

Labor Market Analysis for Program Recommendation: 0702.00/Computer Information Systems (Certificate of Achievement)

CVML Center of Excellence, October 2025



FOR LABOR MARKET RESEARCH
CENTRAL VALLEY/MOTHER LODGE

Summary

Program LMI Endorsement	Endorsed: All LMI Criteria Met ☒	Endorsed: Some LMI Criteria Met ☐	Not LMI Endorsed ☐
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Program LMI Endorsement Criteria

	Yes ☒	No ☐
Supply Gap:	<i>Comments:</i> There is projected to be 1 annual job opening throughout the SCV/SML subregion for <i>data analytics</i>-related occupations, which is less than the 337 awards conferred by educational institutions in the SCV/SML subregion (CC + Non-CC). However, the oversupply is within the COE's margin (25% over or under the number of annual job openings) to be considered "supply met" rather than a "supply gap". <i>Note:</i> Only middle-skill jobs are considered when determining supply gap. Including above middle-skill annual job openings increases the overall annual job openings by 312 to a total of 313. <i>Business Intelligence Analysts</i> is an emerging occupation, and therefore is not included in the supply.	
Living Wage: (Entry-Level, 25 th):	Yes ☒	No ☐
	<i>Comments:</i> All three <i>data analytics</i>-related occupations included in this report have an entry-level hourly wage above the SCV/SML living wage of \$16.08.	
Education:	Yes ☒	No ☐
	<i>Comments:</i> The typical entry-level education for <i>data analytics</i>-related occupations is a bachelor's degree. Additionally, between 10% and 36% have completed some college or an associate degree as their highest level of education.	

Emerging Occupations(s)

Yes ☐	Some ☒	No ☒
<i>Comments:</i> This report focuses on <i>Data Scientists</i> (15-2051), which includes data for the emerging occupation, <i>Business Intelligence Analysts</i> (15-2051.01). Data for the emerging occupation is developing and currently limited, and therefore cannot be analyzed on its own.		

The Central Valley/Mother Lode 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 occupations:

- Middle-Skill
 - Statistical Assistants (43-9111)
- Above Middle-Skill - denoted with a caret (^) throughout this report
 - Market Research Analysts and Marketing Specialists (13-1161)^
 - Data Scientists (15-2051)^

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 does appear to be a supply gap for *data analytics*-related occupations. In addition to these occupations having entry-level wages above the subregion's living wage, between 10% and 36% of workers in this field have completed some college or an associate degree as their highest level of education. **Therefore, due to all 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 *data analytics*-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
Statistical Assistants (43-9111)	Insufficient Data SCV/SML: 1	NCV/NML: 160 SCV/SML: 337	Insufficient Data SCV/SML: \$27.06	Bachelor's degree	36%
Middle-Skill Total	2	497	-	-	-
Market Research Analysts and Marketing Specialists (13-1161)^	NCV/NML: 171 SCV/SML: 263	NCV/NML: 160 SCV/SML: 337	NCV/NML: \$25.24 SCV/SML: \$23.50	Bachelor's degree	14%
Data Scientists (15-2051)^	NCV/NML: 27 SCV/SML: 49		NCV/NML: \$35.59 SCV/SML: \$33.69	Bachelor's degree	10%
Above Middle-Skill Total	509	497	-	-	-
Total	511		-	-	-

Demand:

- The number of jobs related to the three *data analytics*-related occupations in this report are projected to increase 9% through 2029. There will be 313 annual job openings in the SCV/SML subregion.
- All three *data analytics*-related occupations have an entry-level hourly wage above the living wage of \$16.08 in the SCV/SML subregion.

- There were 732 online job postings for *data analytics*-related occupations over the past 12 months.
- The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for the three *data analytics*-related occupations.
- National-level educational attainment data indicates that between 10% and 36% 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 241 awards conferred by community colleges in the SCV/SML subregion.
- Between 2020 and 2023, non-community college institutions in the SCV/SML subregion conferred an average of 96 awards in relevant programs.

Demand

Occupational Projections

Exhibit 2 shows the annual percent change in jobs for the three *data analytics*-related occupations from 2019 through 2029. The SCV/SML subregion experienced the highest growth in 2022 at 12%, compared to the 5% growth across all CA occupations. The SCV/SML subregion experienced a 4% growth in 2023, compared to the 0% growth across all CA occupations. From 2025 to 2029, growth is projected to remain fairly steady (between 1% and 3%) in the SCV/SML subregion.

Exhibit 2: Annual Percent Change in Jobs for Data Analytics-Related Occupations, 2019-2029

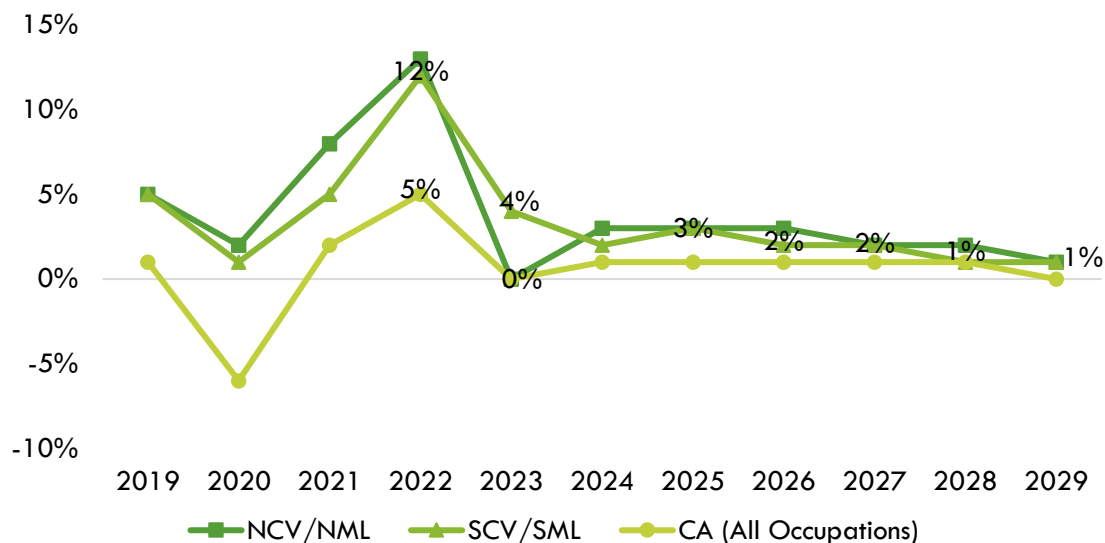


Exhibit 3 shows the five-year occupational demand projections for the three *data analytics*-related occupations. In the SCV/SML subregion, the number of jobs related to these occupations are projected to increase by 9% through 2029. There are projected to be 313 jobs available annually in the SCV/SML subregion.

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

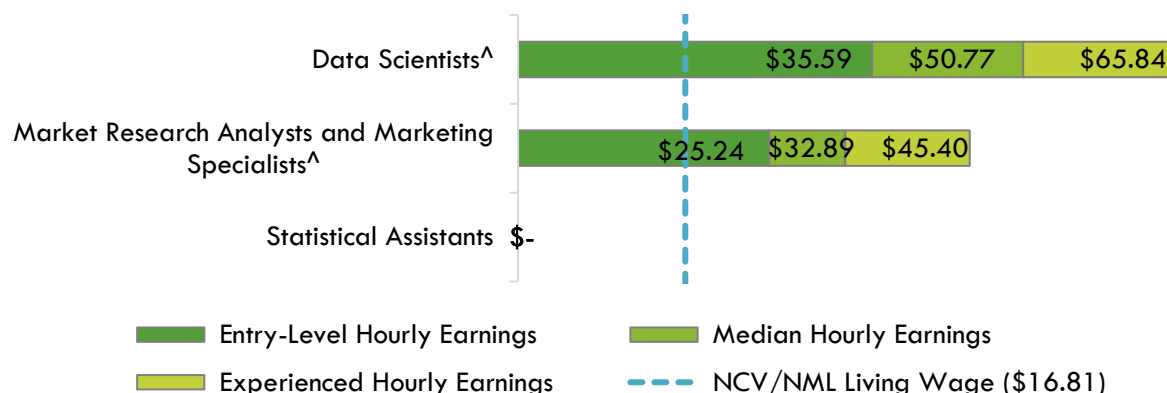
Geography	2024 Jobs	2029 Jobs	2024-2029 Change	2024-2029 % Change	Annual Openings
NCV/NML	1,788	2,001	213	12%	198
SCV/SML	3,042	3,323	281	9%	313
CVML	4,830	5,324	494	10%	511

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for the three *data analytics*-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 three *data analytics*-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 \$41.25, which is below the average statewide wage of \$56.85. Exhibit 4a shows the wage range for *data analytics*-related occupations and how they compare to the NCV/NML subregion's living wage. *Note:* there is insufficient wage data for *Statistical Assistants* in the NCV/NML subregion.

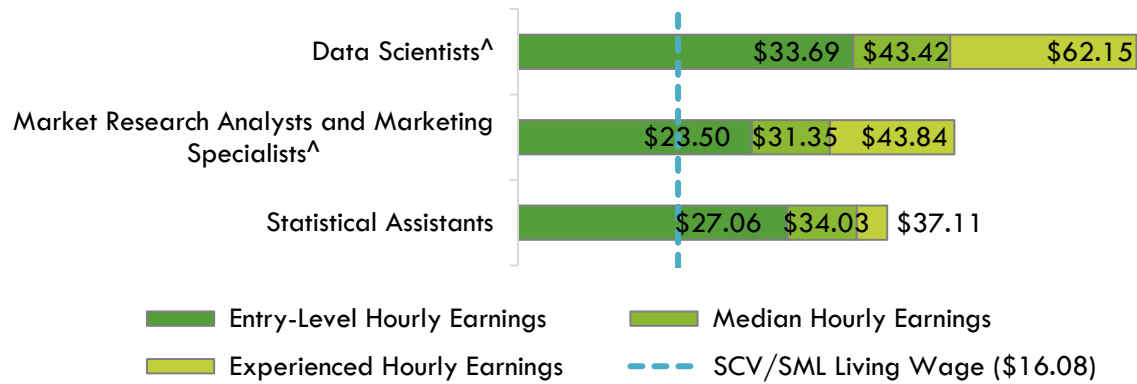
Exhibit 4a: Wages by Occupation in NCV/NML



All three *data analytics*-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 \$39.28, which is below the average statewide wage of \$56.85. Exhibit 4b shows the wage range for *data analytics*-related occupations and how they compare to the SCV/SML subregion's living wage.

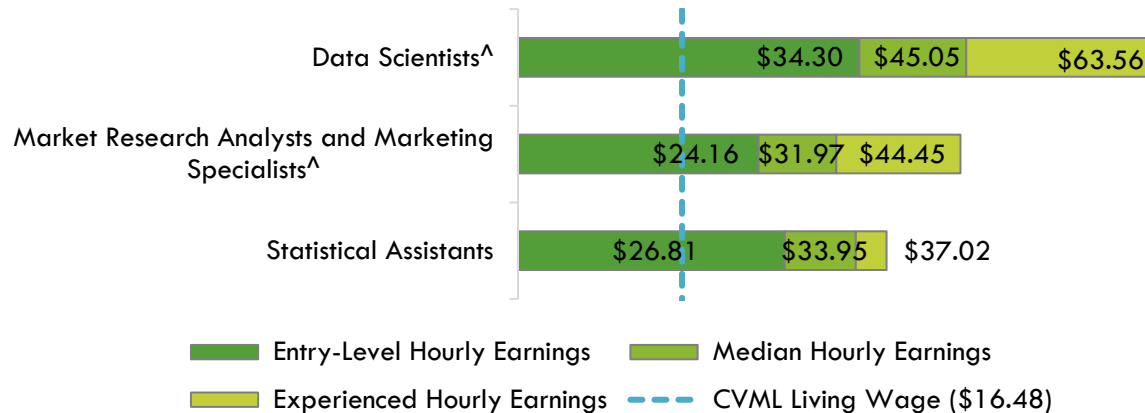
¹Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Exhibit 4b: Wages by Occupation in SCV/SML



All three *data analytics*-related occupations have an entry-level hourly wage above the living wage for one adult in the CVML region (\$16.48). The CVML region average wage for these occupations is \$40.01, which is below the average statewide wage of \$56.85. Exhibit 5 shows the wage range for *data analytics*-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.

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.

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

There were 732 online job postings related to *data analytics*-related occupations listed in the past 12 months (Exhibit 6).

Exhibit 6: Number of Job Postings by Job Titles (n=732)

Job Titles	Job Postings	Percentage of Job Postings
Market Research Analysts and Marketing Specialists	472	64%
Business Intelligence Analysts	236	32%
Data Scientists	24	3%

The top employers in the region for *data analytics*-related occupations, by number of job postings, are shown in Exhibit 7.

Exhibit 7: Top Employers by Number of Job Postings (n=732)

Employer	Job Postings	Percentage of Job Postings
Deloitte	40	5%
Abercrombie & Fitch	15	2%
Kern Community College District	14	2%
Valley Children's Healthcare	12	2%
Cedars-Sinai	10	1%
PayPal	9	1%
Lithia Motors	7	1%
Scdc	6	1%
Olympus Solutions	6	1%
The Wonderful Company	6	1%

The top specialized, common, and software skills for *data analytics*-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=732)

Top Specialized Skills	Top Soft Skills	Top Computer Skills
Marketing (289)	Communication (342)	Microsoft Excel (102)
Data Analysis (146)	Sales (235)	Microsoft Office (79)

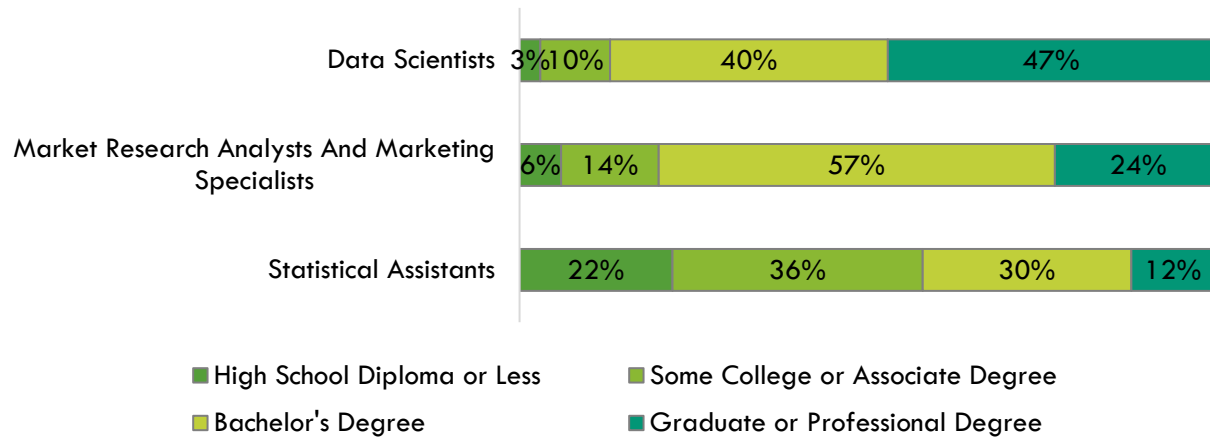
Top Specialized Skills	Top Soft Skills	Top Computer Skills
Social Media (92)	Management (173)	SQL (Programming Language) (78)
Business Development (87)	Problem Solving (136)	Microsoft PowerPoint (71)
SQL (Programming Language) (72)	Presentations (124)	Dashboard (66)
Computer Science (67)	Customer Service (123)	Python (Programming Language) (56)
Finance (66)	Detail Oriented (113)	Power BI (46)
Customer Relationship Management (65)	Operations (111)	Tableau (Business Intelligence Software) (42)
Digital Marketing (60)	Microsoft Excel (102)	SAP Applications (40)
Dashboard (59)	Writing (98)	R (Programming Language) (37)

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for the three *data analytics*-related occupations. National-level educational attainment data indicates that between 10% and 36% 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 *data analytics*-related occupations.

Of the 732 online job postings, 51% (equivalent to 374 postings) of cumulative job postings for the three *data analytics*-related occupations listed a minimum education requirement in the SCV/SML subregion. Of the 374 postings, 66% (248) requested a bachelor's degree.

Exhibit 9: National-level Educational Attainment for Data Analytics-Related Occupations



Educational Supply

Community College Supply:

Exhibits 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 colleges with the most completions are Merced (North) and Cerro Coso (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
0599.00	Other Business and Management	San Joaquin Delta	1	1	-	1
Subtotal/Average			1	1	-	1
0702.00	Computer Information Systems	Columbia	-	1	-	-
		Merced	10	21	28	20
		San Joaquin Delta	19	17	21	19
Subtotal/Average			29	39	49	39
0706.00	Computer Science (transfer)	Merced	30	40	23	31
		Modesto	37	21	41	33
		San Joaquin Delta	7	10	17	11
Subtotal/Average			74	71	81	75
NCV/NML Supply Grand Total			104	111	130	115

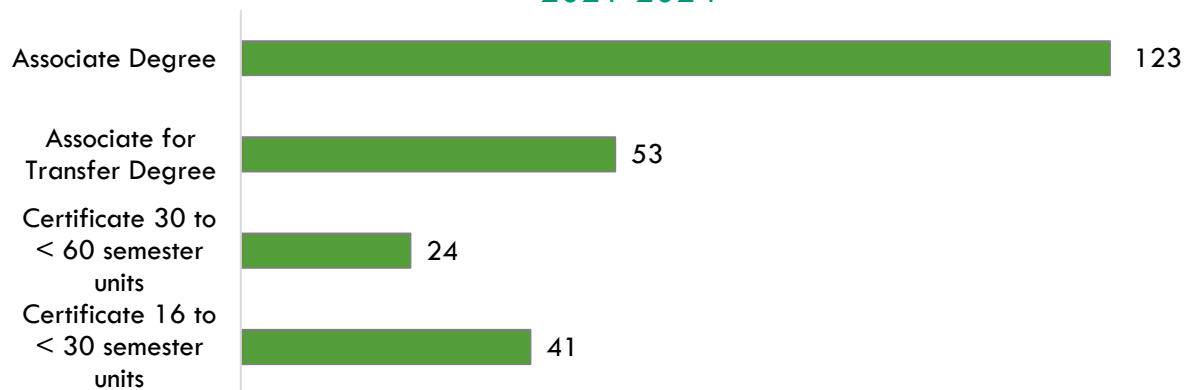
**Exhibit 10b: SCV/SML Community College Awards (Certificates and Degrees)
2021-22 through 2023-24**

TOP Code	Program	College	2021-2022 Awards	2022-2023 Awards	2023-2024 Awards	3-Year Award Average
0599.00	Other Business and Management	Fresno City	-	-	1	-

TOP Code	Program	College	2021-2022 Awards	2022-2023 Awards	2023-2024 Awards	3-Year Award Average
Subtotal/Average			-	-	1	-
0702.00	Computer Information Systems	Cerro Coso	72	59	65	65
		Clovis	1	1	2	1
		Fresno City	21	27	56	35
		Porterville	2	6	8	5
		Reedley	3	7	9	6
		Sequoias	10	6	11	9
Subtotal/Average			109	106	151	122
0706.00	Computer Science (transfer)	Bakersfield	41	37	41	40
		Clovis	45	53	46	48
		Madera	-	4	2	2
		Reedley	13	16	18	16
		Sequoias	7	13	20	13
Subtotal/Average			106	123	127	119
SCV/SML Supply Grand Total			215	229	279	241

Exhibit 11 shows the annual average community college awards by type from 2021-22 through 2023-24. Of the 241 awards conferred in the SCV/SML subregion, 73% (176) of these awards were for an associate degree or an associate for transfer degree.

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



Community College Student Outcomes:

Exhibits 12 shows the Strong Workforce Program (SWP) metrics for programs related to Data Analytics in Kern Community College District (KCCD), the SCV/SML subregion, the CVML region, and California.

Of the 24,370 computer information systems program students statewide in the 2023-2024 academic year, 3% (721) attended a CVML institution. KCCD students that exited computer information systems programs in the 2022-2023 academic year had greater median annual earnings (\$49,272) compared to all computer information systems students in SCV/SML subregion (\$48,978). Notably, 66% of SCV/SML computer information systems students attained a living wage, which is greater than the percentage of students who attained a living wage statewide (39%).

Exhibit 12: Computer Information Systems (0702.00) Strong Workforce Program Metrics

SWP Metric	KCCD	SCV/SML Subregion	CVML Region	California
SWP Students	388	455	721	24,370
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	29%	32%	37%	37%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	N/A	N/A	N/A	68%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	13%	26%	22%	4%
SWP Students Who Transferred to a Four-Year Postsecondary Institution	5%	6%	6%	8%
SWP Students with a Job Closely Related to Their Field of Study	N/A	N/A	62%	71%
Median Annual Earnings for SWP Exiting Students	\$49,272 (\$23.69)	\$48,978 (\$23.55)	\$48,660 (\$23.39)	\$41,582 (\$19.99)
Median Change in Earnings for SWP Exiting Students	21%	21%	28%	28%
SWP Exiting Students Who Attained the Living Wage	68%	66%	64%	39%



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. Exhibits 13a and 13b show 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, non-community college institutions in the SCV/SML subregion conferred an average of 96 awards annually in related programs.

Exhibit 13a: NCV/NML Subregional Non-Community College Awards, 2020-2023

CIP Code	Program	Institution	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Award Average
11.0103	Information Technology	California State University-Stanislaus	1	-	-	-
Subtotal/Average			1	-	-	-
30.7001	Data Science, General	University of the Pacific	50	31	31	37
Subtotal/Average			50	31	31	37
52.0299	Business Administration, Management and Operations, Other	Humphreys University-Stockton and Modesto Campuses	10	8	4	7
Subtotal/Average			10	8	4	7
NCV/NML Supply Grand Total			61	39	35	45

Exhibit 13b: SCV/SML Subregional Non-Community College Awards, 2020-2023

CIP Code	Program	Institution	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Award Average
11.0103	Information Technology	San Joaquin Valley College-Visalia	49	86	44	60
Subtotal/Average			49	86	44	60

CIP Code	Program	Institution	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Award Average
52.0299	Business Administration, Management and Operations, Other	Fresno Pacific University	1	53	54	36
Subtotal/Average			1	53	54	36
SCV/SML Supply Grand Total			50	139	98	96

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	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/ Wage figures are used by the CCCCCO to calculate the percentage of students that attained the regional living wage.
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	The CCCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu 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
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	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 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

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