

Cybersecurity Occupations Labor Market Information Report Monterey Peninsula College

Prepared by the San Francisco Bay Center of Excellence
for Labor Market Research
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Recommendation

Based on all available data, there appears to be an undersupply of Cybersecurity workers compared to the demand for this cluster of occupations in the Bay region and in the SC-Monterey sub-region (Monterey, San Benito, and Santa Cruz Counties). There is a projected annual gap of about 375 students in the Bay region and 18 students in the SC-Monterey Sub-Region.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0708.00-Computer Infrastructure and Support programs in the state and region. It is recommended that these data be reviewed to better understand how outcomes for students taking courses on this TOP code compare to potentially similar programs at colleges in the state and region, as well as to outcomes across all CTE programs at Monterey Peninsula College and in the region.

This report profiles Cybersecurity Occupations in the 12 county Bay region and in the SC-Monterey sub-region for a proposed new program at Monterey Peninsula College.

- Information Security Analysts (SOC 15-1212):** 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. Excludes “Computer Network Architects” (15-1143).

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: None

Percentage of Community College Award Holders or Some Postsecondary Coursework: 27%

Occupational Demand

Table 1. Employment Outlook for Cybersecurity Occupations in Bay Region

Occupation	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Average Annual Openings	25% Hourly Wage	Median Hourly Wage
Information Security Analysts	3,552	4,611	1,059	30%	2,493	499	\$41.35	\$55.30

Source: EMSI 2020.3

Bay Region includes Alameda, Contra Costa, Marin, Monterey, Napa, San Benito, San Francisco, San Mateo, Santa Clara, Santa Cruz, Solano and Sonoma Counties

Table 2. Employment Outlook for Cybersecurity Occupations in SC-Monterey Sub-Region

Occupation	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings	Average Annual Openings	25% Hourly Wage	Median Hourly Wage
Information Security Analysts	139	161	22	16%	89	18	\$47.45	\$60.00

Source: EMSI 2020.3

SC-Monterey Sub-Region includes Monterey, San Benito, and Santa Cruz Counties

Job Postings in Bay Region and SC-Monterey Sub-Region

Table 3. Number of Job Postings by Occupation for latest 12 months (October 2019 - September 2020)

Occupation	Bay Region	SC-Monterey Sub-Region
Information Security Analysts	9,129	108

Source: Burning Glass

**Table 4a. Top Job Titles for Cybersecurity Occupations for latest 12 months (March 2019 - February 2020)
Bay Region**

Common Title	Bay	Common Title	Bay
Security Engineer	287	Security Architect	74
Senior Security Engineer	153	IT Security Analyst	54
Security Analyst	151	Cyber Security Engineer	47
Information Security Engineer	143	Senior Cloud Security Engineer	44
Information Security Analyst	91	Penetration Tester	42
Network Security Engineer	86	Product Security Engineer	40
Cloud Security Engineer	82	IT Security Specialist	39
Cyber Security Analyst	80	IT Auditor	38

**Table 4b. Top Job Titles for Cybersecurity Occupations for latest 12 months (October 2019 - September 2020)
SC-Monterey Sub-Region**

Common Title	SC-Monterey	Common Title	SC-Monterey
Application Security Analyst	11	Security Analyst Associate	3
IT Specialist Information Security	5	Information Security Analyst	3
Cyber Security Analyst	5	Systems Security Architect	2
Security Analyst	4	Security Engineer	2
MacAfee SME	4	Information Security Specialist	2

Source: Burning Glass

Industry Concentration

Table 5. Industries hiring Cybersecurity Workers in Bay Region

Industry – 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2018)	Jobs in Industry (2022)	% Change (2018-22)	% in Industry (2018)
Custom Computer Programming Services (541511)	8,163	10,220	25%	26%
Computer Systems Design Services (541512)	4,980	5,868	18%	15%
Internet Publishing and Broadcasting and Web Search Portals (519130)	1,837	2,345	28%	6%
Corporate, Subsidiary, and Regional Managing Offices (551114)	1,762	1,818	3%	5%
Data Processing, Hosting, and Related Services (518210)	1,406	1,999	42%	4%
Electronic Computer Manufacturing (334111)	1,381	1,498	8%	4%
Software Publishers (511210)	1,174	1,605	37%	4%
Other Computer Related Services (541519)	1,136	1,469	29%	4%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715)	565	627	11%	2%
Local Government, Excluding Education and Hospitals (903999)	495	511	3%	1%
Temporary Help Services (561320)	389	399	3%	1%
General Medical and Surgical Hospitals (622110)	376	362	-4%	1%
Commercial Banking (522110)	324	349	8%	1%
Administrative Management and General Management Consulting Services (541611)	342	418	22%	1%

Source: EMSI 2020.3

Table 6. Top Employers Posting Cybersecurity Occupations in Bay Region and SC-Monterey Sub-Region (October 2019 - September 2020)

Employer	Bay	Employer	Bay	Employer	SC-Monterey
Wells Fargo	213	Google	59	Indrasoft Inc.	11
Deloitte	142	Lockheed Martin Corporation	55	General Dynamics	8
Cisco Systems Inc.	119	Nvidia Co.	54	Devine Consulting Inc.	6
Palo Alto Networks	115	Accenture	53	Crowdstrike	6
Apple Inc.	97	Salesforce	49	Lintech Global Inc.	5
Splunk	125	Capital One	48	Joby Aviation	4
KPMG	83	SAP	46	US Fleet Forces Command	3
Facebook	79	PG&E	46	Lockheed Martin Corporation	3
IBM	74	Dell	37	Del Monte Foods	3
Amazon	68	Infobahn Softworld Inc.	35	Arma Global Corp.	3
Vmware Inc.	64	Nsys Design Systems	34	Google	2
Allied Universal	61	Blue Cross Blue Shield of CA	31	Dell	2

Source: Burning Glass

Educational Supply

There are three (3) community colleges in the Bay Region issuing 71 awards on average annually (last 3 years ending 2018-19) on TOP 0708.00-Computer Infrastructure and Support. There are no colleges in the SC-Monterey Sub-Region issuing awards on average annually (last 3 years) on this TOP code.

There are five (5) other CTE Educational Institutions in the Bay Region issuing 53 awards on average annually (last 3 years ending 2016-17) on TOP 0708.00-Computer Infrastructure and Support. There are no other CTE Educational Institutions in the SC-Monterey Sub-Region issuing awards on average annually (last 3 years) on this TOP code.

Table 7a. Community College Awards on TOP 0708.00-Computer Infrastructure and Support in Bay Region

College	Sub-Region	Associates	Certificate 18+ Units	Certificate Low Unit	Total
Los Medanos	East Bay	6		5	11
Ohlone	East Bay			1	1
San Francisco	Mid-Peninsula	46		13	59
Total Bay Region		52		19	71
Total SC-Monterey Sub-Region		0		0	0

Source: Data Mart

Note: The annual average for awards is 2016-17 to 2018-19.

Table 7b. Other CTE Institutions Awards on TOP 0708.00-Computer Infrastructure and Support in Bay Region

College	Sub-Region	Associate Degree	Award < 1 academic yr	Total
Academy of Art University	Mid-Peninsula	4		4
Golden Gate University-San Francisco	Mid-Peninsula		1	1
ITT Technical Institute-Concord	East Bay	6		6
ITT Technical Institute-Oakland	East Bay	4		4
Unitek College	East Bay		38	38
Total Bay Region		14	39	53
Total SC-Monterey Sub-Region		0	0	0

Source: Data Mart

Note: The annual average for awards is 2014-15 to 2016-17.

Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 499 annual openings for the Cybersecurity occupational cluster and 124 annual (3-year average) awards from community colleges

and other CTE institutions for an annual undersupply of 375 students. In the SC-Monterey Sub-Region, there is also a gap with 18 annual openings and no annual (3-year average) awards from community colleges and other CTE institutions for an annual undersupply of 18 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0708.00-Computer Infrastructure and Support

2017-18	Bay All CTE Programs	Monterey Peninsula College All CTE Programs	State 0708.00	Bay 0708.00	SC-Monterey 0708.00	Monterey Peninsula College 0708.00
% Employed Four Quarters After Exit	74%	70%	66%	72%	64%	56%
Median Quarterly Earnings Two Quarters After Exit	\$10,550	\$8,510	\$10,986	\$13,156	\$10,368	\$7,511
Median % Change in Earnings	46%	58%	37%	47%	15%	21%
% of Students Earning a Living Wage	63%	54%	62%	68%	61%	52%

Source: Launchboard Pipeline (version available on (9/29/20)

Skills, Certifications and Education

Table 9. Top Skills for Cybersecurity Occupations in Bay Region (October 2019 - September 2020)

Skill	Postings	Skill	Postings	Skill	Postings
SQL	4,748	SAP	2,522	DevOps	1,324
Information Security	4,481	Customer Service	2,461	UNIX	1,302
Project Management	4,428	Enterprise Resource Planning	1,933	Authentication	1,301
Business Process	4,373	Software Engineering	1,844	Penetration Testing	1,258
Python	4,116	Salesforce	1,827	Systems Development Life Cycle (SDLC)	1,227
Oracle	4,039	Network Security	1,733	C++	1,153
Java	4,025	Quality Assurance and Control	1,701	Project Planning and Development Skills	1,152
Business Systems Analysis	3,782	Cryptography	1,634	Web Application Development	1,095
Business Systems	3,649	Budgeting	1,551	Atlassian JIRA	1,094
Software Development	3,487	Software as a Service (SaaS)	1,540	Extensible Markup Language (XML)	1,066
Systems Analysis	2,962	Data Analysis	1,503	Technical Writing / Editing	1,066
Information Systems	2,941	Technical Support	1,368	Customer Contact	1,025
Linux	2,723	Change Management	1,351	Transmission Control Protocol / Internet Protocol	1,022
Business Analysis	2,708	Scheduling	1,336	Security Operations	1,018
JavaScript	2,663	Scrum	1,332	Product Management	1,004

Source: Burning Glass

Table 10. Certifications for Cybersecurity Occupations in Bay Region (October 2019 - September 2020)

Note: 82% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

Certification	Postings	Certification	Postings
Certified Information Systems Security Professional (CISSP)	2,491	Cisco Certified Security Professional	286
Certified Information Systems Auditor (CISA)	1,273	Driver's License	274
SANS/GIAC Certification	1,065	Cisco Certified Network Professional (CCNP)	221
Certified Information Security Manager (CISM)	989	GIAC Security Essentials (GSEC)	203
Information Systems Certification	512	GIAC Certified Intrusion Analyst	198

IT Infrastructure Library (ITIL) Certification	510	Project Management Professional (PMP)	180
Project Management Certification	420	Cisco Certified Internetwork Expert (CCIE)	126
Certified in Risk and Information Systems Control	415	ITIL Certification	125
Security Clearance	404	Systems Security Certified Practitioner (SSCP)	115
CompTIA Security+	326	Certified Ethical Hacker (CEH)	109
Cisco Certified Network Associate (CCNA)	312	GIAC Certified Forensic Analyst	104
GIAC Certified Incident Handler (GCIH)	291	SAP Certification	101

Source: Burning Glass

Table 11. Education Requirements for Cybersecurity Occupations in Bay Region (October 2019 - September 2020)

Note: 47% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

Education (minimum advertised)	Latest 12 Mos. Postings	Percent 12 Mos. Postings
High school or vocational training	571	4%
Associate Degree	306	2%
Bachelor's Degree or Higher	13,200	94%

Source: Burning Glass

Methodology

Occupations for this report were identified by use of skills listed in O*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCO Data Mart.

Sources

O*Net Online
 Labor Insight/Jobs (Burning Glass)
 Economic Modeling Specialists International (EMSI)
 CTE LaunchBoard www.calpassplus.org/Launchboard/
 Statewide CTE Outcomes Survey
 Employment Development Department Unemployment Insurance Dataset
 Living Insight Center for Community Economic Development
 Chancellor's Office MIS system

Contacts

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