Computer Support Occupations

Labor Market Analysis: San Diego County

November 2020

Summary

- ○ Do not Proceed
- ○ Proceed with Caution
- ● Proceed

PROCEED WITH NEW PROGRAM?

SUPPLY GAP?
☑
☒

- ☑ High
- ☐ Medium
- ☐ Low

NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING

AT OR ABOVE THE LIVING WAGE
☑
☒

- ☑ High
- ☐ Medium
- ☐ Low

NUMBER OF ANNUAL JOB OPENINGS

- ☑ Bachelor's Degree+
- ☐ Associate Degree
- ☐ Some College or Certificate
- ☐ High School Diploma or Equivalent
- ☐ Less than a HS Diploma
- ☐ Apprenticeship

EXPECTED LEVEL OF EDUCATION

The brief provides labor market information about *Computer Support Occupations* to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning. According to available labor market information, *Computer Support Occupations* in San Diego County have a labor market demand of 1,197 annual job openings (while average demand for a single occupation in San Diego County is 277 annual job openings), and 14 educational institutions in San Diego County supply 666 awards for these occupations, suggesting that there is a supply gap in the labor market. *Computer Support Occupations* include "Computer Systems Analysts" and "Computer User Support Specialists." Entry-level and median wages for these occupations are above the living wage. This brief recommends proceeding with developing a **new** program because 1) a supply gap exists; 2) its entry-level and median earnings are above the living wage; and 3) these occupations have a high number of annual openings. However, the region's community colleges should also note that a high number of institutions already provide training programs for these occupations before creating a new program in order to avoid any duplication of efforts.

Introduction

This report provides labor market information in San Diego County for the following occupational codes in the Standard Occupational Classification (SOC)[1] system:

- **Computer Systems Analysts** (SOC 15-1121): Analyze science, engineering, business, and other data processing problems to implement and improve computer systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling limitations. May analyze or recommend commercially available software.
- **Computer User Support Specialists** (SOC 15-1151): Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or 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.

For the purpose of this report, these occupations are referred to as *Computer Support Occupations*.

Projected Occupational Demand

Between 2019 and 2024, *Computer Support Occupations* are projected to increase by 1,206 net jobs or 10 percent (Exhibit 1a). During this period, employers in San Diego County are projected to hire 1,197 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

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[1] The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. bls.gov/soc.

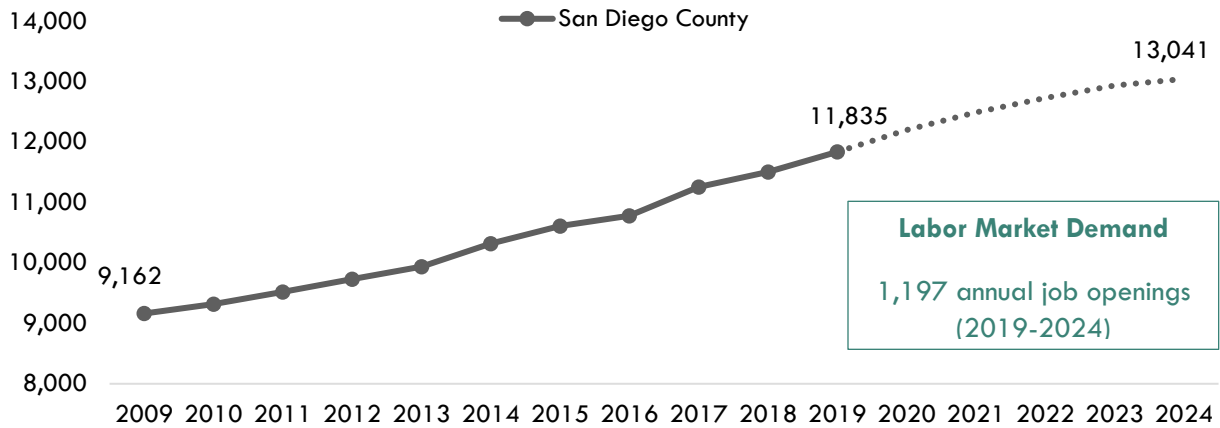**Exhibit 1a: Number of Jobs for *Computer Support Occupations* (2009-2024)[2]**

Exhibit 1b breaks down the projected number of jobs change by occupation more specifically. As Exhibit 1b shows, *Computer Systems Analysts* are projected to increase the most by 611 total jobs between 2019 and 2024.

Exhibit 1b: Number of Jobs for *Computer Support Occupations* in San Diego County (2019-2024)
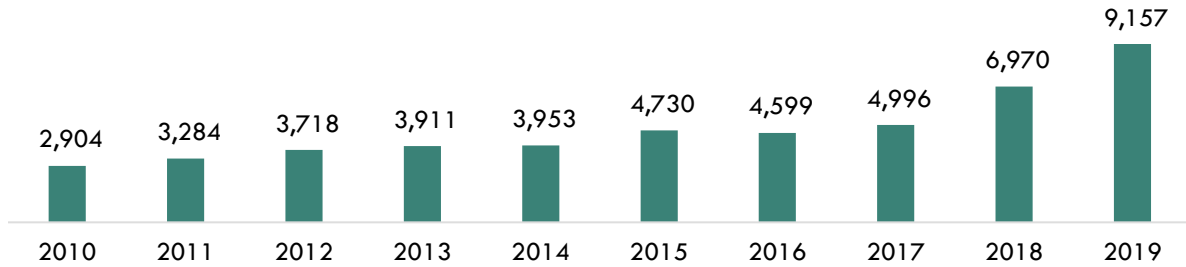
Occupational Title	2019 Jobs	2024 Jobs	2019 - 2024 Net Jobs Change	2019- 2024 % Net Jobs Change	Annual Job Openings (Demand)
Computer Systems Analysts	6,109	6,720	611	10%	585
Computer User Support Specialists	5,726	6,321	595	10%	612
Total	11,835	13,041	1,206	10%	1,197

Online Job Postings

This report analyzes not only historical and projected data (traditional labor market information or LMI), but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2010 and 2019, there was an average of 4,822 online job postings per year in San Diego County for *Computer Support Occupations* (Exhibit 2). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (Exhibit 1b). Employers may post a position multiple times for various reasons, such as increasing the pool of applicants, for example.

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[2] EMSI 2020.02; QCEW, Non-QCEW, Self-Employed.

Exhibit 2: Number of Online Job Postings for *Computer Support Occupations* in San Diego County (2010-2019)[3]

2,904	3,284	3,718	3,911	3,953	4,730	4,599	4,996	6,970	9,157
2010	2011	2012	2013	2014	2015	2016	2017	2018	2019

Earnings

The entry-level hourly earnings for *Computer Support Occupations* range from $23.13 to $35.12 (Exhibit 3a).

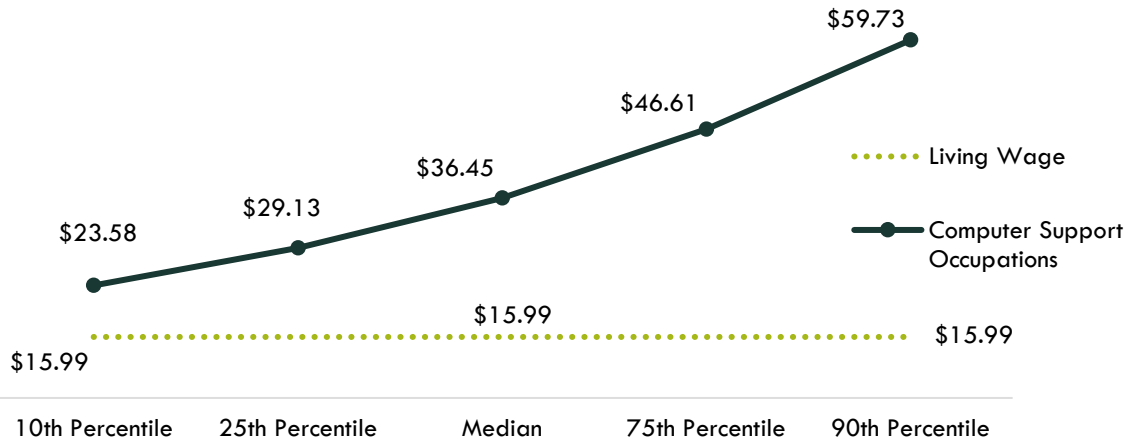**Exhibit 3a: Hourly Earnings for *Computer Support Occupations* in San Diego County**

Occupational Title	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Systems Analysts	$35.12	$44.70	$58.56
Computer User Support Specialists	$23.13	$28.19	$34.65

On average, the entry-level hourly earnings for *Computer Support Occupations* is $29.13; this is more than the living wage for a single adult in San Diego County, which is $15.99 per hour (Exhibit 3b).[4]

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[3] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2010-2019.
[4] "California Family Needs Calculator (formerly the Self-Sufficiency Standard)," Insight: Center for Community Economic Development, last updated 2018. insightcced.org/2018-self-sufficiency-standard.

Exhibit 3b: Average Hourly Earnings[5] for *Computer Support Occupations* in San Diego County[6]

Legend:
- Living Wage (dotted)
- Computer Support Occupations

Data points:
- 10th Percentile: $23.58
- 25th Percentile: $29.13
- Median: $36.45
- 75th Percentile: $46.61
- 90th Percentile: $59.73
- Living Wage: $15.99

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.[7] There are seven TOP code and 14 CIP codes related to *Computer Support Occupations* (Exhibit 4).

Exhibit 4: Related TOP and CIP Codes for *Computer Support Occupations*

Computer Support Occupations
TOP 070100: Information Technology, General
TOP 070200: Computer Information Systems
TOP 070210: Software Applications
TOP 070730: Computer Systems Analysis
TOP 070800: Computer Infrastructure and Support
TOP 070810: Computer Networking
TOP 070820: Computer Support
CIP 11.0101: Computer and Information Sciences, General
CIP 11.0103: Information Technology
CIP 11.0199: Computer and Information Sciences, Other

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[5] 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.
[6] EMSI 2020.02; QCEW, Non-QCEW, Self-Employed.
[7] TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data).

Computer Support Occupations
CIP 11.0501: Computer Systems Analysis/Analyst
CIP 11.0601: Data Entry/Microcomputer Applications, General
CIP 11.0602: Word Processing
CIP 11.0899: Computer Software and Media Applications, Other
CIP 11.0901: Computer Systems Networking and Telecommunications
CIP 11.1001: Network and System Administration/Administrator
CIP 11.1002: System, Networking, and LAN/WAN Management/Manager
CIP 11.1003: Computer and Information Systems Security/Information Assurance
CIP 11.1005: Information Technology Project Management
CIP 11.1006: Computer Support Specialist
CIP 15.1202: Computer Technology/Computer Systems Technology

According to TOP data, nine community colleges supply the region with awards for this occupation: Cuyamaca College, Grossmont College, MiraCosta College, Palomar College, San Diego City College, San Diego Continuing Education, San Diego Mesa, San Diego Miramar, and Southwestern College. According to CIP data, five non-community college supplies the region with awards: Advanced Training Associates, Associated Technical College-San Diego, Brightwood College-San Diego, California Institute of Arts & Technology, and National University (Exhibit 5).

Exhibit 5: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Year 2014-15 through PY2018-19 Average)

TOP6 or CIP	TOP6 or CIP Title	3-Yr Annual Average CC Awards (PY16-17 to PY18-19)	Other Educational Institutions 3-Yr Annual Average Awards (PY14-15 to PY16-17)	3-Yr Total Average Supply (PY14-15 to PY18-19)
070100	Information Technology, General	**8**	**0**	**8**
	• Southwestern	8	0	
070200	Computer Information Systems	**78**	**0**	**78**
	• MiraCosta	2	0	
	• Palomar	15	0	
	• San Diego City	2	0	
	• San Diego Cont Ed	25	0	

TOP6 or CIP	TOP6 or CIP Title	3-Yr Annual Average CC Awards (PY16-17 to PY18-19)	Other Educational Institutions 3-Yr Annual Average Awards (PY14-15 to PY16-17)	3-Yr Total Average Supply (PY14-15 to PY18-19)
	• San Diego Mesa	24	0	
	• San Diego Miramar	7	0	
	• Southwestern	3	0	
070210	Software Applications	**71**	**0**	**71**
	• Grossmont	2	0	
	• MiraCosta	11	0	
	• San Diego City	4	0	
	• San Diego Cont Ed	47	0	
	• San Diego Miramar	6	0	
	• Southwestern	1	0	
070800	Computer Infrastructure and Support	**87**	**0**	**87**
	• MiraCosta	1	0	
	• San Diego City	26	0	
	• San Diego Cont Ed	60	0	
070810	Computer Networking	**87**	**0**	**87**
	• Cuyamaca	11	0	
	• Grossmont	7	0	
	• MiraCosta	15	0	
	• Palomar	38	0	
	• San Diego City	8	0	
	• San Diego Cont Ed	7	0	
	• Southwestern	1	0	
070820	Computer Support	**220**	**0**	**220**
	• MiraCosta	1	0	
	• San Diego Cont Ed	217	0	
	• Southwestern	2	0	

TOP6 or CIP	TOP6 or CIP Title	3-Yr Annual Average CC Awards (PY16-17 to PY18-19)	Other Educational Institutions 3-Yr Annual Average Awards (PY14-15 to PY16-17)	3-Yr Total Average Supply (PY14-15 to PY18-19)
11.0101	Computer and Information Sciences, General	**0**	**34**	**34**
	• Advanced Training Associates	0	27	
	• Associated Technical College-San Diego	0	7	
11.0103	Information Technology	**0**	**5**	**5**
	• Brightwood College-San Diego	0	5	
11.1001	Network and System Administration/Administrator	**0**	**2**	**2**
	• California Institute of Arts & Technology	0	2	
11.1002	System, Networking, and LAN/WAN Management/Manager	**0**	**1**	**1**
	• California Institute of Arts & Technology	0	1	
11.1005	Information Technology Project Management	**0**	**72**	**72**
	• National University	0	72	
15.1202	Computer Technology/Computer Systems Technology	**0**	**1**	**1**
	• California Institute of Arts & Technology	0	1	
			Total	**666**

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply[8] suggests that there is a supply gap for these occupations in San Diego County, with 1,197 annual openings and 666 awards. Comparatively, there are 16,413 annual openings in California and 3,437 awards, demonstrating that there is a supply gap across the state[9] (Exhibit 6).

Exhibit 6: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

Community Colleges and Other Postsecondary Educational Institutions	Demand (Annual Openings)	Supply (Total Annual Average Supply)	Supply Gap or Oversupply
San Diego	1,197	666	**531**
California	16,413	3,437	**12,976**

Please note: This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.
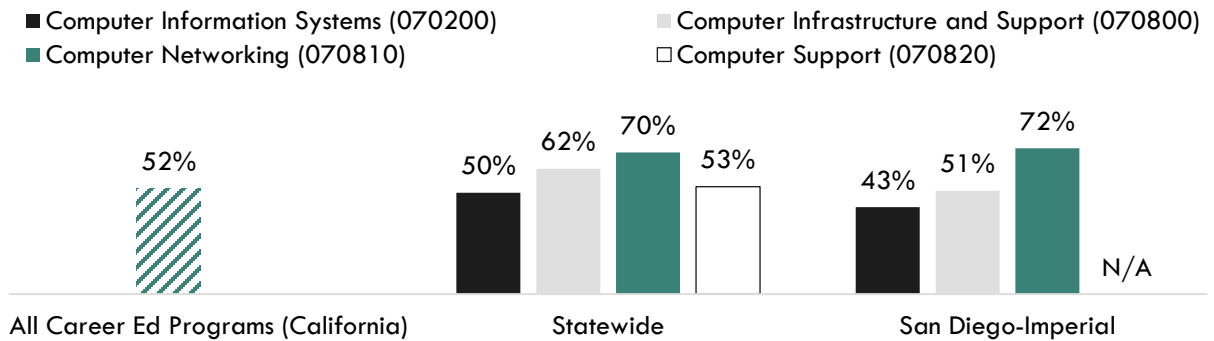
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[8] Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.
[9] "Supply and Demand," Centers of Excellence Student Outcomes, coeccc.net/Supply-and-Demand.aspx.
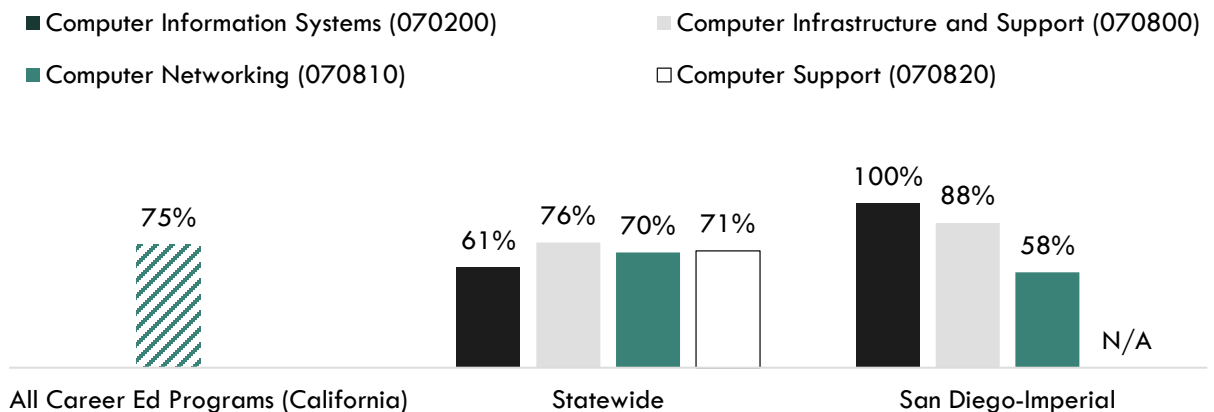
Student Outcomes and Regional Comparisons

According to the California Community Colleges LaunchBoard, 43 to 72 percent of students in the San Diego-Imperial region earned a living wage after completing a program related to *Computer Support Occupations*, compared to 50 to 70 percent statewide and 52 percent of students in Career Education programs in general across the state (Exhibit 7a).

Exhibit 7a: Proportion of Students Who Earned a Living Wage, PY2017-18[10]

- ■ Computer Information Systems (070200)
- ■ Computer Infrastructure and Support (070800)
- ■ Computer Networking (070810)
- ☐ Computer Support (070820)

According to the California Community Colleges LaunchBoard, 58 to 100 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a related program, compared to 61 to 76 percent statewide and 75 percent of students in Career Education programs in general across the state (Exhibit 7b).

Exhibit 7b: Percentage of Students in a Job Closely Related to Field of Study, PY2016-17[11]

- ■ Computer Information Systems (070200)
- ■ Computer Infrastructure and Support (070800)
- ■ Computer Networking (070810)
- ☐ Computer Support (070820)

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[10] Among completers and skills builders who exited, the proportion of students who attained a living wage.
[11] Most recent year with available data is Program Year 2014-15. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

Top Employers

Between January 1, 2017 and December 31, 2019, the top five employers in San Diego County for these occupations were CACI, General Atomics, Best Buy, Accenture, and Scripps Health (Exhibit 8).

Exhibit 8: Top Employers in San Diego County for *Computer Support Occupations*[12]

Top Employers	
• CACI	• University of California San Diego
• General Atomics	• Thermo Fisher Scientific Inc.
• Best Buy	• Booz Allen Hamilton Inc.
• Accenture	• Illumina Incorporated
• Scripps Health	• Jack Henry & Associates

Skills, Education and Certifications

Computer Support Occupations have a national educational requirement range from some college, no degree to a bachelor's degree (Exhibit 9a).

Exhibit 9a: National Educational Attainment for *Computer Support Occupations* [13]

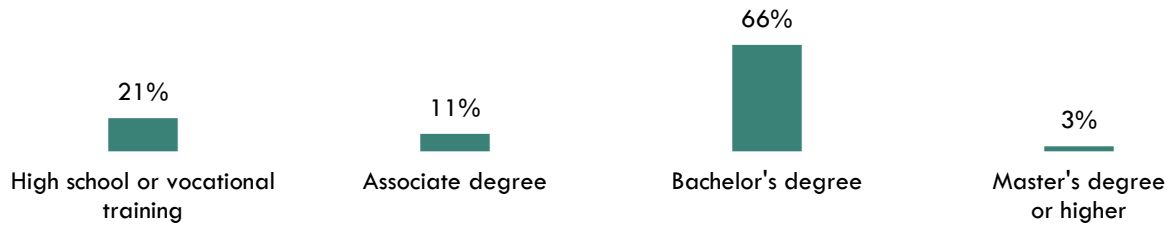| Occupational Title	Typical Entry-Level Education
Computer Systems Analysts	Bachelor's degree
Computer User Support Specialists	Some college, no degree

Based on online job postings between January 1, 2017 and December 31, 2019 in San Diego County, the top listed educational requirement for *Computer Support Occupations* is a bachelor's degree (Exhibit 9b).[14]

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[12] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2017-2019.
[13] EMSI 2020.02; QCEW, Non-QCEW, Self-Employed.
[14] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2017-2019.

Exhibit 9b: Educational Requirements for *Computer Support Occupations* in San Diego County[15]

66%

21%

11%

3%

High school or vocational
training

Associate degree

Bachelor's degree

Master's degree
or higher

*May not add to 100% due to rounding

Exhibit 10 lists the top specialized, soft and software skills that appeared in online job postings between January 1, 2017 and December 31, 2019.

Exhibit 10: Top Skills for *Computer Support Occupations* in San Diego County[16]

Specialized Skills	Soft Skills	Software Skills
• Technical Support	• Communication Skills	• SQL
• Customer Service	• Troubleshooting	• Microsoft Excel
• Repair	• Problem Solving	• Systems Analysis
• Help Desk Support	• Teamwork / Collaboration	• Oracle
• Information Systems	• Research	• Linux

[15] "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified September 4, 2019. bls.gov/emp/tables/educational-attainment.htm.
[16] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2017-2019.

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Important Disclaimers

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; 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 the report 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.

This workforce demand report uses state and federal job projection data that was developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.