

Labor Market Analysis for Program Recommendation: 0114.00/ Forestry (Associate of Science) CVML Center of Excellence, July 2025



Summary

Program LMI Endorsement	Endorsed: All LMI Criteria Met <input type="checkbox"/>	Endorsed: Some LMI Criteria Met <input checked="" type="checkbox"/>	Not LMI Endorsed <input type="checkbox"/>
Program LMI Endorsement Criteria			
	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Supply Gap:	Comments: There are projected to be 1,383 annual job openings throughout the SCV/SML subregion for the four <i>sustainable outdoor recreation leadership</i> -related occupations, which are more than the 134 awards conferred by educational institutions in the SCV/SML subregion.		
	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Living Wage: (Entry-Level, 25th):	Comments: Three of the four <i>sustainable outdoor recreation leadership</i> -related occupations included in this report have an entry-level hourly wage above the SCV/SML living wage of \$16.08.		
	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Education:	Comments: The typical entry-level education for <i>Forest and Conservation Technicians</i> is an associate degree and the typical entry-level education for <i>Recreation Workers, First-Line Supervisors of Farming, Fishing, and Forestry Workers</i> and <i>Forest and Conservation Workers</i> is a high school diploma or equivalent. Additionally, between 20% and 37% have completed some college or an associate degree as their highest level of education.		
Emerging Occupations(s)			
	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>	
Comments: N/A			

The CVML Center of Excellence for Labor Market Research (CVML COE) prepared this report to determine whether there is a supply gap in the South Central Valley/Southern Mother Lode regional labor market related to the following middle-skill occupations:

- Forest and Conservation Technicians (SOC 19-4071)
- Recreation Workers (SOC 39-9032)
- First-Line Supervisors of Farming, Fishing, and Forestry Workers (SOC 45-1011)
- Forest and Conservation Workers (SOC 45-4011)

Middle-skill occupations typically require a community college education while above middle-skill occupations typically require at least a bachelor's degree.

Based on the available data, there appears to be a supply gap for *sustainable outdoor recreation leadership*-related occupations. In addition to most of these occupations having entry-level wages above the subregion's living wage, between 20% and 37% of workers have completed some college or an associate degree as

their highest level of education. **Therefore, due to most of the regional labor market criteria being met, the COE endorses this proposed program.**

Exhibit 1 lists the occupational demand, supply, typical entry-level education, and educational attainment for *sustainable outdoor recreation leadership*-related occupations.

Exhibit 1: Labor Market Endorsement Summary

Occupation (SOC)	Demand (Annual Openings)	Supply (CC and Non-CC)	Entry-Level Hourly Earnings (25th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Forest and Conservation Technicians (19-4071)	NCV/NML: 54 SCV/SML: 82	NCV/NML: 13 SCV/SML: 98	NCV/NML: \$19.71 SCV/SML: \$21.79	Associate degree	32%
Recreation Workers (39-9032)	NCV/NML: 373 SCV/SML: 599		NCV/NML: \$16.74 SCV/SML: \$16.18	High school diploma or equivalent	37%
First-Line Supervisors of Farming, Fishing, and Forestry Workers (45-1011)	NCV/NML: 180 SCV/SML: 622		NCV/NML: \$17.11 SCV/SML: \$17.16	High school diploma or equivalent	24%
Forest and Conservation Workers (45-4011)	NCV/NML: 44 SCV/SML: 80		NCV/NML: \$15.6 SCV/SML: \$15.60	High school diploma or equivalent	20%
Total	2,033	111	-	-	-

Demand:

- The number of jobs for the four *sustainable outdoor recreation leadership*-related occupations are projected to increase 6% through 2028. There will be 1,383 annual job openings in the SCV/SML subregion.
- Three of the four *sustainable outdoor recreation leadership*-related occupations have an entry-level hourly wage above the SCV/SML living wage of \$16.08.
- There were 295 online job postings for *sustainable outdoor recreation leadership*-related occupations over the past 12 months.
- The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for *Forest and Conservation Technicians*, and high school diploma or equivalent for *Recreation Workers*, *First Line Supervisors of Farming, Fishing, and Forestry Workers* and *Forest and Conservation Workers*.
- National-level educational attainment data indicates that between 20% to 37% of workers in the field have completed some college or an associate degree as their highest level of education.

Supply:

- Between 2021 and 2024, there was an average of 97 awards conferred by community colleges in the SCV/SML subregion.
- Between 2020 and 2023, there were no non-community college institutions in the SCV/SML subregion that conferred awards in relevant programs.

Demand

Occupational Projections

Exhibit 2 shows the annual percent change in jobs for the four *sustainable outdoor recreation leadership*-related occupations from 2018 through 2028. The SCV/SML subregion experienced the highest growth in 2018 at 8%, compared to the 2% growth across all CA occupations. The SCV/SML subregion only experienced negative growth rates in 2019 (-5%) and 2020 (-3%). The percent change was highest in 2022 and 2023 and is expected to stabilize at 1% from 2025 through 2028.

Exhibit 2: Annual Percent Change in Jobs for Sustainable Outdoor Recreation Leadership-Related Occupations, 2018-2028

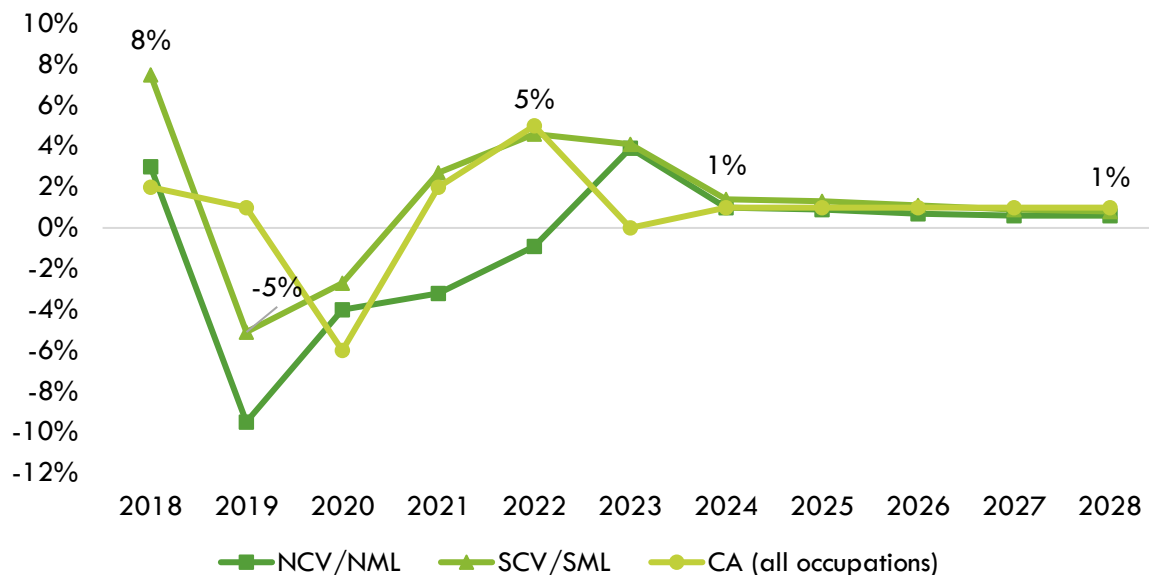


Exhibit 3 shows the five-year occupational demand projections for *sustainable outdoor recreation leadership*-related occupations. In the SCV/SML subregion, the number of jobs related to these occupations are projected to increase by 6% through 2028. There are projected to be 1,383 jobs available annually in the SCV/SML subregion.

Exhibit 3: Occupational Demand in NCV/NML, SCV/SML, and CVML¹

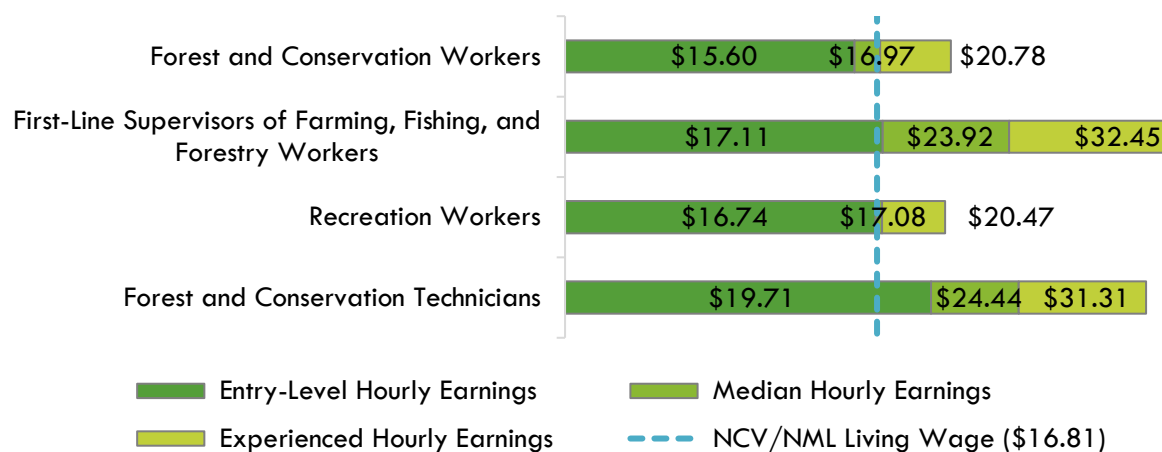
Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
NCV/NML	3,633	3,770	137	4%	650
SCV/SML	8,022	8,474	452	6%	1,383
CVML	11,655	12,244	589	5%	2,033

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for the four *sustainable outdoor recreation leadership*-related occupations as they relate to the subregions and region's living wage. NCV/NML, SCV/SML, and CVML wages are included below to provide a complete analysis of the region.

Two of the four *sustainable outdoor recreation leadership*-related occupations have an entry-level hourly wage above the living wage for one adult in the NCV/NML subregion (\$16.81). The NCV/NML subregion average wage for these occupations is \$22.71, which is above the average statewide wage of \$21.81. Exhibit 4a shows the wage range for *sustainable outdoor recreation leadership*-related occupations and how they compare to the NCV/NML subregion's living wage.

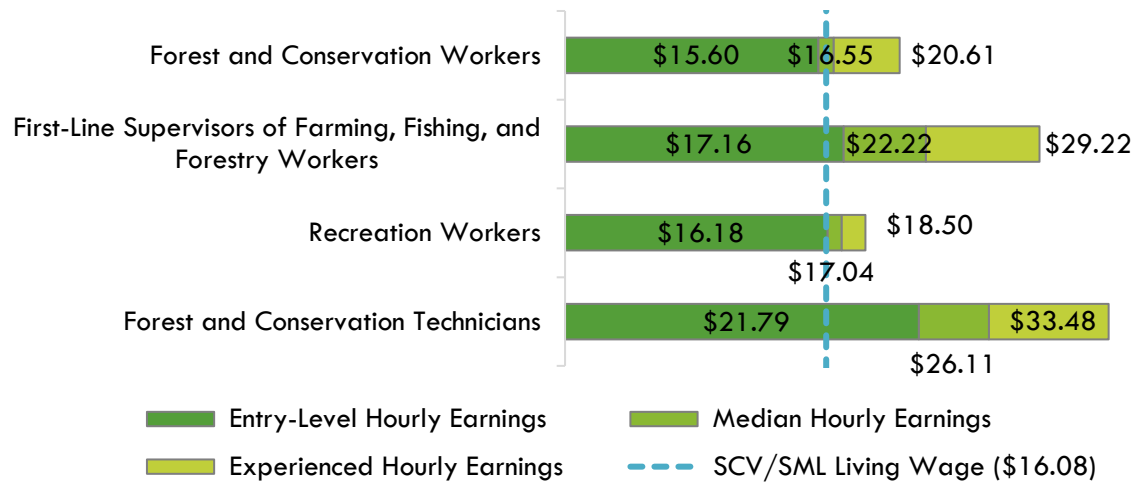
Exhibit 4a: Wages by Occupation in NCV/NML



Three of the four *sustainable outdoor recreation leadership*-related occupations have an entry-level hourly wage above the living wage for one adult in the SCV/SML subregion (\$16.08). The SCV/SML subregion average wage for these occupations is \$22.72, which is above the average statewide wage of \$21.81. Exhibit 4b shows the wage range for *sustainable outdoor recreation leadership*-related occupations and how they compare to the SCV/SML subregion's living wage.

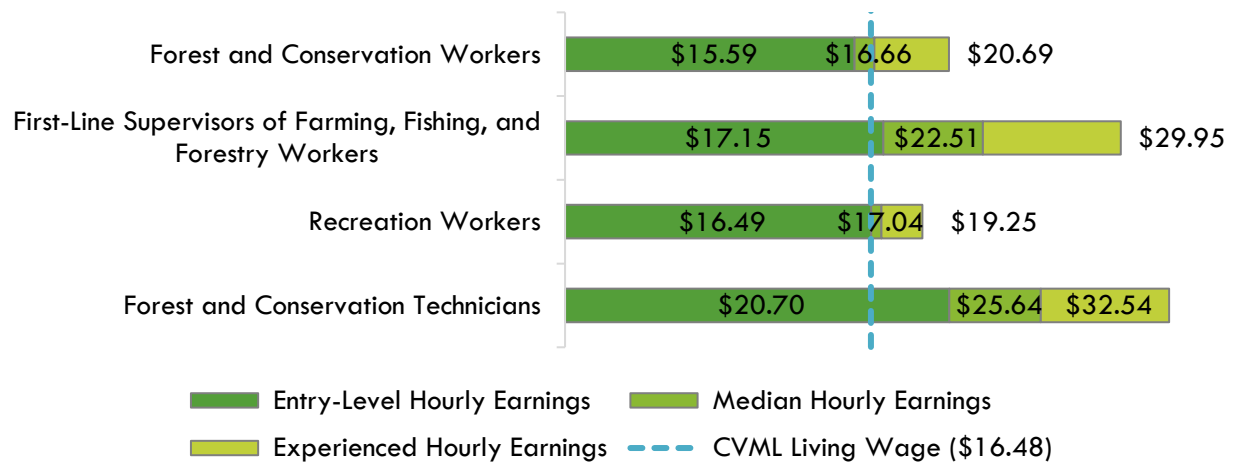
¹Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Exhibit 4b: Wages by Occupation in SCV/SML



Three of the four *sustainable outdoor recreation leadership*-related occupations have an entry-level hourly wage above the living wage for one adult in the CVML region (\$16.48). The CVML region's average wage for these occupations is \$22.72, which is above the average statewide wage of \$21.81. Exhibit 5 shows the wage range for *sustainable outdoor recreation leadership*-related occupations and how they compare to the CVML region's living wage.

Exhibit 5: Wages by Occupation in CVML



Job Postings:

Important Online Job Postings Data Note: Online job postings data is sourced from Lightcast, a labor market analytics firm that scrapes, collects, and organizes data from online job boards such as LinkedIn, Indeed, Glassdoor, Monster, GovernmentJobs.com, and thousands more. Lightcast uses natural language processing (NLP) to determine the related company, industry, occupation, and other information for each job posting. However, NLP has limitations that include understanding contextual words of phrases; determining differences in words that can be used as nouns, verbs, and/or adjectives; and misspellings or grammatical errors.² For these reasons, job postings could be assigned to the wrong employer, industry, or occupation within Lightcast's database.

²K. R. Chowdhary, Fundamentals of Artificial Intelligence (Basingstoke: Springer Nature, 2020), <https://link.springer.com/book/10.1007/978-81-322-3972-7>

Additionally, there are several limitations when analyzing job postings. A single job posting may not represent a single job opening, as employers may be creating a pool of candidates for future openings or hiring for multiple positions with a single posting. Additionally, not all jobs are posted online, and jobs may be filled through other methods such as internal promotion, word-of-mouth advertising, physical job boards, or a variety of other channels.

There were 295 online job postings for the four sustainable outdoor recreation leadership-related occupations listed in the past 12 months (Exhibit 6).

Exhibit 6: Number of Job Postings by Occupation (n=295)

Occupations	Job Postings	Percentage of Job Postings
Recreation Workers	244	83%
Forest and Conservation Technicians	31	11%
Forest and Conservation Workers	19	6%
First-Line Supervisors of Farming, Fishing, and Forestry Workers	1	0%

The top employers in the region for sustainable outdoor recreation leadership-related occupations, by number of job postings, are shown in Exhibit 7.

Exhibit 7: Top Employers by Number of Job Postings (n=295)

Employer	Job Postings	Percentage of Job Postings
United States Forest Service	16	5%
PayPal	14	5%
City of Fresno	13	4%
Big 5 Sporting Goods	9	3%
Powdr Corporation	8	3%
Rolling Hills Care Center	6	2%
Fresno Pacific University	5	2%
Girl Scouts of Greater Los Angeles	5	2%
Innovative Integrated Health	5	2%
Cedarbrook	5	2%

The top specialized, common, and software skills for *sustainable outdoor recreation leadership*-related occupations are listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 8.

Exhibit 8: Top Skills by Number of Job Postings (n=295)

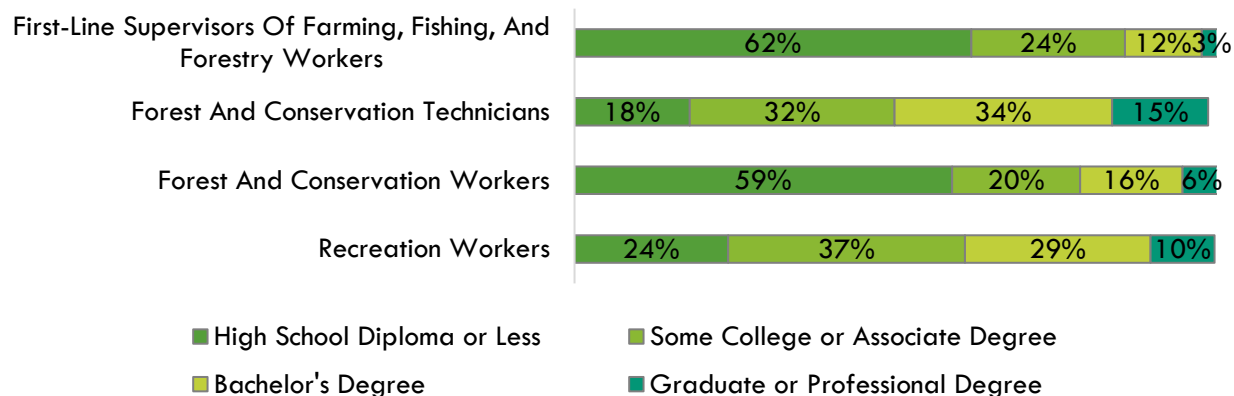
Top Specialized Skills	Top Soft Skills	Top Computer Skills
Forestry (29)	Communication (120)	Microsoft Office (25)
Agriculture (21)	Planning (100)	Microsoft Excel (22)
Cardiopulmonary Resuscitation (CPR) (21)	Management (80)	Microsoft PowerPoint (17)
Rangeland Management (19)	Operations (61)	Microsoft Outlook (12)
Wildfire Suppression (19)	Leadership (53)	Microsoft Word (9)
Long-Term Care (17)	Customer Service (44)	Mono (7)
Instructing (16)	Coordinating (40)	Zoom (Video Conferencing Tool) (5)
Recreational Therapy (15)	English Language (37)	ArcGIS (GIS Software) (5)
Resource Management (15)	Enthusiasm (32)	Spreadsheets (4)
Fire Suppression Systems (14)	Interpersonal Communications (30)	React.js (Javascript Library) (3)

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for *Forest and Conservation Technicians* and a high school diploma or equivalent as the typical entry-level education for *Recreation Workers*, *First-Line Supervisors of Farming, Fishing, and Forestry Workers*, and *Forest and Conservation Workers*. National-level educational attainment data indicates that between 20% and 37% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 9 shows the educational attainment for the four *sustainable outdoor recreation leadership*-related occupations.

Of the 295 online job postings, 53% (equivalent to 156 postings) of cumulative job postings listed a minimum education requirement in the SCV/SML subregion. Of the 156 postings, 82% (128) requested a high school diploma or GED.

Exhibit 9: National-level Educational Attainment for Sustainable Outdoor Recreation Leadership-Related Occupations



Educational Supply

Community College Supply:

Exhibit 10a and 10b show the annual and three-year average number of awards conferred by community colleges in the programs that have historically trained for the occupations included in this report. The college with the most completions is Reedley (South).

Exhibit 10a: NCV/NML Community College Awards (Certificates and Degrees) 2021-22 through 2023-24

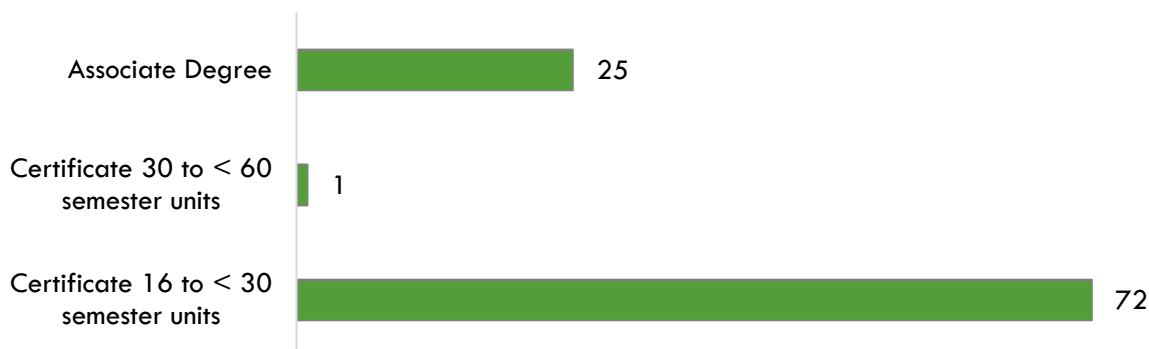
TOP Code	Program	College	2021-2022 Awards	2022-2023 Awards	2023-2024 Awards	3-Year Award Average
0114.00	Forestry	Columbia	7	17	14	13
Subtotal/Average			7	17	14	13
NCV/NML Supply Grand Total			7	17	14	13

Exhibit 10b: SCV/SML Community College Awards (Certificates and Degrees) 2021-22 through 2023-24

TOP Code	Program	College	2021-2022 Awards	2022-2023 Awards	2023-2024 Awards	3-Year Award Average
0114.00	Forestry	Bakersfield	14	13	10	12
		Reedley College	56	77	123	85
Subtotal/Average			70	90	133	98
SCV/SML Supply Grand Total			70	90	133	98

Exhibit 11 shows the annual average community college awards by type from 2021-22 through 2023-24. Of the 98 awards conferred in the SCV/SML subregion, 73% (72) of these awards were for a certificate 16 < 30 semester units.

Exhibit 11: Annual Average Community College Awards (SCV/SML) by Type, 2021-2024



Community College Student Outcomes:

Exhibit 12 shows the Strong Workforce Program (SWP) metrics for Forestry and Recreation Assistant programs in the Kern Community College District (KCCD), the SCV/SML subregion, the CVML region, and California.

Of the 1,540 forestry students statewide in the 2023-2024 academic year, 36% (550) attended a CVML Institution. KCCD students that exited forestry programs in the 2023-2024 academic year had less median annual earnings (\$26,404) compared to all forestry students in SCV/SML subregion (\$33,162) and statewide (\$44,902). Notably, 48% of KCCD forestry students attained a living wage, which is lower than the percentage of students who attained a living wage statewide (57%).

Exhibit 12: Forestry (0114.00) Strong Workforce Program Metrics

SWP Metric	KCCD	SCV/SML Subregion	CVML Region	California
SWP Students	149	416	550	1,540
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	44%	43%	49%	32%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	87%	83%	81%	96%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	5%	17%	15%	8%
SWP Students Who Transferred to a Four-Year Postsecondary Institution	N/A	5%	4%	4%
SWP Students with a Job Closely Related to Their Field of Study	N/A	N/A	N/A	56%

SWP Metric	KCCD	SCV/SML Subregion	CVML Region	California
Median Annual Earnings for SWP Exiting Students	\$26,404 (\$12.69)	\$33,162 (\$15.94)	\$33,574 (\$16.14)	\$44,902 (\$21.59)
Median Change in Earnings for SWP Exiting Students	154%	106%	89%	17%
SWP Exiting Students Who Attained the Living Wage	48%	48%	49%	57%



2023-2024



2022-2023



2021-2022



N/A

Non-Community College Supply:

For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for the occupations studied in this report. This includes examining the annual and three-year average number of awards conferred by non-community college institutions in programs that have historically trained for the occupations of interest.

Between 2020 and 2023, there were no non-community college institutions in the NCV/NML or SCV/SML subregions that conferred awards annually in related training programs.

Appendix A: Methodology

The CVML COE prepared this report by analyzing data from occupations and education programs.

Occupational data is derived from Lightcast, a labor market analytics firm that consolidates data from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS) and other government agencies. Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

Using a TOP-SOC crosswalk, the CVML COE identified middle-skill jobs for which programs within these TOP codes train. Middle-skill jobs include:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

The CVML COE determined labor market supply for an occupation or SOC code by analyzing the number of program completers or awards in a related TOP or CIP code. The COE developed a “supply table” with this information, which is the source of the program supply data for this report. TOP code data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP code data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data), also known as IPEDS. TOP is a system of numerical codes used at the state level to collect and report information on California community college programs and courses throughout the state that have similar outcomes. CIP codes are a taxonomy of academic disciplines at institutions of higher education in the United States and Canada. Institutions outside of the California Community College system do not use TOP codes in their reporting systems.

Data included in this analysis represent the labor market demand for relevant positions most closely related to the proposed program as expressed by the requesting college in consultation with the CVML COE. Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study which can signal demand and show what employers are looking for in potential employees but is not a perfect measure of the quantity of open positions.

All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

Appendix B: Data Sources

Data Type	Source
Occupational Projections, Wages, and Job Postings	Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics and the American Community Survey. For more information, see https://lightcast.io/
Living Wage	<p>The living wage is derived from the Insight Center's California Family Needs Calculator, which measures the income necessary for an individual of family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. For more information, see: https://selfsufficiencystandard.org/California/</p> <p>Wage figures are used by the CCCCCO to calculate the percentage of students that attained the regional living wage.</p>
Typical Education and Training Requirements, and Educational Attainment	The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, see https://www.bls.gov/emp/documentation/education/tech.htm
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	The O*NET database includes information on skills, abilities, knowledges, work activities, and interests associated with occupations. For more information, see https://www.onetonline.org/help/online/
Educational Supply	<p>The CCCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu</p> <p>The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions). For more information, see https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions</p>
Student Metrics and Demographics	DataVista, a statewide data system supported by the California Community Colleges Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: https://datavista.cccco.edu/
Population and Occupation Demographics	<p>The Census Bureau's American Community Survey (ACS) is the premier source for detailed population and housing information. For more information, see: https://www.census.gov/programs-surveys/acs</p> <p>Data is sourced from IPUMS USA, a database providing access to ACS and other Census Bureau data products. For more information, see: https://usa.ipums.org/usa/about.shtml</p>

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