

March 2022

Labor Market Analysis

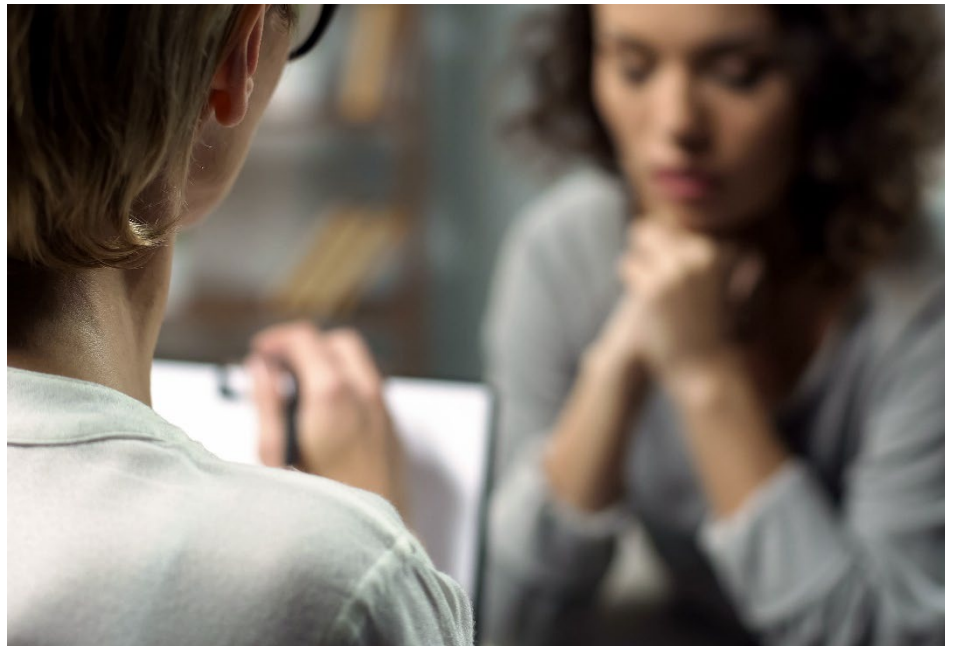
Information Systems, Information Technology Support Technician and Technology Foundations



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Prepared by the Central Valley/Mother Lode Center of Excellence

Table of Contents

- Summary..... 2
 - Key findings 2
- Introduction..... 3
- Occupational Demand 4
- Wages 4
- Job Postings 5
 - Salaries..... 5
 - Education..... 6
 - Baseline and Specialized Skills..... 6
 - Software Skills..... 7
 - Certifications..... 7
- Education, Work Experience & Training..... 7
- Supply..... 9
- Student Outcomes 10
- Conclusion..... 11
- Recommendation 11
- Appendix A: Methodology & Data Sources 12

COVID-19 Statement: This report includes employment projection data by Emsi. Emsi’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy during the projection period will be at approximately full employment or potential output. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, they may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Other measures such as unemployment rates and monthly industry employment estimates will reflect the most recent information on employment and jobs in the state and, in combination with input from local employers, may help validate current and future employment needs as depicted here.

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Summary

Please note the COVID-19 statement on page 2 when considering this report's findings.

This study conducted by the Central Valley/Mother Lode Center of Excellence examines labor market demand, wages, skills, and postsecondary supply for information systems, information technology support technician and technology foundations. Four occupations related to Information Systems, Information Technology Support Technician and Technology Foundations were identified for Reedley College:

- 11-3021, Computer and Information Systems Managers
- 15-1231, Computer Network Support Specialists
- 15-1232, Computer User Support Specialists
- 15-1244, Network and Computer Systems Administrators

Key findings:

- **Occupational demand** — Nearly 4,755 workers were employed in jobs related Information Systems, Information Technology Support Technician and Technology Foundations in 2020 in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. The largest occupation is computer user support specialists with 2,143 workers, a projected growth rate of 2% over the next five years, and 170 annual openings.
- **Wages** — Computer and information systems managers earn the highest entry-level wage, \$50.26/hour in the subregion.
- **Employers** — Employers with the most job postings in the subregion are Anthem Blue Cross, Lockheed Martin Corporation, and Best Buy.
- **Occupational titles** — The most common occupational title in job postings in the subregion is Computer User Support Specialists. The most common job title is Systems Administrator.
- **Skills and certifications** — The top baseline skill is troubleshooting, the top specialized skill is technical support, and the top software skill is Microsoft Office. The most in-demand certification is a driver's license.
- **Education** — Some college, no degree is typically required for computer user support specialists. An associate's degree is typically required for computer network support specialists. A bachelor's degree is typically required for computer and information systems managers and network and computer systems administrators.
- **Supply** — Analysis of postsecondary completions shows that on average 166 awards were conferred in the Central Valley/Mother Lode region each year.

Based on a comparison of occupational demand and supply, there is an undersupply of 229 trained workers in the subregion and 417 workers in the region. The Center of Excellence recommends that Reedley College work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of Information Systems, Information Technology Support Technician and Technology Foundations workers in the region.

Introduction

The Central Valley/Mother Lode Center of Excellence was asked by Reedley College to provide labor market information for Information Systems, Information Technology Support Technician and Technology Foundations. The geographical focus for this report is the South Central Valley/Southern Mother Lode (SCV/SML) subregion, but regional demand and supply data has been included for broader applicability and use. The average living wage for a single adult in the SCV/SML subregion is \$11.91/hour.¹ Analysis of the program and occupational data related to Information Systems, Information Technology Support Technician and Technology Foundations resulted in the identification of applicable occupations. The Standard Occupational Classification (SOC) System codes and titles used in this report are:

- 11-3021, Computer and Information Systems Managers
- 15-1231, Computer Network Support Specialists
- 15-1232, Computer User Support Specialists
- 15-1244, Network and Computer Systems Administrators

The occupational titles, job descriptions, sample job titles, and knowledge and skills from the Bureau of Labor Statistics and O*NET OnLine are shown below.

Computer and Information Systems Managers

Job Description: Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming.

Knowledge: Computers and Electronics, Customer and Personal Service, Administration and Management, Engineering and Technology, English Language

Skills: Critical Thinking, Active Listening, Reading Comprehension, Judgment and Decision Making, Monitoring

Computer Network Support Specialists

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

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: Computers and Electronics, Customer and Personal Service, English Language, Telecommunications, Engineering and Technology

Skills: Active Listening, Reading Comprehension, Speaking, Complex Problem Solving, Critical Thinking

Network and Computer Systems Administrators

Job Description: Install, configure, and maintain an organization's local area network (LAN), wide area network (WAN), data communications network, operating systems, and physical and virtual servers. Perform system monitoring and verify the integrity and availability of hardware, network, and server resources and systems. Review system and application logs and verify completion of scheduled jobs,

¹ The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center's California Family Needs Calculator for each county in the subregion: <https://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

including system backups. Analyze network and server resource consumption and control user access. Install and upgrade software and maintain software licenses. May assist in network modeling, analysis, planning, and coordination between network and data communications hardware and software.

Knowledge: Computers and Electronics, English Language, Customer and Personal Service, Engineering and Technology, Mathematics

Skills: Critical Thinking, Judgment and Decision Making, Reading Comprehension, Systems Analysis, Active Learning

Occupational Demand

The SCV/SML subregion employed 4,749 workers in Information Systems, Information Technology Support Technician and Technology Foundations occupations in 2020 (Exhibit 1). The largest occupation is computer user support specialists with 2,143 workers in 2020. This occupation is projected to grow by 2% over the next five years and has the greatest number of projected annual openings, 170.

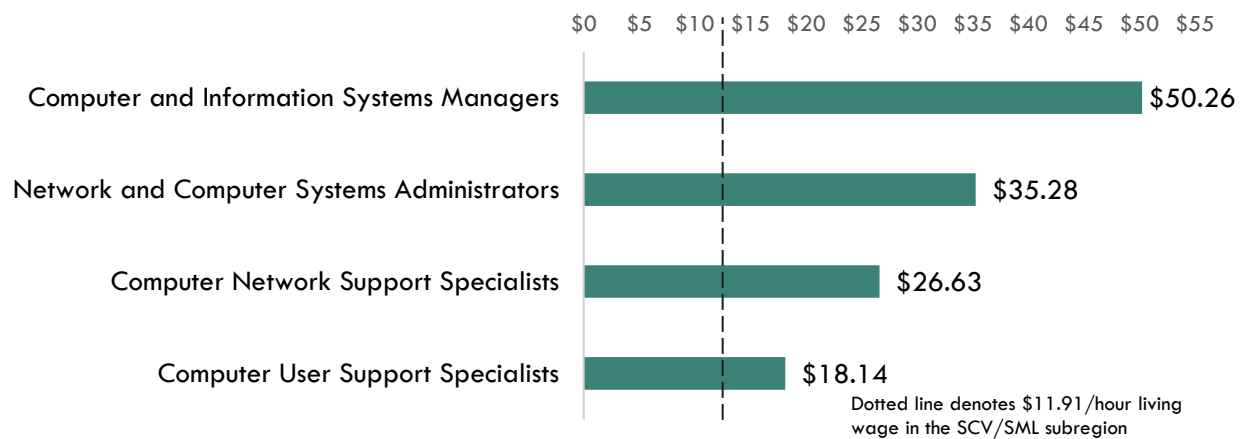
Exhibit 1. Information Systems, Information Technology Support Technician and Technology Foundations employment and occupational projections in the SCV/SML subregion

Occupation	2020 Jobs	2025 Jobs	5-Year Change	5-Year % Change	Annual Openings
Computer User Support Specialists	2,143	2,187	44	2%	170
Computer and Information Systems Managers	1,078	1,131	52	5%	93
Network and Computer Systems Administrators	918	937	19	2%	66
Computer Network Support Specialists	610	619	9	2%	48
TOTAL	4,749	4,874	125	3%	377

Wages

Exhibit 2 shows the entry-level hourly wages of the Information Systems, Information Technology Support Technician and Technology Foundations occupations. Computer and information systems managers earn the highest entry-level wage, \$50.26/hour in the subregion².

Exhibit 2. Information Systems, Information Technology Support Technician and Technology Foundations entry-level wages in the SCV/SML subregion



² Entry-level wages are derived from the 25th percentile.

Job Postings

There were 1,212 job postings for the four occupations in the SCV/SML subregion from October 2021 to March 2021.³ The employers with the most job postings are listed in Exhibit 3.

Exhibit 3. Top employers of Information Systems, Information Technology Support Technician and Technology Foundations by number of job postings

Employer	Job Postings	% Job Postings
Anthem Blue Cross	53	6%
Lockheed Martin Corporation	18	2%
Best Buy	13	2%
Resource Management Concepts	12	1%
Cargill Incorporated	11	1%
Internal Revenue Service	11	1%
Cazador Consulting Group	10	1%
Amentum	8	1%
Kern Community College District	8	1%
Ndti	8	1%

Exhibit 4 shows how job postings for the targeted occupations in the SCV/SML subregion are distributed across four O*NET OnLine occupations. The occupational title computer user support specialists is listed in 767 job postings. Note how this occupational title dominates the job posting results. Common job titles in postings include Systems Administrator in 49 job postings, Help Desk Specialist – Home in 46 job postings, and It Support Specialist in 26 job postings.

Exhibit 4. Top occupational titles in job postings for Information Systems, Information Technology Support Technician and Technology Foundations

Occupational Title	Job Postings	% of Job Postings
Computer User Support Specialists	767	63%
Network and Computer Systems Administrators	304	25%
Computer and Information Systems Managers	73	6%
Computer Network Support Specialists	68	6%

Salaries

Exhibit 5 shows the “Market Salaries” for Information Systems, Information Technology Support Technician and Technology Foundations occupations. These are calculated by Burning Glass using a machine learning model built off of millions of job postings every year. This accounts for adjustments based on locations, industry, skills, experience, education requirements, among other variables.

³ Other than occupation 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.

Exhibit 5. Salaries for Information Systems, Information Technology Support Technician and Technology Foundations occupations

Market Salary Percentile	Salary Amount
10th Percentile	\$31,439
25th Percentile	\$36,837
50th Percentile	\$48,766
75th Percentile	\$68,684
90th Percentile	\$85,820

Education

Of the 1,212 job postings, 731 listed an education level preferred for the positions being filled. Among those, 65% requested a bachelor’s degree, 39% requested high school or vocational training, and 23% requested an associate degree (Exhibit 6). A job posting can indicate more than one education level. Hence, the percentages shown in the chart below may total more than 100%.

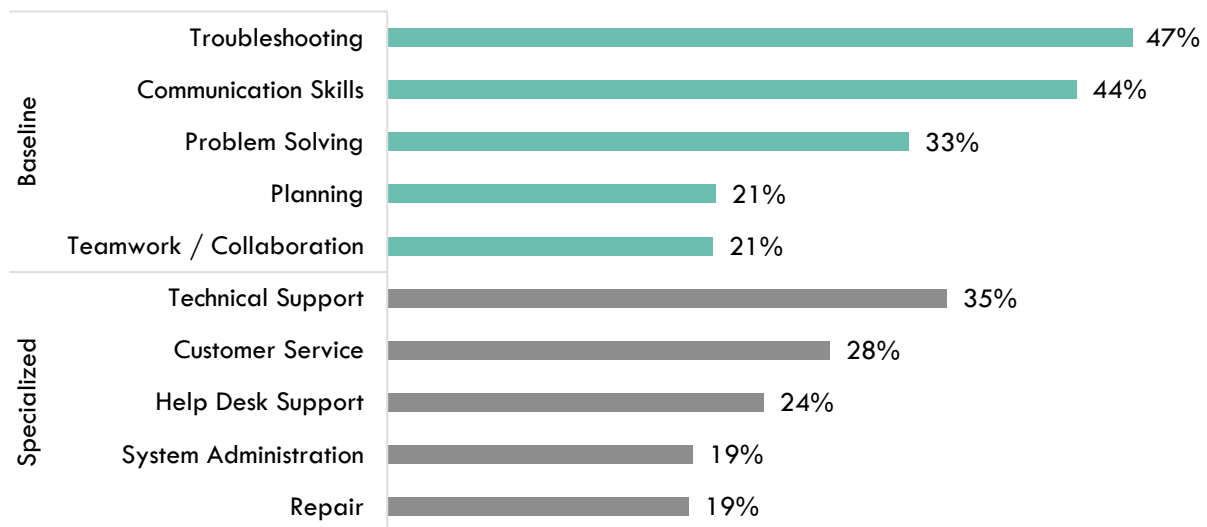
Exhibit 6. Education levels requested in job postings for Information Systems, Information Technology Support Technician and Technology Foundations

Education Level	Job Postings	% of Job Postings
Bachelor's degree	476	65%
High school or vocational training	285	39%
Associate's degree	165	23%
Master's degree	53	7%
Doctoral degree	12	2%

Baseline and Specialized Skills

Exhibit 7 depicts the top baseline and specialized skills for the targeted occupations. The three most important baseline skills are troubleshooting, 47% of job postings, communication skills, 44%, and problem solving, 33%. The top three specialized skills are technical support, 35% of job postings, customer service, 28%, and help desk support, 24%.

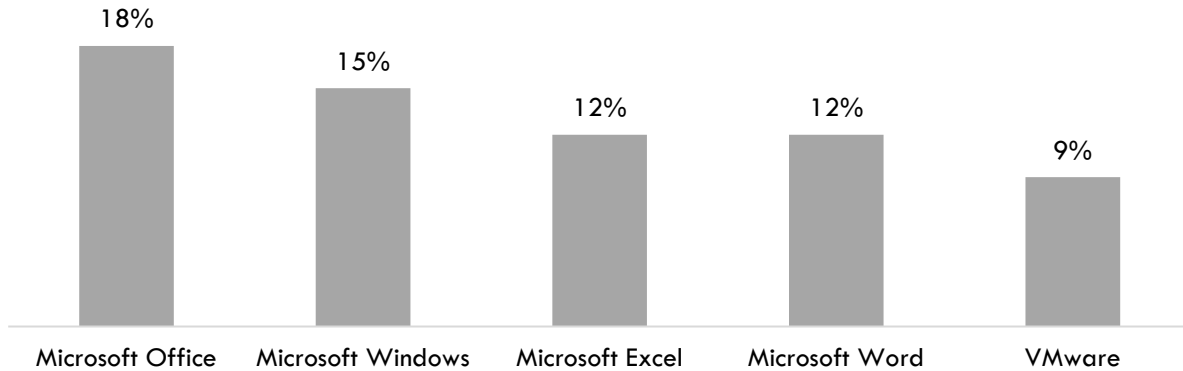
Exhibit 7. In-demand Information Systems, Information Technology Support Technician and Technology Foundations baseline and specialized skills



Software Skills

Analysis also included the software skills most in demand by employers. Microsoft Office and Windows were the top two software skills identified in job postings (Exhibit 8).

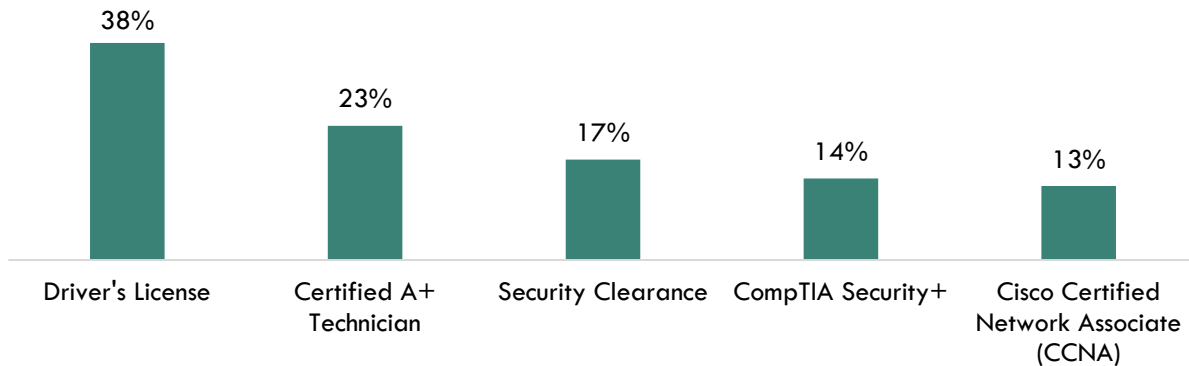
Exhibit 8. In-demand Information Systems, Information Technology Support Technician and Technology Foundations software skills



Certifications

Of the 1,212 job postings, 458 contained certification data. Among those, 38% indicated a need for a driver's license. The next top certifications are certified A+ technician and security clearance (Exhibit 9).

Exhibit 9. Top Information Systems, Information Technology Support Technician and Technology Foundations certifications requested in job postings



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 computer and information systems managers and network and computer systems administrators (Exhibit 10).

Exhibit 10. Education, work experience, training, and Current Population Survey results for Information Systems, Information Technology Support Technician and Technology Foundations occupations⁴

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Computer and Information Systems Managers	Bachelor's degree	5 years or more	None	20.6%
Computer Network Support Specialists	Associate's degree	None	None	39.2%
Computer User Support Specialists	Some college, no degree	None	None	39.2%
Network and Computer Systems Administrators	Bachelor's degree	None	None	37.4%

⁴ "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, <https://www.bls.gov/cps/>.

Supply

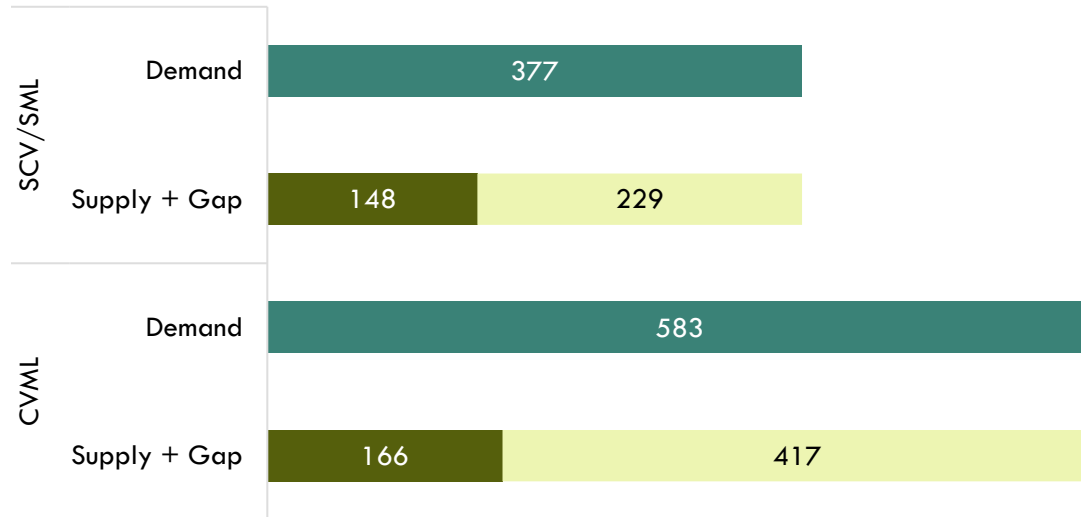
Analysis of program data from the Integrated Postsecondary Education Data System (IPEDS) included the TOP and CIP codes and titles: 070200 - Computer Information Systems and 11.0103 - Information Technology. Analysis of the last three years of data shows that, on average, 166 awards were conferred in the Central Valley/Mother Lode region each year (Exhibit 11).

Exhibit 11. Postsecondary supply for Information Systems, Information Technology Support Technician and Technology Foundations occupations in the region

TOP/CIP Code- Title	College	Associate Degree	Award 1 < 2 Academic Years	Certificate 12 < 18 Semester Units	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 30 < 60 Semester Units	Certificate 6 < 18 Semester Units	Subtotal
070200 - Computer Information Systems	Bakersfield	1							1
	Cerro Coso	16			7	18	15		55
	Clovis				0	1			1
	Columbia	1							1
	Fresno City	7			1				8
	Merced	2							2
	Porterville	11					1		12
	Reedley College			10	15	7			32
	San Joaquin Delta	15							15
	Sequoias	5					2		7
Taft							2	2	
11.0103 - Information Technology	San Joaquin Valley College-Visalia	12	19						31
TOTAL		69	19	10	23	26	18	2	166

There is an undersupply of 229 Information Systems, Information Technology Support Technician and Technology Foundations workers in the SCV/SML subregion and 417 workers in the region (Exhibit 12).

Exhibit 12. Information Systems, Information Technology Support Technician and Technology Foundations workforce demand (annual job openings), postsecondary supply of students (awards), and additional students needed to fill gap in the SCV/SML subregion and region



Student Outcomes

Exhibit 13 summarizes employment and wage outcomes from the California Community College Chancellor’s Cal-PASS Plus LaunchBoard for the TOP code related to information systems, information technology support technician and technology foundations. Of note, 77 students received a degree or certificate or attained apprenticeship journey status; 32 students transferred; 60% of students obtained a job closely related to their field of study; 10% had a median change in earnings; and 82% of students attained a living wage.

Exhibit 13. Subregional metrics for the TOP code related to Information Systems, Information Technology Support Technician and Technology Foundations

Metric	Computer Information Systems 070200
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	77
Number of Students Who Transferred	32
Job Closely Related to Field of Study	60%
Median Change in Earnings	10%
Attained a Living Wage	82%
* denotes data not available.	

Conclusion

The entry-level wages of the four occupations exceed the SCV/SML subregion's average living wage. There were 1,212 job postings in the past six months for occupations related to Information Systems, Information Technology Support Technician and Technology Foundations in the subregion. Analysis of skills and certification requirements in job postings indicates:

- The top baseline skill is troubleshooting, and the top specialized skill is technical support.
- The top software skill is Microsoft Office.
- The top certification is a driver's license.

There is an undersupply of trained workers, a shortage of 229 in the SCV/SML subregion and 417 in the region.

Recommendation

Based on these findings, it is recommended that Reedley College work with the regional director, the college's advisory board, and local industry in the expansion of programs to address the shortage of Information Systems, Information Technology Support Technician and Technology Foundations in the region.

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

Key Terms and Concepts

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

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

Employment Estimate: The total number of workers currently employed.

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

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

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

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

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

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

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

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