March 2024

Labor Market Analysis

Information Technology (IT) / Google IT Support

Prepared by Central Valley/Mother Lode Center of Excellence

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Table of Contents

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Summary

The Central Valley/Mother Lode Center of Excellence developed this report for Columbia College to determine whether there is demand in the local labor market that is not being met by the supply from postsecondary programs. This report summarizes labor market demand, wages, skills, and postsecondary supply for *Information Technology (IT)* occupations, which includes:

- Information Security Analysts (SOC 15-1212)
- Computer Network Support Specialists (SOC 15-1231)
- Computer User Support Specialists (SOC 15-1232)

Key Findings

- **Occupational Demand —** Occupations related to *Information Technology (IT)* have a labor market demand of 138 annual job openings in the North Central Valley/Northern Mother Lode (NCV/NML) subregion. Between 2022 and 2027, c*omputer user support specialists* are projected to have the most demand with 99 annual job openings.

- **Wages —** Average entry-level earnings of $29.95/hour for *Information Technology (IT)* occupations are higher than the living wage in the NCV/NML subregion. *Information security analysts* earn the highest entry-level wage, $41.41/hour.

- **Employers and Occupational Titles —** Employers in the NCV/NML subregion include University of the Pacific and Apple. The most common job title is Desktop Support Technician.

- **Skills and Certifications —** The top baseline skill is communications, the top specialized skill is help desk support, and the top software skill is Microsoft Office. The most in-demand certification is CompTIA A+.

- **Education —** Some college, no degree is typically required for C*omputer User Support Specialists*. An associate degree is typically required for C*omputer Network Support Specialists*. A bachelor's degree is typically required for *Information Security Analysts*.

- **Supply and Demand Analysis —** An analysis of supply and demand reveals that there are 138 annual openings (i.e., demand) and 22 average annual postsecondary degrees awarded (i.e., supply) in the NCV/NML subregion. This suggests an undersupply of 116 workers. In the CVML region, there are 419 annual openings and 194 awards were conferred suggesting an undersupply of 225 workers.

Recommendation

Based on a comparison of demand and supply, there is an undersupply of trained workers in the NCV/NML subregion and the CVML region. The Center of Excellence recommends that Columbia College work with the regional directors, the college's advisory board, and local industry in the creation or expansion of programs to address the shortage of *Information Technology (IT)* workers.

Introduction

The Central Valley/Mother Lode Center of Excellence developed this report to provide Columbia College with labor market information for *Information Technology (IT)* occupations. The geographical focus for this report is the North Central Valley/Northern Mother Lode (NCV/NML) subregion, but regional demand and supply data has been included for broader applicability and use. Analysis of the program and occupational data related to *Information Technology (IT)* occupations are included in the report. The Standard Occupational Classification (SOC) System codes and occupational titles used in this report from the Bureau of Labor Statistics and O*NET OnLine are shown below.

Information Security Analysts (SOC 15-1212)

- **Job Description:** Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. Assess system vulnerabilities for security risks and propose and implement risk mitigation strategies. May ensure appropriate security controls are in place that will safeguard digital files and vital electronic infrastructure. May respond to computer security breaches and viruses.
- **Knowledge:** Computers and Electronics, English Language, Administration and Management, Engineering and Technology, Telecommunications
- **Skills:** Reading Comprehension, Critical Thinking, Active Listening, Complex Problem Solving, Speaking

Computer Network Support Specialists (SOC 15-1231)

- **Job Description:** Analyze, test, troubleshoot, and evaluate existing network systems, such as local area networks (LAN), wide area networks (WAN), cloud networks, servers, and other data communications networks. Perform network maintenance to ensure networks operate correctly with minimal interruption.
- **Knowledge:** Computers and Electronics, Telecommunications, Customer and Personal Service, Engineering and Technology, English Language
- **Skills:** Critical Thinking, Active Listening, Judgment and Decision Making, Reading Comprehension, Active Learning
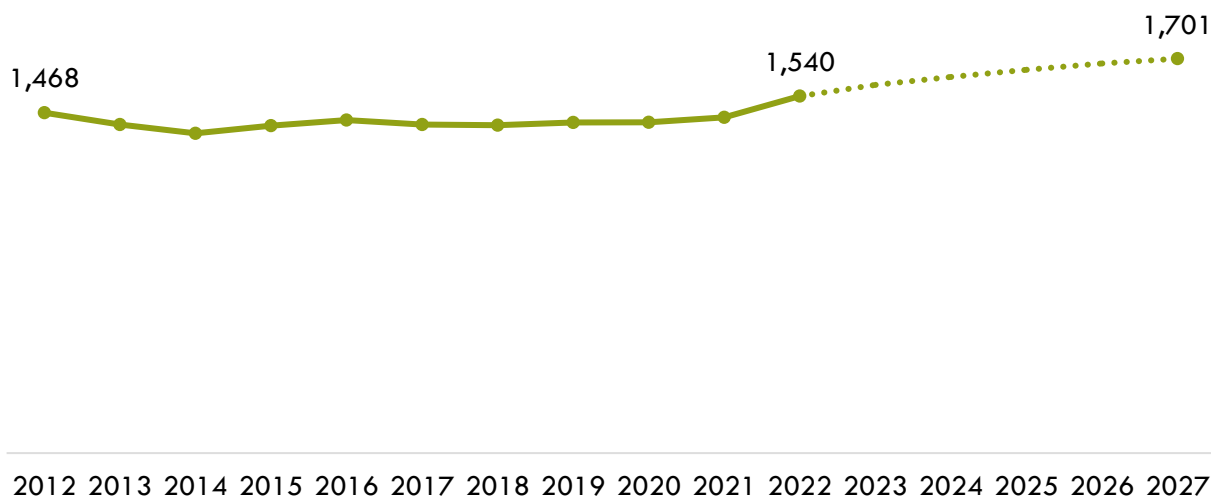
Computer User Support Specialists (SOC 15-1232)

- **Job Description:** Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, via telephone, or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems.
- **Knowledge:** Computer and Electronics, Customer and Personal Service, Telecommunications, English Language, Education and Training
- **Skills:** Active Listening, Reading Comprehension, Speaking, Critical Thinking, Complex Problem Solving

Employment

Exhibit 1a shows trends for *Information Technology (IT)* occupations in the NCV/NML subregion. Between 2022 to 2027, the number of jobs for occupations related to *Information Technology (IT)* is projected to increase by 161, growing by 10%.

Exhibit 1a. Historical employment and projected occupational demand for occupations related to *Information Technology (IT)* in the NCV/NML subregion, 2012-2027

1,468   1,540   1,701

2012 2013 2014 2015 2016 2017 2018 2019 2020 2021 2022 2023 2024 2025 2026 2027

Occupations related to *Information Technology (IT)* in the NCV/NML subregion employed 1,540 workers in 2022 (Exhibit 1b). *Computer User Support Specialists* are projected to have the most annual job openings, with 99 annual openings.

Exhibit 1b. Current employment and projected occupational demand for occupations related to *Information Technology (IT)* in the NCV/NML subregion, 2022-2027

| Occupation	2022 Jobs	2027 Jobs	5-Year Change	5-Year % Change	Annual Openings
Information Security Analysts	105	132	27	25%	12
Computer Network Support Specialists	302	330	28	10%	27
Computer User Support Specialists	1,133	1,239	106	9%	99
TOTAL	**1,540**	**1,701**	**161**	**10%**	**138**

Wages

Exhibit 2a shows the hourly wages for the three occupations of interest.

Exhibit 2a. Hourly wages for occupations related to *Information Technology (IT)* in the NCV/NML subregion

Occupation	25th Percentile Hourly Earnings	Median Hourly Earnings	75th Percentile Hourly Earnings
Information Security Analysts	$41.41	$55.11	$68.33
Computer Network Support Specialists	$25.61	$32.13	$40.24
Computer User Support Specialists	$22.84	$28.55	$36.20

Exhibit 2b shows the average hourly wages for *Information Technology (IT)* occupations; the average entry-level wage is well above the living wage for the NCV/NML subregion.

Exhibit 2b. Average hourly wages for occupations related to *Information Technology (IT)* in the NCV/NML subregion
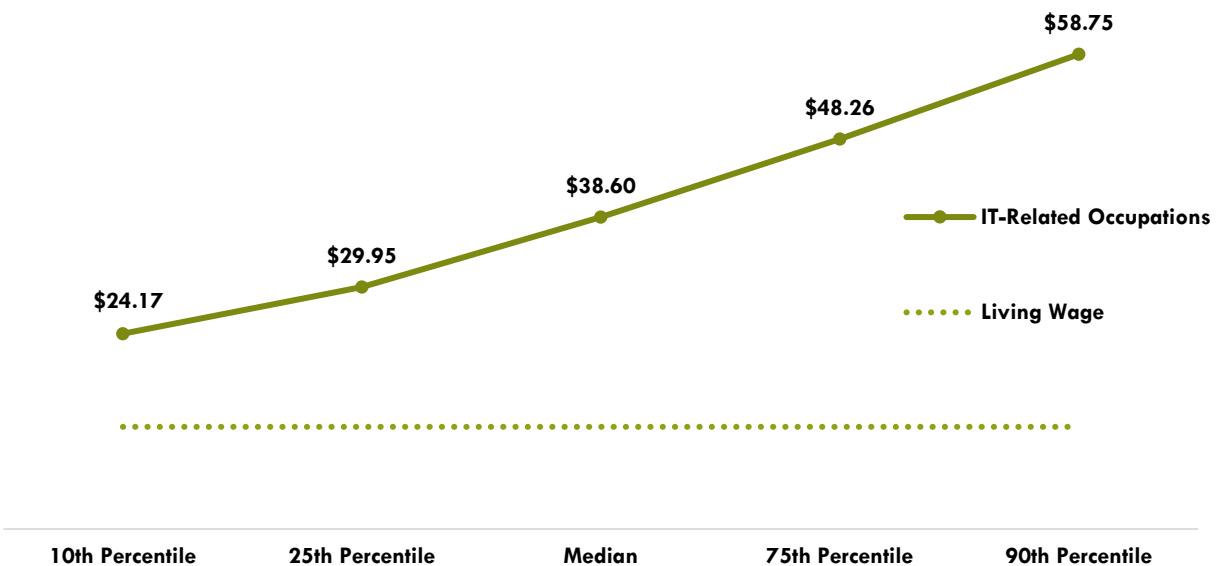
Job Postings

There were 463 unique job postings for occupations related to *Information Technology (IT)* in the NCV/NML subregion from April 2023 to March 2024.[1]

Top Employers

The top employers with the most job postings are listed in Exhibit 3.

Exhibit 3. Top employers of *Information Technology (IT)* occupations in job postings

Employer
University of the Pacific
Apple
Ovation Workplace Services
Dish
Tesla
Delaware North
Wilbur-Ellis
Leidos
Yosemite Community College District
American Advanced Management

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[1] Other than occupational titles and job titles, the categories below can be counted one or multiple times per job posting, and across several areas in a single posting. For example, a skill can be counted in two different skill types, and an employer can indicate more than one education level.

Top Job Titles

Exhibit 4 shows the most common job titles for *Information Technology (IT)* occupations in the NCV/NML subregion.

Exhibit 4. Top job titles in job postings for *Information Technology (IT)* occupations

Job Title
Desktop Support Technicians
IT Specialists
IT Support Technicians
Help Desk Technicians
Cyberspace Operations Officers
IT Support Specialists
IT Technicians
Technical Support Specialists
IT Help Desk Technicians
Network Technicians

Salaries

Exhibit 5 shows the "Market Salaries" for *Information Technology (IT)* occupations. These are calculated by Lightcast using a machine learning model built from millions of job postings every year. This accounts for adjustments based on location, industry, skills, experience, education, among other variables.

Exhibit 5. Market salaries for *Information Technology (IT)* occupations

Market Salary	Job Postings
$31,000-$36,999	14
$37,000-$42,999	28
$43,000-$48,999	56
$49,000-$54,999	51
$55,000-$60,999	47
$61,000-$66,999	26
$67,000-$72,999	19
$73,000-$78,999	16
$79,000-$84,999	14
$85,000+	41

Education

Of the 463 unique job postings, 379 listed a preferred or minimum educational requirement for the position being filled. Among those, 22% requested a high school diploma or GED, 19% requested an associate degree, and 33% requested a bachelor's degree (Exhibit 6).

Exhibit 6. Education levels requested in job postings for *Information Technology (IT)* occupations

Education Level	Job Postings	% of Job Postings
High school or GED	104	22%
Associate degree	87	19%
Bachelor's degree	151	33%
Master's degree	17	4%
Ph.D. or professional degree	20	4%

Baseline, Specialized, and Software Skills

Exhibit 7 depicts the top baseline, specialized, and software skills in job postings. The most requested baseline skill is communications. The most requested specialized skill is help desk support. The most requested software skill is Microsoft Office.

Exhibit 7. In-demand baseline, specialized, and software skills for *Information Technology (IT)* occupations in job postings

Baseline Skills	Specialized Skills	Software Skills
Communications	Help Desk Support	Microsoft Office
Troubleshooting (Problem Solving)	Computer Science	Operating Systems
Management	Technical Support	Active Directory
Customer Service	Operating Systems	Apple iOS
Operations	Computer Hardware	Firewall

Certifications

Of the job postings that listed a certification, 18% indicated a need for CompTIA A+ (Exhibit 8).

Exhibit 8. Top *Information Technology (IT)* certifications requested in job postings

Certifications	% of Job Postings
CompTIA A+	18%
Microsoft Certified Professional	17%
CompTIA Network+	16%
Cisco Certified Network Associate	14%
CompTIA Certification	12%

Education, Work Experience, & Training

Some college, no degree is typically required for *Computer User Support Specialists*. An associate degree is typically required for *Computer Network Support Specialists*. A bachelor's degree is typically required for *Information Security Analysts* (Exhibit 9).

Exhibit 9. Education, work experience, training, and Current Population Survey results for occupations related to *Information Technology (IT)*[2]

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Information Security Analysts	Bachelor's degree	Less than 5 years	None	27%
Computer Network Support Specialists	Associate degree	None	None	39%
Computer User Support Specialists	Some college, no degree	None	None	39%

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[2] "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, https://www.bls.gov/cps/.

Supply

An analysis of program data from the Integrated Postsecondary Education Data System (IPEDS) for the last three program years shows that, on average, 22 awards were conferred in the NCV/NML subregion (Exhibits 10 and 11).

Exhibit 10. TOP and CIP codes for Computer Information Systems (0702.00)

| TOP Titles	CIP Titles
0702.00 - Computer Information Systems	11.0101 Computer and Information Sciences, General 11.0103 Information Technology

Exhibit 11. Postsecondary supply for Computer Information Systems and related Programs, Academic Years 2019-20 through 2021-22

TOP/CIP Code-Title	College	Bachelor's Degree	Associate Degree	Certificate 30 < 60 Semester Units	Certificate 16 < 30 Semester Units	Total
0702.00 - Computer Information Systems	Bakersfield		0			0
	Cerro Coso		23	19	23	65
	Clovis				1	1
	Fresno City		10		12	22
	Merced		3	2		5*
	Porterville		6			6
	Reedley College				18	18
	San Joaquin Delta		16			16*
	Sequoias		6	2		8
11.0101 - Computer and Information Sciences, General	Milan Institute-Visalia				9	9
11.0103 - Information Technology	San Joaquin Valley College-Visalia		16	22	5	43
	California State University, Stanislaus	1				1*
NCV/NML TOTAL		**1**	**19**	**2**	**0**	**22**
CVML TOTAL		**1**	**80**	**45**	**68**	**194**

*NCV/NML awards

There is an undersupply of 116 *Information Technology (IT)* workers in the NCV/NML subregion and an undersupply of 225 workers in the region (Exhibit 12).

Exhibit 12. *Information Technology (IT)* **workforce demand (annual job openings), postsecondary awards (supply), and additional students needed to fill gap in the NCV/NML subregion and region**
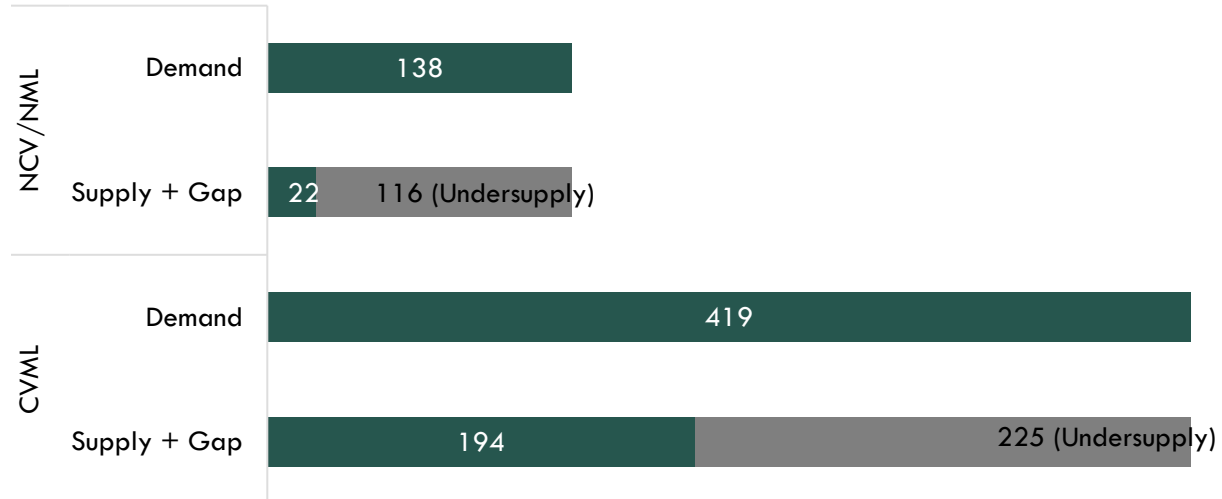
Recommendation

This report suggests there is a shortage of 116 workers in the NCV/NML subregion and a shortage of 225 workers in the CVML region for *Information Technology (IT)*. Based on these findings, it is recommended that Columbia College work with the regional directors, the college's advisory board, and local industry in the creation or expansion of programs to address the shortage of *Information Technology (IT)* workers in the region.

Appendix: Methodology & Data Sources

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 the Economic Modeling Specialists, Inc., 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	Economic Modeling Specialists, Intl. (Lightcast). Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast 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 Lightcast 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: https://www.bls.gov/emp/tables/educational-attainment.htm.
LaunchBoard	Chancellor's LaunchBoard. https://www.calpassplus.org/LaunchBoard/SWP.aspx
Labor Force, Employment and Unemployment Estimates	California Employment Development Department, Labor Market Information Division: labormarketinfo.edd.ca.gov.
Job Posting and Skills Data	Lightcast: https://lightcast.io/.
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 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. (LIGHTCAST) formula that includes historical employment and economic indicators along with national, state and local trends.

LaunchBoard (Attained the Living Wage): Among SWP students who exited college and did not transfer to any postsecondary institution, the proportion who attained the district county living wage for a single adult measured immediately following academic year of exit

LaunchBoard (Median Annual Earnings): Among SWP students who exited the community college system and who did not transfer to any postsecondary institution, median earnings following the academic year of exit.

LaunchBoard (Median Change in Earnings): Among SWP students who exited and who did not transfer to any postsecondary institution, median change in earnings between the second quarter prior to the beginning of the academic year of entry and the second quarter after the end of the academic year of exit from the last college attended.

LaunchBoard (Job Closely Related to Field of Study): Among SWP students who responded to the CTE Outcomes Survey and did not transfer to any postsecondary institution, the proportion who reported that they are working in a job very closely or closely related to their field of study.

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.