



Labor Market Assessment Cybersecurity Occupations

May 2026

Key Findings

In California, employment in Cybersecurity-related occupations (Information Security Analysts and Data Scientists) is projected to generate an average of 4,672 annual job openings from 2024 to 2034. Within the Bay Region, there are approximately 1,935 such openings annually, representing a substantial share of statewide demand. In the Bay Region, postsecondary institutions confer approximately 245 associate-level awards annually and no bachelor's degrees, resulting in a significant undersupply of about 1,690 workers relative to job openings, particularly for positions that require a bachelor's degree. Therefore, De Anza College's proposed Cybersecurity program would help address this workforce shortage, expand access to baccalaureate education, and strengthen the regional talent pipeline for high-demand technology occupations.

In California, entry-level Cybersecurity occupations typically earn approximately \$47 per hour, which exceeds the living wage for a single adult (\$17) and exceeds the living wage for adults with one preschooler (\$32) or one infant (\$35). Median wages reach approximately \$66 per hour, reflecting strong earning potential in the field. Wages also increase substantially with higher levels of education. For Information Security Analysts, entry-level wages increase from approximately \$42 per hour for associate degree holders to \$50 per hour for those with a bachelor's degree. Similarly, for Data Scientists, wages increase from approximately \$44 per hour for associate degree holders to \$49 per hour for those with a bachelor's degree. This wage progression highlights the importance of bachelor's-level education in helping workers achieve high and sustainable earnings over time.

Introduction

This report profiles Cybersecurity occupations in California and the 12-County Bay Region for a proposed bachelor's degree program.

This report provides student outcomes data on employment and earnings for Computer Programming (TOP 0707.10) in the Bay Region. It is recommended that this data be reviewed to better understand how outcomes for students taking courses within these program areas compare to similar programs at colleges in the region.

This report evaluates labor market needs and workforce alignment for the proposed bachelor's degree program called "Cybersecurity." Using state and regional data, it presents insights into educational and occupational requirements, employment trends, wage levels, and degree alignment for Information Security Analysts and Data Scientists, two occupations highly relevant to cybersecurity and data security functions.

The analysis shows that Data Scientists account for the majority of employment and growth, while Information Security Analysts represent a rapidly growing and specialized segment of the workforce. The findings indicate strong demand, high wages, and a significant labor market gap, supporting the creation of a bachelor’s degree program to better align educational pathways with workforce needs in the Bay Region.

Occupation under Review

- **Information Security Analysts (15-1212):** Plan, implement, upgrade, or monitor security measures for the protection of computer networks and information. Assess system vulnerabilities for security risks and propose and implement risk mitigation strategies. 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.

Occupational Characteristics	
Typical Entry Level Education	Bachelor's degree
Work Experience Required	Less than 5 years
Typical On-The-Job Training	None
Existing Workforce(% of individuals age 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment)	24%

- **Data Scientists (15-2051):** Develop and implement a set of techniques or analytics applications to transform raw data into meaningful information using data-oriented programming languages and visualization software. Apply data mining, data modeling, natural language processing, and machine learning to extract and analyze information from large structured and unstructured datasets. Visualize, interpret, and report data findings. May create dynamic data reports.

Occupational Characteristics	
Typical Entry Level Education	Bachelor's degree
Work Experience Required	None
Typical On-The-Job Training	None
Existing Workforce(% of individuals age 25+ with an associate degree, certificate, or some postsecondary coursework as their highest level of education attainment)	10%

State Level Analysis

Table 1 shows the number of job postings that list licenses and certifications which Information Security Analysts and Data Scientists may choose to earn, although they are not required. While a wide range of certifications appear in job postings, most are listed in a small percentage of postings, indicating that certifications are generally not required for entry into the field, but may enhance employability for specialized roles or advanced positions.

Table 1. Educational Licenses or Certifications for Cybersecurity Occupations in California

Licenses or Certifications	# of Job Postings	% of Total
GIAC Certifications	397	1%
Project Management Professional Certification	254	1%
SAP Certification	222	1%
Oracle Certification	200	1%
GIAC Security Essentials Certification (GSEC)	110	<1%
IAT Level II Certification	105	<1%
Salesforce Certification	65	<1%
CompTIA Certification	62	<1%
IAM Level I Certification	61	<1%
TOGAF Certification	52	<1%
Project Management Certification	48	<1%

"Job Posting Analytics." Mar. 2025 - Feb. 2026, Source: Lightcast 2026.1

Tables 2 and 2b show the educational levels listed on job postings for each occupation. For Information Security Analysts, 67% of job postings list a bachelor's degree, with an additional 19% requesting a master's degree. For Data Scientists, 51% of job postings list a bachelor's degree, while a substantial 42% request a master's or doctoral degree, indicating strong demand for advanced education.

Of those postings that include educational requirements, Tables 2a and 2b show that wages increase with higher levels of education. For Information Security Analysts, entry-level wages rise from approximately \$42 per hour for associate degree holders to \$50 per hour for bachelor's degree holders. Similarly, for Data Scientists, wages increase from approximately \$44 per hour for associate degree holders to \$49 per hour for bachelor's degree holders.

This pattern highlights the value of pursuing bachelor's degrees, particularly in fields where advanced education is strongly preferred. These findings support the expansion of bachelor's degree programs in Cybersecurity to better align with employer expectations and wage outcomes.

Table 2a. Educational Level and Entry Level Wages for Information Security Analysts in California

Education Level	# of Job Postings	% of Total	25% Hourly Advertised Wage
High school or GED	127	7%	\$39
Associate's degree	104	6%	\$42
Bachelor's degree	1,247	67%	\$50
Master's degree	354	19%	\$52
Ph.D. or professional degree	38	2%	\$60

"Job Posting Analytics." Mar. 2025 - Feb. 2026, Source: Lightcast 2026.1

Note: 25% 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.

Table 2b. Educational Level and Entry Level Wages for Data Scientists in California

Education Level	# of Job Postings	% of Total	25% Hourly Advertised Wage
High school or GED	921	3%	\$34
Associate's degree	989	3%	\$44
Bachelor's degree	14,884	51%	\$49
Master's degree	8,399	29%	\$60
Ph.D. or professional degree	3,708	13%	\$69

"Job Posting Analytics." Mar. 2025 - Feb. 2026, Source: Lightcast 2026.1

Note: 34% 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.

Tables 3a and 3b indicate that most job postings require moderate levels of work experience. For Information Security Analysts, approximately 36% of postings require 0 to 3 years of experience, while the largest share (37%) requires 4 to 6 years. For Data Scientists, approximately 32% of postings require 0 to 3 years, while 35% require 4 to 6 years.

This distribution suggests that while some entry-level opportunities exist, many positions expect mid-level experience, reinforcing the importance of bachelor's degree programs that incorporate applied skills, internships, and project-based learning to support workforce readiness.

Table 3a. Work Experience Requirement for Information Security Analysts in California

Working Experience Required	Job Postings	% of Total
0 - 1 Years	102	8%
2 - 3 Years	372	28%
4 - 6 Years	496	37%
7 - 9 Years	200	15%
10+ Years	157	12%

"Job Posting Analytics." Mar. 2025 - Feb. 2026, Source: Lightcast 2026.1

Note: 26% 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.

Table 3b. Work Experience Requirement for Data Scientists in California

Working Experience Required	Job Postings	% of Total
0 - 1 Years	1,032	6%
2 - 3 Years	4,712	26%
4 - 6 Years	6,400	35%
7 - 9 Years	3,295	18%
10+ Years	2,948	16%

"Job Posting Analytics." Mar. 2025 - Feb. 2026, Source: Lightcast 2026.1

Note: 34% 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.

Table 4 shows that employment in Cybersecurity-related occupations in California totaled 55,517 jobs in 2024 and is projected to grow by 25% over the next decade, indicating strong demand well above average occupational growth. Growth is driven by both occupations, with Data Scientists increasing by 25% (9,503 jobs) and Information Security Analysts by 24% (4,384 jobs). The field is expected to generate approximately 4,672 annual job openings statewide, driven by both expansion and replacement demand. Entry-level wages average approximately \$47 per hour, with median wages reaching \$66 per hour, demonstrating strong earning potential across occupations.

Table 4. Employment Outlook for Computer Programming Occupations in California

Occupation	2024 Jobs	2034 Jobs	10-yr Change	10-yr % Change	Annual Openings	Annual Replacement Rate	25% Hourly Earning	50% Hourly Wage
Information Security Analysts	17,909	22,293	4,384	24%	1,479	5%	\$50	\$67
Data Scientists	37,608	47,111	9,503	25%	3,193	5%	\$46	\$65
Total	55,517	69,404	13,887	25%	4,672	5%	\$47	\$66

Source: Lightcast 2026.1

Regional Level Analysis

Employment Historical Trend for Cybersecurity

Table 5 shows the number of professionals employed in Information Security Analysts and Data Scientists over the past decade at both the state and regional levels. Employment for Information Security Analysts increased by 105% statewide and 61% in the Bay Region, while Data Scientists experienced significantly higher growth, increasing by 449% statewide and 592% in the Bay Region. These trends indicate rapid expansion in both occupations, particularly for Data Scientists, highlighting strong and sustained demand for cybersecurity and data-related roles in the region.

Table 5. Historical 10-Year Employment Trend for Computer Programming in the Bay Region vs. California

SOC	Area	2014 Jobs	2024 Jobs	10-yr Change	10-yr% Change
15-1212	CA	8,721	17,909	9,188	105
15-1212	Bay	4,437	7,145	2,708	61
15-2051	CA	6,849	37,608	30,759	449
15-2051	Bay	2,361	16,337	13,977	592

Source: Lightcast 2026.1

Figure 1 illustrates the historical employment trend for Information Security Analysts at both the state and regional levels. It shows that the Bay Region experienced strong growth over time, although slightly below the statewide growth rate, reflecting steady demand for cybersecurity professionals.

Figure 1. Historical 10 Year to Year Present Change in Employment for Information Security Analysts in the Bay Region vs. California

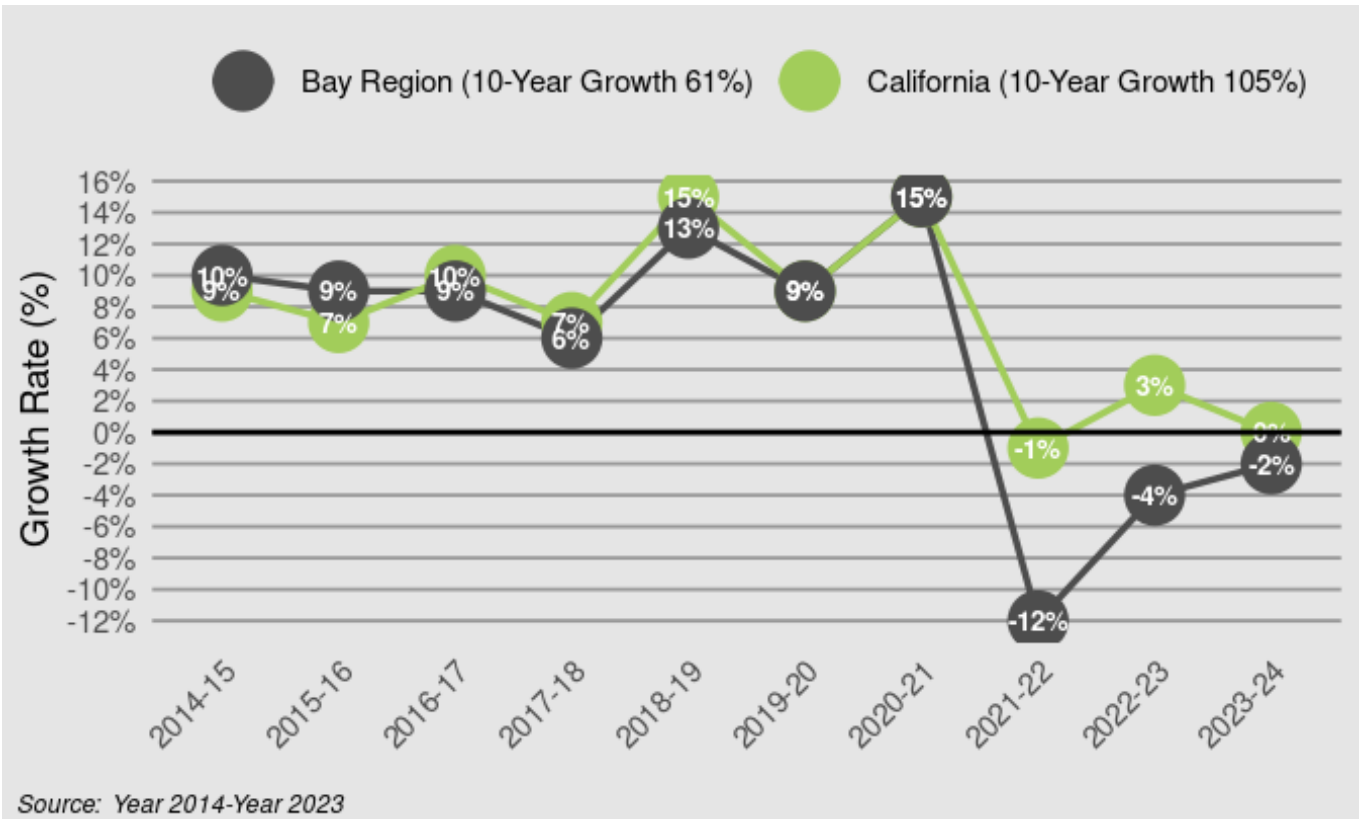
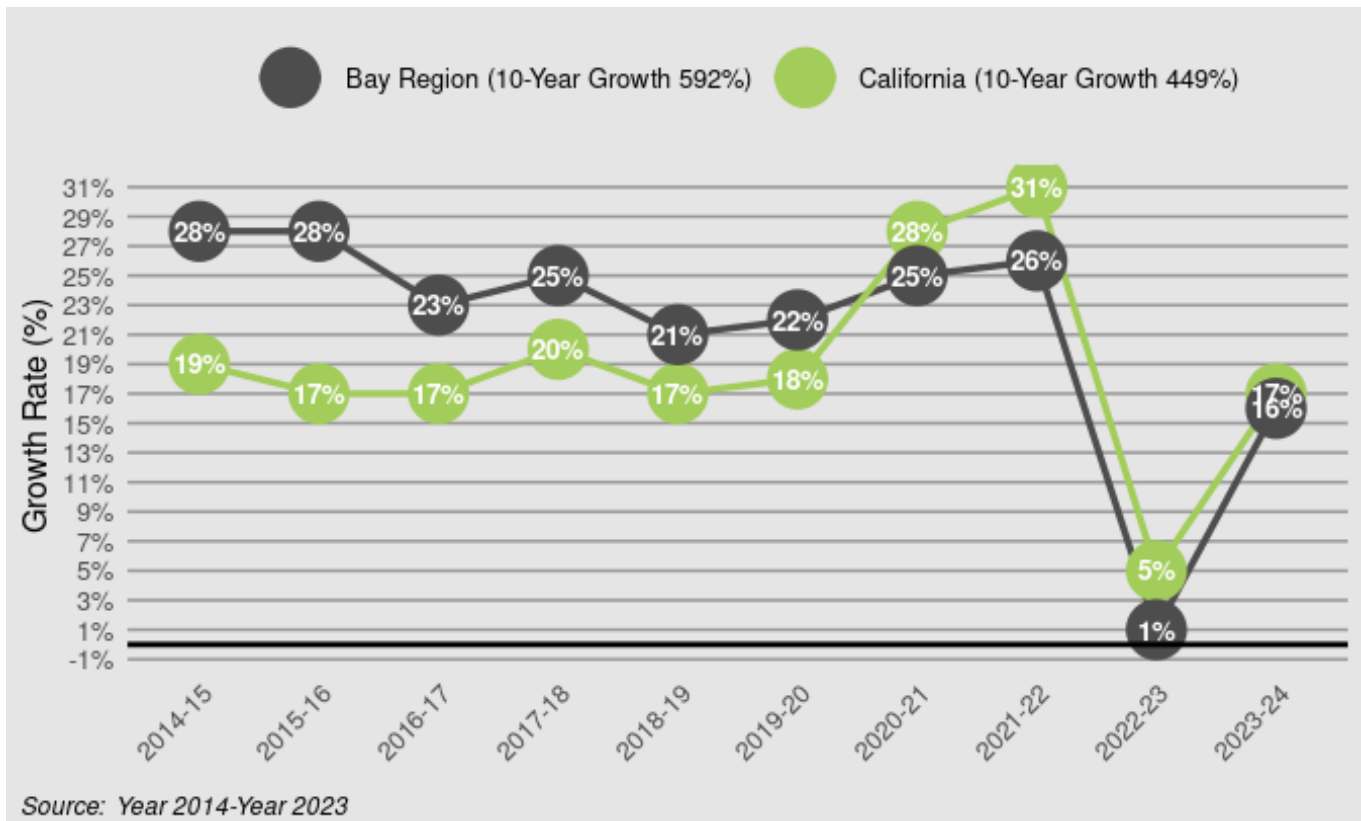


Figure 2 illustrates the historical employment trend for Data Scientists at both the state and regional levels. It shows that the Bay Region experienced significantly higher growth than the state, indicating exceptionally strong regional demand for data-related and cybersecurity-aligned roles.

Figure 2. Historical 10 Year to Year Present Change in Employment for Data Scientists in the Bay Region vs. California



Occupational Demand

Table 6 shows that the Bay Region employed 23,482 workers in 2024 across Cybersecurity-related occupations. Employment is projected to grow by 24% over the next decade, with approximately 1,935 annual job openings. Data Scientists account for the majority of employment (16,337 jobs and 1,346 annual openings), while Information Security Analysts account for 7,145 jobs and 589 annual openings. Entry-level wages average approximately \$62 per hour, with median wages reaching \$80 per hour, indicating very strong earning potential in the region.

Table 6. Employment Outlook for Computer Programming Occupations in the Bay Region

Occupation	2024 Jobs	2034 Jobs	10-yr Change	10-yr % Change	Annual Openings	Annual Replacement Rate	25% Hourly Earning	50% Hourly Wage
Information Security Analysts	7,145	8,901	1,756	25%	589	5%	\$61	\$80
Data Scientists	16,337	20,118	3,781	23%	1,346	5%	\$63	\$80
Total	23,482	29,019	5,537	24%	1,935	5%	\$62	\$80

Source: Lightcast 2026.1

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

Educational Supply

There are eleven community colleges in the Bay Region issuing 245 associate degree awards on average annually (last 3 years ending 2021-23) on TOP 0707.10 - Computer Programming.

There are no other CTE educational institutions and four-year institutions in the Bay Region issuing any associate degrees or bachelor’s degrees on average annually (last 3 years ending 2020-22) on CIP 11.1003- Computer and Information Systems Security/Auditing/Information Assurance.

Table 7a. Community College Awards on TOP 0707.10 - Computer Programming in the Bay Region

College	Subregion	Associate Degree	Total
Berkeley City	East Bay	2	2
Contra Costa	East Bay	1	1
Deanza	Silicon Valley	7	7
Diablo Valley	East Bay	151	151
Gavilan	Silicon Valley	17	17
Hartnell	SC-Monterey	33	33
Laney	East Bay	13	13
Ohlone	East Bay	2	2
San Jose City	Silicon Valley	10	10
San Mateo	Mid-Peninsula	1	1
Solano	North Bay	8	8
Total	-	245	245

Source: Data Mart

Note: The annual average for awards is 2021-22 to 2023-24.

Table 7b. Other CTE Institutions Awards on CIP 11.1003- Computer and Information Systems Security/Auditing/Information Assurance. in the Bay Region

College	Subregion	Master's degree	Total
Naval Postgraduate School	SC-Monterey	25	25
Total	-	25	25

Source: Data Mart

Note: The annual average for awards is 2020-21 to 2022-23.

Gap Analysis

Based on the data included in this report, there is a significant labor market gap in the Bay Region with approximately 1,935 annual job openings for Cybersecurity-related occupations and 245 annual (3-year average) awards (associate degrees). This results in an annual undersupply of approximately 1,690 workers. This substantial gap reflects a mismatch between the scale of workforce demand and the current level of educational supply. In addition, there are no accessible bachelor’s degree programs within the college system in the Bay Region, further limiting pathways for students to enter and advance in this high-demand field. Expanding a bachelor’s degree program in Cybersecurity at De Anza College would help address this workforce shortage and provide students with a pathway to high-wage, in-demand careers.

Living Wage

The Self-Sufficiency Standard Calculator estimates the income needed to meet basic living costs in the Bay Region. Table 8 shows that entry-level wages for Cybersecurity occupations average approximately \$62 per hour, while

median wages reach \$80 per hour. These wages significantly exceed the regional living wage for a single adult and are sufficient to support a single adult and one dependent. Even entry-level wages exceed the thresholds required for households with children, indicating strong economic sustainability in this field. This reinforces the value of bachelor’s level education in preparing students for high-wage careers with strong long-term earning potential.

Table 8. Hourly Living Wage compared to Entry- and Mid-Level Wages for Cybersecurity in the Bay Region

Earning Wage		Hourly Living Wage				
25% Hourly Wage	50% Hourly Wage	Adult Only	Adult + Infant	Adult + Preschool	Adult + School-age	Adult + teenage
\$62	\$80	\$27	\$56	\$53	\$45	\$36

Source: Lightcast 2026.1

Note. The Self-Sufficiency (SS) Standard for California (2024) Center for Women's Welfare, University of Washington. The data combines Information Security Analysts and Data Scientists.

Methodology

The occupation for this report was identified by De Anza College. Labor demand data is sourced from Lightcast occupation and job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CCCC Data Mart.

Sources

Data and information referenced in this report were compiled from the following public and proprietary sources:

- [Lightcast](#).
- California Community Colleges Chancellor’s Office (CCCCO) [DataMart](#).
- U.S. Department of Education, National Center for Education Statistics, Integrated Postsecondary Education Data System [([IPEDS](#))].
- U.S. Department of Labor, Employment and Training Administration, Occupational Information Network ([O*NET](#))
- Self-Sufficiency Standard at the Center for Women’s Welfare, University of Washington. [2024 California Dataset](#).

Contacts

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