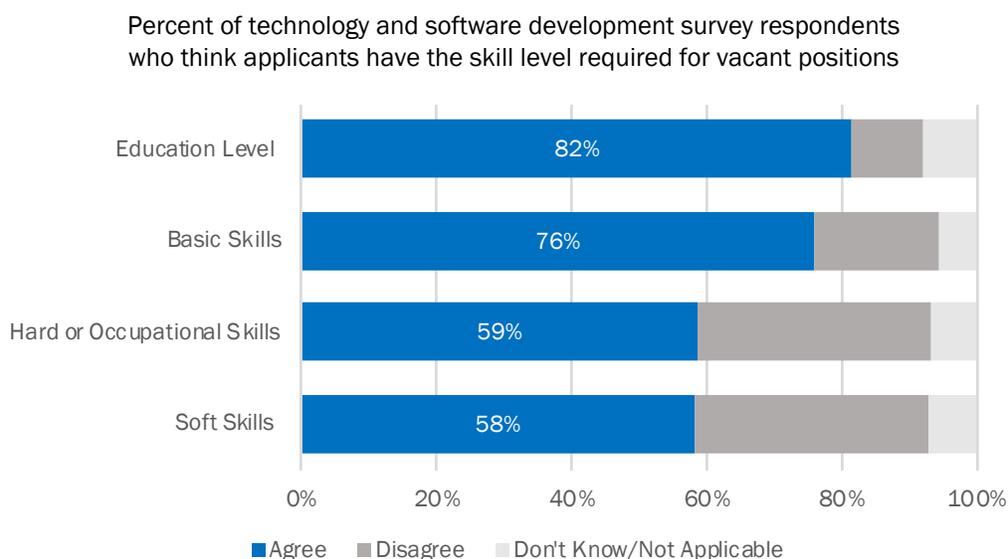
Business leaders interviewed in the technology and software development industry cited the following occupations as in-demand:

- Software developers
- User interface/user experience (UI/UX) designers
- Project/product managers
- Development-operations managers (dev-ops)
- Engineers:
 - Mechanical
 - Electrical
 - Software
- Network security admins
- Web developers
- Chief technology/information officers
- Manufacturing operations technicians
- Manufacturing operations managers
- Salespeople
- Quality assurance analysts
- Database admins

Some technology stakeholders indicated they are seeking engineers with knowledge or experience with machine learning, artificial intelligence, and robotics.

Key skills in demand

Figure 2. Most technology and software development survey respondents noted that applicants have the education level, basic skills, occupation skills, and soft skills required for vacant positions



Interview and focus group participants and the key stakeholder survey revealed the following in-demand skills and/or shortage of skills in the technology and software development industry:

- **Education level.** Of the four skill sets surveyed, technology respondents felt more applicants had the necessary education level for vacant positions than the three other skill sets. Interviewees said they seek applicants with bachelor's or master's degrees in software and electrical engineering, but some stakeholders report that the degrees are too limited for real-world business operations needs, or the degrees are quickly outdated due to rapid changes in technology. Some technology employers shared that they have to recruit out of the country for master's-level electrical or computer engineering candidates.
- **Basic skills.** Most survey respondents also felt that applicants had the basic skills required for the job. Basic math skills and the ability to read spreadsheets were cited by interviewees as the most in-demand and hard to find basic skills.
- **Hard skills.** Survey respondents were less positive about hard skills, but still over half (58 percent) felt that their applicants had the necessary hard skills for vacant positions. Interviewees reported demand for workers with computer science skills, cloud and desktop software platforms, UI/UX design, programming skills, network administration skills, and critical thinking. One technology employer indicated that they always have an opening for a UI/UX position.
- **Soft skills.** Like hard skills, 58 percent of survey respondents felt their applicants had the necessary soft skills. The in-demand and hard to find soft skills cited by interviewees were communication and time management skills (meeting deadlines).
- **Work experience.** All technology industry interviewees placed substantial value on work experience through apprenticeships and internships.
- **Clear Criminal Background:** Two-thirds of technology survey respondents did not feel that applicants' disqualification due to failure to pass a background check made it harder for them to fill positions;

roughly one quarter indicated Don't Know/Not Applicable. Criminal background did not come up in the interviews as a barrier to hiring in this industry.

- **Clean drug screen.** Two-thirds of technology survey respondents did not feel that applicants' disqualification due to failure to pass a drug screening made it harder for them to fill positions. Roughly one quarter indicated Don't Know/Not Applicable. Drug screen failure did not come up in the interviews as a barrier to hiring in this industry.
- **Other.** Technology industry leaders articulated a need to increase diversity in the workforce.

Responses to skill development needs

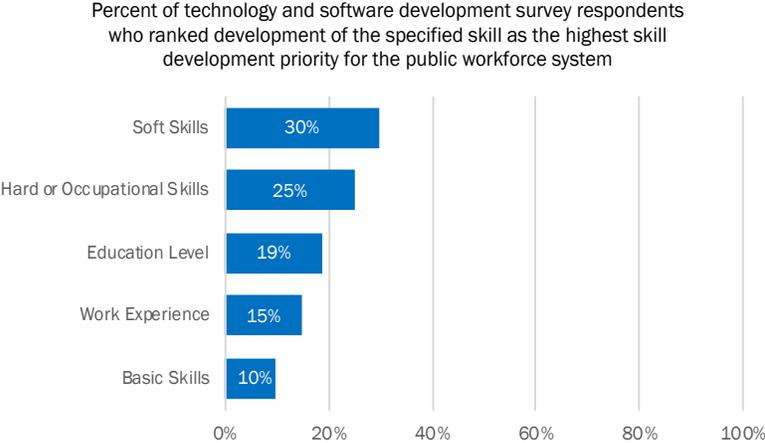
Survey respondents most commonly cited using on-the-job training (76 percent), self-study/online training (74 percent), industry associations (70 percent), and in-house staff (69 percent) to augment the skillsets of their workforce. Interviewees discussed how internal training was required because many students leaving school did not have the necessary skills to succeed at their jobs. Business leaders referenced the important role postsecondary training programs and associated work-based learning opportunities play in training prospective, incumbent, and displaced workers. Many saw a role for businesses to work more closely with postsecondary programs to ensure the curriculum aligns with skill needs. Internships and apprenticeships were seen as vital for helping prospective employees and businesses shape skill building while in school and assess fit for potential employment. An example of an effective and system-wide internship program referenced by multiple people is MECOP (formerly known as Multiple Engineering Cooperative Program), which coordinates engineering internships from Oregon's four large universities.

Many stakeholders talked about the importance of ongoing skill building over a working lifetime, particularly in the quickly evolving technology sector. Interviewees discussed the importance of boot camps and other short-term training programs in helping incumbent workers advance in their careers.

Interviewees remarked on the significant role of the Technology Association of Oregon (TAO) in workforce training and collaboration with the education and government sectors in talent development. Two TAO programs discussed were Apprenti and Elevate. The Apprenti program focuses on training displaced workers—primarily women, minorities, and veterans—for technology occupations across multiple industries in Lane and Deschutes counties. Lane County TAO's Elevate programming helps students get exposure to local career options in technology, advanced manufacturing, and healthcare through organized bus tours of local businesses. Interviewees also cited Benson High School—a polytechnic school with a focus on technology, engineering, and bioscience—as providing students with hands-on experience with equipment.

Survey respondents felt the public workforce system should focus primarily on developing soft and occupational skills in the technology workforce. This aligns with the work being done by county workforce investment boards in TAO initiatives.

Figure 3. The largest share of technology survey respondents identified development of soft skills as the highest skill development priority for the public workforce system



Industry: Forest and wood products

Key findings

The forest and wood industry, similar to advanced manufacturing, requires a mixed skillset for its workforce, including people adept in skilled trades and equipment use, as well as administrative work. The stigma associated with working in the trades creates recruitment challenges. Employers rely heavily on internal training mechanisms for their employees. Mill owners also invest substantially in training and educating future and incumbent workers through paid internships, apprenticeships, and tuition reimbursement. Businesses struggle to find employees with needed soft skills and would like to see additional support from education and public workforce stakeholders in this realm.

The forest and wood products industry survey respondent sample of 13 may not represent broader industry trends. Four additional industry leaders were interviewed.

FOREST AND WOOD PRODUCTS

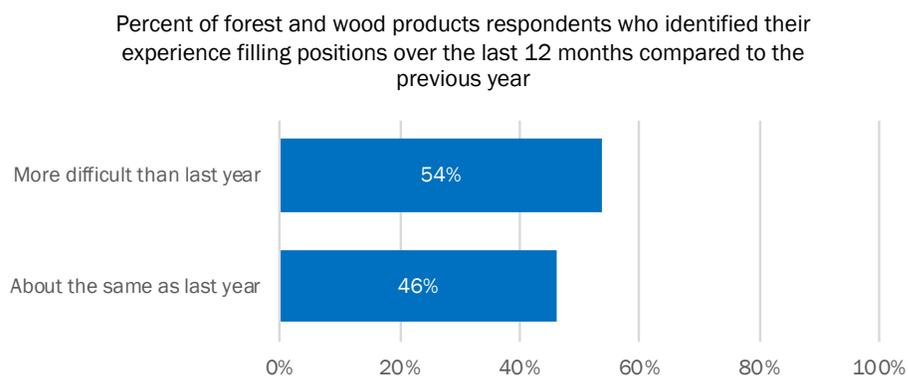
Percent reporting they had hired new employees in last 12 months:

100%

Percent reporting they had difficulty finding qualified applicants in last 12 months:

85%

Figure 1. Compared to last year, wood products survey stakeholders cite about the same level of or more difficulty in finding qualified applicants



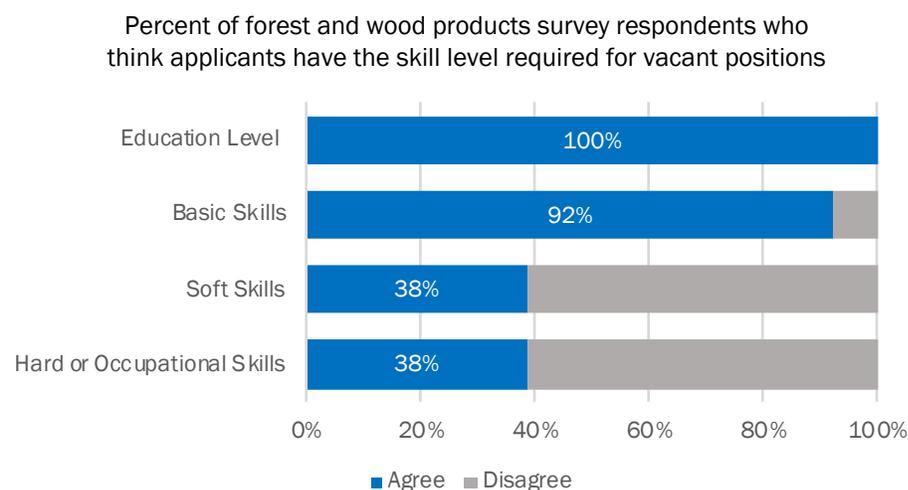
Key occupations in demand

Business leaders interviewed in the forest and wood products industry cited the following occupations as in-demand:

- Engineers:
 - Process
 - Mechanical
- Mill laborers (entry level)
- Skilled trades:
 - Electricians
 - Millwrights
 - Plumbers
 - Pipefitters
 - Machinists
 - Maintenance workers
 - Graders
 - Kiln operators
 - Boiler operators

Key skills in demand

Figure 2. Most forest and wood product survey respondents noted that applicants have the education level and basic skills required for vacant positions



Employer interviews and the key stakeholder survey revealed the following in-demand skills and/or shortage of skills in the forest and wood products industry:

- **Education level.** While survey respondents indicated that their candidates had the education level needed for the job, several interviewees cited the need for high school level CTE and postsecondary training, apprenticeships, or on-the-job training. For example, mills currently have a low supply of electricians and millwrights and are in need of more. However, because of the need for appropriate journeyman-to-apprentice ratios, mills are restricted in their ability to apprentice new electricians or millwrights to increase the supply.
- **Basic skills.** Interviewees indicated that basic math and mechanical aptitude were skills needed for all levels of employment and education, from hourly workers to salaried administrators. Survey results suggest that most candidates have these basic skills.
- **Hard skills.** The industry sees a substantial shortage of hard skills, including critical thinking and problem-solving, skilled trades, and specialized skills for the industry (e.g., graders, kiln operators). Interviewees talked about how the increasing technological complexity of wood processing requires increasing occupational skills for employees. Stakeholders cited difficulties importing electricians and millwrights from other states to meet their employment needs due to stricter licensing standards in Oregon and reciprocal relationships with only a handful of states.
- **Soft skills.** Written and oral communication skills, interpersonal skills, and teamwork were noted as essential for success in the industry. Forest and wood products stakeholders indicated that although it can be hard to find people with the necessary hard or occupational skills, it is often harder to find entry-level laborers with a desire to work.
- **Work experience.** Interviewees discussed how the specialized nature of the work means previous job experience may not be transferable to another company. However, most stakeholders felt it was important for students to participate in work-based learning opportunities to assess interest in a career in wood products and learn related skills.

- **Clear criminal background.** Ninety-two percent of wood products survey respondents did not feel that applicants' disqualification due to failure to pass a background check made it harder for them to fill positions. Interviewees also did not identify this as an issue.
- **Clean drug screen.** Almost half (46 percent) of forest and wood products respondents felt that applicant disqualification for failure to pass a drug screening affected the company's ability to fill positions. Interviewees also cited challenges with failed drug screens.
- **Other.** Rural areas face challenges attracting young workers with technical skills because these workers can often find better pay in urban areas.

Responses to skill development needs

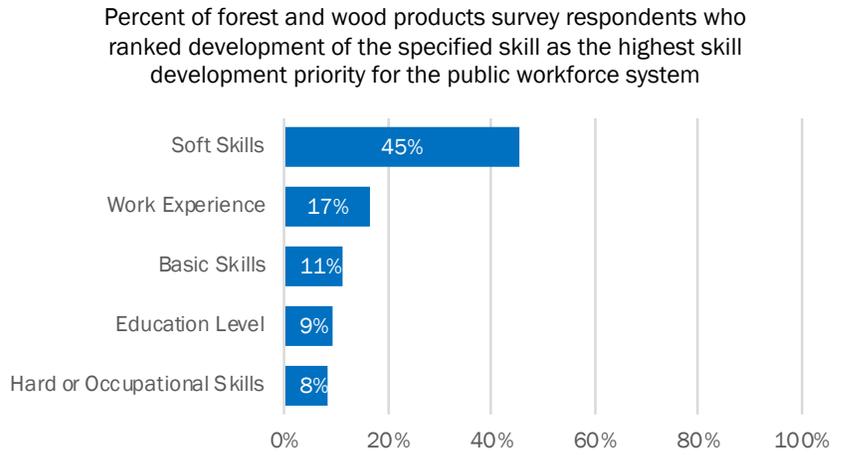
Wood and forest product businesses cited a heavy reliance on internal training to train their workforce. Survey respondents most commonly noted industry, business, or professional organizations (100 percent), in-house staff (85 percent), and on-the-job training (77 percent) as training resources. Interviewees stressed the primacy of the industry training their workforce because of the unique nature of the work and the focus on safety.

Other commonly used training resources are self-study/online training (54 percent) and apprenticeships (46 percent). Apprenticeships were discussed in depth by interviewees, who reflected on various capacity constraints limiting the number of skilled and licensed trade workers who would be able to take over jobs from journeymen/women as they retire. Stakeholders representing mills invest heavily in educating and training their workforce through apprenticeships, tuition reimbursement, paid internships with lodging provisions, and internally provided training. Interviewees also discussed the importance of using a career path in their companies to retain their workforce and grow employee skillsets.

Like stakeholders from other trade-heavy industries, the forest and wood products industry stakeholders discussed the stigma associated with employment in their sector. Oregon Forest Resources Institute and wood products companies are conducting rebranding efforts and reaching out to younger students and educators through a variety of education and awareness campaigns. Interviewees wanted to see more career and technical education programs and work-based learning opportunities available for younger students. Beyond increasing support for technical tradeswork, interviewees also wanted to see the education sector do more to develop soft and basic work skills in students.

Business leaders cited challenges collaborating with education programs and the public workforce system, including poor communication and the slow, complex nature of government. Forest and wood products survey respondents felt the public workforce system should focus on developing soft skills in Oregon's workforce, which aligns with their experiences of skills gaps in the industry.

Figure 3. The largest share of wood products survey respondents identified development of soft skills as the highest skill development priority for the public workforce system

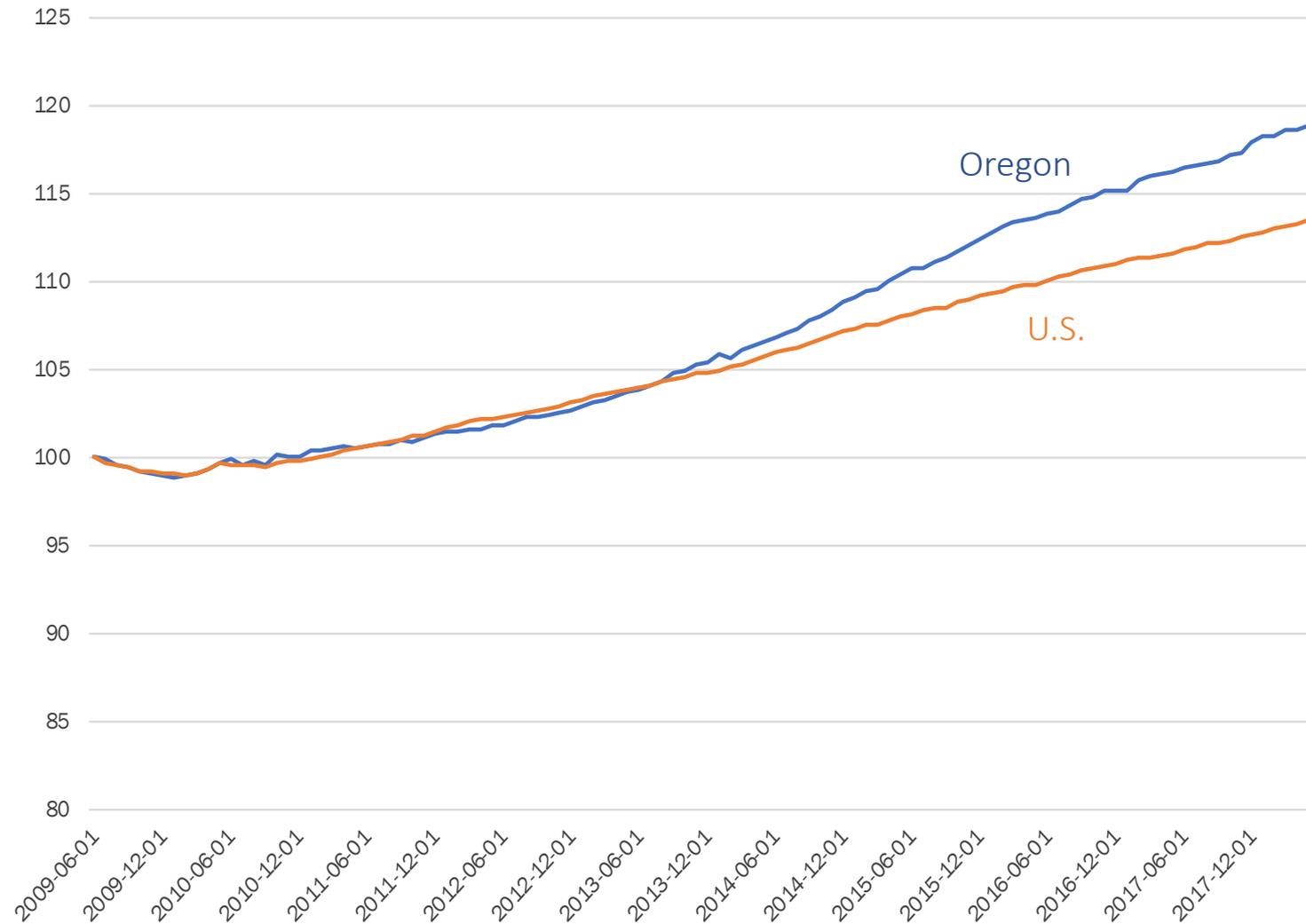


Oregon Talent Assessment

Perspectives on Skill Gaps, Shortages, and Mismatches

Talent has supported strong job growth

Total nonfarm employment, indexed (June 2009 = 100), Oregon and U.S.



Data source: American Community Survey PUMS

Skill Problems

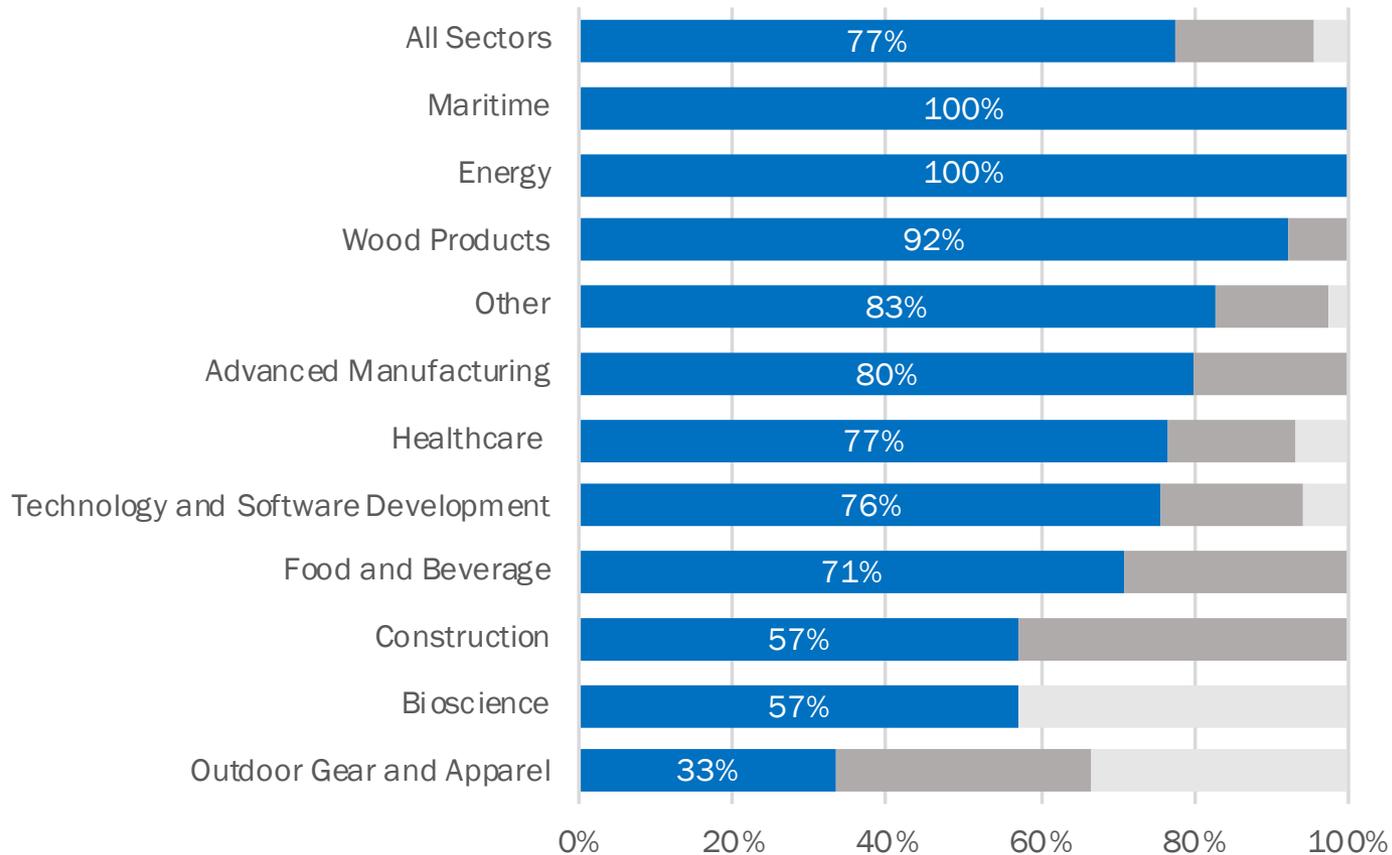
Categories of Skill Problems

- **Skill Gaps:** Widespread shortfalls in basic skills usually associated with a failure of the education system
- **Skill Shortages:** Shortfall of skills required by specific occupations
- **Skill Mismatches:** Supply and demand for skills is out of sync in either direction—oversupply or undersupply

Skill Gaps: Employers' Perspectives

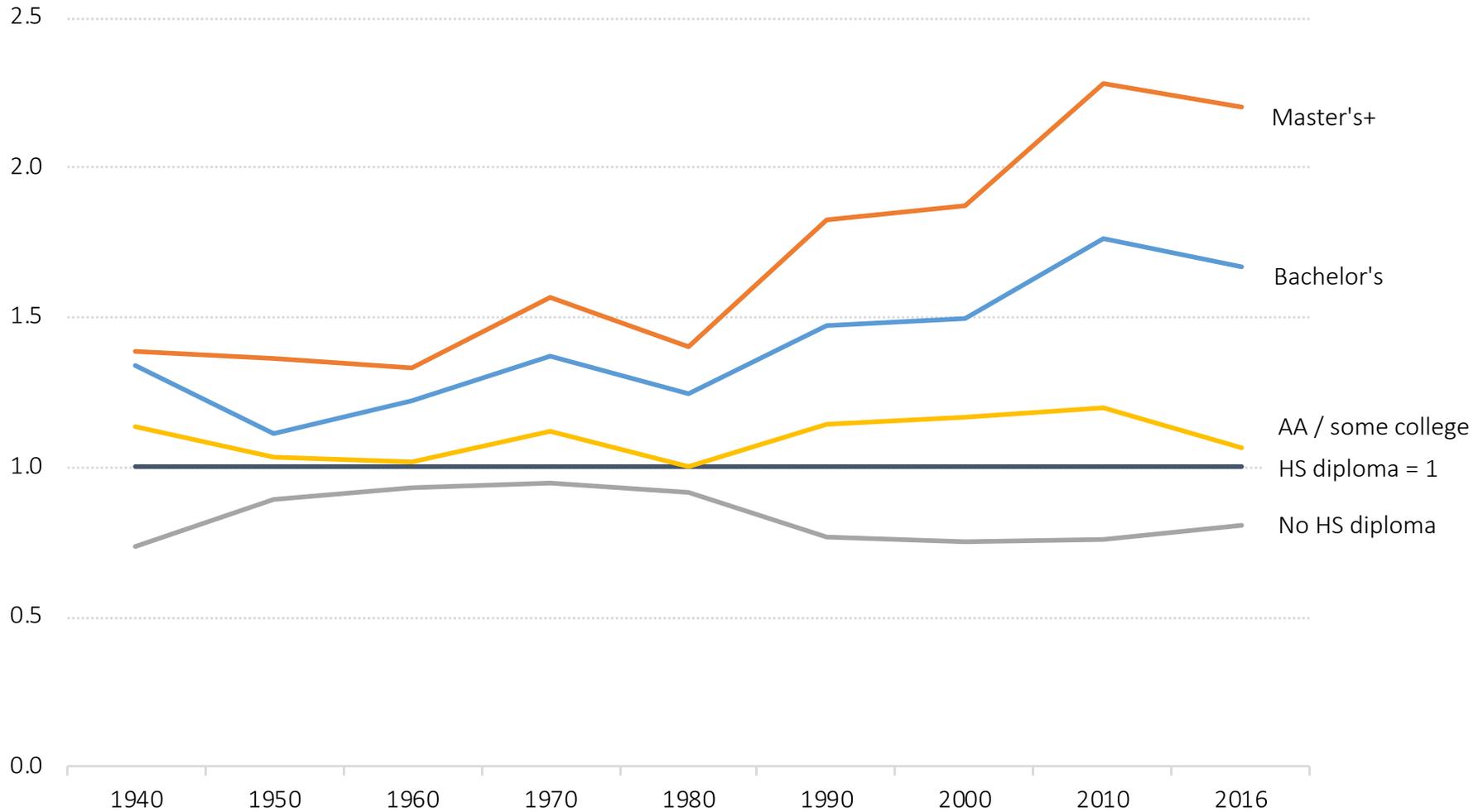
Percent of survey respondents, by industry, who agree that applicants have the basic skills required for vacant positions

■ Agree ■ Disagree ■ Don't Know/Not Applicable



Skill Gaps: What the Data Say

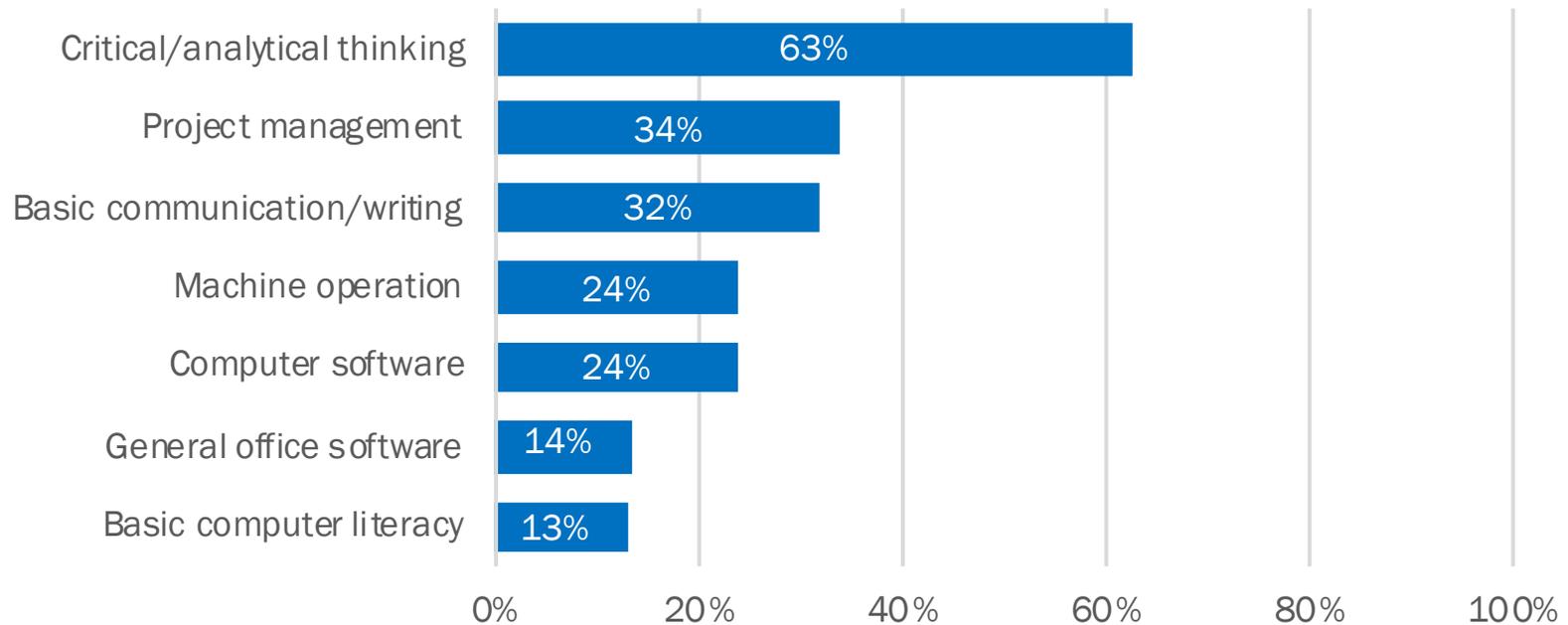
Median wages by educational attainment, relative to high school, Oregon, 1940-2016



Data source: US Census; American Community Survey PUMS

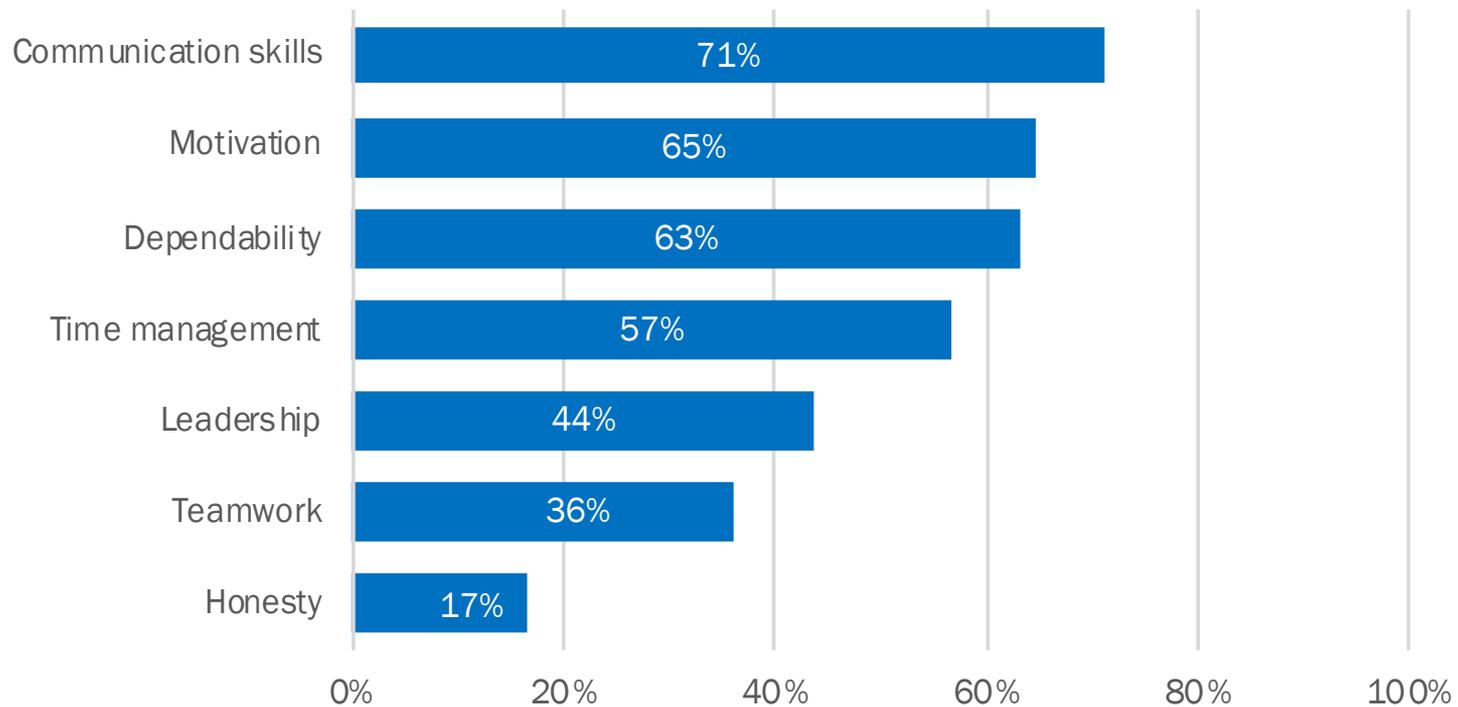
Skill Shortages: Employers' Perspectives

Percent of survey respondents who identified specific hard or occupation skills that are hard to find



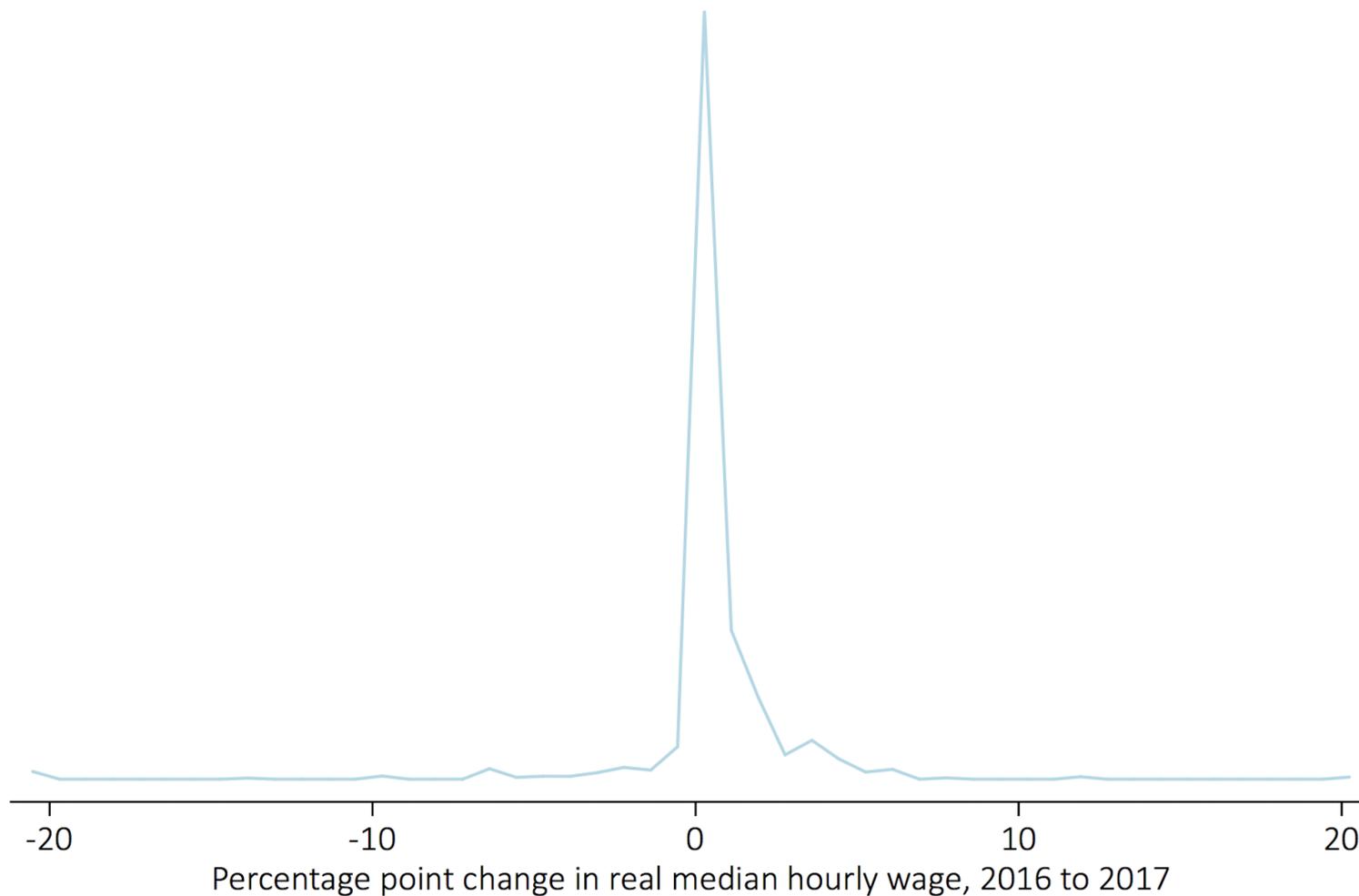
Skill Shortages: Employers' Perspectives

Percent of survey respondents who identified specific soft or interpersonal skills that are hard to find



Skill Shortages: What the Data Say

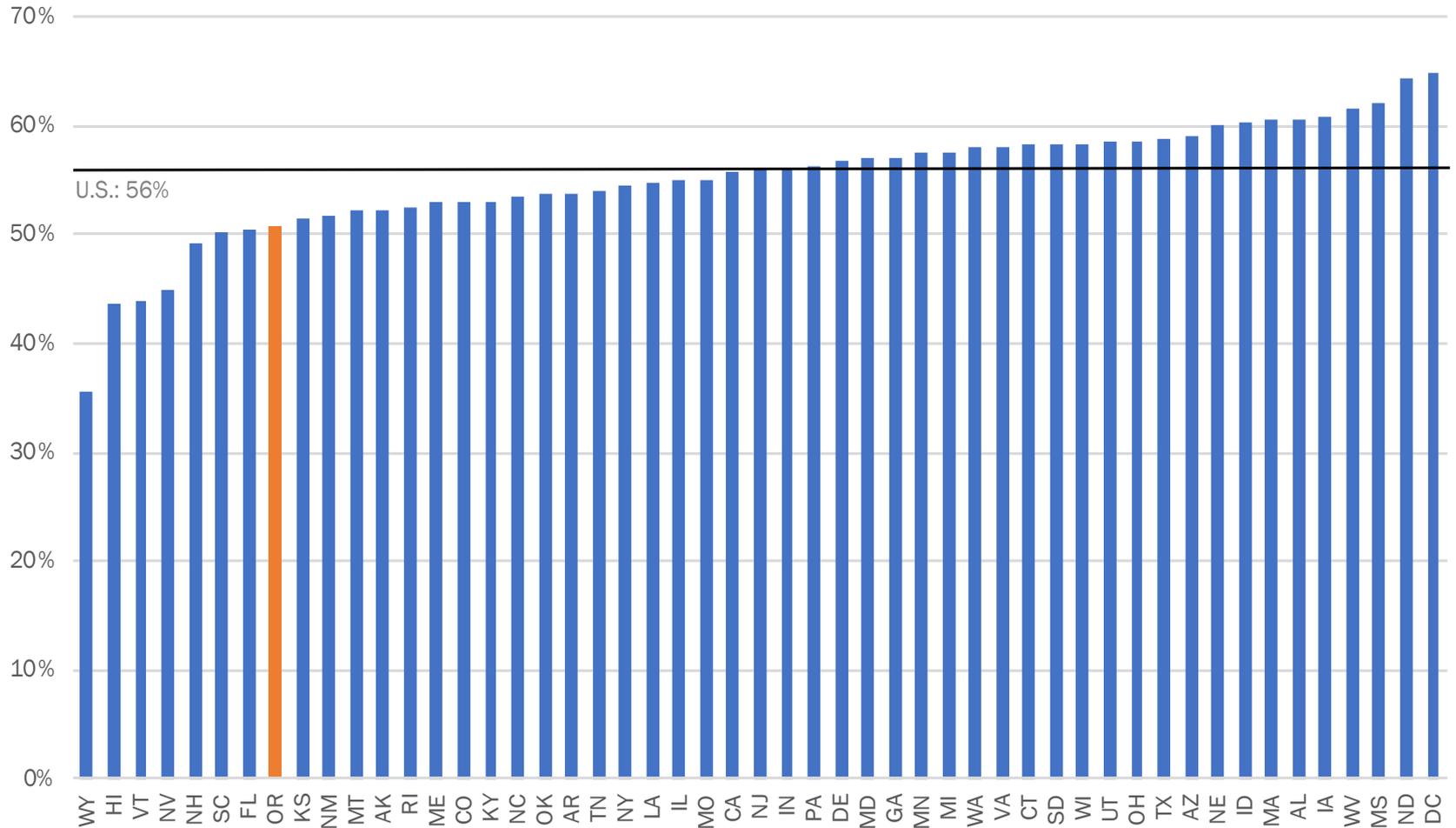
Distribution of Oregon occupations by percentage point change in real median hourly wage, 2016 to 2017



Data source: US Bureau of Labor Statistics

Skill Mismatches: What the Data Say

Share of college-educated 23-29 year old workers in occupations requiring college degrees

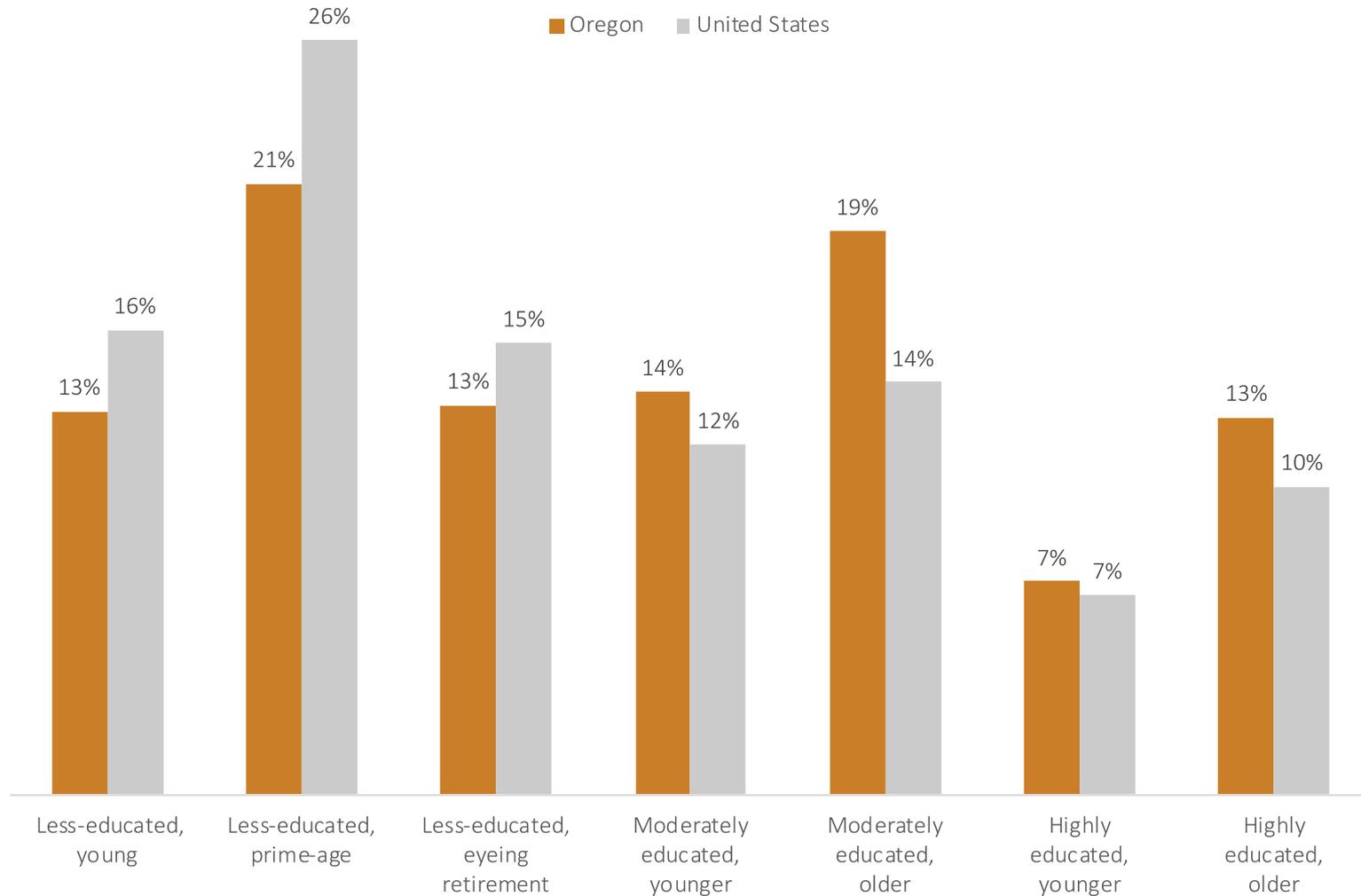


Data source: American Community Survey PUMS data and Oregon Employment Department

The Outlook

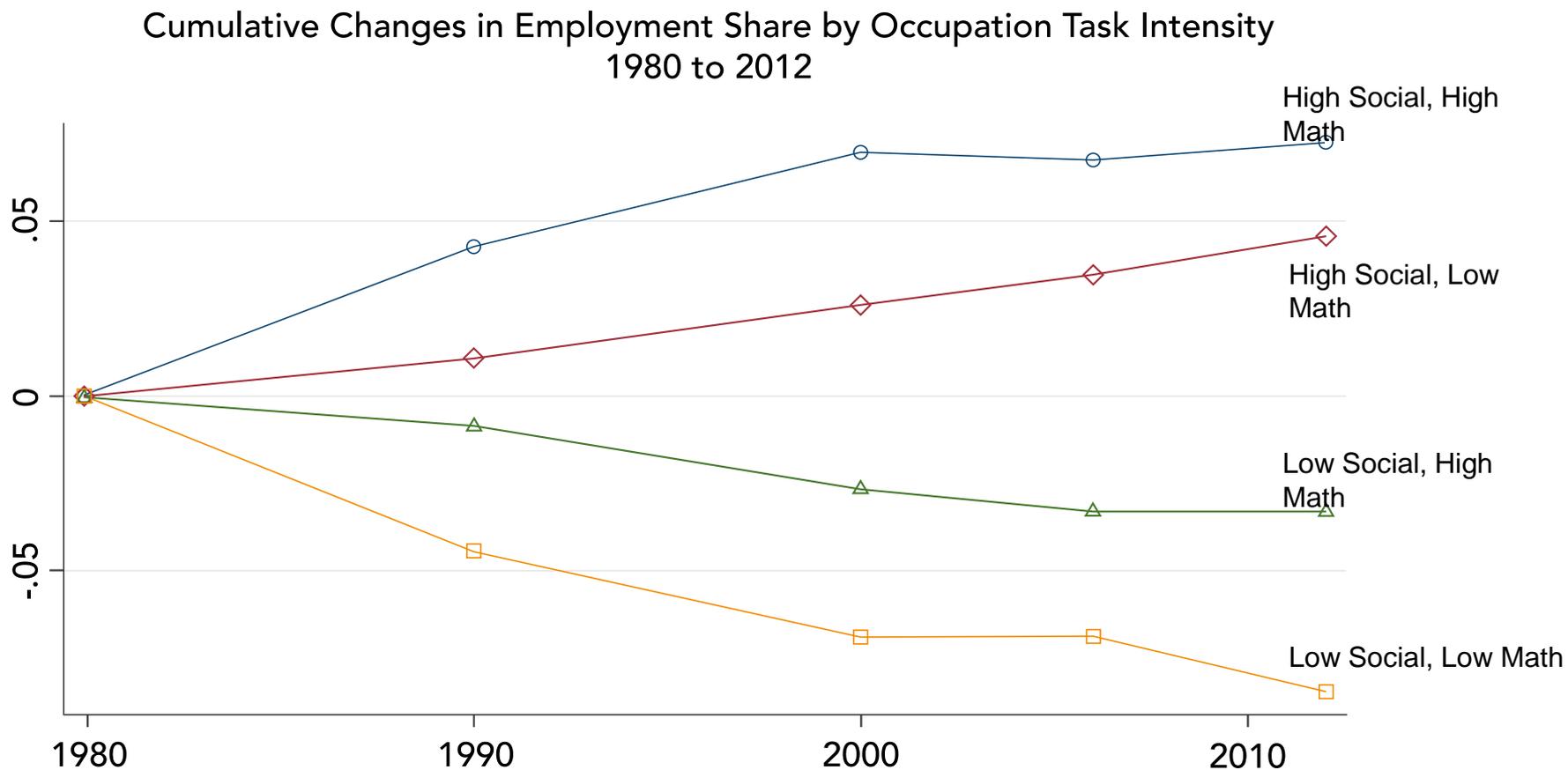
Sidelined Talent Late in the Economic Expansion

Distribution of the out-of-work population (ages 25-64), Oregon and U.S., 2014-2016



Source: American Community Survey PUMS data; Ross & Holmes (2017), The Brookings Institution.

Job Market Rewarding Humans for Being Human



Source: Deming, D.J. (2017). The Growing Importance of Social Skills in the Labor Market. *Quarterly Journal of Economics*, vol. 132 issue 4.

2017-2027 Job Projections by Skill Emphasis

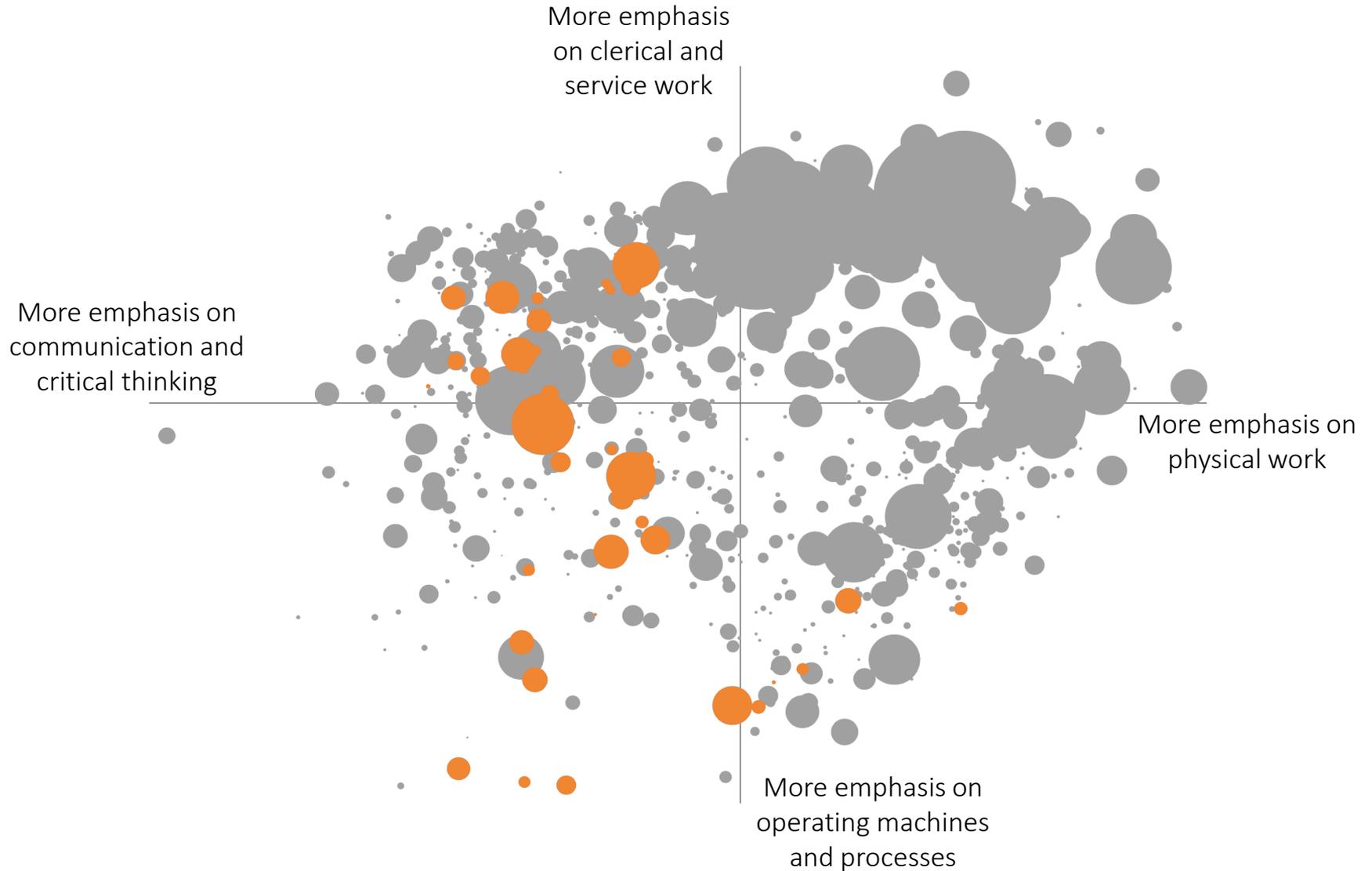
More emphasis
on clerical and
service work

More emphasis on
communication and
critical thinking

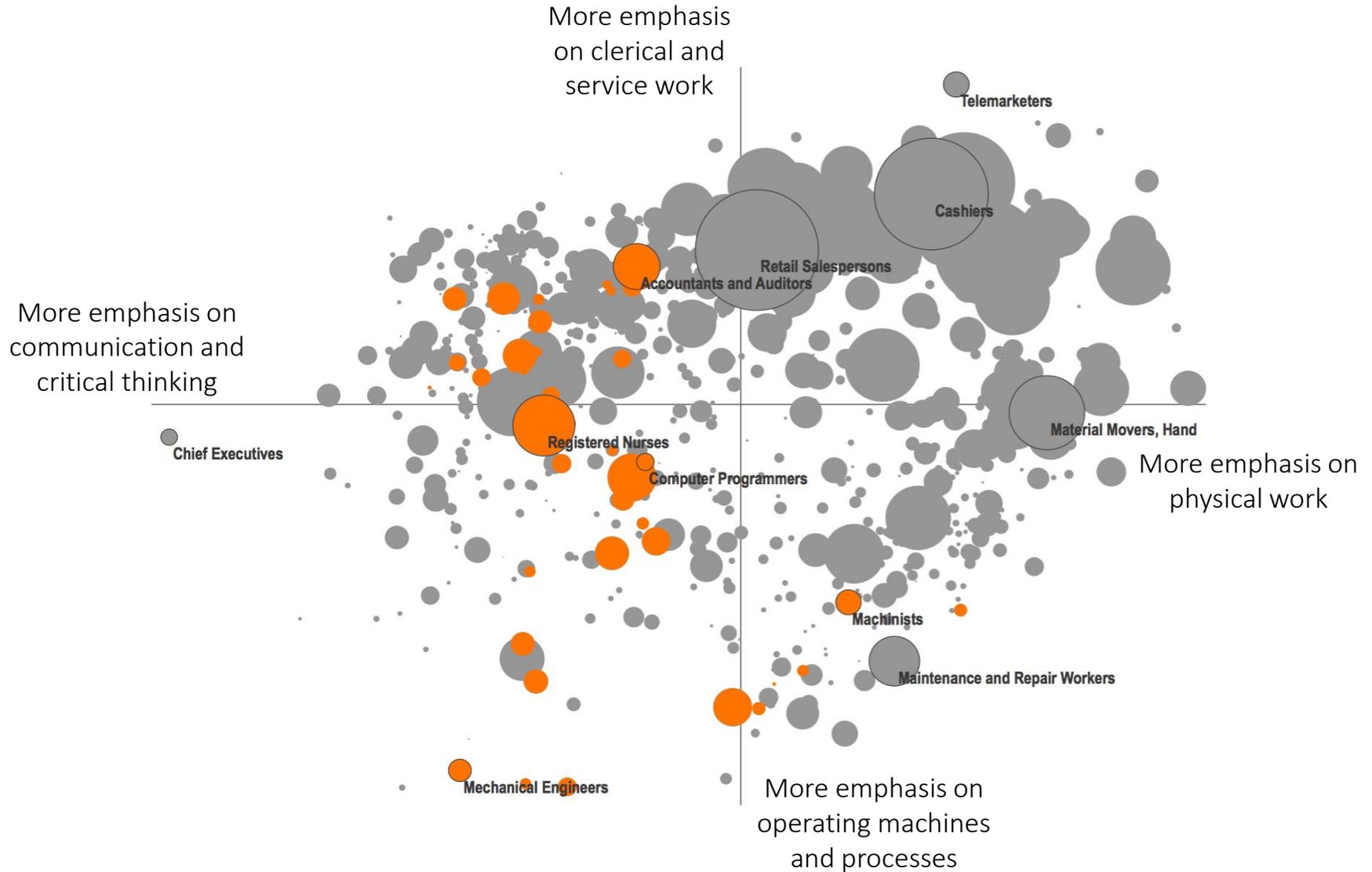
More emphasis on
physical work

More emphasis on
operating machines
and processes

2017-2027 Job Projections by Skill Emphasis



2017-2027 Job Projections by Skill Emphasis



The Work Ahead

1. Humans have to get better at being human, which has broad implications for education and training delivery.

2. “Known knowns” in the occupational and skill forecasts are limited—but exist. They create the space for employer-educator collaboration (e.g., around project management, communication, and writing skills, plus occupations that serve an aging demography, hard-to-automate occupations, and occupations that will serve a growing state).

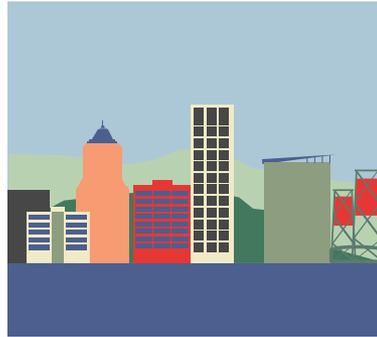
3. Oregonians who are unemployed or underemployed late in this economic expansion deserve priority attention as the state takes action under a new adult attainment goal.

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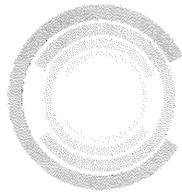
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The Lab's 21st Century Skills Badges



21st Century Skills Badging Challenge

How might we capture learning beyond the traditional transcript in ways that are meaningful to employers?

EXPLORE THE SUITE OF BADGES

[Learn More](#)

Over the past three years, the Education Design Lab has engaged a wide range of school administrators and faculty, students, employers, entrepreneurs, technologists and subject matter experts in designing and piloting 21st century skills badges that could be meaningful within the complex and rapidly changing hiring ecosystem.



To date, the work has yielded a transparent, replicable framework of competencies, learning outcomes as well as a set of student-tested practices that are focused on learner growth and transformation.

As the Lab continues piloting 21st century skills badges with schools this upcoming academic year, we will also increase our work with employers—testing the efficacy of the digital badges and understanding how they can be a valuable signal at all stages of the hiring process.

21st Century Skills Badges

Over the past three years, the Lab has engaged a wide range of school administrators and faculty, students, and employers in the co-design of meaningful 21st century skills badges that transform the way learners recognize and activate their skills.

12

SCHOOLS

Students design and implement pilots

300+

LEARNERS

Feedback on pilot badge earning processes and potential tech solutions

50+

EMPLOYERS

*Feedback on badge criteria
Student mock interviews
Insight into hiring practices*

The work has yielded a rigorous and transformative badge earning process, combining knowledge, assessment, and experience and reflection.

Each skill has 4 core sub-competencies that make up the badge. There is a performance-based assessment associated with each of the sub-competencies which must be completed to stack up to the awarding of the badge.



Initiative

The individual who has earned this badge has demonstrated 21st century leadership skills, which include the capacity to: **motivate and influence others; act as a catalyst; demonstrate self-awareness, and learn from experience.**

Lead without a title Individuals motivate and guide others; raising the morale of their group; and taking responsibility for what needs to be done.

Act as a catalyst Individuals galvanize action; identifying and seizing opportunities for change; and overcoming inertia.

Demonstrate self-awareness Individuals evaluate their own performance; recognizing their motivations; and managing their anxiety.

Learn from experience Individuals welcome and apply feedback; resisting defensiveness; and seeing "failure" as an opportunity for greater understanding.

Developed in partnership with Georgetown University



Collaboration

The individual who has earned this badge has demonstrated 21st century collaboration skills, which include the capacity to: **work productively with others toward a common goal by: valuing and strengthening relationships; incorporating diverse viewpoints, using active listening skills; and focusing on solutions rather than problems**

Strengthen relationships Individuals create networks through which they access and provide resources, information, and support.

Listen actively Individuals form productive working relationships; ensuring that others feel heard and valued; and grasping and retaining information.

Incorporate diverse perspectives Individuals enlarge the conversation; challenging their own thinking; and maximizing group effectiveness.

Focus on solutions Individuals create the forward momentum that advances the work of the organization.

Developed in partnership with University of Arizona



Creative Problem Solving

The individual who has earned this badge has demonstrated 21st century creative problem-solving skills, which include the capacity to: **exercise both divergent and convergent thinking; identify patterns; manage ambiguity; and apply an iterative process**

Exercise convergent and divergent thinking Individuals generate fresh ideas and apply a process for evaluating them.

Identify patterns Individuals recognize commonalities among situations that may at first appear unrelated; framing problems more accurately; and accessing relevant solutions.

Manage ambiguity Individuals trust the process; tolerating their own anxiety; and gathering information before settling on solutions prematurely.

Apply an iterative process Individuals systematically test ideas; challenging their own preconceptions; and expanding the range of potential solutions.

Developed in partnership with University of Virginia



Critical Thinking

The individual who has earned this badge has demonstrated 21st century critical thinking skills, which include the capacity to **gather and assess relevant information; identify patterns; question assumptions; and support ideas with evidence.**

Gather and assess relevant information Individuals ground problem-solving in facts rather than assertions.

Identify patterns Individuals make sense of data; recognizing commonalities among seemingly unrelated situations; and framing novel problems in familiar terms.

Question assumptions Individuals resist easy answers; probing more deeply; and improving the problem-solving process.

Draw conclusions Individuals use logic and reasoning to evaluate arguments, form judgments, and make recommendations.

Developed in partnership with Andrews University, Aquinas College, and Hope College



I feel that I can use the badge as a talking-point on my next interview. I can expand on the details, and even share my narrative of how I embody resilience.
- Junior, George Mason University



Intercultural Fluency

The individual who has earned this badge has demonstrated 21st century intercultural fluency, which includes the capacity to recognize and challenge one's own cultural biases; show curiosity; demonstrate self-awareness; and incorporate diverse perspectives.

Recognize and challenge one's own cultural biases Individuals reject "othering"; working effectively in multicultural settings; and avoiding ethnocentrism.

Show curiosity Individuals demonstrate cognitive and affective openness to and interest in change and difference.

Demonstrate self-awareness Individuals evaluate their own performance; recognizing their motivations; and managing their anxiety.

Incorporate diverse perspectives Individuals enlarge the conversation; challenging their own thinking; and maximizing group effectiveness.

Developed in partnership with Vassar College



Empathy

The individual who has earned this badge has demonstrated 21st century skills in empathy, which include the capacity to listen actively; validate others' feelings and perceptions; incorporate diverse perspectives; and recognize others' needs and values.

Listen actively Individuals forming productive working relationships; ensuring that others feel heard and valued; and grasping and retaining information.

Provide validation Individuals create a safe and participatory environment in which each member of a team can contribute.

Identify others' needs and values Individuals put themselves in others' shoes.

Incorporate diverse perspectives Individuals enlarge the conversation; challenging their own thinking; and maximizing group effectiveness.

Developed in partnership with Bay Path University



Oral Communication

The individual who has earned this badge has demonstrated 21st century oral communication skills, which include the capacity to speak with clarity and precision; adjust tone and word choice for both formal and informal settings; listen actively, and recognize nonverbal cues.

Speak with clarity and precision Individuals communicate ideas and information effectively, minimizing unintended confusion, misinformation, and offence.

Use appropriate tone and word choice Individuals adjust their style and approach for different settings; building rapport; and communicating up and down the organization.

Listen actively Individuals recognize and respond to both verbal and nonverbal cues; by ensuring that others feel heard and valued.

Tell stories to express ideas Individuals capture their audience; using the components of storytelling to draw attention.

Developed in partnership with Makerere University and Tunis Business School



Resilience

The individual who has earned this badge has demonstrated 21st century resilience, which includes the capacity to learn from experience; exhibit flexibility; demonstrate self-awareness, and focus on solutions.

Learn from experience Individuals welcome and apply feedback; resisting defensiveness; seeing "failure" as an opportunity for greater understanding; and cultivating optimism by consciously challenging negative self-talk.

Exhibit flexibility Individuals adapt and adjust to new and changing situations.

Demonstrate self-awareness Individuals evaluate their own performance; recognizing their motivations; and managing their anxiety.

Focus on solutions Individuals create the forward momentum that advances the work of the organization.

Developed in partnership with George Mason University

Interested in adopting the Badges?

Contact us at labinfo@eddesignlab.org

The Education Design Lab was founded to bring the latest in design, innovation tools, and processes to bear on the 'wicked' problems facing education today. The Lab's team combines deep vertical expertise in higher education with training in design and innovation processes. Beginning with an obsessive focus on the student journey, understanding the dreams and challenges of "non-traditional" learners, we help our partners design, test and pilot transformative changes in the postsecondary education landscape.



STUDENT REACTIONS



The Resilience Badge is unique...I have left with a greater understanding of myself and my abilities. I am mindful to the fact that I need to discuss this experience to other peers and employers. I feel that I can use the badge as a talking-point on my next interview. I can expand on the details, and even share my narrative of how I embody resilience.

Junior

George Mason University



Tunis Business School students share their reactions to the Oral Communication Badge pilot.

21st Century Skills Badges

What's behind the badges?

With the goal of sending a united signal to employers, the Lab and partners have built 21st century skills badges that share important criteria, components, and learning outcomes.

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Now that 300+ learners have been through our pilots, and 50+ employers have weighed in, we are more convinced than ever that the intentional development and assessment of 21st century skills can be a game changer...

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Want to learn about our latest work advancing 21st Century Skills? Watch our webinar!

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RESILIENCE AT GEORGE MASON UNIVERSITY

George Mason University offers students opportunity to participate in Resilience badge workshop.

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Education Design Lab Partners with Leading Credentialing Platform to Help Universities Close the 21st Century Skills Gap

Education Design Lab, a nonprofit that applies design thinking to create new pathways from education to employment, announced the launch of a new partnership with Credly that will designate participating colleges and universities as authorized issuers of nationally-designed digital credentials that recognize workforce-relevant skills.

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The Governor's Work Ethic Certificate

Bridging Education and Success

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PURPOSE OF THE GOVERNOR'S WEC IMPLEMENTATION GUIDE

The Governor's State Workforce Innovation Council (SWIC) views the development and adoption of a community and employer recognized Work Ethic Certificate (WEC) as an important tool that can help provide a pipeline of skilled high school graduates into today's workforce. The employability skills recognized in the Governor's WEC have been vetted by Hoosier employers, community based organizations and post-secondary education institutions and are designed to encourage students to meet the benchmarks that will assist them in their college or career goals.

Under the leadership of the SWIC, the Department of Workforce Development (DWD), in partnership with the Greater Clark County School Corporation (GCCS) and a special taskforce including members of the Indiana Department of Education (IDOE), Vocational Rehabilitation (VR), Indiana Chamber of Commerce and local employers developed the WEC Implementation Guide designed to provide instructions and sample documents for local school corporations to implement their own WEC program for high school students. The implementation guide also contains planning tools and data tracking worksheets that can be used to measure the program's effectiveness during the implementation phase.

All information contained in this guide are recommendations based upon the experiences of GCCS and is meant to serve as a starting point. The most effective WEC programs contain local guidance and feedback from the business community in order to ensure the students are prepared with the most in-demand industry employability skills. Sample documents contained in this guide can be modified to suit the needs of the individual school corporation and community.

WORK ETHIC CERTIFICATION PROGRAM HISTORY

In 2006, the Indiana DWD scaled the WEC model from East Allen County Schools statewide. Although this program contained the soft skills deemed necessary for employment, it lacked several components that would allow it to be a sustainable program in the participating school corporations. There was no employer driven recognition of the value of this program, and without local and state champions of this work, it was eventually discontinued.

In the 2013-14 school year, GCCS decided to take a comprehensive look at student soft skill proficiency. At that time, a few of the district's 20 schools had implemented Positive Behavior Interventions and Supports (PBIS) programs, and a decision was made to implement PBIS in all district schools. PBIS focuses on identifying student behavioral expectations that staff members will teach and positively reinforce school-wide.

Around that same time period, discussions began about implementing a WEC program. This concept was familiar to the district's Superintendent, Dr. Andrew Melin, as he had experience as a high school principal in the East Allen County Schools in 2006 during DWD's statewide implementation of the WEC. The need for a WEC was identified as a best practice by GCCS' College and Career Readiness Advisory Council, which is comprised of K-12, higher education, non-profit and for-profit employers, and elected officials as a necessary step to meet the talent pipeline needs of the regional economy.

While planning for WEC implementation, the GCCS administrative team identified the need to merge the district's PBIS and WEC efforts. Utilizing the district's administrative team and College and Career Readiness Advisory council, a single program combining PBIS and WEC was created and called PRIDE: Persistence, Respectfulness, Initiative, Dependability, and Efficiency.

The PRIDE program, implemented in GCCS during the 2014-15 school year, is designed to provide students from pre-school through 12th grade with a foundation of work ethic and character skills that will translate into a future workforce with the soft skills needed to help businesses and communities thrive. PRIDE, when taught and reinforced on a daily basis, can dramatically improve student behavior and create a positive school culture.

While PRIDE focuses on five character skills, the culminating event of the PRIDE program is the ability for graduating seniors to earn a Work Ethic Certification that documents a student's proficiency in those five character skills as well as in four quantifiable measures, i.e., attendance, behavior, community/school service, and grade point average. The WEC verifies high school graduates possess the soft skills necessary to succeed in any post-secondary endeavor and, when supported and implemented by businesses and organizations, greatly enhances a community's ability to meet workforce needs.

Through an ongoing partnership between GCCS and the Indiana DWD, the Governor's WEC, modeled after the successful PRIDE program, launched in the 2016-17 school year for a group of pilot school corporations.

TIMELINE OF ACTIVITIES

As mentioned in the historical information, GCCS Corporation served as the initial pilot implementation site of the Governor's WEC program. Below is a suggested timeline of activities that will help local school corporations convene a College and Career Advisory Council or similar body of committed employers, post-secondary institutions and community based organizations to assist in the planning and implementation process.

To best serve students with time to understand the WEC competencies in order consistently demonstrate them at school and in extracurricular activities, there are identified planning and implementation years. An effective and widely-regarded WEC program will not happen in one school year.

School Year 1:

- Establish a College and Career Readiness Advisory Council by the end of the first semester (more information on the Advisory Council on pages 10-14).
- Schedule meetings with the Advisory Council during the second semester to provide them more information the about the WEC Program and develop an action plan.
- Develop business partnerships to understand how they will honor the WEC.
- Meet with 10th and/or 11th grade students prior to the end of the year and inform them about the program.
- Send written overview of the program home to the parents.
- Provide staff professional development to inform them about the program and their roles in implementing the WEC Program.

School Year 2:

- Meet with 11th and/or 12th grade students within the first two weeks of school to:
 - Review program requirements;
 - Discuss with students the value of earning the WEC;
 - Distribute criteria checklists;
 - Establish deadline for students to enroll in the program.
- Schedule meetings with parents of 11th and/or 12th graders to:
 - Review program requirements and deadlines (provide copy of criteria);
 - Discuss the value of earning the WEC.
- Establish and communicate system to collect and monitor student data and progress.
- Order sashes, awards, etc. that will be used to acknowledge the WEC recipients at commencement.
- Establish and communicate deadlines for:
 - Community service hours to be completed and forms submitted;
 - Cut-off date for monitoring attendance and discipline.
- Submit student names of those who could potentially receive the signed Governor's WEC to DWD (April/May).
Establish procedures for staff to sign the student's criteria letter:
 - Do not allow students to present their forms to staff;
 - All staff in the building should be utilized;
 - Allow 2-3 days for this to occur;
 - Use a location that can be secured and locked.
- Finalize list of WEC recipients and submit to the Department of Workforce Development

GOVERNOR'S WEC OVERVIEW

Students participating in the Governor's WEC program will be required to demonstrate the following employability skills consistently throughout the school year of participation.

The following 5 competencies will require the signature of three (3) teachers who have had the student candidate in class for the entire academic year.

- Student is able to persevere through challenges and problem-solve;
- Student is accepting and demonstrates service to others, possesses a positive attitude and communicates clearly;
- Student is a self-starter and a critical thinker;
- Student is reliable and demonstrates responsibility and teamwork;
- Student is organized, punctual and demonstrates self-management.

Student candidate will also be required to meet the following four (4) objective competencies for the entire academic year.

- Student demonstrates academic readiness and has a cumulative GPA of at least 2.0 and has met or is on track to meet all graduation requirements;
- Student attendance rate is 98% or higher;
- Student has 1 or fewer discipline referrals for the school year;
- Student has completed a minimum of 6 hours of community service or volunteerism during the academic calendar.

Student must meet a score of 9 of 9 in order to obtain the Governor's WEC.

GOVERNOR'S WEC APPLICATION PROCESS

Below is the approved process for participation in the Governor's WEC program through the SWIC Youth Committee.

- Local schools shall submit to the Department of Workforce Development, via email, a completed program application of any WEC program that they wish to be signed by the Governor of the State of Indiana and the Commissioner of Workforce Development.
- Local schools shall include letters of support from local employers.
- All applications that directly follow the prescribed Employability Skills Benchmarks, shall receive notification of approval from the Department of Workforce Development within 10 business days.
- Should the local WEC application and rubric deviate from the Employability Skills Benchmarks, the school shall submit justifications for these changes or additions. Justifications shall include employer support.
- Within 5 business days from receipt of all emailed applications, the Department of Workforce Development shall send, via email, any submitted application that deviates from the Employability Skills Benchmarks established in Appendix A to the SWIC Youth Committee.
- Within 10 business days from receipt of the email, SWIC Youth Committee members shall submit to the chair whether they approve or deny any deviations from the Employability Skills Benchmarks established in Appendix A, or if they have any additional questions for the school prior to making a decision.
- Once all questions have been addressed, the SWIC Youth Committee will vote at their next meeting on any pending WEC submissions.
- All approved submissions will be signed by the Governor of the State of Indiana and the Commissioner of Workforce Development.
- Beginning in school year 2017-2018, all schools who wish to have their certificates signed shall submit their program rubric to the Department of Workforce Development and SWIC Youth Committee no later than September 30 of the school year for which they wish to have their certificates signed. Schools only need to submit their program rubric to the SWIC if it is 1.) A new program, or 2.) The rubric has changed from the previous school year, however, program outcomes will be reviewed annually (see next bullet).
- By June 30 of each year, a school shall submit the outcomes of the program for the previous school year. DWD shall review each program's outcomes to determine if a school corporation is meeting the expectation of the department, the SWIC and the Governor's office.

OVERVIEW OF GCCS CORPORATION'S PRIDE PROGRAM

The mission of GCCS is to assure that every student graduates accepted to a post-secondary opportunity, i.e., four-year college, two-year college, military, workforce., etc. In order to meet that goal, students must not only have academic skills, but also the soft skills or process skills necessary to succeed in their chosen post-secondary setting.

To this end, Greater Clark staff members have worked to merge several systems into one system to instruct students on the expectations that exist in the school and career settings. These three systems, College Career Readiness (CCR), Positive Behavior Interventions and Support (PBIS), and Work Ethic Certification have merged to become the PRIDE Program.

At the start of the 2014-15 school year, PRIDE was introduced to all school staff, students, parents, and community supporters. PRIDE is essential for our students not only as a means to teach and reinforce behavioral expectations in our schools, but, more importantly, to assure our students graduate prepared to succeed in their chosen post-secondary opportunity.

The acronym PRIDE stands for:

Persistence – persevere through challenges, problem-solve

Respectfulness – accept and serve others, possess a positive attitude, communicate clearly

Initiative – self-starters, critical thinkers

Dependability – academic readiness, reliable, demonstrate responsibility and teamwork

Efficiency – organized, punctual, self-management

The PRIDE Program allows schools to address common expectations and assess student performance as it relates to CCR, PBIS, and Work Ethic. Teaching these expectations and measuring student performance provides the data to determine each student's college and career readiness.

Schools incorporated PRIDE into their building-level plan during the 2014-15 school year to guide them in teaching PRIDE expectations and to acknowledge positive student behavior. Seniors who met specific PRIDE expectations were eligible to earn a Work Ethic Certification, supported by our Region 10 Works Council. Students wishing to obtain the Work Ethic Certification were measured in nine areas of academic and work ethic competency. Five subjective measures (PRIDE) required three teachers each to sign stating that a student had met these requirements. Four additional objective competencies, i.e., community/school service, attendance, academic readiness, and behavior were obtained from the district's student management system to indicate competency in measurable areas. At the end of the 2014-15 school year, WECs, signed by Governor Pence, were distributed to 170 Greater Clark graduates, which was 24% of the senior class.

In 2015-16, 208 Greater Clark graduates (30%) earned the WEC. The Work Ethic Certification program was also implemented with 5th and 8th graders with 31% of 5th graders and 24% of 8th graders earning the certification. In an effort to embed PRIDE into classrooms daily, a numerical PRIDE score, based upon a district created rubric, was given to all students on each nine week report card. Out of two points possible, K-12 students averaged 1.5 for the school year. PRIDE has proven to be rigorous and respected by all stakeholders.

GCCS PRIDE RUBRIC OVERVIEW

In an effort to embed **PRIDE** into classrooms daily, a numerical **PRIDE** score that is based on a district created rubric (following page), is given to all WEC student participants on each nine week report card. Every teacher gives every student a score based on the following scale:

- 2 Exceeds Expectations
- 1 Meets Expectations
- 0 Below Expectations

The **PRIDE** rubric was created by a team of educators and reviewed by the district's College and Career Readiness Advisory Council.

Teachers are not obligated to track daily **PRIDE** grades, but must be able to provide justification to administrators and/or parents if necessary.

All teachers are expected to teach and positively reinforce **PRIDE** on a daily basis. Being responsible for giving a **PRIDE** score for each student on every report card enhances accountability to this expectation.

2015-2016 GCCS PRIDE RUBRIC

SCORE	Persistence	Respectfulness	Initiative	Dependability	Efficiency
2 - Exceeds Expectations A teacher would say: "Student is a positive role model in this school."	Student consistently demonstrates persistence through challenges and problem solving.	Student consistently demonstrates both respectful and helpful behavior to fellow students and all school staff. Student seeks and accepts the opinions and input of others.	Student initiates curiosity and an interest in learning. Student independently engages in learning activities. Student consistently perseveres; problem solves, and actively seeks assistance when needed.	Student consistently demonstrates academic readiness and reliability. Student acts as a leader or exemplary team member. Student consistently values and encourages all member of teams.	Student is consistently punctual and prepared. Student almost always completes homework and classroom assignments in a timely fashion. Student almost always demonstrates strong personal, time management, and flexibility skills.
1 - Meets Expectations A teacher would say: "Student demonstrates this in observable ways."	Student demonstrates persistence through challenges and problem solving.	Student demonstrates both respectful and helpful behavior to fellow students and all school staff. Student listens and accepts the opinions and input of others.	Student demonstrates curiosity and an interest in learning. Student engages in learning activities. Student demonstrates perseverance, seeks assistance when needed.	Student often demonstrates academic readiness and reliability. Student is a strong team member. Student usually values and encourages all member of teams.	Student is often punctual and prepared. Student often completes homework and classroom assignments in a timely fashion. Student often demonstrates strong personal, time management, and flexibility skills.
0 - Below Expectations A teacher would say: "Student could use support here."	Student needs improvement in demonstrating persistence through challenges and problem solving.	Student seldom demonstrates both respectful and helpful behavior to fellow students and all school staff. Student usually ignores the opinions and input of others.	Student seldom demonstrates curiosity and an interest in learning. Student rarely engages in learning activities. Student lacks initiative in seeking academic assistance.	Student rarely demonstrates academic readiness and reliability. Student rarely participates in team activities. Student rarely values and encourages all member of teams.	Student is rarely punctual and prepared. Student rarely completes homework or assignments in a timely manner. Student does not demonstrate efficiency skills

COLLEGE AND CAREER READINESS ADVISORY COUNCIL

The most effective change in the implementation of the WEC from 2006 to present, is Greater Clark County's use of a College and Career Readiness Advisory Council.

Purpose:

- To help improve student achievement by increasing relevancy of content;
- To develop a stronger talent pool;
- To promote economic development in the region.

Suggested Membership:

- Education, business, and government leaders.
- The following are specific examples from the GCCS advisory council:
 - Hospital CEO
 - President & CEO of One Southern Indiana
 - Director of Business Retention One Southern Indiana
 - Executive Director Region 10 Workforce Board
 - Govt. & Community Relations Mgr. for Duke Energy
 - Regional President of Credit Union
 - Commercial Real Estate Broker
 - Owner of Lumber Company
 - Architect
 - President & CEO of Construction Company
 - Mechanical Engineer from HVAC Co.
 - Executive Director of Local Independent Electrical Contractors
 - President of IT Company
 - President of Junior Achievement Kentuckiana Inc.
 - President & CEO of Family Scholar House
 - Big Brothers Big Sisters of Kentuckiana
 - Metro United Way-Southern Indiana Director
 - Chancellor of Local Ivy Tech Campus
 - Director from Purdue Polytech
 - Admissions Director from Indiana University Southeast
 - Career Development Center-Asst. Director-IUS
 - President or CEO of Manufacturing Companies (3)
 - Ford Motor CO. HR Rep/Ford NGL Partnership Mgr.
 - Director of the Ports of Indiana
 - Amazon Fulfillment Services – Plant Manager
 - Human Resources Directors
 - Mayor
 - State Senator
 - Regional Director from U.S. Senator's Office
 - Attorney
 - Regional Director – Career & Technical Education
 - School District Representatives (e.g. Superintendent & Assistant Superintendent, College & Career Readiness Coordinator, Department Supervisors/Directors, Principals, Counselors, Teachers)

Action Plan:

The next step is the development of a CCR Action Plan which should include the following:

- Goals
- Action Steps
- Timeline for Implementation
- Current Data
- Target Data
- Data Source
- Position/Person Responsible
- Actual Results

The advisory plan goals could include:

- Implement the Work Ethic Certification program.
- Establish partnerships with Business/Industry, Governmental Agencies and Post-Secondary Institutions to create community support for the WEC.
- Develop a campaign to make parents, students and the community aware of the WEC Program.

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SAMPLE COLLEGE AND CAREER READINESS ADVISORY COUNCIL

ACTION PLAN

Sample Action Plan						
Strategic Objective	Action Items	Current Data	Target Data	Timeline	Responsible Party	Actual Results
Nurture an outstanding work ethic in Economic Growth Region 10 students as needed to succeed in any workplace or career endeavor	1. Increase awareness of the value of a work ethic certification to students, parents, educators, and business/organizational leaders.			14/15 School Year	Greater Clark CCR Team	Presentations made to GCCS seniors and their parents, community groups, and regional and state level groups.
	2. Develop a set of criteria for the Work Ethic Certification that be supported by the educational and business community.			14/15 School Year	Greater Clark CCR Team	Nine criteria established by GCCS staff and CCR advisory
	3. Implement the Pilot of Work Ethic Certification program with Greater Clark Schools high school and Prosser seniors.			14/15 School Year	Greater Clark CCR Team	170 GCCS seniors and 34 Prosser seniors earned certification
	4. Expand the Work Ethic Certification pilot program to include both the 5 th grade and 8 th grade levels and implement PRIDE curriculum to teach character skills to pre-school through 12 th grade students. Student progress toward earning the WEC will be monitored quarterly.	Meetings have been held with all 12 th grade students and for parents at all high schools. Letters sent home to all parents. Students signed up: 12 th Grade = 568 Students (73% of Class)	At least 25% of all 12 th graders will earn the WEC: 12 th Grade = 194 Students	15/16 School Year	Greater Clark CCR Team	Calendar attached.

	<p>5. Recruit employers who will recognize and champion a WEC.</p> <p>Prepare an informational packet that can be shared with business partners.</p> <p>Develop a list of things that businesses could do to honor and recognize the WEC.</p> <p>Individual meetings with current and future business partners to finalize how each will recognize the WEC.</p>	<p>During 2014/15 partnership meetings 90 organizations stated they would support the WEC.</p> <p>Following items are complete: -Informational letter -Student checklist with the 9 required criteria. -Form businesses will use to confirm how they will honor the WEC. -Sample certificate.</p> <p>Draft list has been developed.</p> <p>Spreadsheet has been created and will be used to document meetings, business information and how each will honor the certificate.</p>	<p>At least 100 employers will commit to the WEC.</p>	<p>15/16 School Year</p>	<p>Greater Clark CCR Team</p>	
	<p>6. Encourage and Support the implementation of the Work Ethic Certification in all region 10 school corporations.</p> <p>Mr. John Dattilo and CCR Counselor will contact each corporation to request a meeting.</p>	<p>Meetings to date: South Harrison 8/20/2015. Scottsburg High 8/25/2015.</p>	<p>At least two school districts and/or high schools will commit to implementing the WEC</p>	<p>15/16 School Year</p>	<p>Greater Clark CCR, Prosser Admin, John Dattilo</p>	<p>South Harrison plans to implement the WEC 2016/17. Scottsburg High implementing WEC 2015/16 (Attachment)</p>

SAMPLE GCCS ADVISORY COUNCIL MEETING AGENDA



College and Career Readiness Advisory January 29, 2015

- I. Welcome
- II. School-Based Advisory Update – Michael Denny
- III. Career Center Update – Jeanne Null
- IV. Work Ethic Certification – Jan Myers and Christi Steller
- V. Discussion – Dr. Melin
- VI. Adjourn
- VII. Next Meeting: Wednesday, April 22 from 11:30 a.m. – 1:00 p.m.
(GCCS Administration Building)

BUSINESS PARTNERSHIPS

Business partners who will recognize and honor the WEC are crucial to the success of the program. Following are some strategies and activities used by GCCS when engaging their local business community.

- Business leaders were included as members of the College and Career Advisory when it was established. This allowed them to be engaged in the process from day one and play an integral role in developing the criteria for the program and in identifying ways businesses could potentially recognize and honor the WEC. The business partnership letter is reflective of the work done by the advisory.
- It is important to have representatives from across the business community to ensure that all sectors have a voice in the process. The GCCS advisory has representatives from manufacturing, logistics, building and construction, the health industry, the financial sector, public service, non-profit organizations, the chamber of commerce or a comparable organization, post-secondary education and K-12 education. The advisory also reflects diversity in the kinds of roles the advisory members have within their respective organizations. Included are business owners, CEO's, plant managers, human resource specialists, state representative and senator, liaison from U.S. Senators office, financial managers and directors of non-profits. This also includes a post-secondary education chancellor, a campus director, an admissions director and others from leadership positions. From K-12 education, members include teachers, counselors and representatives from the administration. Experience has shown that you can start with a small but representative advisory and as the program develops others will want to join and become a part of what you are doing.

Following are some of the ways GCCS informed and engaged their business community:

- Current advisory members shared information about the program with their colleagues and counter-parts;
- Informational materials and a brochure were created and these were used to create talking points. This provides consistency to the message being shared with potential business partners.
- Staff attended chamber of commerce events, job fairs, business expositions, community days and any other events where we could tell others about the program and provide them with information;
- Conducted door-to-door visits or cold calls to make businesses aware of the program.

The sequence of activities varied based on circumstances but GCCS used the following process for development of their partnerships:

- Visit the business (cold call) and ask that informational materials and contact information be shared with a company representative;
- Place a follow-up call within two to three days to schedule a meeting with a company representative;
- Use the meeting to provide a program overview, share program materials and answer questions;

- Second follow-up call was made at which time the partnership was finalized;
- If already engaged with a company via the advisory council or other college and career readiness activities then utilize the partnership letter to connect via email and follow that up with a phone call.

The resources available within each school corporation will vary which means the process will look different but can still result in an effective implementation of the program.

SAMPLE BUSINESS PARTNERSHIP LETTER

[Insert Mailing Information]

[Insert Date]

Dear [Insert Name],

One component of the [School Corporation] College and Career Readiness Program is to identify business and industry partners who will honor the WEC earned by graduates. Students receiving the WEC will have been measured in nine areas of academic and employability skills competency. This certificate includes five subjective measures (persistence, respectfulness, initiative, dependability, efficiency) which will require three teachers each to sign stating that a student has met these requirements. Students must also complete 6 hours of community service, have a GPA of 2.0 or higher and meet all graduation requirements, have an attendance rate of 98% and one or fewer discipline referrals for the year.

Based on discussions with the district's College and Career Advisory and many of you in the business community we believe that the requirements for a student to earn the WEC are rigorous and that students earning the certificate have demonstrated the academic and work based skills needed to become successful employees. We are happy to report that [Insert Data # or %] of our graduating class met all of the criteria and received their WEC.

Our next step is to determine how our business community will commit their support of this program and to the students earning the certificate. Listed below are suggestions from discussions with business leaders, our administrative team and the college and career readiness advisory council as possible ways a business could honor the certificate. This list is certainly not inclusive and we would appreciate your feedback on any additional way that your organization might honor the WEC.

Please provide the following information if your organization will partner with (corporation) Schools in recognizing and honoring those students who have earned the WEC.

Name: _____ **Business:** _____

Phone: _____ **Email:** _____

Certificate Holder will be provided:

- | | |
|---|--|
| _____ 1) Job Interview – Guaranteed | _____ 7) Bonus Vacation Day @ End of First Yr. |
| _____ 2) Applicant Pool Preference | _____ 8) Sign-On Bonus |
| _____ 3) Increased Base Pay ____5% ____10% | _____ 9) Tuition Re-Imbursement |
| _____ 4) College Orientation Class Waived | _____ 10) Health Club/Gym Membership |
| _____ 5) Professional Mentoring Opportunity | _____ 11) Flexible Scheduling |
| _____ 6) Professional Seminars/Development | _____ 12) Other: _____ |

We want to thank you again for your support as we prepare students for a successful post-secondary experience. If you have any questions or need additional information please contact [Insert contact name, title, phone number and email].

BUSINESS PARTNERS – INCENTIVES

There are a number of ways for businesses to partner with your school corporation and that information is included in the Business Partnership Letter. Following are some suggested ways to share information with your community about those businesses who are recognizing and honoring the WEC.

- Business partners can be listed and recognized on the school and corporation websites.
- Business partners can be identified and recognized at different meetings and forums.
- Digital displays can be placed in your schools (high traffic locations) with a continuous scroll identifying your business partners and the ways they recognize the WEC.
- Business partner information can be shared at faculty meetings.
- Business partners can be recognized at student meetings.
- A list of the business partners can be posted in the schools, athletic facilities, etc.
- Business partner information can be included in both school and corporation newsletters.

Below is a sample tracking form that can be used to track commitments from business partners.

Business	Job Interview Guaranteed	Applicant Pool Preference	Increased Base Pay	Professional Mentoring Opportunity	Professional Seminars	*Bonus Vacation Day	*Tuition Reimbursement	Flex Schedule
Company #1	X							
Company #2			X					
Company #3	X	X						
Company #4		X						X
Company #5	X			X				
Company #6	X							
Company #7	X	X	10%			X	X	X
Company #8	X	X						
Company #9	X	X					X	
Company #10	X						X	

PARENT/GUARDIAN LETTER

The following letter is sent to parents during the second semester of the year their child/children are completing their junior year.

- School should meet with all juniors to explain/review the Work Ethic Certification program.
- The parent/guardian letter can be provided to students at the meeting and request that they take it home to their parent/guardian.
- Schools should also consider mailing the letter home following the student meeting.
- Schools could host a parent meeting following their receipt of the informational letter.

As these students begin their senior year, schools should schedule the following activities within the first two weeks of school:

- Meeting with the senior class. At this meeting either the superintendent, principal or a designee will review the program with the students and discuss with them the benefits of earning the WEC.
- The parent/guardian letter should be distributed to students with a request that they take it home to their parent/guardian.
- Host a second parent meeting. Another opportunity to inform parents about the program and encourage them to have their child/children participate in the program.

Following are other ways to provide information to students/parents regarding the Work Ethic Certification program:

- Include article in school newspaper;
- Information can be included in school/corporation newsletters;
- Program information can be posted to school/corporation webpages;
- Request local media organizations to help inform the public about the program.

Please note that this letter can be used as either an informational letter or as the meeting invitation letter to parents. Simply replace the last paragraph with the paragraph highlighted in red text.

SAMPLE PARENT INFORMATION LETTER

[Insert Mailing Information]

[Insert Date]

Dear Parent/Guardian,

One aspect of our College and Career Readiness Initiative is the Governor's Work Ethic Certification program. There are a limited number of school corporations in Indiana who are currently providing this opportunity to students. Earning this certificate is a way for students to demonstrate that they possess the employability and character skills needed to be successful as they enter post-secondary institutions, apprenticeships, the military or the workforce.

Students receiving the Governor's WEC are measured in nine areas of academic and work ethic competency. Five subjective measures (persistence, respectfulness, teamwork, initiative and efficiency) will require three teachers each to sign stating that a student has met these requirements. Students must also complete 6 hours of community service, have a GPA of 2.0 or higher and meet all graduation requirements, have an attendance rate of 98% and one or fewer discipline referrals for the year.

Our next step is to continue working with our business community and post-secondary institutions to determine how they will commit their support of this program and to the students earning the certificate. Based on feedback we have received from the business community it is obvious that they place great value on employees being at work on a regular basis and on time, being able to work with others, being able to solve problems and being a self-starter. The goal this year is to partner with businesses in the local area that will honor the Governor's WEC.

We would like for you to encourage your child/children to participate in the program. Students can sign up for the program in the [designated location] at their school. If you have any questions or would like more information about the program please contact [Name] at [Phone Number] or [Email].

We want to invite you to attend a parent meeting on [Day, Month/Date, Year, Time and Location]. The meeting will be an opportunity for you to learn more about the Governor's WEC program and for us to answer your questions. In the event you are unable to attend the meeting please contact [Name] at [Phone Number] or [Email] for more information about the program.

Sincerely,

Name

Title

STUDENT ACKNOWLEDGEMENT FORM/CHECK SHEET

The Governor's WEC Acknowledgement Form/Checklist is used for the following:

- Students sign the form at the beginning of the school year to acknowledge that they are making a commitment to earn the WEC.
- The form is used at the end of the year to verify which students have met all the criteria for earning the WEC.

Students will have been informed about the WEC in the years leading up to their senior year. At the beginning of the senior year, a meeting will be held to share with the students the value of earning the WEC and a review of the criteria that must be met. Following the senior meeting, students will be provided the opportunity to sign their form indicating that they are committing to earn the WEC.

- Students put their name and the school they attend on the form and then sign/date indicating they have read and understand the guidelines for successfully completing the established criteria.
- The forms are collected and maintained by the designated school staff.

At the end of the school year the forms for all students eligible to receive the WEC will be placed in a secure room for a designated period of time during which staff will sign student forms.

- The forms should be placed in a secure room to provide staff the anonymity to sign based on their honest assessment of the student.
- All staff at the school are eligible to sign forms for students (including, but not limited to teachers, administrators, counselors, coaches, office staff, custodial staff, cafeteria staff, para-educators, etc.)
- Staff can sign for students in the areas of persistence, respectfulness, teamwork, initiative and efficiency. Each student must have three staff members sign in each of the five areas (a total of 15 signatures). Staff may sign for one area or could sign all five areas for a student; this is at the discretion of the staff member.

The student check sheets are then completed by designated staff using the data that has been recorded on the Criteria Monitoring Spreadsheet. These areas include the following:

- Community Service: students must have completed at least six (6) hours of community service and submitted the documentation forms.
- In the area of dependability staff will record the following:
 - Student must have a 2.0 GPA (cumulative, grades 9-12) and meet all graduation requirements;
 - Students must have a 98% attendance rate and have four (4) or fewer sign-ins, sign-outs or times tardy to school; and
 - Students must have no more than one (1) discipline referral. For serious infractions such as assault, drugs/alcohol or weapons the student would immediately lose their eligibility for the WEC.

SAMPLE STUDENT PARTICIPATION ACKNOWLEDGEMENT FORM

Student Name: _____ School: _____

Students wishing to obtain the Governor's WEC will be measured in nine areas of academic and work ethic competency. Five subjective measures will require three teachers each to sign stating that a student has met these requirements. Four additional objective competencies will be obtained from the student management system to indicate competency in measurable areas.

1. **Persistence:** Student is able to persevere through challenges and problem-solve.
2. **Respectfulness:** Student accepts and demonstrates service to others, possesses a positive attitude and communicates clearly.
 - **Teamwork**
 - **Community Service:** Student has completed a minimum of six hours of service this school year.
3. **Initiative:** Student is a self-starter and a critical thinker.
4. **Dependability:** Student is reliable and demonstrates responsibility and teamwork. Student also demonstrates academic readiness.
 - **Academic Readiness:** Student has a GPA of 2.0 or higher and will have met criteria for graduation.
 - **Reliability Attendance Rate:** Student attendance rate is 98% or higher AND has four or fewer sign-ins, sign-outs or times tardy to school.
 - **Responsibility:** Student has one or fewer discipline referrals for the school year.
5. **Efficiency:** Student is organized, punctual and demonstrates self-management.

Instructions: Please read the following statement, complete this form and return it to your counselor.

I have received, read and understand the standards and requirements for the Governor's WEC program. I fully understand the guidelines for the successful completion of all established criteria necessary for awarding of the certificate. I am committing to pursue the WEC.

By signing, I verify that I am a senior in high school and I am eligible to apply for participation in the Work Ethic Certification Program.

Student Signature: _____ **Date:** _____

Administrator Signature: _____ **Date:** _____

SAMPLE WORK ETHIC TEACHER/ADULT VERIFICATION FORM

Student Name: _____ School: _____

By signing, I verify that the above student is a senior in high school and successfully demonstrated the below competencies to complete the Governor's WEC requirements.

Persistence: Student is able to persevere through challenges and problem-solve.

1. _____ 2. _____ 3. _____

Respectfulness: Student accepts and demonstrates service to others, possesses a positive attitude and communicates clearly.

1. _____ 2. _____ 3. _____

Teamwork

1. _____ 2. _____ 3. _____

Community Service

_____ **Number of Hours Completed:** Student has completed a minimum of six hours of service this school year.

Initiative: Student is a self-starter, critical thinker and completes required tasks with minimal assistance.

1. _____ 2. _____ 3. _____

Dependability: Student is reliable and demonstrates responsibility, teamwork and community/job readiness.

Career Readiness: Student participates and progresses in job training (for Students with Disabilities)

In-School Job

Job Shadow

Work Study

Reliability Attendance Rate _____ **Number of times tardy to school:** Student attendance rate is 98% or higher AND has four or fewer sign-ins, sign-outs or times tardy to school.

Responsibility

_____ **Number of Referrals:** Student has one or fewer discipline referrals for the school year.

Efficiency - Student is organized, punctual and demonstrates self-management.

1. _____ 2. _____ 3. _____

WEC Student Score /**9**

A student **must** earn 9/9 Work Ethic Points to obtain the Governor's WEC.

COMMUNITY SERVICE DOCUMENTATION

Students have many opportunities to complete their community service requirement. The hours may be completed in the community at large or at school. Any activity where the student volunteers their time is acceptable provided they receive no monetary compensation or a grade/credit if the activity occurs at school.

Following are some examples of activities that would qualify as community service:

- Helping at an animal shelter;
- Service activities with organizations like Boy Scouts, Girl Scouts, etc.;
- Volunteering at a nursing home;
- Volunteering with a church group;
- Working with a group to help clean up a local park, etc.;
- Helping a neighbor by mowing their yard or other tasks (no pay);
- Service activities with schools clubs/organizations such as Key Club, Jobs for America's Graduates, National Honor Society, etc.;
- Volunteer work in classrooms, athletic event, school plays, etc.

This is certainly not an inclusive list and there are many other activities that students could do to complete their community service requirement.

The documentation form can be modified or edited as needed. This allows for schools/corporations to adapt the form to include specific information they want to include. It is also at the discretion of the school/corporation to decide if students need to turn in a form for each activity or use only one form if all the volunteer hours are completed at the same organization.

SAMPLE COMMUNITY SERVICE DOCUMENTATION FORMS

Community Service Documentation

Student Name: _____ School: _____

Organization: _____

Briefly describe the community service activity completed by the student:

Number of hours completed: _____

Signature: _____ Date: _____

Students are to return completed forms to the College and Career Center (or other designated location).

Community Service Documentation

Student Name: _____ School: _____

Organization: _____

Briefly describe the community service activity completed by the student:

Number of hours completed: _____

Signature: _____ Date: _____

Students are to return completed forms to the College and Career Center (or other designated location).

CRITERIA MONITORING SPREADSHEET

The collection and monitoring of data is an integral part of the Work Ethic Certification program. It would be at the discretion of each school/corporation to determine a methodology that works best for them. That said, after trying several different methods we have found the Criteria Monitoring Spreadsheet to be both efficient and effective.

Following are some basics for using the spreadsheet:

- Column A: Student names can be imported from your student database or entered manually.
- Column B: Participation is optional for seniors and can be marked accordingly.
- Column C: Record the student enrollment date. If students are enrolled less than a semester we do not allow them to participate. Students who are enrolled for the entire second semester have their data adjusted accordingly (2 days absence, etc.).
- Columns D-J: Record specific data categories related to competencies. GCCS found it helpful to record the number of instances for absences, tardies, etc. Example – Student H has at least 1 discipline referral, 8 absences, and 17 sign-ins.
- Column K: Record community service information. Highlight or color code students who meet the standard.
- Column L: Indicates those students who earn the WEC.

Once the data collection has been finalized:

- Students receiving the WEC are identified.
- The data is shared with building administrators, counselors and administrative office staff.
- Students not receiving the WEC are made aware of the criteria they did not meet. This can be done on an ongoing basis throughout the school year.
- The data is shared with parents only when they inquire as to why their child/children did not receive the WEC.
- If a school corporation has more than one school participating this data is used to compile corporation results and reports.

SAMPLE CRITERIA MONITORING SPREADSHEET

Column A	Column B	Column C	Column D	Column E	Column F	Column G	Column H	Column I	Column J	Column K	Column L
Student Name	WEC Candidate	Date of Application	Less than 2.0 GPA	Less than Req. Signatures (15)	More than 1 Disciplinary Referral	Total Absences (no more than 4)	Total Tardies (no more than 4)	Total Sign-ins (no more than 4)	Total Sign-outs (no more than 4)	Community Service Hours (min. 6 Req.)	Earned WEC
Student A	X	7/30/2015				6					
Student B	X	8/5/2015								6	X
Student C	X	7/30/2015					10		8	6	
Student D	X	7/30/2015	X			5					
Student E	X	7/30/2015								6	X
Student F	X	7/30/2015			X	9			10		
Student G	X	7/30/2015								6	X
Student H	X	7/30/2015			X	8		17			
Student I	X	7/30/2015				5	7		19	6	
Student J	X	7/30/2015								6	X
Student K	X	7/30/2015		X						6	
Student L	X	7/30/2015				25	15				
Student M	X	7/30/2015								6	X
Student N	X	7/30/2015						12		8	
Student O	X	7/30/2015	X			14					
Student P	X	7/30/2015				12	6				
Student Q	X	7/30/2015		X							

DRAFT

DATA COLLECTION AND ANALYSIS

During the implementation year of the Governor's WEC program each school/corporation needs to designate someone who will be responsible for collecting, recording and analyzing the data.

The first year data is used to establish the baseline. Each successive year creates longitudinal data from which growth targets and goals can be established. Data also validates area where the program is experiencing success.

Each school corporation would need to decide how the data would be shared and with whom it would be shared. At present we share the data with our board of trustees, the administrative team (central office and school), our college and career advisory and the counselors. We will be sharing the data with students and parents but are still working on the logistics of how best to accomplish this.

DEMOGRAPHIC DATA

The demographic data currently compares the data on a year to year basis only for the identified groups. In moving forward schools/corporations will want to compare/contrast their results to the total school/corporation population for each identified group.

Following are some activities that can be used to better engage students from identified groups where participation or success in the Work Ethic Certification Program has been lacking.

- The superintendent should speak to all senior classes to address the importance of the program and their support of the program.
- Counselors should make the WEC a focus of their meetings with students during the years leading up to them becoming seniors. The program needs to be strongly emphasized during final planning for the senior year.
- Teachers should promote the program and encourage students to participate.
- Schools/corporations can use newsletters, websites and other media to promote the program and the benefits it brings to the student.
- Business partners can meet with specific groups of students to promote participation in the program.

	School 1	School 1	School 2	School 2	School 3	School 3	School 4	School 4		Overall Corporation	Overall Corporation	Overall Corporation	% CHANGE
School Year	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16	2014-15	2015-16		2014-15	2015-16		
MALE	0	1	20	25	57	70	11	10		88	106	18	20%
FEMALE	0	0	24	23	50	68	8	8		82	99	17	21%
WHITE	0	1	39	44	84	89	19	18		142	152	10	7.0%
BLACK	0	0	0	0	14	22	0	0		14	22	8	57.1%
MULTI-RACIAL	0	0	0	2	5	11	0	0		5	13	8	160.0%
HISPANIC/LATINO	0	0	5	2	2	13	0	0		7	15	8	114.3%
HAWAIIAN/PACIFIC ISLANDER	0	0	0	0	0	1	0	0		0	1	1	0.0%
AMERICAN INDIAN/ALASKAN	0	0	0	0	0	1	0	0		0	1	1	0.0%
ASIAN	0	0	0	0	1	1	0	0		1	1	0	0%
SPECIAL EDUCATION	0	1	2	4	12	10	2	2		16	17	1	6.3%
FREE LUNCH	0	1	11	5	19	43	3	2		33	51	18	54.5%
REDUCED LUNCH	0	0	2	3	9	13	2	1		13	17	4	30.8%
PAID LUNCH	0	0	31	40	79	82	14	15		124	137	13	10.5%

POST-SECONDARY PLANS DATA

The post-secondary data provides an overview of what students are planning to do following graduation.

All seniors are required to provide written verification of their post-secondary plans:

- College bound must provide letter of acceptance.
- If entering the military the students must have letter of having been accepted for service.
- If they are going to work they need a letter from their current or prospective employer.

The data can then be used to look for trends and patterns of what students are doing when they graduate. Example: When GCCS looked at first set of data, they found that 91% of the students earning the WEC indicated they were going to either a 2-year or 4-year college while only 7% were planning to enter the workforce. This information is then used to establish growth targets to students without a post-secondary plan or to better engage Career and Technical Education students who may be interested in pursuing apprenticeship programs or matriculate directly into the workforce.

This information can be shared in the same manner as referenced above for the demographic data.

An example of a Post-Secondary Tracking Sheet is below.

School	4 Year College			2 Year College			Employment			Military			Apprenticeship			Total		
	Class of 2015	Class of 2016	Diff	Class of 2015	Class of 2016	Diff	Class of 2015	Class of 2016	Diff	Class of 2015	Class of 2016	Diff	Class of 2015	Class of 2016	Diff	Class of 2015	Class of 2016	Diff
School 1	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	1	1
School 2	25	36	11	17	5	-12	0	1	1	1	5	4	0	1	1	43	48	5
School 3	86	111	25	19	13	-6	12	7	-5	1	7	6	0	0	0	118	138	20
School 4	14	13	-1	2	3	1	1	1	0	0	1	1	0	0	0	17	18	1
Total	125	160	35	38	21	-17	13	10	-3	2	13	11	0	1	1	178	205	27

SUMMATIVE DATA

Summative data is used to establish targets for the upcoming year and we share this data in the same manner as referenced above for the demographic data.

School	Number of Participants	# Met Criteria	% Met Criteria (Goal=30%)	# Not Met Criteria
School 1	166	48	29%	118
School 2	21	0	0%	21
School 3	9	1	11%	8
School 4	437	138	32%	299
School 5	54	18	43%	36
Totals	687	205	30%	482

DRAFT

STUDENT CERTIFICATE

**Placeholder for DWD Designed
Governor's WEC**



INDIANA
WORKFORCE
DEVELOPMENT
AND ITS **WorkOne** CENTERS



A State that Works

1st Edition, September 2016
For questions, contact the Indiana Department of Workforce Development
Phone Number: 317-xxx-xxxx

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The driving force behind MDRC is a conviction that reliable evidence, well communicated, can make an important difference in social policy.

Gordon L. Berlin, President, MDRC

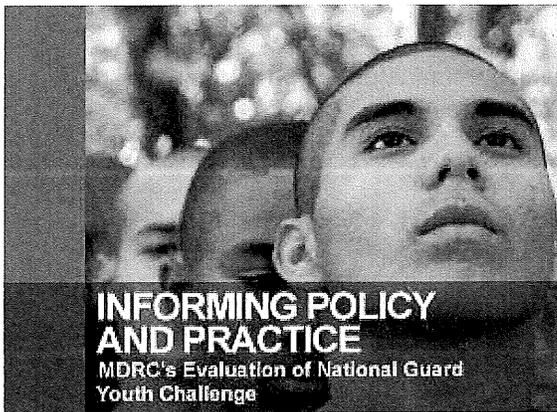
MDRC is committed to finding solutions to some of the most difficult problems facing the nation — from reducing poverty and bolstering economic self-sufficiency to improving public education and college graduation rates. We design promising new interventions, evaluate existing programs using the highest research standards, and provide technical assistance to build better programs and deliver effective interventions at scale. We work as an intermediary, bringing together public and private funders to test new policy-relevant ideas, and communicate what we learn to policymakers and practitioners — all with the goal of improving the lives of low-income individuals, families, and children.

[MDRC Corporate Report 2017/18](#) [Statement of Principles for MDRC's Work](#)

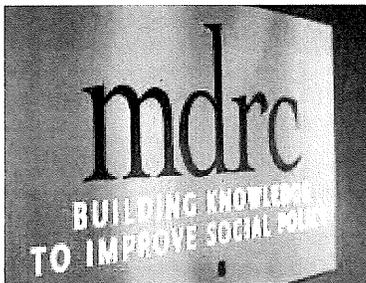
Founded in 1974 as the Manpower Demonstration Research Corporation, "MDRC" became the official name of our organization in 2003.

What makes us unique





A Brief History



Created in 1974 by the Ford Foundation and a group of federal agencies, MDRC is a nonprofit, nonpartisan education and social policy research organization dedicated to learning what works to improve programs and policies that affect the poor. MDRC is best known for mounting large-scale demonstrations and evaluations of real-world policies and programs targeted to low-income people. We helped pioneer the use of random assignment — the same highly reliable methodology used to test new medicines — in our evaluations. From welfare policy to high school reform, MDRC's work has helped to shape legislation, program design, and operational practices across the country. Working in fields where emotion and ideology often dominate public debates, MDRC is a source of objective, unbiased evidence about cost-effective solutions that can be replicated and expanded to scale.

More »

Project Overview

Twenty-first-century skills (also known as noncognitive or soft skills) are increasingly viewed as critical for both education and employment outcomes. Research has shown that these skills — such as effective teamwork, problem-solving, and functioning in diverse work settings — are highly valued by employers and important to academic success as well, but community colleges either offer no instruction in these skills, or do so in a nonrigorous or ad hoc manner. Now, postsecondary institutions are increasingly realizing that if they do not offer opportunities for their students to master 21st-century skills they may be hurting both their educational attainment and their economic prospects — particularly important outcomes for community colleges, which train many of the nation's entry- and middle-skill workers.

New World of Work (NWoW), a 21st-century skills program currently being piloted at a number of community colleges in California, incorporates three key components: a curriculum designed to be taught in the classroom, a work-based learning component, and a credential. Taken together, these three components, once enhanced and strengthened with evidence from this study, may have the potential to improve students' 21st-century skills, which in turn could help move the needle on educational outcomes, such as college completion, and the likelihood of finding and keeping a job with family-supporting wages.

In partnership with the developers of the NWoW program and nine community colleges in California, MDRC will strengthen and refine the program and then pilot the refined model in career and technical education programs to assess its promise for improving educational and employment outcomes for students.

Agenda, Scope, and Goals

The New World of Work intervention is designed for students in California community colleges enrolled in discipline-specific, single-semester career and technical education (CTE) courses. The finished intervention will have three components, each associated with a set of specific practices, activities, and elements:

1. **Classroom instruction** of a uniform duration and intensity, covering one of ten skills each week; supported by initial and ongoing professional development and support.
2. The **work-based learning experience**, concurrent with the class, aligned with the student's major or field of study, and meeting specific quality standards.
3. An **assessment** to measure mastery of each of the ten skills, and an opportunity to earn up to ten digital badges:
 - Adaptability
 - Analysis/solution mindset
 - Collaboration
 - Communication
 - Digital fluency
 - Entrepreneurial mindset

- Empathy
 - Resilience
 - Self-awareness
 - Social/diversity awareness
-

Design, Sites, and Data Sources

The New World of Work study launches in July 2017 with a two-year iterative development phase to strengthen and standardize all three components of the program. Drawing on interviews and focus groups from current NWoW users, the team will revise the existing curriculum and draft guides for colleges to use to develop strong work-based learning options. The team will also improve on the existing assessments and the badging system to make it more accessible to its end users: students, instructors, and employers. This iterative improvement process will conclude in the fall of 2019.

The pilot phase of the study will begin in 2020 using the final version of the program. It will consist of a randomized controlled trial efficacy study in five career and technical education (CTE) departments within six California community colleges, using a cluster random assignment design. Data sources will include administrative records data, 21st-century skills assessment data, student course evaluation data, employer assessments of student internship performance, and student survey data.

Funders

Institute of Education Sciences, U.S. Department of Education

Partners

Dr. Rajinder Gill, Co-Principal Investigator, Shasta College

MDRC Staff



Mary Visher **Co-Principal Investigator**

Senior Associate, K-12 Education and Young Adults and Postsecondary Education Policy Areas

Visher has many years of experience in public-policy research, spanning several sectors including education (K-12 and postsecondary), workforce development, and adult education.

**Michael J. Weiss**

Senior Associate, Postsecondary Education Policy Area

Weiss's work focuses on evaluating programs designed to improve community college students' chances of achieving academic success. He is also deeply involved in methodological projects intended to improve the quality of random assignment evaluations.

**Evan Weissman**

Senior Associate, Postsecondary Education Policy Area

Weissman has nearly 20 years of experience at MDRC directing projects, providing technical assistance, conducting qualitative research, and disseminating findings in a wide range of education and social policy settings.

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the **QA** commons

THE QUALITY ASSURANCE COMMONS

for HIGHER and POSTSECONDARY EDUCATION

EEQ CERT Graduate Profile

EEQ Certified programs foster a distinctive set of attributes in their graduates. These qualities, which are embodied in the EEQ Graduate Profile, are intended to prepare graduates to make important contributions in their workplaces. The qualities are not specific to any discipline, field, or industry, but are applicable to most work-based, professional environments; they represent the knowledge, skills, abilities, and experiences that help ensure that graduates are not only ready for their first job, but also to support learners' foundation for a lifetime of engaging employment in the rapidly changing workplace of the 21st century.

A Student's Perspective

These qualities clearly communicate a set of attributes that students will be developing through the course of their program, and also communicate to students what employers will be expecting of them in the workplace. Students can use the Profile to continually self-assess, develop, provide evidence of, and communicate their EEQs.

An Employer's Perspective

These qualities reflect what employers are seeking in people they hire and wish to retain, particularly in regard to the continuously changing nature of work in the modern era. The QA Commons has validated* these qualities through the analysis of national data sets and feedback from numerous employer groups. They will be continually reviewed and revised to ensure currency and relevance, and can be adapted at the regional or local level to ensure relevance to specific workforce needs.

Academic Features & Employer Frameworks

Many of the EEQs build upon existing learning outcomes embedded in many programs. The qualities can be appropriately adapted to degree and certificate programs of different levels, timeframes, and modalities. Many of these qualities are included in existing aspects of some programs, but by necessity, they have an applied work-based character that may warrant separate or supplemental articulation and application in order to prepare graduates for a lifetime of successful employability.

There are existing frameworks that generally reflect aspects of the EEQs, including:

- [Lumina Degree Qualifications Profile \(DQP\)](#)
- [AAC&U's Essential Learning Outcomes](#)
- [NACE's Career Readiness Competencies](#)
- [Connecting Credentials Framework](#)



The QA Commons

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www.theqacommons.org - 6/1/17

The EEQs also represent current and future employer expectations as reflected in studies completed by Burning Glass, LinkedIn, ACT, the Foresight Alliance, Jobs for the Future, Career Tech, the Business Roundtable, O*NET, third way, National Network of Business and Industry Associations, and the Institute for the Future, to name a few.

Developing Learners' EEQs

While individual general education and disciplinary courses may address the qualities, they are best developed over time and with continued attention across students' curricular, co-curricular, and applied and work-based experiences. Generally, the qualities are developed and fostered by programs that:

- Intentionally integrate authentic, work-relevant, and applied or experiential learning activities into the curriculum and co-curriculum, such as through internships, apprenticeships, community-based and service learning activities, work-based projects, simulations, and leadership roles in student organizations.
- Directly address and assess these qualities in an ongoing way throughout the student's educational pathway, recognizing qualities that learners bring with them; identifying areas where learners need more development and providing resources or interventions to support them; and engaging learners in reflecting on their own development in these areas.
- Engage deeply with employers to ensure that the programmatic and curricular approaches develop these qualities in ways that are authentic to the workplace and meet the needs of the local employment community.

***Validation:**

Preliminary validation sources include:

- Burning Glass National-Level Job Postings; Foundational Skills Requested by Burning Glass Occupation, Burning Glass Occupation-CIP6 Program Matrix. Analysis conducted by the National Center for Higher Education Management Systems.
- Review of studies and resources cited above.
- The QA Commons' Employer Advisory Group (pending)
- Additional sources of data and direct feedback from employers and professional groups.



Graduates of the EEQ Certified Program are:

Communicators

Graduates express ideas and information confidently, creatively, and appropriately for work-based contexts, and in a variety of modes (written, verbally, interpersonally, and presentationally). They participate in discussions by listening actively and responding constructively.

Thinkers & Problem Solvers

Graduates exercise initiative in applying critical and creative thinking skills to identify and address complex work-related problems, and to make reasoned, ethical decisions. They apply quantitative, financial, and technical fluency to work-based situations with confidence in their own ability to grow.

Inquirers

Graduates conduct inquiry and research by reviewing, evaluating, citing, and applying multiple sources of information to help address a work-based problem or perform a task. They generate new ideas through independent or collaborative inquiry.

Collaborators

Graduates engage in groups and work effectively and willingly in collaboration with others both in person and virtually. They seek a range of points of view, are willing to modify their perspectives, and they help resolve conflicts where appropriate. They work effectively with diverse colleagues individually or in groups. Graduates take initiative in leading work-based groups, and/or follow direction from others as appropriate.

Adaptable

Graduates approach new or unfamiliar work-based situations and uncertainty with courage and forethought, and they explore, learn, and apply new roles, ideas, approaches, tools, technologies, and strategies.

Principled, Responsible, Self-Directed, and Professional

Graduates act with integrity and honesty, with a strong sense of fairness and respect for individuals, groups, and communities. They carry out their responsibilities consistently, persistently, reliably, and with integrity, and maintain appropriate confidentiality.

Graduates establish priorities and manage their time to meet the obligations of work-related assignments with a minimum of external supervision or direction, and they take responsibility for their own actions and the consequences that accompany them.

Learners

Graduates continually develop themselves professionally and personally. They assess and understand their strengths and areas for improvement in order to support their learning and professional development. They seek out and engage in formal and informal professional learning opportunities on a continuing basis and actively apply learning from these opportunities to work-related assignments. They are system thinkers and demonstrate an ability to understand concepts across multiple disciplines and different cultures.

