



# Labor Market Analysis for Program Recommendation Data Science Occupations Mission College

Prepared by the Bay Region Center of Excellence for Labor Market Research

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## Recommendation

Based on all available data, there appears to be an “undersupply” of Data Science workers compared to the demand for this cluster of occupations in the Bay Region and in the Silicon Valley Sub-Region (Santa Clara County). There is a projected annual gap of about 11,566 students in the Bay Region and 3,947 students in the Silicon Valley Sub-Region.

## Introduction

This report provides student outcomes data on employment and earnings for TOP 0707.20 - Database Design and Administration 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 Mission College and in the region.

This report profiles Data Science Occupations in the 12 county Bay Region and in the Silicon Valley Sub-Region for program recommendation at Mission College.

- **Computer and Information Systems Managers (11-3021):** Plan, direct, or coordinate activities in such fields as electronic data processing, information systems, systems analysis, and computer programming.  
Entry-Level Educational Requirement: Bachelor’s degree  
Training Requirement: None  
Percentage of Community College Award Holders or Some Postsecondary Coursework: 21%
- **Market Research Analysts and Marketing Specialists (13-1161):** Research conditions in local, regional, national, or online markets. Gather information to determine potential sales of a product or service, or plan a marketing or advertising campaign. May gather information on competitors, prices, sales, and methods of marketing and distribution. May employ search marketing tactics, analyze web metrics, and develop recommendations to increase search engine ranking and visibility to target markets.  
Entry-Level Educational Requirement: Bachelor’s degree  
Training Requirement: None  
Percentage of Community College Award Holders or Some Postsecondary Coursework: 15%
- **Computer Systems Analysts (15-1211):** Analyze science, engineering, business, and other data processing problems to develop and implement solutions to complex applications problems, system administration issues, or network concerns. Perform systems management and integration functions, improve existing computer systems, and review computer system capabilities, workflow, and schedule limitations. May analyze or recommend commercially available software.  
Entry-Level Educational Requirement: Bachelor’s degree  
Training Requirement: None  
Percentage of Community College Award Holders or Some Postsecondary Coursework: 20%

- 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.
  - Entry-Level Educational Requirement: Bachelor's degree
  - Training Requirement: None
  - Percentage of Community College Award Holders or Some Postsecondary Coursework: 10%

## Occupational Demand

**Table 1. Employment Outlook for Data Science Occupations in the Bay Region**

Occupation	2023 Jobs	2028 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Computer and Information Systems Managers	48,348	53,076	4,727	10%	20,916	4,183	\$90	\$113
Market Research Analysts and Marketing Specialists	40,047	43,466	3,419	9%	22,153	4,431	\$36	\$56
Computer Systems Analysts	18,965	21,024	2,059	11%	7,882	1,576	\$52	\$70
Data Scientists	13,963	16,433	2,470	18%	6,914	1,383	\$60	\$79
<b>Total</b>	<b>121,323</b>	<b>133,999</b>	<b>12,676</b>	<b>10%</b>	<b>57,865</b>	<b>11,573</b>	<b>\$63</b>	<b>\$84</b>

Source: Lightcast 2024.3

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

**Table 2. Employment Outlook for Data Science Occupations in the Silicon Valley Sub-Region**

Occupation	2023 Jobs	2028 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Computer and Information Systems Managers	20,530	22,156	1,626	8%	8,438	1,688	\$101	\$135
Market Research Analysts and Marketing Specialists	11,632	12,495	863	7%	6,278	1,256	\$39	\$63
Computer Systems Analysts	6,672	7,358	686	10%	2,725	545	\$60	\$79
Data Scientists	4,889	5,650	761	16%	2,303	461	\$68	\$82
<b>Total</b>	<b>43,723</b>	<b>47,659</b>	<b>3,936</b>	<b>9%</b>	<b>19,744</b>	<b>3,950</b>	<b>\$75</b>	<b>\$101</b>

Source: Lightcast 2024.3

Silicon Valley Sub-Region includes: Santa Clara Counties

## Job Postings in the Bay Region and Silicon Valley Sub-Region

**Table 3. Number of Job Postings by Occupation for the latest 12 months**

Occupation	Bay Region	Silicon Valley
Data Scientists	16,641	7,753
Market Research Analysts and Marketing Specialists	7,325	2,092
Computer Systems Analysts	3,146	1,191
Computer and Information Systems Managers	741	228

Source: Lightcast 2024.4; "Job Posting Analytics." Nov. 2023 - Oct. 2024

**Table 4a. Top Job Titles in Job Postings for Data Science Occupations in the Bay Region**

Title	Bay	Title	Bay
Machine Learning Engineers	1,798	Deep Learning Engineers	190
Data Scientists	1,721	Principal Data Scientists	182
Data Analysts	866	Chief Data Scientists	181
Business Systems Analysts	698	Data Analytics Scientists	172
Machine Learning Software Engineers	684	Machine Learning Data Scientists	152
Business Development Representatives	245	Machine Learning Scientists	145
Data Science Managers	234	Directors of Data Science	124
Marketing Specialists	229	Marketing Associates	122
Business Intelligence Analysts	192	Algorithm Engineers	116

Source: Lightcast 2024.4; "Job Posting Analytics." Nov. 2023 - Oct. 2024

**Table 4b. Top Job Titles in Job Posting for Data Science Occupations in the Silicon Valley Sub-Region**

Title	Silicon Valley	Title	Silicon Valley
Machine Learning Engineers	1,062	Marketing Specialists	69
Data Scientists	740	Business Intelligence Analysts	66
Machine Learning Software Engineers	477	Data Analytics Scientists	64
Data Analysts	342	Machine Learning Research Scientists	64
Business Systems Analysts	316	Business Development Representatives	63
Deep Learning Engineers	158	Computer Vision and Machine Learning Engineers	62
Data Science Managers	86	Machine Learning Researchers	62
Algorithm Engineers	83	Technical Marketing Engineers	61
Chief Data Scientists	79	SAP FICO Consultants	59

Source: Lightcast 2024.4; "Job Posting Analytics." Nov. 2023 - Oct. 2024

## Industry Concentration

**Table 5. Industries Hiring for Data Science Occupations in the Bay Region**

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2023)	Jobs in Industry (2028)	% Change (2023-28)	% Occupation Group in Industry (2023)
Custom Computer Programming Services	17,055	20,252	19%	14%
Software Publishers	8,979	10,213	14%	7%
Computer Systems Design Services	7,489	7,539	1%	6%
Data Processing, Hosting, and Related Services	6,923	8,644	25%	6%
Corporate, Subsidiary, and Regional Managing Offices	6,002	5,683	-5%	5%
Web Search Portals and All Other Information Services	5,363	5,672	6%	4%
Electronic Computer Manufacturing	4,343	4,920	13%	4%
Media Streaming Distribution Services, Social Networks, and Other Media Networks and Content Providers	3,500	3,799	9%	3%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	3,287	3,784	15%	3%
Administrative Management and General Management Consulting Services	3,153	3,675	17%	3%

Source: Lightcast 2024.4

**Table 6. Top Employers Posting Data Science Occupations in the Bay Region and the Silicon Valley Sub-Region**

Employer	Bay	Employer	Silicon Valley
Apple	712	Apple	698
Meta	611	Google	495
Google	587	Tiktok	459
Amazon	476	Nvidia	285
Tiktok	468	Amazon	282
Jensen Landscape Services	443	Walmart	224

Source: Lightcast 2024.4; "Job Posting Analytics." Nov. 2023 - Oct. 2024

## Educational Supply

There are three community colleges in the Bay Region issuing 7 awards on average annually (last 3 years ending 2021-23) on TOP 0707.20 - Database Design and Administration. In the Silicon Valley Sub-Region, there is one community college that issued 3 awards on average annually (last 3 years) on this TOP code.

**Table 7. Community College Awards on TOP 0707.20 - Database Design and Administration in the Bay Region**

College	Subregion	Associate Degree	Low unit Certificate	Total
Deanza	Silicon Valley	1	2	3
Ohlone	East Bay	0	3	3
San Francisco	Mid-Peninsula	0	1	1
<b>Total</b>	<b>-</b>	<b>1</b>	<b>6</b>	<b>7</b>

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 labor market gap in the Bay Region with 11,573 annual openings for the Data Science occupational cluster and 7 annual (3-year average) awards for an annual undersupply of 11,566 students. In the Silicon Valley Sub-Region, there is also a gap with 3,950 annual openings and 3 annual (3-year average) awards for an annual undersupply of 3,947 students.

## Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0707.20 - Database Design and Administration**

Metric Outcomes	Bay All CTE Program	Mission College All CTE Program	State 0707.20	Bay 0707.20	Silicon Valley 0707.20	Mission College 0707.20
Students with a Job Closely Related to Their Field of Study	74%	75%	71%	74%	90%	100%
Median Annual Earnings for SWP Exiting Students	\$53,090	\$59,106	\$72,112	\$86,016	\$83,561	\$72,438
Median Change in Earnings for SWP Exiting Students	24%	22%	15%	18%	16%	28%
Exiting Students Who Attained the Living Wage	54%	52%	73%	73%	69%	72%

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

## Skills, Certifications and Education

**Table 9. Top Skills in Job Postings for Data Science Occupations in the Bay Region**

Skill	Posting	Skill	Posting
Computer Science	8,173	Algorithms	3,598
Python (Programming Language)	8,101	R (Programming Language)	3,415
Machine Learning	7,701	Scalability	2,959
Data Analysis	6,838	Finance	2,866
SQL (Programming Language)	6,521	Workflow Management	2,860
Marketing	6,017	Deep Learning	2,825
Data Science	5,768	Dashboard	2,781
Statistics	4,782	Tableau (Business Intelligence Software)	2,744
Project Management	4,654	Business Requirements	2,619
Artificial Intelligence	3,906	SAP Applications	2,556

Source: Lightcast 2024.4; "Job Posting Analytics." Nov. 2023 - Oct. 2024

**Table 10. Certifications in Job Postings for Data Science Occupations in the Bay Region**

Certification	Posting	Certification	Posting
Epic EMR Certification	225	Certified Information System Auditor (CISA)	56
Project Management Professional Certification	136	Certified Business Analysis Professional	54
SAP Certification	130		

Source: Lightcast 2024.4; "Job Posting Analytics." Nov. 2023 - Oct. 2024

**Table 11. Education Requirements for Data Science Occupations in the Bay Region**

Education Level	Job Postings	% of Total
High school or GED	1,034	4%
Associate degree	692	2%
Bachelor's degree & higher	27,026	94%

Source: Lightcast 2024.4; "Job Posting Analytics." Nov. 2023 - Oct. 2024

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.

## 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](http://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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