

Information Security Analysts

Labor Market Analysis: San Diego County

April 2019

Summary

- Do not Proceed
- Proceed with Caution
- Proceed

**PROCEED WITH
NEW PROGRAM?**



**SUPPLY
GAP?**



**AT OR ABOVE
THE LIVING WAGE**



Bachelor's Degree+



Associate Degree



Some College or Certificate



High School Diploma or Equivalent



Less than a HS Diploma



Apprenticeship

**EXPECTED LEVEL
OF EDUCATION**



High



Medium



Low

**NUMBER OF
INSTITUTIONS THAT
PROVIDE TRAINING**



High



Medium



Low

**NUMBER OF ANNUAL
JOB OPENINGS**

According to available labor market information, there is a supply gap for *Information Security Analysts* in San Diego County. This occupation has a labor market demand of 87 annual job openings, while average demand for an occupation in San Diego County is 277 annual job openings. *Information Security Analysts* are also considered “Cybersecurity Analysts.” Six educational institutions in San Diego County supply 11 awards in programs that are “cybersecurity focused” and 11 institutions supply 37 awards in programs that “include aspects of cybersecurity,” suggesting that there is a supply gap. However, this supply number does not include people currently in the labor force looking for work as *Information Security Analysts*. This occupation’s entry-level and median wages are higher than the Self-Sufficiency Standard, suggesting that students who successfully complete a program and obtain employment in a related field may earn living wages.

Introduction

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

Information Security Analysts (SOC 15-1122): 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. Sample reported job titles include:

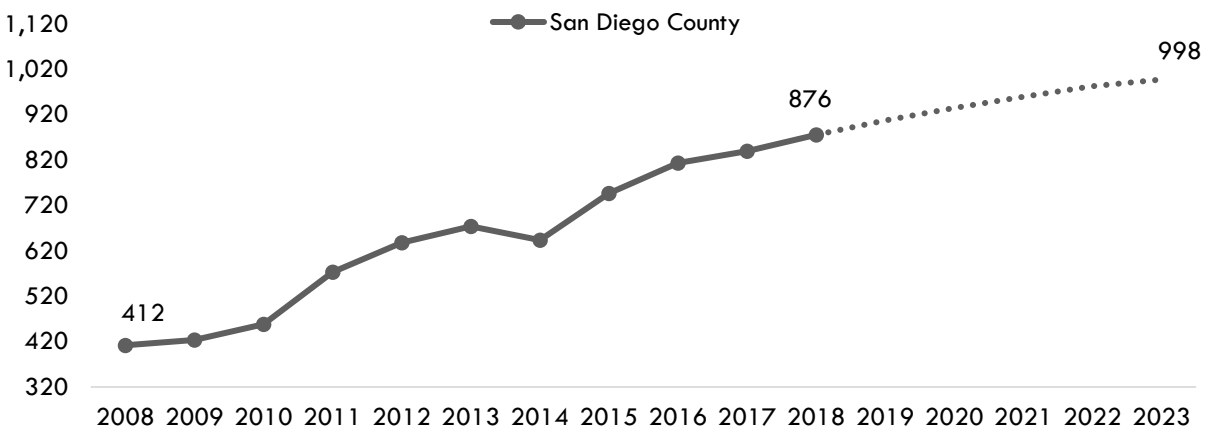
- Computer Security Specialist
- Information Systems Security Officer
- Security Engineer
- Network Security Analyst
- Information Security Manager
- Information Security Analyst
- Network Security Engineer
- Information Technology Security Analyst

Information Security Analysts is also the most commonly used occupation in the SOC system to collect labor market data on cybersecurity occupations (e.g., cybersecurity specialists, cybersecurity analysts).

Projected Occupational Demand

Between 2018 and 2023, the number of *Information Security Analysts* is projected to increase by 122 jobs or 14 percent (Exhibit 1). Employers in San Diego County will need to hire 87 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

Exhibit 1: Number of Jobs for Information Security Analysts (2008-2023)²



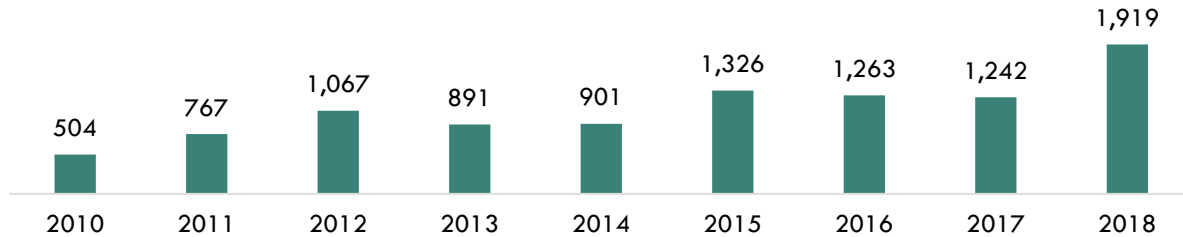
¹ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc/).

² Source: Emsi 2019.01; QCEW, Non-QCEW, Self-Employed.

Online Job Postings

Between 2010 and 2018, there was an average of 1,098 online job postings per year for *Information Security Analysts* in San Diego County (Exhibit 2).

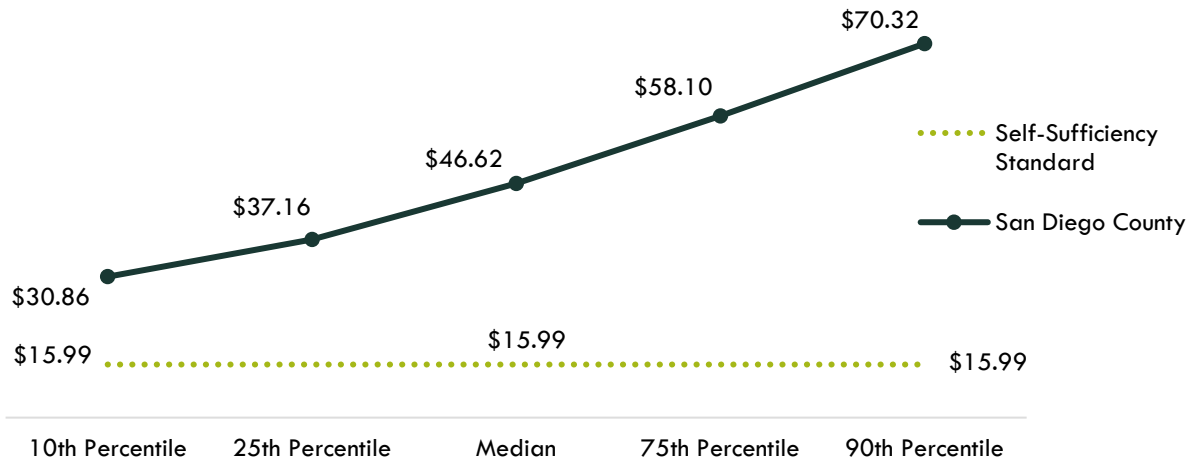
Exhibit 2: Number of Online Job Postings for *Information Security Analysts* in San Diego County (2010-2018)³



Earnings

The median hourly earnings for *Information Security Analysts* is \$46.62. This is more than the Self-Sufficiency Standard for a single adult in San Diego County, which is \$15.99 per hour (Exhibit 3).⁴

Exhibit 3: Hourly Earnings⁵ for *Information Security Analysts* in San Diego County⁶



³ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2010-2018.

⁴ The self-sufficiency wage in San Diego for one adult is \$15.99 (insightcced.org/2018-self-sufficiency-standard).

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 Source: Emsi 2019.01; QCEW, Non-QCEW, Self-Employed.

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 is no single, specific TOP code for cybersecurity; therefore, for the purpose of this brief, CIP codes will be used. According to a recent statewide report by the Centers of Excellence for Labor Market Research (COE), there are **three** CIP codes that are “focused on cybersecurity,” and **10** CIP codes that “include cybersecurity.”⁸ There are also **23** CIP codes that “likely include cybersecurity,” but those numbers will not be used for this brief due to the broad range of occupations that those CIP codes train for (Exhibit 4).

Exhibit 4: Related CIP Codes for Information Security Analysts

<i>Information Security Analysts</i>
Cybersecurity Focused
CIP 11.1003 Computer and Information Systems Security/Information Assurance.
CIP 29.0207 Cyber/Electronic Operations and Warfare.
CIP 43.0116 Cyber/Computer Forensics and Counterterrorism.
Includes Aspects of Cybersecurity
CIP 11.0802: Data Modeling/Warehousing and Database Administration.
CIP 11.0901: Computer Systems Networking and Telecommunications.
CIP 11.1002: System, Networking, and LAN/WAN Management/Manager.
CIP 11.1004: Web/Multimedia Management and Webmaster.
CIP 15.1204: Computer Software Technology/Technician.
CIP 43.0301: Homeland Security
CIP 43.0303: Critical Infrastructure Protection.
CIP 52.1201: Management Information Systems, General.
CIP 52.1206: Information Resources Management.
CIP 52.2101: Telecommunications Management.

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).

⁸ coeccc.net/reports/Cybersecurity

According to CIP data, six community colleges supply the region with awards for this occupation: Cuyamaca College, Grossmont College, Palomar College, MiraCosta College, San Diego City College, and Southwestern College. Six non-community colleges supply the region with awards, Ashford University, California Miramar University, Coleman University, National University, Point Loma Nazarene University, and University of San Diego (Exhibit 5).

Exhibit 5: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Year 2015-16 through PY2016-17)

Postsecondary Institutions	CC Awards (PY16-17)	Other Educational Institutions Awards (PY15-16)	Total Supply (PY15-16 to PY16-17)
Cybersecurity Focused	5	6	11
• California Miramar University	0	1	
• Coleman University	0	2	
• National University	0	1	
• San Diego City College	2	0	
• Southwestern College	3	0	
• University of San Diego	0	2	
Includes Aspects of Cybersecurity	24	13	37
• Ashford University	0	1	
• California Miramar University	0	1	
• Coleman University	0	3	
• Cuyamaca College	2	0	
• Grossmont College	9	0	
• MiraCosta College	4	0	
• National University	0	7	
• Palomar College	5	0	
• Point Loma Nazarene University	0	1	
• San Diego City College	1	0	
• Southwestern College	3	0	
		Total	48

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply⁹ suggests that there is a **supply gap** for this occupation in San Diego County, with **87** annual openings and **48** awards. Comparatively, there are **1,069** annual openings in California and **319** awards¹⁰ (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	87	48	39
California	1,069	319	750

Please note: This is a basic analysis of supply and demand of labor. 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. Additionally, the data does not include workers who are currently in the labor force who could fill these positions or workers who are not captured by publicly available data.

Student Outcomes

While there is no TOP code specifically related to *Information Security Analysts*, the most closely related TOP code for the occupation is Computer Infrastructure and Support (TOP 070800). Based on the information available in the CTE LaunchBoard, students who took courses in the related TOP code exhibited the following outcomes (Exhibit 7).

Exhibit 7: Strong Workforce Program Metrics for TOP 070800: Computer Infrastructure and Support San Diego-Imperial Region vs. California (PY2015-16)

Metric	San Diego-Imperial	California
Number of course enrollments ¹¹	818	8,369
Completed 12+ CTE units in one year ¹²	106	1,361
Completed 48+ CTE contact hours in one year ¹³	22	23

⁹ 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.

¹⁰ Centers of Excellence Student Outcomes supply table. (coecc.net/Supply-and-Demand.aspx).

¹¹ The number of enrollments in courses assigned to the TOP code in the selected year.

¹² The number of students who completed 12 or more credit CTE units.

¹³ The number of students who completed 48 or more noncredit CTE instructional contact hours.

Metric	San Diego-Imperial	California
Number of students who got a degree or certificate ¹⁴	N/A	225
Number of students who transferred ¹⁵	29	426
Employed in the second fiscal quarter after exit ¹⁶	65%	65%
Employed in the fourth fiscal quarter after exit ¹⁷	67%	66%
Job closely related to field of study ¹⁸	N/A	N/A
Median earnings in the second fiscal quarter after exit ¹⁹	\$9,761	\$10,986
Median change in earnings ²⁰	22%	37%
Attained a living wage ²¹	51%	62%

Top Employers and Work Locations

Between January 1, 2016 and December 31, 2018, the top five employers in San Diego County for this occupation were [Booz Allen Hamilton](#), [Northrop Grumman](#), [Teradata Operations](#), [Qualcomm](#), and [General Atomics](#) (Exhibit 8).

Exhibit 8: Top Employers in San Diego County for *Information Security Analysts*²²

Top Employers	
<ul style="list-style-type: none"> • Booz Allen Hamilton, Inc. • Northrop Grumman • Teradata Operations, Inc. • Qualcomm • General Atomics 	<ul style="list-style-type: none"> • Sony Electronics Incorporated • BAE Systems • Viasat • Accenture • Leidos

¹⁴ The number of unduplicated students who earned a locally-issued certificate, Chancellor's Office approved certificate, associate degree, and/or California Community Colleges bachelor's degree in the selected TOP code.

¹⁵ Students who took non-introductory courses or completed a California Community Colleges Chancellor's Office award in the selected TOP code in selected year who subsequently enrolled for the first time in a four-year institution the following year.

¹⁶ Among all exiters with a valid SSN, the percentage who were employed two quarters after exiting California Community Colleges.

¹⁷ Among exiting students with a valid SSN, the percentage who were employed four quarters after exiting California Community Colleges.

¹⁸ Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

¹⁹ Among exiting students, the median second-quarter earnings one year after the year in which they exited California Community Colleges.

²⁰ Among exiting students with a valid SSN, the percentage change in earnings one year before and one year after exiting California Community Colleges.

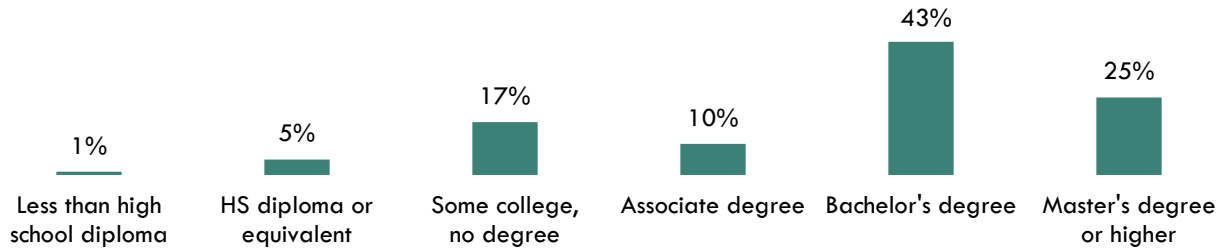
²¹ Among completers and skills builders who exited, the proportion of students who attained a living wage.

²² Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.

Skills, Education, and Certifications

Exhibit 9 indicates the educational attainment for the occupation found currently in the national labor force. There is no typical on-the-job training for this profession. The typical entry-level education is a bachelor's degree.²³

Exhibit 9: National Educational Attainment of Information Security Analysts²⁴



*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, 2016 and December 31, 2018.

Exhibit 10: Top Skills for Information Security Analysts in San Diego County²⁵

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> Information Security Information Systems Information Assurance Linux Network Security 	<ul style="list-style-type: none"> Communication Skills Teamwork / Collaboration Research Planning Problem Solving 	<ul style="list-style-type: none"> Linux Vulnerability assessment UNIX Python Java

²³ Source: Emsi, 2018.04; QCEW, Non-QCEW, Self-Employed.

²⁴ "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified October 18, 2018. bls.gov/emp/tables/educational-attainment.htm.

²⁵ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.

Prepared by:

Tina Ngo Bartel, Director

John Edwards, Research Analyst

San Diego-Imperial Center of Excellence for Labor Market Research

tngobartel@miracosta.edu

jedwards@miracosta.edu



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.