



Labor Market Information Report

Security for Web App Development Occupations

City College of San Francisco

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

April 2023

Recommendation

Based on all available data, there appears to be an “undersupply” of Security for Web App Development workers compared to the demand for this cluster of occupations in the Bay region and in the Mid-Peninsula sub-region (San Francisco, San Mateo counties). There is a projected annual gap of about 1,729 students in the Bay region and 818 students in the Mid-Peninsula Sub-Region.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0708.10 - Computer Networking 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 City College of San Francisco and in the region.

This report profiles Security for Web App Development Occupations in the 12 county Bay region and in the Mid-Peninsula sub-region for a program modification at City College of San Francisco.

- **Information Security Analysts (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%
- **Web Developers (15-1254):** Develop and implement websites, web applications, application databases, and interactive web interfaces. Evaluate code to ensure that it is properly structured, meets industry standards, and is compatible with browsers and devices. Optimize website performance, scalability, and server-side code and processes. May develop website infrastructure and integrate websites with other computer applications.
Entry-Level Educational Requirement: Bachelor’s degree
Training Requirement: None
Percentage of Community College Award Holders or Some Postsecondary Coursework: NA%

Occupational Demand

Table 1. Employment Outlook for Security for Web App Development Occupations in Bay Region

Occupation	2021 Jobs	2026 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Information Security Analysts	12,437	15,166	2,729	22%	7,590	1,518	\$59	\$67
Web Developers	5,083	5,639	556	11%	2,501	500	\$38	\$52
Total	17,520	20,804	3,284	19%	10,091	2,018		

Source: Lightcast 2022.3

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 Security for Web App Development Occupations in Mid-Peninsula Sub-region

Occupation	2021 Jobs	2026 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Information Security Analysts	4,806	6,200	1,393	29%	3,329	666	\$65	\$68
Web Developers	2,447	2,801	354	14%	1,299	260	\$40	\$52
Total	7,253	9,000	1,748	24%	4,628	926		

Source: Lightcast 2022.3

Mid-Peninsula Sub-Region includes: San Francisco, San Mateo Counties

Job Postings in Bay Region and Mid-Peninsula Sub-Region

Table 3. Number of Job Postings by Occupation for latest 12 months (Mar. 2022 - Feb. 2023)

Occupation	Bay Region	Mid-Peninsula
Web Developers	2,557	1,175
Information Security Analysts	1,440	524

Source: Lightcast

Table 4a. Top Job Titles for Security for Web App Development Occupations for latest 12 months (Mar. 2022 - Feb. 2023) - Bay Region

Title	Bay	Title	Bay
Front End Engineers	220	UI/UX Designers	74
Back End Engineers	204	Cloud Security Engineers	47
Front End Developers	128	Information Security Analysts	44
Security Engineers	118	User Experience Designers	44
UX Designers	111	Back End Developers	43
UX Researchers	106	Cybersecurity Engineers	42
Web Developers	95	UI Developers	42
Back End Software Engineers	88	Product Security Engineers	41

Title	Bay	Title	Bay
Front End Software Engineers	77	UI Engineers	38

Source: Lightcast

Table 4b. Top Job Titles for Security for Web App Development Occupations for latest 12 months (Mar. 2022 - Feb. 2023) - Mid-Peninsula Sub-Region

Title	Mid-Peninsula	Title	Mid-Peninsula
Back End Engineers	122	Web Developers	31
Front End Engineers	104	Ruby on Rails Engineers	24
Back End Software Engineers	69	Information Security Analysts	22
UX Researchers	57	User Experience Designers	21
Front End Software Engineers	55	Lead UX Designers	20
UX Designers	50	IT Auditors	18
Security Engineers	49	Ruby on Rails Developers	18
Front End Developers	44	Security Analysts	18
UI/UX Designers	40	Lead UX Researchers	16

Source: Lightcast

Industry Concentration

Table 5. Industries hiring Security for Web App Development Workers in Bay Region

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2021)	Jobs in Industry (2026)	% Change (2021-26)	% Occupation Group in Industry (2022)
Internet Publishing and Broadcasting and Web Search Portals	4,726	5,975	26%	26%
Custom Computer Programming Services	3,116	3,942	27%	18%
Computer Systems Design Services	1,456	1,716	18%	8%
Data Processing, Hosting, and Related Services	691	1,024	48%	4%
Software Publishers	727	869	19%	4%
Corporate, Subsidiary, and Regional Managing Offices	664	670	1%	4%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	488	617	26%	3%
Other Computer Related Services	366	459	25%	2%
Research and Development in Biotechnology (except Nanobiotechnology)	292	409	40%	2%
Administrative Management and General Management Consulting Services	240	327	36%	1%

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2021)	Jobs in Industry (2026)	% Change (2021-26)	% Occupation Group in Industry (2022)
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Source: Lightcast 2022.3

Table 6. Top Employers Posting Security for Web App Development Occupations in Bay Region and Mid-Peninsula Sub-Region (Mar. 2022 - Feb. 2023)

Employer	Bay	Employer	Mid-Peninsula
Motion Recruitment	158	Capital One	109
CyberCoders	112	Braintrust Group	79
Capital One	110	CyberCoders	58
Braintrust Group	101	Motion Recruitment	52
Apple	73	Jobot	46
Jobot	69	Robert Half	22
Cisco	52	Raytheon Technologies	20
Google	46	Federal Reserve Bank	19
University of California	38	Patreon	17
Robert Half	37	Wells Fargo	16

Source: Lightcast

Educational Supply

There are 15 community colleges in the Bay Region issuing 289 awards on average annually (last 3 years ending 2019-20) on TOP 0708.10 - Computer Networking. In the Mid-Peninsula Sub-Region, there are two (2) community colleges that issued 108 awards on average annually (last 3 years) on this TOP code.

Table 7. Community College Awards on TOP 0708.10 Computer Networking in Bay Region

College	Subregion	Associate Degree	High unit Certificate	Low unit Certificate	Total
Cabrillo	SC-Monterey	7	3	0	10
Contra Costa	East Bay	1	0	2	3
De Anza	Silicon Valley	19	0	18	37
Diablo Valley	East Bay	4	2	0	6
Foothill	Silicon Valley	1	0	0	1
Gavilan	Silicon Valley	3	0	1	4
Las Positas	East Bay	3	0	5	8
Los Medanos	East Bay	5	1	3	9
Mission	Silicon Valley	13	0	18	31
Monterey	SC-Monterey	1	2	1	4
Ohlone	East Bay	3	0	24	27
San Francisco	Mid-Peninsula	18	0	80	98
San Jose City	Silicon Valley	11	0	18	29
Santa Rosa	North Bay	0	0	12	12
Skyline	Mid-Peninsula	7	3	0	10
Total		96	11	182	289

College	Subregion	Associate Degree	High unit Certificate	Low unit Certificate	Total
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Source: Data Mart

Note: The annual average for awards is 2017-18 to 2019-20.

Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 2,018 annual openings for the Security for Web App Development occupational cluster and 289 annual (3-year average) awards for an annual undersupply of 1,729 students. In the Mid-Peninsula Sub-Region, there is also a gap with 926 annual openings and 108 annual (3-year average) awards for an annual undersupply of 818 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0708.10 Computer Networking

Metric Outcomes	Bay All CTE Programs	CCSF All CTE Programs	State 0708.10	Bay 0708.10	Mid-Peninsula 0708.10	CCSF 0708.10
Students with a Job Closely Related to Their Field of Study	74%	73%	71%	73%	64%	62%
Median Annual Earnings for SWP Exiting Students	\$48,926	\$57,224	\$51,856	\$59,218	\$65,072	\$64,442
Median Change in Earnings for SWP Exiting Students	23%	18%	17%	21%	22%	23%
Exiting Students Who Attained the Living Wage	50%	47%	61%	56%	53%	53%

Source: Launchboard Strong Workforce Program Median of 2018 to 2021.

Skills, Certifications and Education

Table 9. Top Skills for Security for Web App Development Occupations in Bay Region (Mar. 2022 - Feb. 2023)

Skill	Posting	Skill	Posting
JavaScript (Programming Language)	1,145	Software Engineering	599
Computer Science	1,090	User Interface	594
React.js	885	Software Development	570
User Experience	830	Application Programming Interface (API)	563
Cascading Style Sheets (CSS)	805	Node.js	505
Amazon Web Services	715	Scalability	483
Python (Programming Language)	693	Cyber Security	480
Front End (Software Engineering)	684	Front End Design	470
Agile Methodology	667	Java (Programming Language)	461
HyperText Markup Language (HTML)	614	Auditing	422

Skill	Posting	Skill	Posting
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Source: Lightcast

Table 10. Certifications for Security for Web App Development Occupations in Bay Region (Mar. 2022 - Feb. 2023)

Certification	Posting	Certification	Posting
Certified Information Systems Security Professional	337	Offensive Security Certified Professional	44
Certified Information System Auditor (CISA)	155	Certified Internal Auditor	37
Certified Information Security Manager	133	Valid Driver's License	35
GIAC Certifications	120	GIAC Certified Incident Handler	34
Certified Ethical Hacker	84	Cisco Certified Network Associate	31
Security Clearance	83	Master of Business Administration (MBA)	31
Certified In Risk And Information Systems Control	69	Cisco Certified Network Professional	25
CompTIA Security+	57	Top Secret Clearance	25
Cisco Certified Security Professional	54	Certified Secure Software Lifecycle Professional	23
NIST Cybersecurity Framework (CSF)	46	Project Management Professional Certification	22

Source: Lightcast

Table 11. Education Requirements for Security for Web App Development Occupations in Bay Region

Education Level	Job Postings	% of Total
High school or GED	110	4%
Associate degree	62	2%
Bachelor's degree & higher	2,783	94%

Source: Lightcast

Note: 48% of records have been excluded because they do not include a degree level. As a result, the chart above may not be representative of the full sample.

Methodology

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

Sources

O*Net Online

Lightcast

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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