**Program Recommendation**

This report was compiled by the South Central Coast[1] Center of Excellence to provide regional labor market data for the program recommendation – Computer Infrastructure and Support. This report can help determine whether there is demand in the local labor market that is not being met by the supply from programs of study (CCC and non-CCC) that align with this occupation group.

**Key Findings**

- In the South Central Coast region, **the number of jobs related to Emergency Medical Services are expected** to remain **steady**, over the next five years, for Computer User Support Specialists and Computer Network Support Specialists, **increase** for Information Security Analysts and Database Administrators, and decrease for Computer Programmers.

- All related occupations are anticipated to experience a **low risk of automation**.

- In 2018 there were 1,041 regional completions in programs related to the occupations identified as related to Computer Infrastructure and Support and 593 openings, indicating an **oversupply**.

- Typical entry-level education ranges from **some college, no degree** for Computer User Support Specialists, an **Associate's degree** for Computer Network Support Specialists, and a **Bachelor's degree** for all other occupations.

- Completers of Computer Infrastructure and Support programs from the 2015-2016 academic year had a **median annual wage** upon completion of $37,661.

- 73% of students are **employed within a year** after completing a program.

- 65% of students are **earning a living wage**.

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[1] The South Central Coast Region consists of San Luis Obispo County, Santa Barbara County, Ventura County, and the following cities from North Los Angeles County: Canyon Country, Castaic, Lake Hughes, Lancaster, Littlerock, Llano, Newhall, Palmdale, Pearblossom, Santa Clarita, Stevenson Ranch, and Valencia.

## Occupation Codes and Descriptions

Currently, there are five occupations in the standard occupational classification (SOC) system that were identified as related to Computer Infrastructure and Support for this analysis. The occupation titles and descriptions, as well as reported job titles are included in Exhibit 1.

**Exhibit 1 – Occupation, description, and sample job titles**

| SOC Code | Title | Description | Sample of Reported Job Titles |
|---|---|---|---|
| 15-1122 | **Information Security Analysts** | Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. 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. | Data Security Administrator, Information Security Officer, Information Security Specialist, Information Systems Security Analyst, Information Technology Security Analyst |
| 15-1131 | **Computer Programmers** | Create, modify, and test the code, forms, and script that allow computer applications to run. Work from specifications drawn up by software developers or other individuals. May assist software developers by analyzing user needs and designing software solutions. May develop and write computer programs to store, locate, and retrieve specific documents, data, and information. | Analyst Programmer, Application Programmer Analyst, Computer Programmer, Internet Programmer, Java Developer, Programmer, Programmer Analyst, Web Applications Programmer, Web Programmer |
| 15-1141 | **Database Administrators** | Administer, test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. May plan, coordinate, and implement security measures to safeguard computer databases. | Data Architect, Database Administration Manager, Database Analyst, Database Coordinator, Database Developer, Information Systems Manager, Management Information Systems Director, Systems Administrator |
| 15-1151 | **Computer User Support Specialists** | 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. | Computer Specialist, Computer Support Specialist, Computer Technician, Desktop Support Technician, Help Desk Analyst, Information Technology Specialist, Network Technician, Support Specialist, Technical Support Specialist |
| 15-1152 | **Computer Network Support Specialists** | Analyze, test, troubleshoot, and evaluate existing network systems, such as local area network (LAN), wide area network (WAN), and Internet systems or a segment of a network system. Perform network maintenance to ensure networks operate correctly with minimal interruption. | Computer Network Specialist, IT Consultant, Network Engineer, Network Support Specialist, Network Technical Analyst, Personal Computer Network Analyst, Senior IT Assistant, Systems Specialist |

Source: O*NET Online

**Current and Future Employment**

In the South Central Coast region, the number of jobs related to Computer Infrastructure and Support are expected to remain steady, over the next five years, for Computer User Support Specialists and Computer Network Support Specialists, increase for Information Security Analysts and Database Administrators, and decrease for Computer Programmers.

**Exhibit 2 – Five-year projections for Computer Infrastructure and Support in the South Central Coast region**

| SOC | Occupation | 2018 Jobs | 2023 Jobs | 2018-2023 Change | 2018-2023 % Change |
|---|---|---|---|---|---|
| 15-1122 | **Information Security Analysts** | 528 | 617 | 89 | 17% |
| 15-1131 | **Computer Programmers** | 1,180 | 1,155 | -25 | -2% |
| 15-1141 | **Database Administrators** | 363 | 402 | 39 | 11% |
| 15-1151 | **Computer User Support Specialists** | 3,354 | 3,624 | 270 | 8% |
| 15-1152 | **Computer Network Support Specialists** | 917 | 974 | 57 | 6% |

Source: Economic Modeling Specialists International (EMSI)

**Earnings**

In the South Central Coast region, the average wage for the listed occupations is $31.09 per hour.

Exhibit 3 contains hourly wages and annual average earnings for these occupations. Entry-level hourly earnings are represented by the 25th percentile of wages, median hourly earnings are represented by the 50th percentile of wages, and experienced hourly earnings is represented by the 75th percentile of wages, demonstrating various levels of employment.

**Exhibit 3 – Earnings for Computer Infrastructure and Support in the South Central Coast region**

| SOC | Occupation | Entry-Level Hourly Earnings | Median Hourly Earnings | Experienced Hourly Earnings |
|---|---|---|---|---|
| 15-1122 | **Information Security Analysts** | $22.85 | $54.07 | $72.91 |
| 15-1131 | **Computer Programmers** | $32.62 | $42.59 | $54.27 |
| 15-1141 | **Database Administrators** | $26.40 | $38.56 | $57.15 |
| 15-1151 | **Computer User Support Specialists** | $20.83 | $26.69 | $33.81 |
| 15-1152 | **Computer Network Support Specialists** | $26.72 | $34.19 | $44.29 |

Source: Economic Modeling Specialists International (EMSI)

**Employer Job Postings**

In this research brief, real-time labor market information is used to provide a more nuanced view of the current job market, as it captures job advertisements for occupations relevant to the field of study. Employer job postings are consulted to understand who is employing computer programmers, and what they are looking for in potential candidates. To identify job postings related to Computer Infrastructure and Support the following standard occupational classifications were used:

| | |
|---|---|
| 15-1122 | Information Security Analysts |
| 15-1131 | Computer Programmers |
| 15-1141 | Database Administrators |
| 15-1151 | Computer User Support Specialists |
| 15-1152 | Computer Network Support Specialists |

*Top Occupations*

In 2018, there were 2,534 employer postings for occupations related to Computer Infrastructure and Support.

**Exhibit 4 – Top occupations in job postings and risk of automation tables**

| SOC Code | Occupation | Job Postings, Full Year 2018 |
|---|---|---|
| 15-1151 | **Computer User Support Specialists** | 1,297 |
| 15-1122 | **Information Security Analysts** | 503 |
| 15-1141 | **Database Administrators** | 320 |
| 15-1131 | **Computer Programmers** | 279 |
| 15-1152 | **Computer Network Support Specialists** | 135 |

Source: Labor Insight/Jobs (Burning Glass)

| SOC Code | Occupation | Risk of Automation |
|---|---|---|
| 15-1151 | **Computer User Support Specialists** | Low |
| 15-1122 | **Information Security Analysts** | Low |
| 15-1141 | **Database Administrators** | Low |
| 15-1131 | **Computer Programmers** | Low |
| 15-1152 | **Computer Network Support Specialists** | Low |

Source: Labor Insight/Jobs (Burning Glass)

*Top Titles*

The top job titles for employers posting ads for jobs related to Computer Infrastructure and Support are listed in Exhibit 5. Geek Squad Agent is mentioned as the job title in 3% of all relevant job postings (84 postings).

**Exhibit 5 –Job titles**

| Title | Job Postings, Full Year 2018 |
|---|---|
| Geek Squad Agent | 84 |
| Information Technology Specialist | 84 |
| Desktop Support | 75 |
| Help Desk Analyst | 62 |
| Security Analyst | 54 |

Source: Labor Insight/Jobs (Burning Glass)

*Top Employers*

Exhibit 6 lists the major employers hiring professionals in the Computer Infrastructure and Support field. The top employer posting job ads was Best Buy. The top worksite cities in the region for these occupations were Santa Barbara, Thousand Oaks, Palmdale, Oxnard, and Santa Clarita.

**Exhibit 6 – Top employers (n=2,534)**

| Employer | Job Postings, Full Year 2018 |
|---|---|
| Best Buy | 127 |
| Anthem Blue Cross | 99 |
| Lockheed Martin Corporation | 98 |
| Northrop Grumman | 43 |
| Raytheon | 35 |

Source: Labor Insight/Jobs (Burning Glass)

*Skills*

Technical Support is the most sought after skill for employers hiring for jobs related to Computer Infrastructure and Support.

**Exhibit 7 –Job skills (n=2,353)**

| Skills | Job Postings, Full Year 2018 |
|---|---|
| Technical Support | 696 |
| Customer Service | 486 |
| Repair | 390 |
| Microsoft Active Directory | 338 |
| Help Desk Support | 334 |
| Information Systems | 332 |
| SQL | 332 |

Source: Labor Insight/Jobs (Burning Glass)

**Industry Concentration**

Exhibit 8 shows the industries with most Computer Infrastructure and Support postings in the South Central Coast. Note: 32% of records have been excluded because they do not include an industry. As a result, the chart below may not be representative of the full sample.

**Exhibit 8 – Industries employing the most in the Computer Infrastructure and Support field, 2018**

| Industry | Occupation Group Jobs in Industry | % of Occupation Group in Industry |
|---|---|---|
| Professional, Scientific, and Technical Services | 398 | 23.2% |
| Manufacturing | 334 | 19.5% |
| Finance and Insurance | 175 | 10.2% |
| Retail Trade | 174 | 10.2% |
| Administrative and Support and Waste Management and Remediation Services | 154 | 9.0% |

Source: Labor Insight/Jobs (Burning Glass)

**Education and Training**

Exhibit 9 shows the typical entry-level education requirement for the occupations of interest, along with the typical on-the-job training needed to attain competency in the occupation.

**Exhibit 9 – Education and training requirements**

| SOC | Occupation | Typical entry-level education | Typical on-the-job training |
|---|---|---|---|
| 15-1122 | **Information Security Analysts** | Bachelor's degree | None |
| 15-1131 | **Computer Programmers** | Bachelor's degree | None |
| 15-1141 | **Database Administrators** | Bachelor's degree | None |
| 15-1151 | **Computer User Support Specialists** | Some college, no degree | None |
| 15-1152 | **Computer Network Support Specialists** | Associate's degree | None |

Source: Bureau of Labor Statistics Employment Projections (Educational Attainment)

**Regional Completions and Openings**

There were 1,041 regional completions (2017) and 593 regional openings (2017) in the South Central Coast region in programs related to the occupations identified as related to Computer Infrastructure and Support.

**Exhibit 10 – Completions and Openings**

| **15** Regional Institutions had Related Programs (2018) | **1,041** Regional Completions (2018) | **593** Annual Openings (2018) |
|---|---|---|

Source: Economic Modeling Specialists International (EMSI)

**Related Programs**

| CIP Code | Program | Completions (2018) |
|---|---|---|
| 11.0701 | Computer Science | 517 |
| 14.0901 | Computer Engineering, General | 177 |
| 11.1003 | Computer and Information, Systems Security/Information Assurance | 126 |
| 11.0901 | Computer Systems Networking and Telecommunications | 79 |
| 11.0803 | Computer Graphics | 31 |
| 11.0103 | Information Technology | 28 |
| 11.1006 | Computer Support Specialists | 27 |
| 11.0101 | Computer and Information Sciences, General | 17 |
| 11.1001 | Network and System Administration/Administrator | 11 |
| 11.0201 | Computer Programming/Programmer, General | 10 |
| 11.0801 | Web Page, Digital/Multimedia and Information Resources Design | 10 |
| 52.1201 | Management Information Systems, General | 6 |
| 11.0804 | Modeling, Virtual, Environments and Simulation | 2 |

Source: Economic Modeling Specialists International (EMSI)

**Student Outcomes**

The CTE LaunchBoard provides student outcome data on the effectiveness of CTE programs. The following student outcome information was collected from exiters of the Computer Infrastructure and Support Program (TOP: 0708.00) in the South Central Coast region for the 2015-16 academic year.

- The median annual wage for students after exiting is $37,661.
- 73% of students are employed within a year after completing a program.
- 65% of students are earning a living wage.
- Most Common middle-skills jobs for this program are:
    - Computer Network Support Specialists

Source: CTE LaunchBoard

**Sources**

O*Net Online, Labor Insight/Jobs (Burning Glass), Economic Modeling Specialists International (EMSI), Bureau of Labor Statistics (BLS) Education Attainment, California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart, CTE LaunchBoard

**Notes**

Data included in this analysis represent the labor market demand for relevant positions most closely related to Computer Infrastructure and Support. 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 and 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.