Labor Market Analysis for Program Recommendation: 0708.10/Computer Networking *(Certificate of Achievement)*

CVML Center of Excellence, March 2026

Summary

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

Program LMI Endorsement Criteria

	Yes ☑	No ☐
Supply Gap:	*Comments:* There are projected to be **110 annual job openings** throughout the SCV/SML subregion for *database and network administrators and architects*-related occupations, which **are more than the 89 awards conferred by educational institutions in the SCV/SML subregion.** **Note:** Only middle-skill jobs are considered when determining supply gap. Including the above middle-skill job increases the overall annual job openings by 33 to a total of 143.	
Living Wage: (Entry-Level, 25th):	Yes ☑	No ☐
	Comments: All three *database and network administrators and architects*-related middle-skill occupations included in this report have an entry-level hourly wage **above the SCV/SML living wage of $16.08.** **Note:** Only middle-skill jobs are considered when determining living wage.	
Education:	Yes ☑	No ☐
	Comments: The typical entry-level education for *Computer Network Support Specialists* is an associate degree, and the typical entry-level education for *Computer Network Architects* and *Network and Computer Systems Administrators* is a bachelor's degree. Additionally, **between 36% and 39% of middle-skill workers have completed some college or an associate degree as their highest level of education.** **Note:** Only middle-skill jobs are considered when determining education.	

Emerging Occupations(s)

Yes ☐	No ☑

Comments: N/A

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
  - Computer Network Architects (15-1241)
  - Network and Computer Systems Administrators (15-1244)
  - Computer Network Support Specialists (15-1231)
- Above Middle-Skill - denoted with a caret (^) throughout this report

- Information Security Analysts (15-1212)^

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 *database and network administrators and architects*-related middle-skill occupations. In addition to the middle-skill occupations in this report having entry-level wages above the subregion's living wage, between 36% and 39% of middle-skill workers in this field have completed some college or an associate degree as their highest level of education. **Therefore, due to all 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 *database and network administrators and architects*-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
Computer Network Support Specialists (15-1231)	NCV/NML: 18 SCV/SML: 31	NCV/NML: 36 SCV/SML: 89	NCV/NML: $28.80 SCV/SML: $29.13	Associate degree	39%
Computer Network Architects (15-1241)	NCV/NML: 13 SCV/SML: 21		NCV/NML: $39.08 SCV/SML: $38.88	Bachelor's degree	36%
Network and Computer Systems Administrators (15-1244)	NCV/NML: 30 SCV/SML: 58		NCV/NML: $37.82 SCV/SML: $38.10	Bachelor's degree	38%
Middle-Skill Total	**171**	**125**	-	**-**	**-**
Information Security Analysts (15-1212)^	NCV/NML: 14 SCV/SML: 33	NCV/NML: 36 SCV/SML: 89	NCV/NML: $44.02 SCV/SML: $41.46	Bachelor's degree	26%
Above Middle-Skill Total	**47**	**125**	-	**-**	**-**
Total	**218**		-	**-**	**-**

Demand:

- The number of jobs related to the three *database and network administrators and architects*-related middle-skill occupations in this report are projected to increase 2% through 2029. There will be 110 annual job openings in the SCV/SML subregion.
- All three *database and network administrators and architects*-related middle-skill occupations have an entry-level hourly wage above the living wage of $16.08 in the SCV/SML subregion.
- There were 640 online job postings for *database and network administrators and architects*-related middle-skill occupations over the past 12 months.
- The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for *Computer Network Architects* and *Network and Computer Systems Administrators*, and lists an associate degree as the typical entry-level education for *Computer Network Support Specialists*.

- National-level educational attainment data indicates that between 36% and 39% of middle-skill 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 89 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 2a shows the annual percent change in middle-skill jobs for the three *Database and Network Administrators and Architect*-related occupations from 2019 through 2029. The SCV/SML subregion experienced the highest growth in 2020 at 3%, compared to the 6% decline across all CA occupations. The SCV/SML subregion experienced an equivalent growth of 3% in 2022, compared to the 5% growth across all CA occupations. From 2026 to 2030, growth is projected to remain steady (between 0% and 1%), similar to all CA occupations.

Exhibit 2a (Middle-Skill) Annual Percent Change in Jobs for Database and Network Administrators and Architect-Related Occupations, 2019-2029

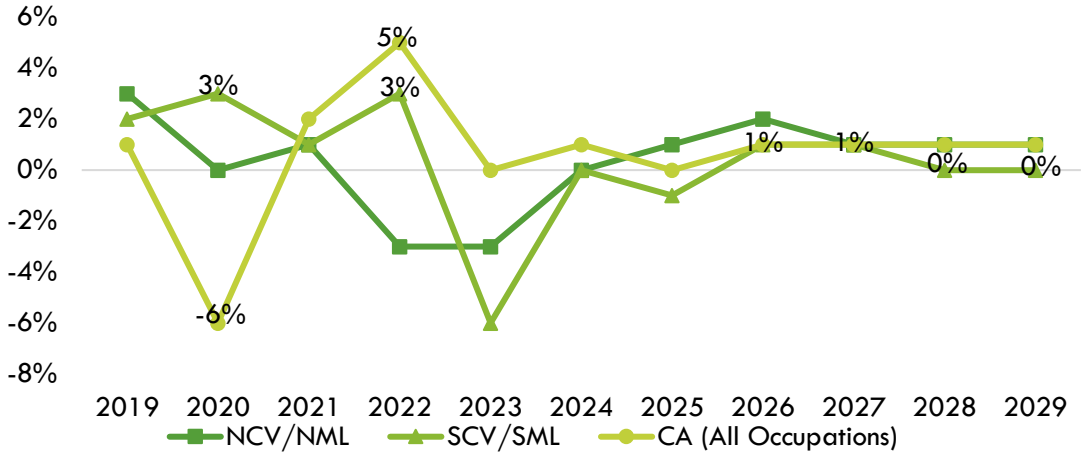


Exhibit 2b shows the annual percent change in above middle-skill jobs for *Information Security Analysts* from 2019 through 2029. The SCV/SML subregion experienced the highest growth in 2021 at 16%, compared to the 2% growth across all CA occupations. The SCV/SML subregion experienced an equivalent growth in 2024 at 16%, compared to the 1% growth across all CA occupations. From 2026 to 2030, growth is projected to remain steady (between 2% and 3%).

Exhibit 2b (Above Middle-Skill) Annual Percent Change in Jobs for Information Security Analysts, 2019-2029

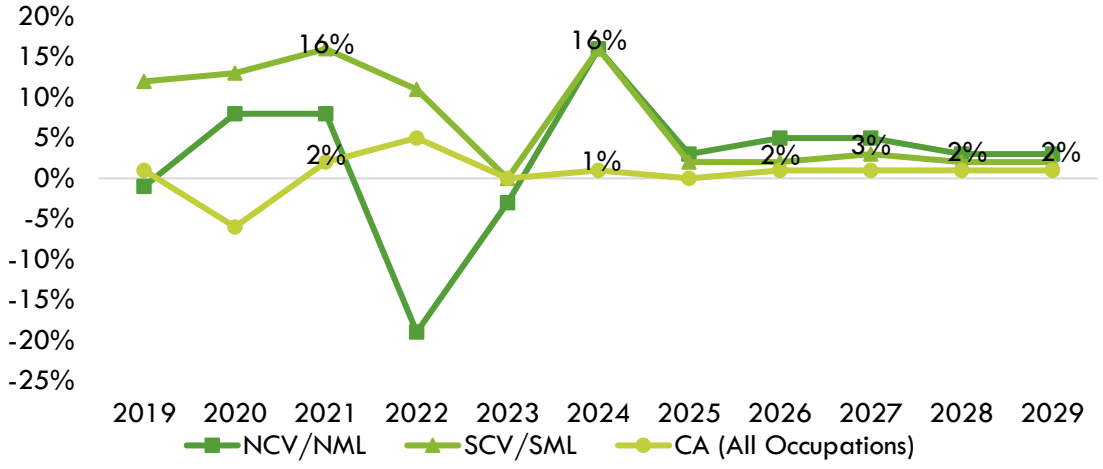


Exhibit 3a shows the five-year occupational demand projections for the four *database and network administrators and architects*-related middle-skill occupations. In the SCV/SML subregion, the number of jobs related to these occupations are projected to increase by 2% through 2029. There are projected to be 171 jobs available annually in the SCV/SML subregion.

Exhibit 3a (Middle-Skill): Occupational Demand in NCV/NML, SCV/SML, and CVML[1]

Geography	2024 Jobs	2029 Jobs	2024-2029 Change	2024-2029 % Change	Annual Openings
NCV/NML	923	981	58	6%	61
SCV/SML	1,918	1,956	38	2%	110
CVML	**2,841**	**2,937**	**96**	**3%**	**171**

Exhibit 3b shows the five-year occupational demand projections for the *database and network administrators and architects*-related above middle-skill occupation. In the SCV/SML subregion, the number of jobs related to this occupation is projected to increase by11% through 2029. There are projected to be 33 jobs available annually in the SCV/SML subregion.

Exhibit 3b (Above Middle-Skill): Occupational Demand in NCV/NML, SCV/SML, and CVML

Geography	2024 Jobs	2029 Jobs	2024-2029 Change	2024-2029 % Change	Annual Openings
NCV/NML	139	168	29	21%	14
SCV/SML	422	470	48	11%	33
CVML	**561**	**638**	**77**	**14%**	**47**

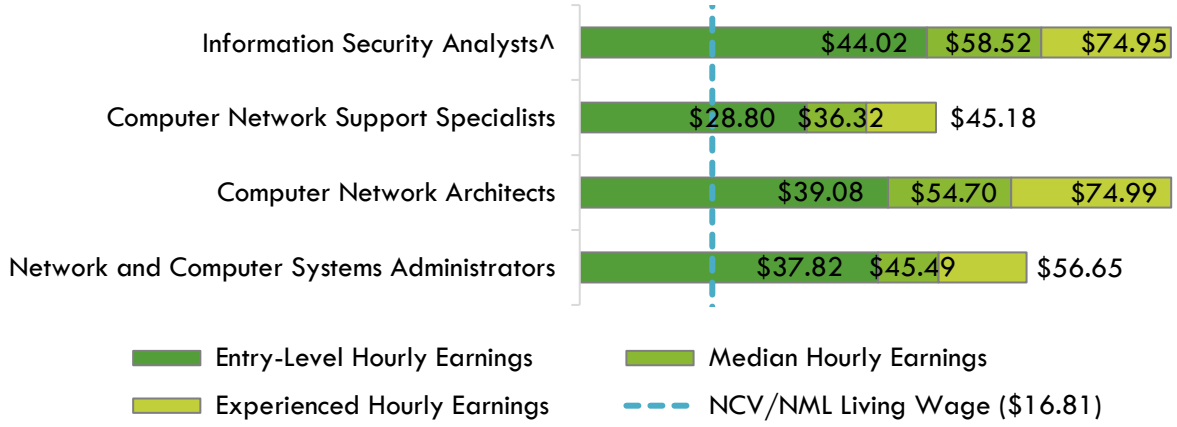
[1]Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for the four *database and network administrators and architects*-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.

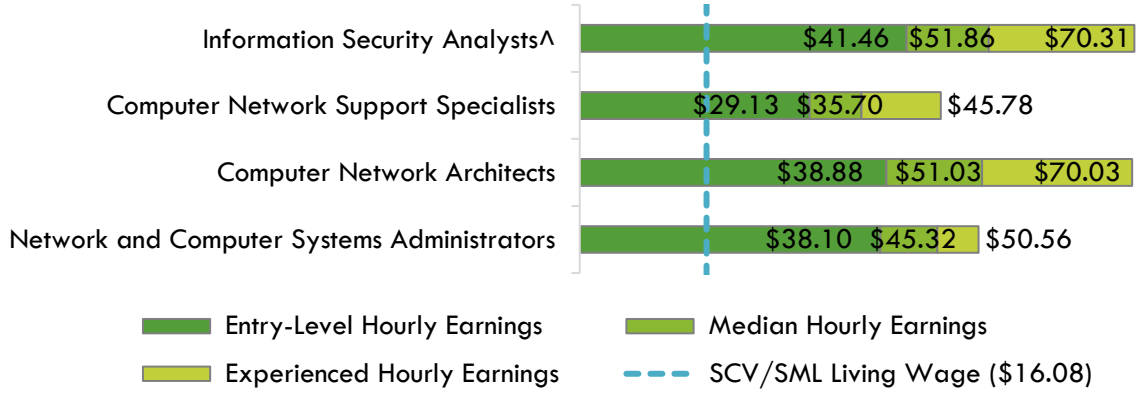
All four *database and network administrators and architects*-related occupations have an entry-level hourly wage above the living wage for one adult in the NCV/NML subregion ($16.81). The NCV/NML subregion average wage for these occupations is $49.42, which is below the average statewide wage of $61.36. Exhibit 4a shows the wage range for *database and network administrators and architects*-related occupations and how they compare to the NCV/NML subregion's living wage.

Exhibit 4a: Wages by Occupation in NCV/NML



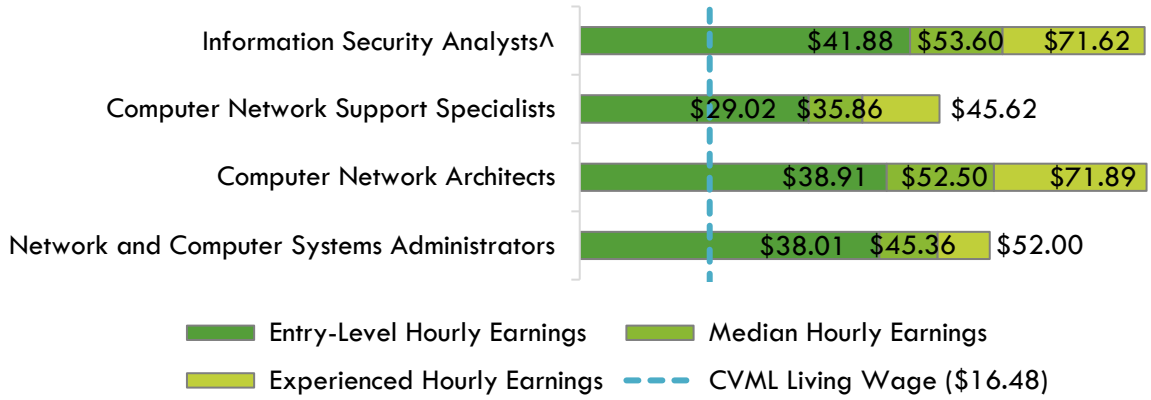
All four *database and network administrators and architects*-related occupations have an entry-level hourly wage above the living wage for one adult in the SCV/SML subregion ($16.08). The SCV/SML subregion average wage for these occupations is $48.48, which is below the average statewide wage of $61.36. Exhibit 4b shows the wage range for *database and network administrators and architects*-related occupations and how they compare to the SCV/SML subregion's living wage.

Exhibit 4b: Wages by Occupation in SCV/SML



All four *database and network administrators and architects*-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 $48.77, which is below the average statewide wage of $61.36. Exhibit 5 shows the wage range for *database and network administrators and architects*-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.

There were 640 online job postings related to *Database and Network Administrators and Architect*-related occupations listed in the past 12 months (Exhibit 6a).

Exhibit 6a (Middle-Skill): Number of Job Postings (n=640)

Occupations	Job Postings	Percentage of Job Postings
Network and Computer Systems Administrators	364	57%
Computer Network Architects	173	27%
Computer Network Support Specialists	103	16%

There were 68 online job postings related to *Information Security Analysts* listed in the past 12 months (Exhibit 6b).

Exhibit 6b (Above Middle-Skill): Number of Job Postings (n=68)

Occupations	Job Postings	Percentage of Job Postings
Information Security Analysts	68	100%

The top employers in the region for *Database and Network Administrators and Architect*-related occupations, by number of job postings, are shown in Exhibit 7a.

Exhibit 7a (Middle-Skill): Top Employers by Number of Job Postings (n=640)

Employer	Job Postings	Percentage of Job Postings
DCS Corporation	33	5%
Northrop Grumman	32	5%
Redwood Family Care Network	20	3%

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

Employer	Job Postings	Percentage of Job Postings
Saalex Solutions	18	3%
Golden 1 Credit Union	13	2%
JT4	11	2%
Allegis Group	10	2%
Leidos	9	1%
Creative Financial Staffing	8	1%
TEKsystems	8	1%

The top employers in the region for *Information Security Analysts*, by number of job postings, are shown in Exhibit 7b.

Exhibit 7b (Above Middle-Skill): Top Employers by Number of Job Postings (n=68)

Employer	Job Postings	Percentage of Job Postings
Saalex Solutions	7	10%
Lockheed Martin	5	7%
University of California-Davis	3	4%
JT4	3	4%
ASEC Corporation	3	4%
CAE	2	3%
DCS Corporation	2	3%
Grifols	2	3%
Juniper Networks	2	3%
Booz Allen Hamilton	2	3%

The top specialized, common, and software skills for *Database and Network Administrators and Architect*-related occupations are listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 8a.

Exhibit 8a (Middle-Skill): Top Skills by Number of Job Postings (n=640)

Top Specialized Skills	Top Soft Skills	Top Computer Skills
Operating Systems (170)	Communication (323)	Operating Systems (170)
Computer Science (137)	Troubleshooting (Problem Solving) (321)	Firewall (107)
Technical Support (119)	Management (223)	Active Directory (102)
Local Area Networks (111)	Operations (196)	Linux (80)
Network Routing (111)	Customer Service (159)	Windows Servers (79)
Firewall (106)	Problem Solving (148)	Microsoft Office (75)
Active Directory (100)	Planning (115)	Dynamic Host Configuration Protocol (DHCP) (45)
Cyber Security (99)	Information Technology (112)	Windows PowerShell (44)
Networking Hardware (95)	Writing (89)	Unix (41)
Wide Area Networks (87)	Leadership (83)	Microsoft Excel (40)

The top specialized, common, and software skills for *Information Security Analysts* are listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 8b.

Exhibit 8b (Above Middle-Skill): Top Skills by Number of Job Postings (n=68)

Top Specialized Skills	Top Soft Skills	Top Computer Skills
Cyber Security (45)	Operations (26)	Operating Systems (10)
Auditing (34)	Communication (24)	Enterprise Mission Assurance Support Service (eMASS) (8)
Information Systems (28)	Information Technology (24)	Linux (8)
Information Systems Security (26)	Problem Solving (19)	SAP Applications (7)
Incident Response (25)	Leadership (18)	Firewall (6)
Vulnerability Management (24)	Management (17)	Splunk (6)

Top Specialized Skills	Top Soft Skills	Top Computer Skills
Risk Management Framework (23)	Investigation (14)	Microsoft Access (5)
Plan of Action and Milestones (POA&M) (21)	Planning (13)	Dashboard (5)
Security Controls (19)	Report Writing (11)	Python (Programming Language) (5)
Information Assurance (19)	Detail Oriented (11)	Windows PowerShell (5)

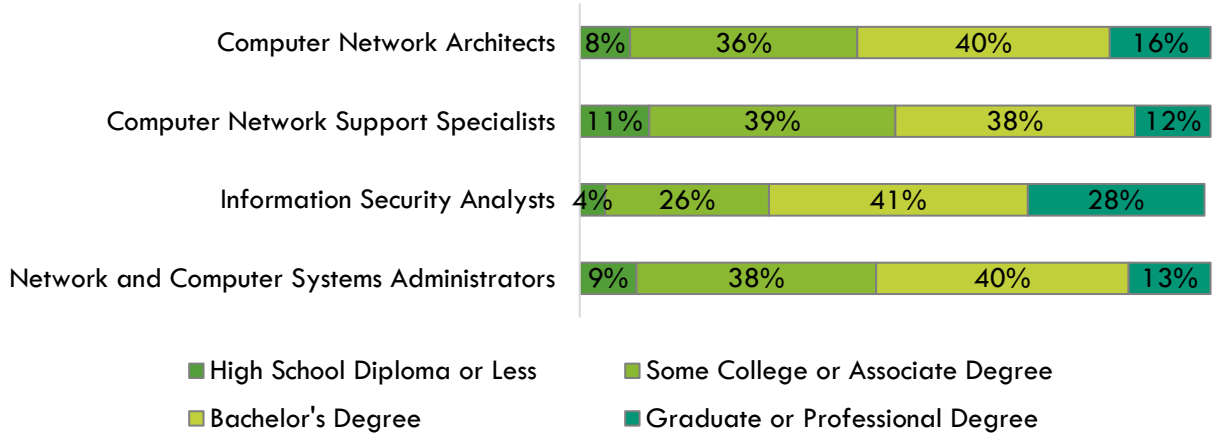
Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for *Computer Network Architects* and *Network and Computer Systems Administrators* and lists an associate degree as the typical entry-level education for *Computer Network Support Specialists*. National-level educational attainment data indicates that between 36% and 39% of middle-skill 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 *database and network administrators and architects*-related occupations.

Of the 640 online job postings for middle-skill occupations, 63% (equivalent to 402 postings) of cumulative job postings for the three *database and network administrators and architects* listed a minimum education requirement in the SCV/SML subregion. Of the 402 postings, 45% (181) requested a high school or GED.

Of the 68 online job postings for the above middle-skill occupation, 68% (equivalent to 46 postings) of cumulative job postings for the one *database and network administrators and architects* listed a minimum education requirement in the SCV/SML subregion. Of the 46 postings, 59% (27) requested a bachelor's degree.

Exhibit 9: National-level Educational Attainment for Database and Network Administrators and Architects-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 San Joaquin Delta (North) and Cerro Coso (South).

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

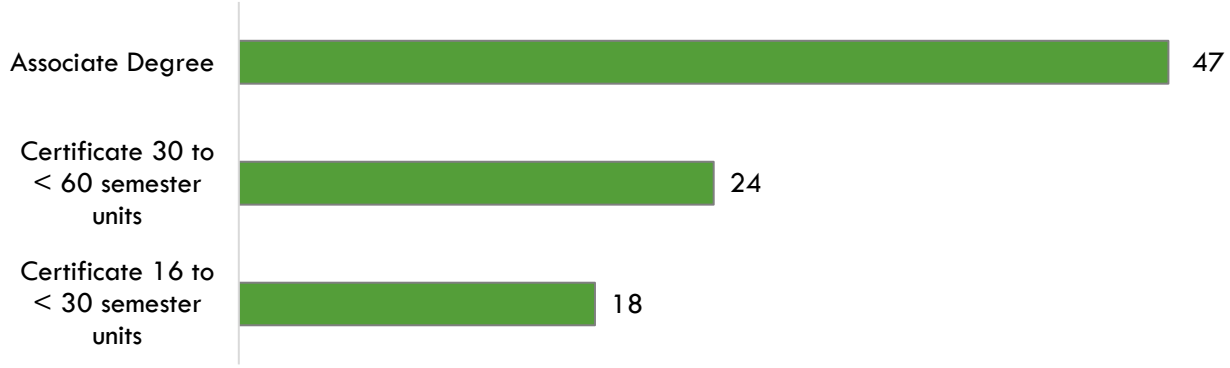
TOP Code	Program	College	2021-2022 Awards	2022-2023 Awards	2023-2024 Awards	3-Year Award Average
0708.10	Computer Networking	Merced	-	-	9	3
		Modesto	8	8	2	6
		San Joaquin Delta	42	21	18	27
Subtotal/Average			**50**	**29**	**29**	**36**
NCV/NML Supply Grand Total			**50**	**29**	**29**	**36**

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
0708.10	Computer Networking	Cerro Coso	44	15	36	32
		Clovis	5	11	15	10
		Fresno City	24	22	18	21
		Lemoore	3	3	2	3
		Reedley	4	5	6	5
		Sequoias	8	10	36	18
Subtotal/Average			**88**	**66**	**113**	**89**
SCV/SML Supply Grand Total			**88**	**66**	**113**	**89**

Exhibit 11 shows the annual average community college awards by type from 2021-22 through 2023-24. Of the 89 awards conferred in the SCV/SML subregion, 53% (47) of these awards were for an associate degree.

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 Computer Networking programs in West Kern Community College District (WKCCD), the SCV/SML subregion, the CVML region, and California.

Of the 10,203 computer networking program students statewide in the 2023-2024 academic year, 5% (536) attended a CVML institution. SCV/SML subregion students that exited computer networking programs in the 2022-2023 academic year had less median annual earnings ($46,682) compared to all computer networking students in CVML region ($47,144). Notably, 73% of CVML region computer networking students attained a living wage, which is greater than the percentage of students who attained a living wage statewide (55%).

Exhibit 12: Computer Networking (0708.10) Strong Workforce Program Metrics

SWP Metric	WKCCD	SCV/SML Subregion	CVML Region	California
SWP Students	N/A	452	536	10,203
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	N/A	51%	49%	46%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	N/A	80%	80%	71%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	N/A	18%	19%	9%
SWP Students Who Transferred to a Four-Year Postsecondary Institution	N/A	3%	2%	4%
SWP Students with a Job Closely Related to Their Field of Study	N/A	N/A	N/A	68%
Median Annual Earnings for SWP Exiting Students	N/A	$46,682 ($22.44)	$47,144 ($22.67)	$54,738 ($26.32)
Median Change in Earnings for SWP Exiting Students	N/A	22%	20%	23%
SWP Exiting Students Who Attained the Living Wage	N/A	72%	73%	55%

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 SCV/SML subregion that conferred awards annually in related training programs.

Exhibit 13: 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
11.1003	Computer and Information Systems Security/Auditing/ Information Assurance	University of the Pacific	-	-	-	-
Subtotal/Average			**-**	**-**	**-**	**-**
NCV/NML Supply Grand Total			**-**	**-**	**-**	**-**

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 CCCCO 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 CCCCO 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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