SOUTH CENTRAL VALLEY/ SOUTHERN MOTHER LODE

SUBREGIONAL LABOR MARKET OVERVIEW

2022

Prepared by the Central Valley/Mother Lode Center of Excellence
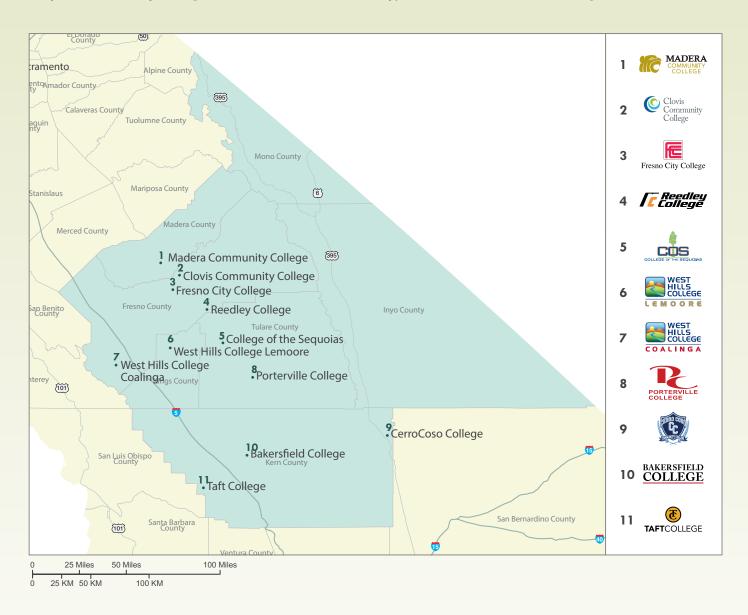
C·O·E
CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

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SCV/SML COLLEGE AREA

Map of community colleges in the South Central Valley/Southern Mother Lode subregion

1	MADERA COMMUNITY COLLEGE
2	Clovis Community College
3	Fresno City College
4	Reedley College
5	COS COLLEGE OF THE SEQUOIAS
6	WEST HILLS COLLEGE LEMOORE
7	WEST HILLS COLLEGE COALINGA
8	PORTERVILLE COLLEGE
9	CERRO COSO COMMUNITY COLLEGE
10	BAKERSFIELD COLLEGE
11	TAFT COLLEGE

Map labels:
1. Madera Community College
2. Clovis Community College
3. Fresno City College
4. Reedley College
5. College of the Sequoias
6. West Hills College Lemoore
7. West Hills College Coalinga
8. Porterville College
9. CerroCoso College
10. Bakersfield College
11. Taft College

EXECUTIVE SUMMARY

The Central Valley/Mother Lode Center of Excellence has updated its annual report on 10 sectors critical to the South Central Valley/Southern Mother Lode (SCV/SML) subregion's economic vitality. This report examines where future job growth is expected to occur and estimates workforce gaps, i.e., potential shortages of workers to fill middle-skill jobs (occupations requiring some education or training beyond a high school diploma, but less than a bachelor's degree) in each of the 10 sectors. The report examines subregional demographics and educational attainment, and for each sector identifies workforce demographic patterns, and promising middle-skill occupations along with their projected demand and wages. For each sector, top job titles, certifications, and specialized skills are also highlighted.

In the subregion, the population is expected to add 69,286 new residents, totaling nearly 2.8 million by 2025.

Within the SCV/SML subregion, the 10 sectors are expected to offer 66,407 job openings annually.

A large proportion of middle-skill job openings are expected in the health sector, which is projected to have 15,885 annual openings, and business and entrepreneurship sector, which is projected to have 12,210 annual openings in the subregion. The energy, construction, and utilities sector is expected to offer 6,659 annual openings.

Strategic planning is imperative for these sectors because they lead the subregion in terms of labor market demand. A comparison of community college supply and projected workforce demand shows that these sectors also have the largest supply gaps in the subregion, a collective shortage of 25,872 workers.

Additional Key Findings

On average each year, community colleges in the region confer 16,396 awards in areas related to the 10 sectors. The greatest number of awards are in health care, 6,049, followed by business and entrepreneurship, 1,938, and education, 1,834.

In addition to sectors with the largest shortage of workers, future planning efforts by the community colleges may take into consideration occupations with the most annual openings in the SCV/SML subregion:

- Heavy and tractor-trailer truck drivers, **2,529 annual openings** (advanced transportation and logistics)

- Office clerks, general, **2,308 annual openings** (ICT/digital media)

- Teaching assistants, except postsecondary, **1,660 annual openings** (education)

- Registered nurses, **1,364 annual openings** (health)

INTRODUCTION

The Central Valley/Mother Lode Center of Excellence conducted a labor market analysis focusing on the two subregions comprising the larger Central Valley/Mother Lode region. This report focuses on the South Central Valley/Southern Mother Lode (SCV/SML) subregion. The community colleges in the subregion are shown on page 3.

The first half of the report addresses regional population characteristics and the labor force. Analysis of Strong Workforce Program metrics are provided for the subregion, region, and state.

A comparison of the number of postsecondary awards (degrees and certificates) with workforce demand (annual openings) by sector is presented in the Gap Analysis section. This section is intended to help community college leadership assess which workforce areas may be undersupplied in the subregion.

Last, a deep-dive analysis was conducted into the subregion's primary 10 sectors as defined by the California Community Colleges Chancellor's Office (CCCCO). For each sector, the CVML COE highlights:

- The top occupations, their current employment, projected demand, and median wages

- The composition of the sector's workforce in terms of gender and race/ethnicity

- Top job titles, specialized skills, and certifications in job postings

Please note, for the purpose of this report, a sector represents a cluster or grouping of occupations, comprising a segment of one or multiple industries.

For each individual sector analysis, the CVML COE identifies the top 15 or fewer occupations that are both in high demand and that pay a strong median wage. This approach was conducted because occupations that have a solid foundation in terms of employment outlook and earnings can lead to promising careers for students.

CCCCO Sectors

- Advanced Manufacturing

- Advanced Transportation & Logistics

- Agriculture, Water & Environmental Technologies

- Business & Entrepreneurship

- Education

- Energy, Construction & Utilities

- Health

- ICT/Digital Media

- Public Safety

- Retail, Hospitality & Tourism

METHODOLOGY

Quantitative data collection and analysis were conducted for this report. Labor market data, particularly secondary data related to workforce demand and occupational employment, informed the report's findings and is derived from the labor market analytics firm Emsi.

The North American Industry Classification System (NAICS) and the Standard Occupational Classification (SOC) System were used to source data. Occupational projections include annual openings. Replacements can be determined by subtracting annual openings from overall job change. If the change is negative, then all the annual openings are replacements. For more information on data sources and the definition of terms used by this study, please refer to Appendix A.

Workforce demographics, such as gender and race/ethnicity composition by sector, are also sourced from Emsi for each sector profile.[1] The data analysis of race/ethnicity demographics involved calculating percentages of the total for the top 15 occupations within a sector and comparing those percentages with the composition of workers across all sectors. For example, if 46% of workers are white in a sector, but across all sectors 30% of all workers are white, then there is overrepresentation of that demographic. Due to low percentages, the "All Other" category comprises Two or More Races, American Indian/Alaska Native, and Native Hawaiian/Other Pacific Islander.

The average living wage for a single adult in the South Central Valley/Southern Mother Lode (SCV/SML) subregion is $11.91/hour.[2] Data on top job titles, specialized skills, and certifications is sourced from the job postings aggregator Burning Glass for the most commonly occurring occupations among the 15 occupations selected for each sector.

The Gap Analysis section of this report relies on an evaluation of postsecondary educational supply which counts awards by TOP4 codes from the Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

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[1] Please note: This report uses race and ethnicity data from Emsi collected by the U.S. Census Bureau through the American Community Survey. This report uses the term Asian American instead of Asian. The race/ethnicity terms in this document, including white, Hispanic, and Black, adhere to the terms and definitions the Census Bureau uses in collecting its data. For definitions, refer to: https://www.census.gov/topics/population/race/about.html. Please refer to Appendix A for additional information on definitions.
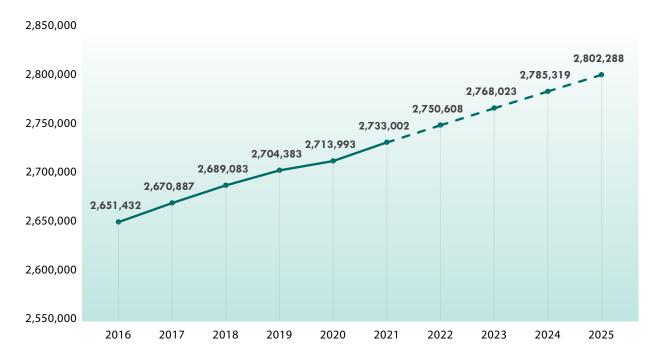
[2] The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center's California Family Needs Calculator for each county in the subregion: https://insightcced.org/tools-metrics/self-sufficiency-standard-tool-for-california/.

SUBREGIONAL OVERVIEW

Residential Population

According to the latest U.S. Census data, the SCV/SML subregion is home to approximately 2.7 million residents (Exhibit 1). Between 2016 and 2020, the region added 62,561 residents. By 2025, the subregion is projected to add another 69,286 new residents, totaling 2.8 million residents.

Exhibit 1. Population estimates and projections in the SCV/SML subregion, 2016–2025

Population Demographics

The SCV/SML subregion's gender composition is roughly equivalent to the state. The population is almost equally divided between men and women (Exhibit 2).

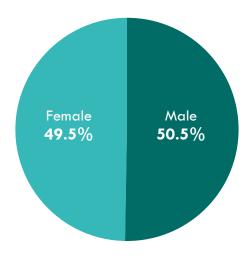**Exhibit 2. Gender composition in the SCV/SML subregion**

Exhibit 3 shows projected changes in the SCV/SML subregion's race/ethnicity demographics by 2025. The number of individuals identifying as white, non-Hispanic is expected to decline by 86,198 in the subregion by 2025. The most rapid growth is projected to occur among individuals identifying as two or more races, Hispanic, 21%; Asian, Non-Hispanic, 18%; white, Hispanic, 14%, and Native Hawaiian or Pacific Islander, Hispanic, 14%. The most substantial population growth by number of residents is projected for:

- White, Hispanic residents, an increase of 177,310 residents
- Asian, non-Hispanic residents, an increase of 30,121 residents
- Two or more races, Hispanic residents, an increase of 6,913 residents

Exhibit 3. Projected changes in race/ethnicity in the SCV/SML subregion

Race/Ethnicity	2016	2025	Change	% Change
White, Hispanic	1,305,460	1,482,770	177,310	14%
White, Non-Hispanic	856,542	770,344	(86,198)	(10%)
Asian, Non-Hispanic	164,091	194,212	30,121	18%
Black, Non-Hispanic	112,022	117,928	5,906	5%
American Indian or Alaskan Native, Hispanic	60,173	65,031	4,858	8%
Two or More Races, Non-Hispanic	46,997	52,952	5,955	13%
Two or More Races, Hispanic	32,296	39,209	6,913	21%
Black, Hispanic	27,854	31,507	3,653	13%
American Indian or Alaskan Native, Non-Hispanic	19,935	19,393	(542)	(3%)
Asian, Hispanic	18,920	20,776	1,856	10%
Native Hawaiian or Pacific Islander, Hispanic	3,778	4,325	547	14%
Native Hawaiian or Pacific Islander, Non-Hispanic	3,364	3,840	476	14%
Total	**2,651,432**	**2,802,288**	**150,855**	**6%**

For cohorts under age 20, the largest projected increase over the next five years will occur in young adults age 15 to 19 years, a 7% increase representing the addition of more than 14,008 young adults (Exhibit 4). There is a projected 6% decrease in the 5–9 age cohort, a decline of 12,790 young adults in the subregion.

Exhibit 4. Projected change in age cohorts in the SCV/SML subregion, 2020–2025

Age Cohort	2020 Population	2025 Population	Change	% Change	2025 % of Cohort
Under 5 years	199,798	201,651	1,853	1%	7.20%
5 to 9 years	221,485	208,695	(12,790)	(6%)	7.45%
10 to 14 years	223,116	223,585	469	(0%)	7.98%
15 to 19 years	201,321	215,329	14,008	7%	7.68%
20 to 24 years	190,157	195,069	4,912	3%	6.96%
25 to 29 years	211,545	195,688	(15,857)	(7%)	6.98%
30 to 34 years	201,885	211,580	9,695	5%	7.55%
35 to 39 years	186,985	200,203	13,218	7%	7.14%
40 to 44 years	166,507	183,839	17,332	10%	6.56%
45 to 49 years	151,028	159,719	8,691	6%	5.70%
50 to 54 years	144,735	145,491	756	1%	5.19%
55 to 59 years	145,456	137,833	(7,623)	(5%)	4.92%
60 to 64 years	135,177	135,334	157	(0%)	4.83%
65 to 69 years	111,604	123,945	12,341	11%	4.42%
70 to 74 years	88,027	100,037	12,010	14%	3.57%
75 to 79 years	59,256	75,896	16,640	28%	2.71%
80 to 84 years	38,426	46,297	7,871	20%	1.65%
85 years and over	37,485	42,098	4,613	12%	1.50%
Total	**2,713,993**	**2,802,288**	**88,296**	**3%**	**100.00%**

Educational Attainment

Fresno County has largest number of cohort students, 15,842 in the SCV/SML subregion. Fresno County also has the largest number of high school graduates, 12,852. However, Tulare County has a higher graduation rate, 86.6%. Fresno County also has the largest number of graduates meeting UC or CSU requirements, 6,117. Kern County has the largest number of graduates who earned a Seal of Biliteracy, 1,407, and graduates who earned a Golden State Seal Merit Diploma, 4,570 (Exhibit 5).

Exhibit 5. Cohort graduation rate in the SCV/SML subregion, academic year 2020–21

County	Cohort Students	Regular High School Diploma Graduates	Cohort Graduation Rate	Graduates Meeting UC/CSU Requirements	Graduates Earning A Seal Of Biliteracy	Graduates Earning A Golden State Seal Merit Diploma
Fresno County	15,842	12,852	81.1%	6,117	682	2,320
Inyo County	698	306	43.8%	123	25	35
Kern County	14,553	12,169	83.6%	4,662	1,407	4,570
Kings County	2,314	1,804	78.0%	677	95	521
Madera County	2,179	1,822	83.6%	760	179	312
Mono County	201	114	56.7%	59	44	33
Tulare County	7,666	6,641	86.6%	2,273	678	1,078
Subregional Total	**43,453**	**35,708**	**82.2%**	**14,671**	**3,110**	**8,869**
Statewide Total	**500,179**	**417,919**	**83.6%**	**217,910**	**61,976**	**111,368**

The SCV/SML subregion trails the state in bachelor's degree attainment, with only 12% of the adult population holding a bachelor's degree, compared to 21% in the state (Exhibit 6). Regarding associate degree attainment, the subregion and the state are the same, 8%.

A greater proportion of the subregion has completed some college compared to the state. In the subregion, 23% of the population has completed some college, which is greater than the state, 21%. Similarly, the subregion has a higher percentage of the population that has completed a high school diploma, 25%, compared to the state, 21%.

Compared to the state, a higher proportion of residents 25 years of age or older in the subregion have completed less than a 9th grade education and less than a 12th grade education, which indicates a greater need for adult education in the region. In the subregion, 14% of residents have less than a 9th grade education and 11% have less than a 12th grade education, compared to 9% and 7% in the state.
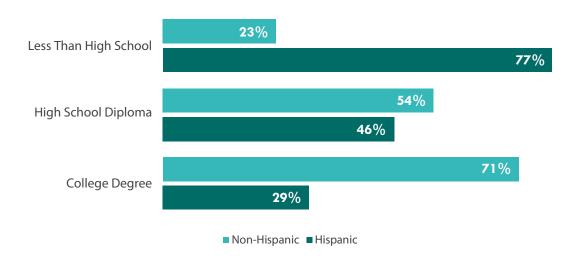
Exhibit 6. Educational attainment comparison of the SCV/SML subregion, region, and state, 2020

In the subregion, 71% of the non-Hispanic adult population has completed a college degree, compared to 29% of the Hispanic population (Exhibit 7). A greater proportion of the Hispanic population has less than a high school education. Nearly 80% of the Hispanic population has less than a high school diploma, compared to 23% of the non-Hispanic population.

Exhibit 7. Hispanic/non-Hispanic educational attainment in the subregion, 2020

Labor Force & Employment

The size and characteristics of a region's labor force are important considerations in workforce planning. Labor force, employment, and unemployment data are based upon "place of residence" – where people live, regardless of where they work. Individuals who have more than one job are counted only once. These data elements differ from industry employment estimates that are "place-of-work" based – where the employer/workplace is located, regardless of where the employee resides. The labor force in the SCV/SML subregion has decreased by nearly 9,000 workers over the last five years (Exhibit 8). Unemployment has increased from 10% to 12% during the same period. Employment has declined by nearly 30,300 workers, from 1,053,710 workers in 2016 to 1,023,480 workers in 2020.

Exhibit 8. Labor force size, employment, and unemployment in the SCV/SML subregion, 2016–2020

Metric	2016	2020	5-Year Change
Labor Force	1,171,630	1,162,760	(8,870)
Employment	1,053,710	1,023,480	(30,230)
Unemployment	117,920	139,380	21,460
Unemployment Rate	10%	12%	2%

Since 2016, the labor force in the Central Valley/Mother Lode region has grown by 1,260 workers. Total employment declined by 40,000 workers (Exhibit 9). In 2016, more than 180,000 individuals were unemployed. By 2020, this number had increased by 41,560, to 222,440 individuals. Because total employment decreased more than the labor force, the unemployment rate increased from 9% in 2016 (compared to 6% statewide) to 12% in 2020 (compared to 10% statewide).

Exhibit 9. Labor force size, employment, and unemployment in the CVML region, 2016–2020

Metric	2016	2020	5-Year Change
Labor Force	1,911,950	1,913,210	1,260
Employment	1,731,170	1,691,170	(40,000)
Unemployment	180,880	222,440	41,560
Unemployment Rate	9%	12%	2%

At 10%, the state's unemployment rate is lower than the region's and subregion's unemployment rates (Exhibit 10). Over the last five years, the state's labor force has lost 190,800 workers, declining to 18.8 million. The statewide number of unemployed individuals increased from 1,046,600 in 2016 to 1,908,100 in 2020.

Exhibit 10. Labor force size, employment, and unemployment in California, 2016–2020

Metric	2016	2020	5-Year Change
Labor Force	19,012,000	18,821,200	(190,800)
Employment	17,965,400	16,913,100	(1,052,300)
Unemployment	1,046,600	1,908,100	861,500
Unemployment Rate	6%	10%	5%

CAREER EDUCATION OUTCOMES

Exhibit 11 summarizes Strong Workforce Program (SWP) outcomes from the CCCCO's Cal-PASS Plus LaunchBoard for all career education (CE) programs in the subregion, region, and state. At 22%, the percentage of students who earned 9 or more CE units is similar to the region, 21%, and state, 19%. The subregion leads the region in the percentage of students who have completed a noncredit CE course or workforce preparation class—69% in the subregion compared to 46% in the region and 65% in the state.

In the subregion, 5,486 of students received a degree or certificate or attained apprenticeship journey status, and 4,190 students transferred. Median annual earnings total $28,544 in the subregion which is slightly less than the region, $29,246.

The subregion is nearly on par with the region and state in terms of the percentage of students obtaining a job closely related to their field of study and students reporting a median change in earnings. In the subregion, 63% of students attained a living wage, which is about the same as the region, 62%, and is above the state, 53%.

Exhibit 11. Comparison of SWP outcomes from LaunchBoard for the SCV/SML subregion, the Central Valley/Mother Lode region, and the state

Metric	SCV/SML Subregion	CVML Region	State
Strong Workforce Program Students	68,482	107,510	1,007,649
Students Who Earned 9 or More Career Education Units in the District in a Single Year	22%	21%	19%
Students Who Completed a Noncredit CTE or Workforce Preparation Course	69%	46%	65%
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	5,486	8,232	77,269
Number of Students Who Transferred	4,190	6,354	61,964
Job Closely Related to Field of Study	72%	73%	72%
Median Annual Earnings	$28,544	$29,246	$36,246
Median Change in Earnings	24%	27%	22%
Attained a Living Wage	63%	62%	53%

GAP ANALYSIS

Annual openings for all middle-skill occupations in the 10 sectors total 66,407. With 16,396 awards (degrees and certificates) conferred on average each year, there is a supply gap of 50,012 workers in the SCV/SML subregion (Exhibit 12). The health sector has the most annual openings in the subregion, nearly 15,900, followed by business and entrepreneurship, more than 12,200. Sectors with the fewest annual openings include advanced manufacturing, approximately 3,000, and public safety, about 2,000. Postsecondary institutions in the subregion are conferring the most awards in health; business and entrepreneurship; and education. The sectors with the largest supply gaps are:

- **Business and entrepreneurship,** an undersupply of 10,273 workers

- **Health,** an undersupply of 9,836 workers

- **Energy, construction, and utilities,** an undersupply of 5,763 workers

While the gap analysis presented in this section reflects the greatest workforce demand by sector in the subregion, there may be localized differences in workforce demand. As a result, the colleges in the subregion are encouraged to evaluate demand by program to reveal local nuances in the labor market in terms of the career path occupations that fall within the college's immediate vicinity.

Other localized trends and economic impacts may affect projected workforce demand. Reviewing program recommendation (PR) reports prepared by the CVML COE can shed light on this, especially in terms of differences in student outcomes for the same programs that are offered by different colleges. Changes in labor market demand can be due to localized adoption of technological advancements that are changing the worker training and subsequent skill sets sought by employers. (For example, improved efficiencies are impacting the demand for farmers, ranchers and agricultural managers in the region.) However, even when an occupation is projected to shed jobs, there may still be a need for workers due to replacements and retirements. As a result, colleges are encouraged to examine numbers at the program-level in addition to sector-level since there may be substantial variation among programs within a single sector.

Exhibit 12. Comparison between workforce demand (annual job openings) and postsecondary supply of students (awards) for each sector showing gaps in the number of workers to fill openings

Sector	Demand (Annual Openings)	Supply (Average Annual Awards)	Gap
Business & Entrepreneurship	12,210	1,938	10,273
Health	15,885	6,049	9,836
Energy, Construction & Utilities	6,659	896	5,763
Advanced Transportation & Logistics	5,421	877	4,544
Retail, Hospitality & Tourism	5,566	1,040	4,526
Agriculture, Water & Environmental Technologies	5,233	727	4,506
ICT/Digital Media	4,688	679	4,010
Education	5,651	1,834	3,817
Advanced Manufacturing	3,020	911	2,110
Public Safety	2,073	1,445	628
TOTAL	**66,407**	**16,396**	**50,012**

ADVANCED MANUFACTURING

Summary

» **Gender & race/ethnicity:** Comprising 17% of the workforce, women are underrepresented in this sector. Analysis shows overrepresentation of Hispanic or Latino workers (Exhibits 13 and 14).

» **Employment & projected demand:** The largest middle-skill occupation is inspectors, testers, sorters, samplers, and weighers, which is projected to have 370 annual openings (Exhibit 15).

» **Wages:** The highest paid occupation is industrial production managers, $45.51/hour median (Exhibit 15).

» **In-demand qualifications:** The top skill is quality assurance and control, and the top certification is a driver's license (Exhibits 16 and 17).

Top Job Titles

- Production Supervisor

- Sorter

- Machinist

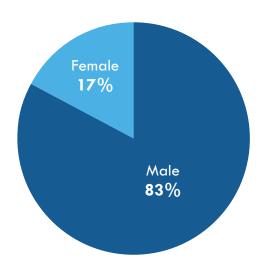**Exhibit 13. Gender composition of the top occupations in the advanced manufacturing workforce**

Female 17%

Male 83%

Exhibit 14. Race/ethnicity composition of the top occupations in the advanced manufacturing workforce

	Advanced Manufacturing	All Sectors
White	45%	46%
Hispanic or Latino	40%	35%
Asian American	9%	11%
Black	3%	5%
All Other	3%	3%

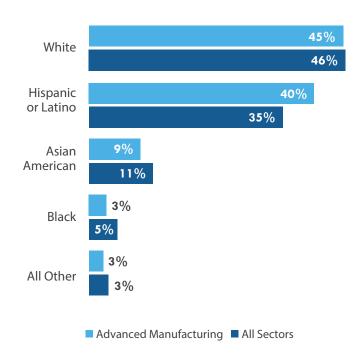■ Advanced Manufacturing ■ All Sectors

Exhibit 15. Advanced manufacturing employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
Inspectors, Testers, Sorters, Samplers, and Weighers	3,144	3,062	(82)	(3%)	370	$17.56
First-Line Supervisors of Production and Operating Workers	3,126	3,227	101	3%	331	$30.75
Welders, Cutters, Solderers, and Brazers	3,010	3,057	46	2%	331	$19.33
Industrial Machinery Mechanics	2,687	2,899	212	8%	279	$28.04
Machinists	1,317	1,371	55	4%	147	$19.85
Calibration Technologists and Technicians and Engineering Technologists and Technicians, Except Drafters, All Other	1,116	1,115	(1)	(0%)	107	$36.51
Coating, Painting, and Spraying Machine Setters, Operators, and Tenders	644	695	51	8%	76	$19.26
Industrial Production Managers	863	886	23	3%	64	$45.51
Separating, Filtering, Clarifying, Precipitating, and Still Machine Setters, Operators, and Tenders	581	587	6	1%	63	$22.43
Cutting and Slicing Machine Setters, Operators, and Tenders	355	354	(1)	(0%)	44	$17.34
Stationary Engineers and Boiler Operators	347	349	2	1%	43	$36.57
Maintenance Workers, Machinery	401	418	17	4%	40	$23.00
Computer Numerically Controlled Tool Operators	314	321	8	2%	37	$21.11
Crushing, Grinding, and Polishing Machine Setters, Operators, and Tenders	313	316	3	1%	36	$19.66
Extruding, Forming, Pressing, and Compacting Machine Setters, Operators, and Tenders	318	324	7	2%	35	$19.97

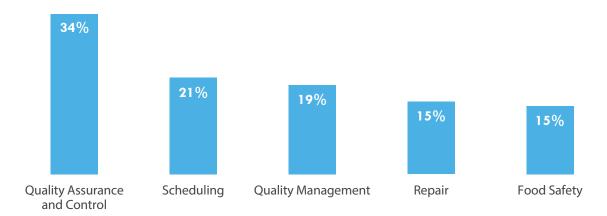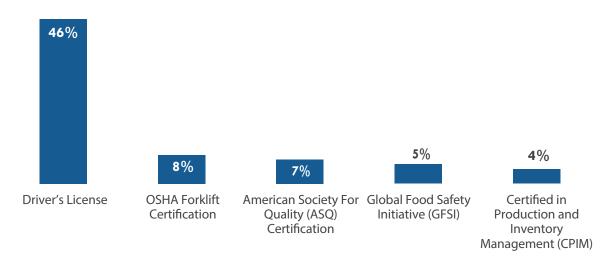**Exhibit 16. Top specialized skills in job postings for advanced manufacturing occupations, n=1,207**

Skill	Percentage
Quality Assurance and Control	34%
Scheduling	21%
Quality Management	19%
Repair	15%
Food Safety	15%

Exhibit 17. Top certifications in job postings for advanced manufacturing occupations, n=295

Certification	Percentage
Driver's License	46%
OSHA Forklift Certification	8%
American Society For Quality (ASQ) Certification	7%
Global Food Safety Initiative (GFSI)	5%
Certified in Production and Inventory Management (CPIM)	4%

ADVANCED TRANSPORTATION & LOGISTICS

Summary

» **Gender & race/ethnicity:** Comprising 11% of the workforce, women are underrepresented in this sector. Analysis shows underrepresentation of white workers and overrepresentation of Hispanic or Latino workers (Exhibits 18 and 19).

» **Employment & projected demand:** The largest middle-skill occupation is heavy and tractor-trailer truck drivers, which is projected to have 2,529 annual openings (Exhibit 20).

» **Wages:** The highest paid occupation is airline pilots, copilots, and flight engineers, $100.90/hour median (Exhibit 20).

» **In-demand qualifications:** The top skill is HAZMAT, and the top certification is CDL Class A (Exhibits 21 and 22).

Top Job Titles

- Class A Owner/Operator — Dedicated Routes, Mile

- Driver

- Class A Local Driver

Exhibit 18. Gender composition of the top occupations in the advanced transportation and logistics workforce
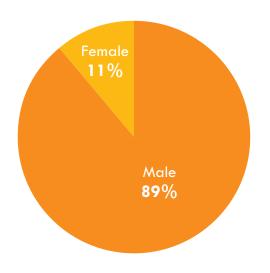

Female 11%
Male 89%

Exhibit 19. Race/ethnicity composition of the top occupations in the advanced transportation and logistics workforce

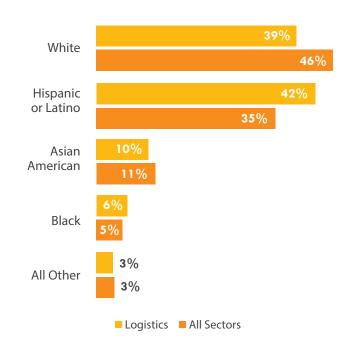|	Logistics	All Sectors
White	39%	46%
Hispanic or Latino	42%	35%
Asian American	10%	11%
Black	6%	5%
All Other	3%	3%

Exhibit 20. Advanced transportation and logistics employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
Heavy and Tractor-Trailer Truck Drivers	18,459	20,494	2,035	11%	2,529	$20.54
Automotive Service Technicians and Mechanics	5,030	5,082	52	1%	511	$19.60
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	3,353	3,647	294	9%	430	$27.62
First-Line Supervisors of Mechanics, Installers, and Repairers	2,860	3,016	156	5%	290	$37.18
Bus and Truck Mechanics and Diesel Engine Specialists	2,024	2,184	161	8%	224	$23.35
Aircraft Mechanics and Service Technicians	1,329	1,517	188	14%	156	$33.03
Logisticians	1,141	1,273	132	12%	131	$40.05
Bus Drivers, Transit and Intercity	733	891	158	22%	124	$23.00
Transportation, Storage, and Distribution Managers	1,086	1,145	60	5%	96	$40.96
Automotive Body and Related Repairers	911	959	49	5%	95	$19.97
Commercial Pilots	322	363	41	13%	46	$52.67
Cargo and Freight Agents	305	351	46	15%	41	$20.80
Airline Pilots, Copilots, and Flight Engineers	345	347	1	(0%)	40	$100.90
Air Traffic Controllers	282	297	15	5%	31	$54.02
Aircraft Service Attendants and Transportation Workers, All Other	133	165	32	24%	26	$19.58

Exhibit 21. Top specialized skills in job postings for advanced transportation and logistics occupations, n=1,747
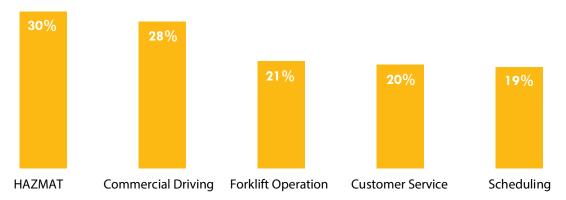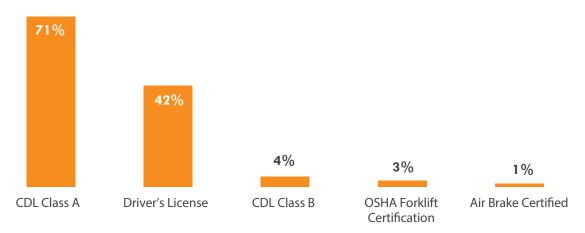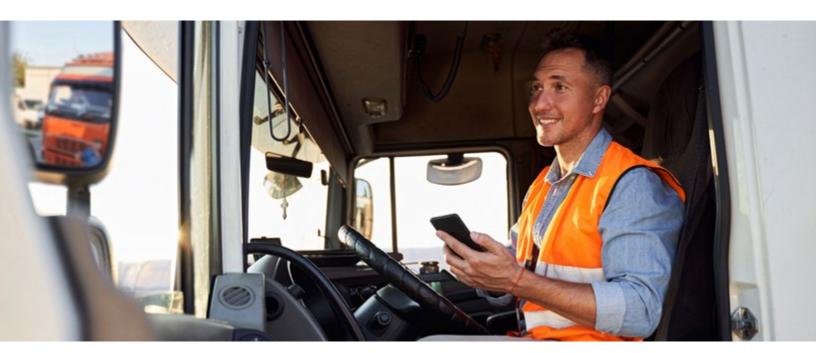
HAZMAT	Commercial Driving	Forklift Operation	Customer Service	Scheduling
30%	28%	21%	20%	19%

Exhibit 22. Top certifications in job postings for advanced transportation and logistics occupations, n=2,377

CDL Class A	Driver's License	CDL Class B	OSHA Forklift Certification	Air Brake Certified
71%	42%	4%	3%	1%

AGRICULTURE, WATER & ENVIRONMENTAL TECHNOLOGIES

Summary

» **Gender & race/ethnicity:** Comprising 30% of the workforce, women are underrepresented in this sector. Analysis shows underrepresentation of Hispanic or Latino workers and overrepresentation of white workers (Exhibits 23 and 24).

» **Employment & projected demand:** The largest middle-skill occupation is sales representatives, wholesale and manufacturing, except technical and scientific products, which is projected to have 664 annual openings (Exhibit 25).

» **Wages:** The highest paid occupation is cost estimators, $36.52/hour median (Exhibit 25).

» **In-demand qualifications:** The top skill is sales, and the top certification is a driver's license (Exhibits 26 and 27).

Top Job Titles

- Sales Representative

- Outside Sales Representative

- Account Executive

Exhibit 23. Gender composition of the top occupations in the agriculture, water, and environmental technologies workforce
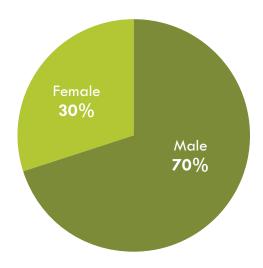
Female 30%

Male 70%

Exhibit 24. Race/ethnicity composition of the top occupations in the agriculture, water, and environmental technologies workforce

Race/ethnicity	Agriculture, Water & Environmental Technologies	All Sectors
White	54%	46%
Hispanic or Latino	31%	35%
Asian American	10%	11%
Black	3%	5%
All Other	3%	3%

■ Agriculture, Water & Environmental Technologies
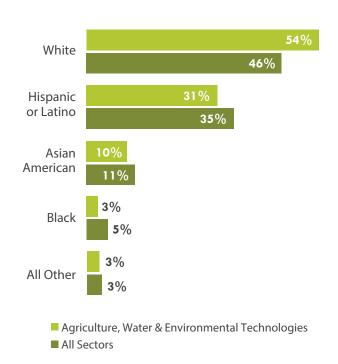■ All Sectors

Exhibit 25. Agriculture, water, and environmental technologies employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	6,281	6,479	197	3%	664	$30.98
First-Line Supervisors of Farming, Fishing, and Forestry Workers	3,761	3,799	39	1%	558	$18.28
Buyers and Purchasing Agents	1,695	1,691	(5)	(0%)	166	$29.93
Mobile Heavy Equipment Mechanics, Except Engines	1,505	1,530	25	2%	153	$27.31
Compliance Officers	1,547	1,658	110	7%	145	$35.51
Pest Control Workers	921	982	60	7%	138	$17.58
Cost Estimators	1,350	1,378	28	2%	129	$36.52
Farm Equipment Mechanics and Service Technicians	1,184	1,243	58	5%	129	$19.50
Agricultural Inspectors	608	608	(0)	(0%)	99	$21.64
Agricultural and Food Science Technicians	656	652	(5)	(1%)	87	$18.52
Forest and Conservation Technicians	491	501	10	2%	64	$17.98
Pesticide Handlers, Sprayers, and Applicators, Vegetation	374	386	12	3%	54	$16.38
Life, Physical, and Social Science Technicians, All Other	359	374	15	4%	47	$33.98
Biological Technicians	342	352	10	3%	47	$17.47
Environmental Science and Protection Technicians, Including Health	311	322	11	4%	41	$21.04

Exhibit 26. Top specialized skills in job postings for agriculture, water, and environmental technologies occupations, n=2,687
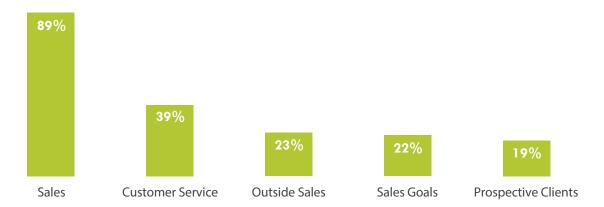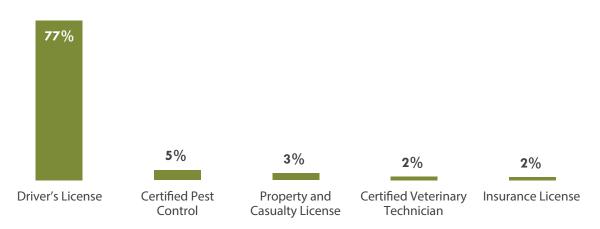
Skill	Percentage
Sales	89%
Customer Service	39%
Outside Sales	23%
Sales Goals	22%
Prospective Clients	19%

Exhibit 27. Top certifications in job postings for agriculture, water, and environmental technologies occupations, n=1,567

Certification	Percentage
Driver's License	77%
Certified Pest Control	5%
Property and Casualty License	3%
Certified Veterinary Technician	2%
Insurance License	2%

BUSINESS & ENTREPRENEURSHIP

Summary

» **Gender & race/ethnicity:** Comprising 44% of the workforce, men are slightly underrepresented in this sector. Analysis shows very slight underrepresentation of Hispanic or Latino workers and very slight overrepresentation of white workers (Exhibits 28 and 29).

» **Employment & projected demand:** The second largest middle-skill occupation—bookkeeping, accounting, and auditing clerks—will have the most annual openings, 1,153 (Exhibit 30).[3]

» **Wages:** The highest paid occupation is general and operations managers, $46/hour median (Exhibit 30).

» **In-demand qualifications:** The top skill is accounting, and the top certification is a driver's license (Exhibits 31 and 32).

Top Job Titles

- Bookkeeper

- Accounting Clerk

- Accounts Payable Clerk

Exhibit 28. Gender composition of the top occupations in the business and entrepreneurship workforce
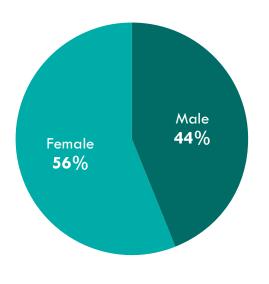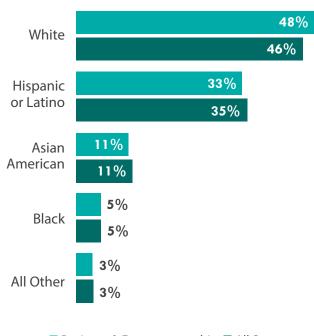

Exhibit 29. Race/ethnicity composition of the top occupations in the business and entrepreneurship workforce

■ Business & Entrepreneurship ■ All Sectors

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[3] Not all occupations with the greatest number of annual openings also have the greatest employment. Most do, but in this case, there is an exception.

Exhibit 30. Business and entrepreneurship employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
Bookkeeping, Accounting, and Auditing Clerks	10,225	10,275	51	(0%)	1,153	$20.57
General and Operations Managers	10,230	11,062	832	8%	1,037	$46.00
Project Management Specialists and Business Operations Specialists, All Other	9,906	10,421	515	5%	835	$32.15
First-Line Supervisors of Office and Administrative Support Workers	7,548	7,739	191	3%	791	$27.23
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	4,232	4,541	309	7%	556	$22.94
Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other	4,834	5,093	260	5%	410	$35.14
Human Resources Specialists	2,774	3,024	250	9%	323	$29.35
Insurance Sales Agents	3,213	3,309	97	3%	317	$23.57
Eligibility Interviewers, Government Programs	2,544	2,688	144	6%	261	$23.58
Production, Planning, and Expediting Clerks	1,967	2,074	108	5%	226	$22.03
Real Estate Sales Agents	2,185	2,252	67	3%	205	$26.54
Tax Examiners and Collectors, and Revenue Agents	2,002	2,019	17	1%	172	$21.84
Training and Development Specialists	1,272	1,392	120	9%	145	$30.12
Claims Adjusters, Examiners, and Investigators	1,543	1,516	(27)	(2%)	120	$30.63
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	943	992	50	5%	105	$41.75

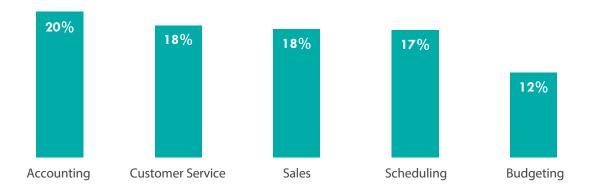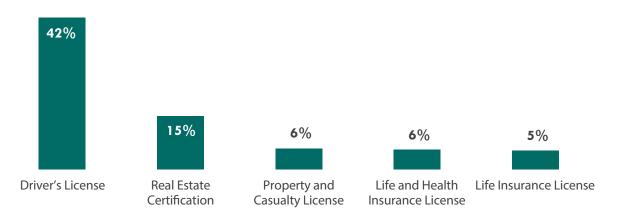**Exhibit 31. Top specialized skills in job postings for business and entrepreneurship occupations, n=6,125**

Skill	Percentage
Accounting	20%
Customer Service	18%
Sales	18%
Scheduling	17%
Budgeting	12%

Exhibit 32. Top certifications in job postings for business and entrepreneurship occupations, n=1,987

Certification	Percentage
Driver's License	42%
Real Estate Certification	15%
Property and Casualty License	6%
Life and Health Insurance License	6%
Life Insurance License	5%

EDUCATION

Summary

» **Gender & race/ethnicity:** Comprising 19% of the workforce, men are underrepresented in this sector. Analysis shows underrepresentation of white workers and overrepresentation of Hispanic or Latino workers (Exhibits 33 and 34).

» **Employment & projected demand:** The largest middle-skill occupation is teaching assistants, except postsecondary, which is projected to have 1,660 annual openings (Exhibit 35).

» **Wages:** The highest paid occupation is interpreters and translators, $26.93/hour median (Exhibit 35).

» **In-demand qualifications:** The top skill is teaching, and the top certification is first aid/CPR/AED (Exhibits 36 and 37).

Top Job Titles

• Pre-School Teacher

• Teacher

• Infant Teacher — Mountain

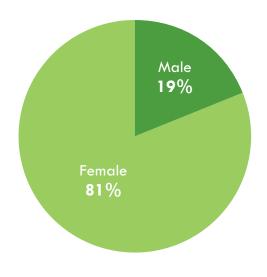**Exhibit 33. Gender composition of the top occupations in the education workforce**

Male **19%**

Female **81%**

Exhibit 34. Race/ethnicity composition of the top occupations in the education workforce

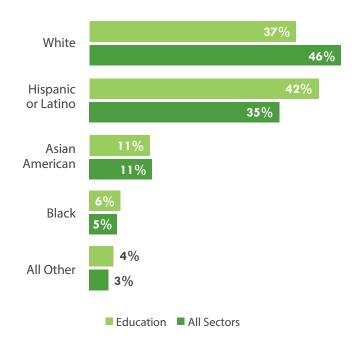|	Education	All Sectors
White	37%	46%
Hispanic or Latino	42%	35%
Asian American	11%	11%
Black	6%	5%
All Other	4%	3%

■ Education ■ All Sectors

Exhibit 35. Education employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
Teaching Assistants, Except Postsecondary	15,860	16,764	904	6%	1,660	$16.05
Substitute Teachers, Short-Term	8,178	8,771	593	7%	1,071	$18.04
Preschool Teachers, Except Special Education	2,925	3,204	(280)	(10%)	361	$15.62
Library Technicians	1,223	1,231	(9)	(1%)	180	$22.04
Teaching Assistants, Postsecondary	1,685	1,689	4	(0%)	167	$15.02
Education and Childcare Administrators, Preschool and Daycare	699	735	37	5%	59	$25.27
Interpreters and Translators	504	551	47	9%	58	$26.93
Library Assistants, Clerical	331	340	9	3%	54	$15.84

Exhibit 36. Top specialized skills in job postings for education occupations, n=699
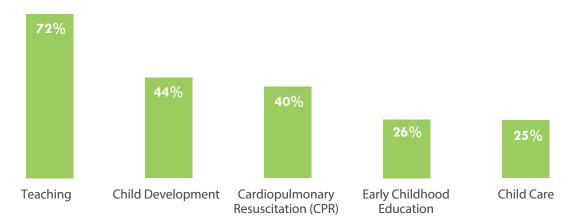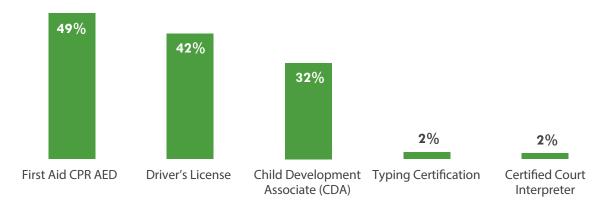
Skill	Percentage
Teaching	72%
Child Development	44%
Cardiopulmonary Resuscitation (CPR)	40%
Early Childhood Education	26%
Child Care	25%

Exhibit 37. Top certifications in job postings for education occupations, n=262

Certification	Percentage
First Aid CPR AED	49%
Driver's License	42%
Child Development Associate (CDA)	32%
Typing Certification	2%
Certified Court Interpreter	2%

ENERGY, CONSTRUCTION & UTILITIES

Summary

» **Gender & race/ethnicity:** Comprising 6% of the workforce, women are underrepresented in this sector. Analysis shows underrepresentation of Asian American workers and overrepresentation of white workers (Exhibits 38 and 39).

» **Employment & projected demand:** The largest middle-skill occupation is carpenters, which is projected to have 616 annual openings (Exhibit 40).

» **Wages:** The highest paid occupation is telecommunications line installers and repairers, $45.07/hour median (Exhibit 40).

» **In-demand qualifications:** The top skill is repair, and the top certification is a driver's license (Exhibits 41 and 42).

Top Job Titles

• Forklift Operator

• Electrician

• Solar Installer

Exhibit 38. Gender composition of the top occupations in the energy, construction, and utilities workforce
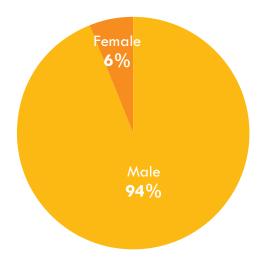

Female 6%
Male 94%

Exhibit 39. Race/ethnicity composition of the top occupations in the energy, construction, and utilities workforce

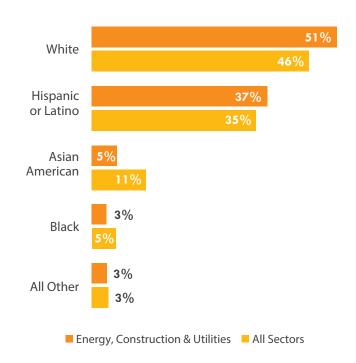|	Energy, Construction & Utilities	All Sectors
White	51%	46%
Hispanic or Latino	37%	35%
Asian American	5%	11%
Black	3%	5%
All Other	3%	3%

Exhibit 40. Energy, construction, and utilities employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
Carpenters	6,111	6,312	201	3%	616	$22.30
Electricians	4,405	4,782	377	9%	558	$29.64
First-Line Supervisors of Construction Trades and Extraction Workers	4,056	4,120	64	2%	410	$35.48
Plumbers, Pipefitters, and Steamfitters	3,085	3,276	191	6%	361	$26.13
Telecommunications Equipment Installers and Repairers, Except Line Installers	2,373	2,263	(109)	(5%)	260	$31.31
Operating Engineers and Other Construction Equipment Operators	2,368	2,408	40	2%	260	$27.65
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	2,050	2,204	153	7%	232	$26.66
Construction Managers	2,463	2,634	171	7%	216	$38.57
Administrative Services and Facilities Managers	1,634	1,733	99	6%	157	$44.34
Telecommunications Line Installers and Repairers	1,031	999	(32)	(3%)	113	$45.07
Solar Photovoltaic Installers	625	755	130	21%	104	$22.77
Electrical and Electronic Engineering Technologists and Technicians	950	939	(11)	(1%)	91	$40.92
Electrical Power-Line Installers and Repairers	790	793	3	(0%)	75	$41.75
Water and Wastewater Treatment Plant and System Operators	831	825	(6)	(1%)	75	$29.43
Control and Valve Installers and Repairers, Except Mechanical Door	294	330	36	12%	32	$32.33

Exhibit 41. Top specialized skills in job postings for energy, construction, and utilities occupations, n=2,598
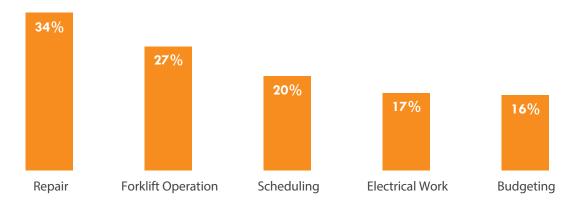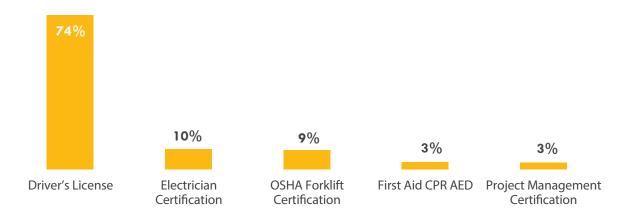

Repair	Forklift Operation	Scheduling	Electrical Work	Budgeting
34%	27%	20%	17%	16%

Exhibit 42. Top certifications in job postings for energy, construction, and utilities occupations, n=1,266

Driver's License	Electrician Certification	OSHA Forklift Certification	First Aid CPR AED	Project Management Certification
74%	10%	9%	3%	3%

HEALTH

Summary

» **Gender & race/ethnicity:** Comprising 15% of the workforce, men are underrepresented in this sector. Analysis shows underrepresentation of white workers and Hispanic or Latino workers, and overrepresentation of Asian American workers (Exhibits 43 and 44).

» **Employment & projected demand:** The largest middle-skill occupation is registered nurses, which is projected to have 1,364 annual openings (Exhibit 45).

» **Wages:** The highest paid occupation is registered nurses, $44.19/hour median (Exhibit 45).

» **In-demand qualifications:** The top skill is patient care, and the top certification is registered nurse (Exhibits 46 and 47).

Top Job Titles

- Registered Nurse

- Licensed Vocational Nurse

- Pharmacy Technician

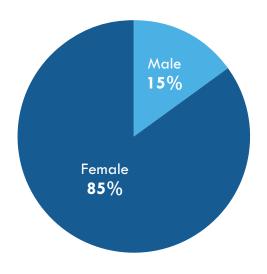**Exhibit 43. Gender composition of the top occupations in the health workforce**

Male 15%
Female 85%

Exhibit 44. Race/ethnicity composition of the top occupations in the health workforce

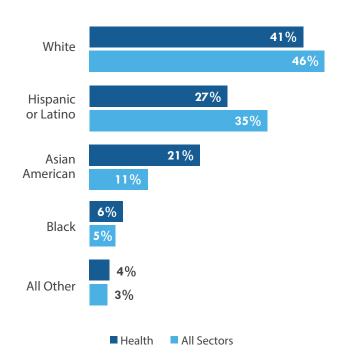| Race/ethnicity	Health	All Sectors
White	41%	46%
Hispanic or Latino	27%	35%
Asian American	21%	11%
Black	6%	5%
All Other	4%	3%

■ Health ■ All Sectors

Exhibit 45. Health employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
Registered Nurses	18,158	19,987	1,829	10%	1,364	$44.19
Medical Secretaries and Administrative Assistants	5,283	5,650	366	7%	658	$17.64
Social and Human Service Assistants	4,137	4,661	524	13%	609	$18.25
Licensed Practical and Licensed Vocational Nurses	4,210	4,674	464	11%	426	$26.14
Dental Assistants	2,952	3,086	134	5%	379	$18.24
Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	2,480	2,761	281	11%	240	$19.85
Pharmacy Technicians	2,566	2,698	132	5%	211	$19.64
Psychiatric Technicians	1,418	1,501	83	6%	123	$30.26
Radiologic Technologists and Technicians	961	1,070	109	11%	93	$38.86
Respiratory Therapists	1,113	1,269	156	14%	87	$26.60
Social Science Research Assistants	516	541	26	5%	69	$20.48
Surgical Technologists	625	696	72	11%	61	$29.74
Physical Therapist Assistants	339	415	76	22%	60	$36.32
Medical Equipment Preparers	385	418	33	9%	56	$24.19
Health Information Technologists, Medical Registrars, Surgical Assistants, and Healthcare Practitioners and Technical Workers,	499	546	47	9%	46	$25.42

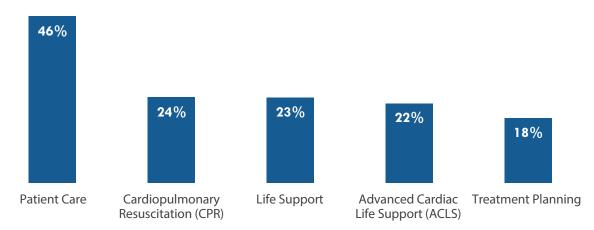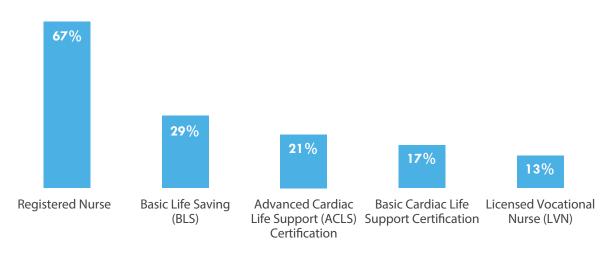**Exhibit 46. Top specialized skills in job postings for health occupations, n=9,348**

Skill	Percentage
Patient Care	46%
Cardiopulmonary Resuscitation (CPR)	24%
Life Support	23%
Advanced Cardiac Life Support (ACLS)	22%
Treatment Planning	18%

Exhibit 47. Top certifications in job postings for health occupations, n=9,458

Certification	Percentage
Registered Nurse	67%
Basic Life Saving (BLS)	29%
Advanced Cardiac Life Support (ACLS) Certification	21%
Basic Cardiac Life Support Certification	17%
Licensed Vocational Nurse (LVN)	13%

ICT/DIGITAL MEDIA

Summary

» **Gender & race/ethnicity:** Comprising 20% of the workforce, men are underrepresented in this sector. Analysis shows very slight underrepresentation of Hispanic or Latino workers (Exhibits 48 and 49).

» **Employment & projected demand:** The largest middle-skill occupation is office clerks, general, which is projected to have 2,308 annual openings (Exhibit 50).

» **Wages:** The highest paid occupation is network and computer systems administrators, $43.36/hour median (Exhibit 50).

» **In-demand qualifications:** The top skill is administrative support, and the top certification is a driver's license (Exhibits 51 and 52).

Top Job Titles

- Administrative Assistant

- Office Assistant

- Executive Assistant

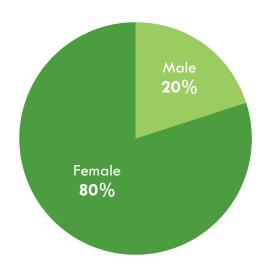**Exhibit 48. Gender composition of the top occupations in the ICT/digital media workforce**

Male **20%**

Female **80%**

Exhibit 49. Race/ethnicity composition of the top occupations in the ICT/digital media workforce

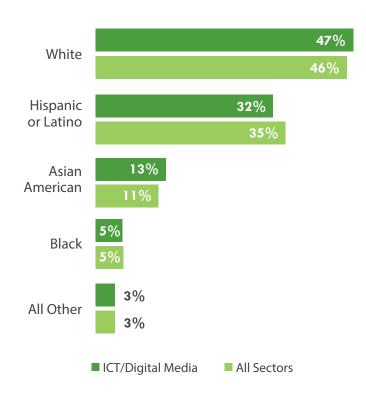|	ICT/Digital Media	All Sectors
White	47%	46%
Hispanic or Latino	32%	35%
Asian American	13%	11%
Black	5%	5%
All Other	3%	3%

Exhibit 50. ICT/digital media employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
Office Clerks, General	19,338	19,701	363	2%	2,308	$16.89
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	11,498	11,429	(69)	(1%)	1,245	$19.27
Executive Secretaries and Executive Administrative Assistants	1,878	1,776	(103)	(5%)	198	$27.60
Computer User Support Specialists	2,139	2,264	126	6%	184	$24.14
Computer Occupations, All Other	1,909	2,043	135	7%	169	$38.95
Graphic Designers	778	797	19	2%	77	$23.36
Network and Computer Systems Administrators	907	948	41	5%	68	$43.36
Computer Network Support Specialists	608	636	28	5%	51	$31.94
Web Developers and Digital Interface Designers	438	476	38	9%	41	$32.00
Procurement Clerks	349	346	(3)	(1%)	32	$20.70
Audio and Video Technicians	257	277	20	8%	30	$22.05
Audiovisual Equipment Installers and Repairers	246	247	1	(0%)	28	$21.78
Special Effects Artists and Animators	243	244	(0)	(0%)	27	$24.93
Surveying and Mapping Technicians	189	201	12	6%	26	$30.76

Exhibit 51. Top specialized skills in job postings for ICT/digital media occupations, n=4,942
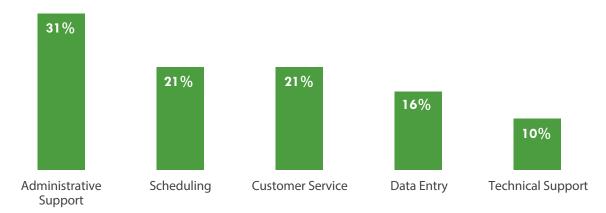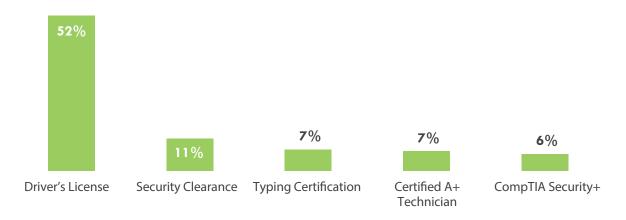
Skill	Percentage
Administrative Support	31%
Scheduling	21%
Customer Service	21%
Data Entry	16%
Technical Support	10%

Exhibit 52. Top certifications in job postings for ICT/digital media occupations, n=1,399

Certification	Percentage
Driver's License	52%
Security Clearance	11%
Typing Certification	7%
Certified A+ Technician	7%
CompTIA Security+	6%

PUBLIC SAFETY

Summary

» **Gender & race/ethnicity:** Comprising 29% of the workforce, women are underrepresented in this sector. Analysis shows underrepresentation of Asian American workers and overrepresentation of Black workers (Exhibits 53 and 54).

» **Employment & projected demand:** The largest middle-skill occupation is correctional officers and jailers, which is projected to have 800 annual openings (Exhibit 55).

» **Wages:** The highest paid occupation is first-line supervisors of police and detectives, $72.85/hour median (Exhibit 55).

» **In-demand qualifications:** The top skill is cardiopulmonary resuscitation (CPR), and the top certification is a driver's license (Exhibits 56 and 57).

Top Job Titles

- Military Police Officer Entry Level

- Dispatcher

- Police Officer

Exhibit 53. Gender composition of the top occupations in the public safety workforce
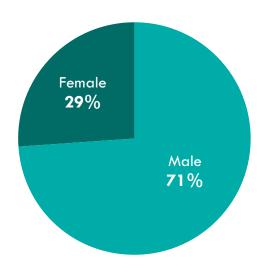
Female 29%

Male 71%

Exhibit 54. Race/ethnicity composition of the top occupations in the public safety workforce

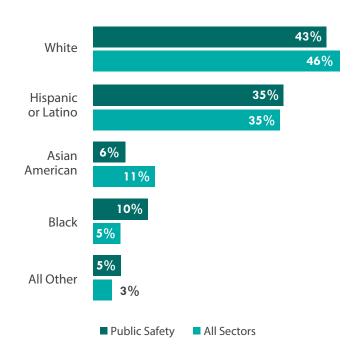|	Public Safety	All Sectors
White	43%	46%
Hispanic or Latino	35%	35%
Asian American	6%	11%
Black	10%	5%
All Other	5%	3%

■ Public Safety ■ All Sectors

Exhibit 55. Public safety employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
Correctional Officers and Jailers	8,566	8,493	(73)	(1%)	800	$41.98
Police and Sheriffs Patrol Officers	4,640	4,909	269	6%	418	$39.24
Firefighters	2,324	2,473	150	6%	207	$32.08
Emergency Medical Technicians and Paramedics	1,466	1,756	291	20%	169	$16.90
Public Safety Telecommunicators	672	731	59	9%	75	$25.24
First-Line Supervisors of Correctional Officers	681	705	24	3%	60	$49.16
Private Detectives and Investigators	599	616	17	3%	58	$31.19
Detectives and Criminal Investigators	580	619	39	7%	51	$45.51
Miscellaneous First-Line Supervisors, Protective Service Workers	420	430	10	2%	46	$30.97
Transportation Security Screeners	428	454	25	6%	44	$27.38
First-Line Supervisors of Police and Detectives	371	405	33	9%	31	$72.85

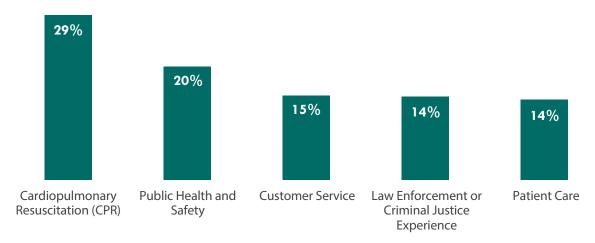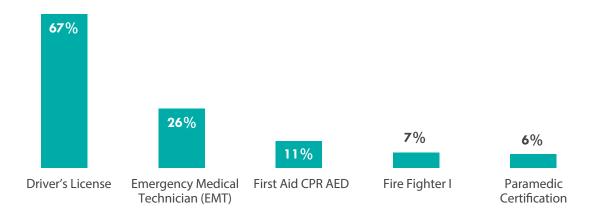**Exhibit 56. Top specialized skills in job postings for public safety occupations, n=435**

Skill	Percentage
Cardiopulmonary Resuscitation (CPR)	29%
Public Health and Safety	20%
Customer Service	15%
Law Enforcement or Criminal Justice Experience	14%
Patient Care	14%

Exhibit 57. Top certifications in job postings for public safety occupations, n=418

Certification	Percentage
Driver's License	67%
Emergency Medical Technician (EMT)	26%
First Aid CPR AED	11%
Fire Fighter I	7%
Paramedic Certification	6%

RETAIL, HOSPITALITY & TOURISM

Summary

» **Gender & race/ethnicity:** Comprising 46% of the workforce, women are slightly underrepresented in this sector. Analysis shows underrepresentation of white workers and overrepresentation of Asian American workers (Exhibits 58 and 59).

» **Employment & projected demand:** The largest middle-skill occupation is first-line supervisors of retail sales workers, which is projected to have 940 annual openings (Exhibit 60).

» **Wages:** The highest paid occupation is producers and directors, $31.22/hour median (Exhibit 60).

» **In-demand qualifications:** The top skill is retail industry knowledge, and the top certification is a driver's license (Exhibits 61 and 62).

Top Job Titles

- Assistant Store Manager

- Assistant Manager

- Store Manager

Exhibit 58. Gender composition of the top occupations in the retail, hospitality, and tourism workforce

Female 46%
Male 54%
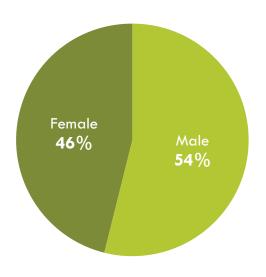
Exhibit 59. Race/ethnicity composition of the top occupations in the retail, hospitality, and tourism workforce

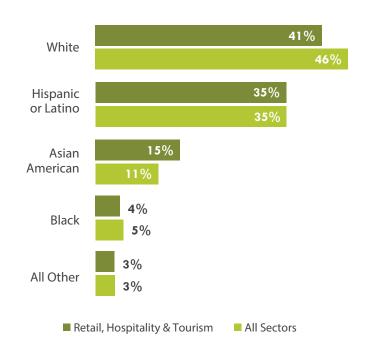|	Retail, Hospitality & Tourism	All Sectors
White	41%	46%
Hispanic or Latino	35%	35%
Asian American	15%	11%
Black	4%	5%
All Other	3%	3%

■ Retail, Hospitality & Tourism   ■ All Sectors

Exhibit 60. Retail, hospitality, and tourism employment, occupational projections, and median wages

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings	Median Wage
First-Line Supervisors of Retail Sales Workers	8,478	8,564	86	1%	940	$19.13
First-Line Supervisors of Food Preparation and Serving Workers	4,792	5,617	825	17%	924	$18.17
Food Service Managers	1,996	2,148	152	8%	266	$20.70
Self-Enrichment Teachers	1,824	1,989	165	9%	248	$19.35
Exercise Trainers and Group Fitness Instructors	1,142	1,362	220	19%	232	$24.71
First-Line Supervisors of Housekeeping and Janitorial Workers	1,096	1,257	160	15%	163	$22.24
Chefs and Head Cooks	834	918	84	10%	128	$21.43
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	948	1,007	59	6%	115	$23.03
Musicians and Singers	783	789	6	1%	95	$21.47
Photographers	553	547	(6)	(1%)	53	$23.15
Producers and Directors	369	406	37	10%	40	$31.22
Music Directors and Composers	240	240	(0)	(0%)	29	$25.10
Morticians, Undertakers, and Funeral Arrangers	186	202	17	9%	26	$22.34
Medical Equipment Repairers	192	210	18	9%	25	$24.72

Exhibit 61. Top specialized skills in job postings for retail, hospitality, and tourism occupations, n=3,825

Skill	Percentage
Retail Industry Knowledge	46%
Customer Service	34%
Store Management	32%
Scheduling	31%
Merchandising	24%

Exhibit 62. Top certifications in job postings for retail, hospitality, and tourism occupations, n=1,283

Certification	Percentage
Driver's License	61%
ServSafe	19%
Food Handler Certification	7%
First Aid CPR AED	6%
Automotive Service Excellence (ASE) Certification	5%

CONCLUSION

Gap analysis

In the SCV/SML subregion, the 10 sectors detailed in this study are projected to offer more than **66,400 annual openings** each year for middle-skill occupations. By comparison, postsecondary institutions in the region are conferring **16,396 awards** (degrees and certificates) on average each year. A comparison between workforce demand and the number of awards being earned shows **a potential undersupply of 50,012 workers** in the subregion.

On average each year, the greatest number of awards are being conferred by programs in the health sector (6,049 awards), business and entrepreneurship sector (1,938 awards), and education sector (1,834 awards). The fewest awards are being conferred in the agriculture, water, and environmental technologies sector (727 awards) and ICT/digital media (679 awards).

The three sectors with the greatest number of annual openings also have the largest potential gaps in workforce supply in the region:

- **Business and entrepreneurship,** a shortage of 10,273 workers

- **Health**, a shortage of 9,836 workers

- **Energy, construction, and utilities,** a shortage of 5,763 workers

Please refer to the separate supplemental section of this report for a comprehensive list of occupations by sector along with current employment, projected demand, and wages. The supplemental section also lists typical education level, work experience, and on-the-job training required for each occupation discussed in the sector sections. Current Population Survey (CPS) data are also included, which can be used to evaluate whether bachelor's-degree-education-level occupations are considered middle skill. An occupation is considered middle skill when one-third or more of current workers in B.A./B.S.-level occupations have completed some college up to an associate degree as their highest level of education. Finally, a thorough inventory of awards by program has also been compiled for the subregion and is included for review.

Occupational titles in job postings

While job postings should not be used as a direct measure of employment demand, they can indicate hiring needs and preferences among employers. To provide additional insights into the occupations that are at the forefront of the current hiring wave, job postings were examined to identify frequently occurring occupational titles. The most commonly occurring occupational titles can indicate jobs with hiring challenges, such as a high churn rate or a severe worker shortage due to other factors.

Advanced Manufacturing—Job postings are highly concentrated for the sector's two largest occupations—first-line supervisors of production and operating workers, and inspectors, testers, sorters, samplers, and weighers.

Advanced Transportation & Logistics—The extreme shortage of truck drivers during the pandemic appears to be affecting the subregion. Job postings for heavy and tractor-trailer truck drivers account for 3,303 out of 4,298 postings, or 77%. Truck drivers remains a highly in-demand occupation across the entire state as has been the case for nearly a decade.

However, the existing problem is now exacerbated by the pandemic along with concurrent supply and supply chain issues.

Agriculture, Water & Environmental Technologies—Job postings for sales representatives, wholesale and manufacturing, except technical and scientific products, account for 74% of postings. This reflects anecdotes from regional directors for employer engagement concerning heightened demand for this type of position due to the poaching of experienced agricultural sales representatives by agriculture companies. This is a highly in-demand occupation in the CVML region.

Business & Entrepreneurship—Job postings are concentrated among the sector's two largest occupations: bookkeeping, accounting, and auditing clerks; and general and operations managers. There is also a high number of postings seeking human resources specialists, indicating that this well-paid occupation, $29.35/hour median, may have a shortage of workers in the subregion.

Education—Education sector employment was deeply affected by the pandemic. Analysis shows 64% of job postings are for preschool teachers, except special education. This is also the top job title in the sector for the subregion.

Energy, Construction & Utilities—About 20% of job postings are for industrial truck and tractor operators in this sector. This occupation's median wage falls below $20/hour, which was part of the selection criteria for the top occupations in the energy, construction, and utilities sector. However, this occupation may still be a promising career choice for students since it is projected to offer 814 annual openings in the subregion and pays a median wage of $17.38/hour.

Health—It has been widely reported that the Central Valley/Mother Lode region is facing an extreme shortage of registered nurses, and hospitals are hiring traveling nurses as a stop-gap measure. In the subregion, 57% of job postings are for registered nurses, which is also the top job title for the sector.

ICT/Digital Media—Ads for secretaries and administrative assistants, except legal, medical, and executive, comprise a third of all job postings, a total of 1,556. This is the second largest occupation in the sector in terms of employment in the subregion. It is possible that this occupation has crossover skills with office clerks, general, which is the largest occupation in the sector and has the most projected annual openings. Office clerks, general, has the second highest number of job postings, 979.

Public Safety—Job postings for EMTs account for 20% of all ads. It has been widely reported that the region is

suffering from a shortage of EMTs due to many factors, including low pay, long hours, and burnout from the pandemic. In general, this sector has very few job postings compared to other sectors, perhaps indicating that agencies hiring for public safety occupations use a different means to recruit job applicants.

Retail, Hospitality & Tourism—Nearly half, 49%, of all job postings are for first-line supervisors of retail sales workers. This is the largest occupation in the sector and has the greatest number of annual openings. Job postings are also concentrated for food service managers, 1,074 ads, and first-line supervisors of food preparation and serving workers, 894 ads.

Workforce demographics

The starkest degree of underrepresentation of women in the subregion exists in the energy construction, and utilities sector, in which women make up only 6% of the workforce. The advanced transportation and logistics sector also has a low percentage of women in its workforce, only 11%, and is followed by advanced manufacturing, 17%. (Women comprise about a third of the public safety workforce and the agriculture, water, and environmental technologies workforce.)

By contrast, men are most severely underrepresented in the health sector, in which only 15% of the workforce is male. Men comprise only 19% of the education sector workforce and 20% of the ICT/digital media sector workforce.

In terms of race/ethnicity composition of the subregion's workforce, Black workers are overrepresented in the public safety sector, comprising 10% of the sector's workforce but only 5% of the overall workforce in the subregion.

Hispanic or Latino workers are overrepresented by 5–8 percentage points in three sectors: advanced manufacturing, advanced transportation and logistics, and education. They are underrepresented by a similar margin in the agriculture, water, and environmental technologies sector and health sector.

Asian American workers are underrepresented in the energy, construction, and utilities sector and the public safety sector. They are overrepresented in the health sector and retail, hospitality, and tourism sector

White workers are underrepresented in the education sector, health sector, and retail, hospitality, and tourism sector. They are noticeably overrepresented in the agriculture, water, and environmental technologies sector, comprising 54% of the sector's workforce but only 46% of the overall workforce in the subregion. Overrepresentation also appears to exist in the energy, construction, and utilities sector.

In-demand occupations

The 10 occupations with the most annual openings across all sectors are listed below. Given that these are highly in-demand jobs in the subregion, these occupations can provide a promising entry-point for students transitioning to the workforce.

In addition, some sectors contain more than one of these occupations due to strong projected growth projections or large employment size for these occupations. These occupations' sectors are highlighted to bring attention to the fact that there are certain areas with more job opportunities than others. To demonstrate this, each occupation with the most annual openings is listed along with the name of the sector in which it occurs. For example, the education sector contains two of these occupations, as does the business and entrepreneurship sector, the ICT/digital media sector, and the retail, hospitality, and tourism sector.

1. Heavy and tractor-trailer truck drivers, **2,529 annual openings** (advanced transportation and logistics)
2. Office clerks, general, **2,308 annual openings** (ICT/digital media)
3. Teaching assistants, except postsecondary, **1,660 annual openings** (education)
4. Substitute teachers, short-term, **759 annual openings** (education)
5. Registered nurses, **1,364 annual openings** (health)
6. Secretaries and administrative assistants, except legal, medical, and executive, **1,245 annual openings** (ICT/digital media)
7. Bookkeeping, accounting, and auditing clerks, **1,153 annual openings** (business and entrepreneurship)
8. Substitute teachers, short-term, **1,071 annual openings** (education)
9. First-line supervisors of retail sales workers, **940 annual openings** (retail, hospitality and tourism)
10. First-line supervisors of food preparation and serving workers, **924 annual openings** (retail, hospitality and tourism)

Well-paid occupations

There are 12 occupations in the subregion that pay median wages above $40/hour and that have more than 50 annual openings. These occupations present a particularly promising opportunity for students preparing to enter the workforce. College administrators and faculty may choose to highlight these occupations as avenues that can advance economic opportunities for students.

1. First-line supervisors of correctional officers, **$49.16** (public safety)
2. General and operations managers, **$46** (business and entrepreneurship)
3. Industrial production managers, **$45.51** (advanced manufacturing)
4. Detectives and criminal investigators, **$45.51** (public safety)
5. Telecommunications line installers and repairers, **$45.07** (energy, construction, and utilities)
6. Administrative services and facilities managers, **$44.34** (energy, construction, and utilities)
7. Registered nurses, **$44.19** (health)
8. Network and computer systems administrators, **$43.36** (ICT/digital media)
9. Correctional officers and jailers, **$41.98** (public safety)
10. Sales representatives, wholesale and manufacturing, technical and scientific products, **$41.75** (business and entrepreneurship)

11. Electrical power-line installers and repairers, **$40.92** (energy, construction, and utilities)

12. Logisticians, **$40.05** (advanced transportation and logistics)

Recommendations

- **Close workforce gaps through careful program outcome analysis.** The gap analysis identifies areas in which an undersupply of workers exist. The largest undersupplies exist for business and entrepreneurship, health, and energy, construction, and utilities. A localized examination of program offerings by college and how they supply students for career pathways leading into top occupations in these sectors may be warranted to address the shortages and ensure that employer needs are being met in the subregion.

- **Assess the support and services available to help underrepresented students access and succeed in careers in which they may be a minority.** Based on the findings on the composition of the workforce by sector in terms of gender and race/ethnicity, the community colleges in the subregion are encouraged to conduct a comparison with the demographic composition of students in programs that they offer, in order to evaluate whether programs are moving the needle regarding equitable access for and diversity of students entering related pathways. The colleges may want to take a closer look at what types of supports are needed for underrepresented students to succeed and persist in careers in sectors containing disparities in terms of gender or race/ethnicity.

- **Target high-wage, in-demand occupations as workforce entry-points for students.** Community colleges in the region may want to conduct deep-dives into program outcomes to determine if existing programs are targeting this report's top occupations that are well paid and in high demand as workforce entry-points for students. The occupations with high annual openings, high wages, or both that are highlighted in this section are particularly worth analyzing. In particular, several standout occupations are general and operations managers, $46/hour median with 1,037 annual openings in the business and entrepreneurship sector; registered nurses, $44.19/hour median with 1,364 annual openings in the health sector; and correctional officers and jailers, $41.98/hour median with 800 annual openings in the public safety sector. The energy, construction, and utilities sector also has several occupations that pay the highest wages among all occupations in all sectors.

- **Evaluate the role that specific skills may be playing in employer hiring decisions by sector.** During the pandemic, the value that employers place on skills, as opposed to degrees and certificates, has increased due to the widespread workforce shortage affecting nearly every sector and transforming many jobs. Employers are requiring workers to be adept at many different types of tasks to compensate for positions that are unfilled or experiencing high turnover. Community colleges can use the in-demand certifications and specialized skills identified for each sector to calibrate programs to meet employer needs in the subregion.

APPENDIX A: TERMS & DEFINITIONS

Data Sources

Labor market and educational supply data compiled in this report derive from a variety of sources. Data were drawn from external sources, including Emsi, Burning Glass, the California Community Colleges Chancellor's Office Management Information Systems Data Mart, and the National Center for Educational Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS). Below is the summary of the data sources found in this study.

Data Type	Source
Labor Market Information/Population Estimates and Projections/Educational Attainment	Emsi occupational employment data are based on final Emsi industry data and final Emsi staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level EMSI earnings by industry: economicmodeling.com.
Typical Education Level and On-the-job Training	Bureau of Labor Statistics (BLS) uses a system to assign categories for entry-level education and typical on-the-job training to each occupation for which BLS publishes projections data: bls.gov/emp/tables/educational-attainment.htm.
Labor Force, Employment and Unemployment Estimates	California Employment Development Department, Labor Market Information Division: labormarketinfo.edd.ca.gov.
Job Posting and Skills Data	Burning Glass: burning-glass.com.
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 occupations as well as information on skills, abilities, knowledge, work activities and interests associated with specific occupations: onetonline.org.

Key Terms and Concepts

Annual Job Openings: Annual openings are calculated by dividing the number of years in the projection period by total job openings.

Education Attainment Level: The highest education attainment level of workers age 25 years or older.

Employment Estimate: The total number of workers currently employed.

Employment Projections: Projections of employment are calculated by a proprietary Economic Modeling Specialists, Intl. (EMSI) formula that includes historical employment and economic indicators along with national, state and local trends.

Living Wage: The cost of living in a specific community or region for one adult and no children. The cost increases with the addition of children.

Occupation: An occupation is a grouping of job titles that have a similar set of activities or tasks that employees perform.

Percent Change: Rate of growth or decline in the occupation for the projected period; this does not factor in replacement openings.

Replacements: Estimate of job openings resulting from workers retiring or otherwise permanently leaving an occupation. Workers entering an occupation often need training. These replacement needs, added to job openings due to growth, may be used to assess the minimum number of workers who will need to be trained for an occupation.

Total Job Openings (New + Replacements): Sum of projected growth (new jobs) and replacement needs. When an occupation is expected to lose jobs, or retain the current employment level, number of openings will equal replacements.

Typical Education Requirement: represents the typical education level most workers need to enter an occupation.

Typical On-The-Job Training: indicates the typical on-the-job training needed to attain competency in the skills needed in the occupation.

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The Centers of Excellence (COE) for Labor Market Research deliver regional workforce research and technical expertise to California Community Colleges for program decision making and resource development. This information has proven valuable to colleges in beginning, revising, or updating economic development and Career Education (CE) programs, strengthening grant applications, assisting in the accreditation process, and in supporting strategic planning efforts.

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