



# Labor Market Analysis for Program Recommendation

## Data Analytics Occupations

### Laney College

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

February 2023

#### Recommendation

Based on all available data, there appears to be an “undersupply” of Data Analytics workers compared to the demand for this cluster of occupations in the Bay region and in the East Bay sub-region (Alameda, Contra Costa counties). There is a projected annual gap of about 3,556 students in the Bay region and 525 students in the East Bay 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 Laney College and in the region.

This report profiles Data Analytics Occupations in the 12 county Bay region and in the East Bay sub-region for a proposed new program at Laney College.

- **Computer Systems Analysts (15-1211):** Analyze science, engineering, business, and other data processing problems to implement and improve computer systems. Analyze user requirements, procedures, and problems to automate or improve existing systems and review computer system capabilities, workflow, and scheduling 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: 21%
- **Database Administrators (15-1242):** Administer, test, and implement computer databases, applying knowledge of database management systems. Coordinate changes to computer databases. Identify, investigate, and resolve database performance issues, database capacity, and database scalability. May plan, coordinate, and implement security measures to safeguard computer databases.  
Entry-Level Educational Requirement: Bachelor’s degree  
Training Requirement: None  
Percentage of Community College Award Holders or Some Postsecondary Coursework: 19%
- **Database Architects (15-1243):** Design strategies for enterprise databases, data warehouse systems, and multidimensional networks. Set standards for database operations, programming, query processes, and security. Model, design, and construct large relational databases or data warehouses. Create and optimize data models for warehouse infrastructure and workflow. Integrate new systems with existing warehouse structure and refine system performance and functionality.

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: None

Percentage of Community College Award Holders or Some Postsecondary Coursework: 19%

- **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: 11%

## Occupational Demand

**Table 1. Employment Outlook for Data Analytics 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
Computer Systems Analysts	23,816	25,350	1,535	6%	10,106	2,021	\$47	\$62
Database Administrators	2,917	3,220	303	10%	1,410	282	\$38	\$58
Database Architects	3,034	3,385	350	12%	1,511	302	\$63	\$86
Data Scientists	8,882	10,341	1,459	16%	4,804	961	\$60	\$77
<b>Total</b>	<b>38,649</b>	<b>42,296</b>	<b>3,647</b>	<b>9%</b>	<b>17,831</b>	<b>3,566</b>		

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 Data Analytics Occupations in East Bay 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
Computer Systems Analysts	4,467	4,413	-54	-1%	1,538	308	\$42	\$55
Database Administrators	543	567	24	4%	224	45	\$35	\$52
Database Architects	431	436	6	1%	163	33	\$51	\$69
Data Scientists	1,648	1,780	132	8%	729	146	\$53	\$68
<b>Total</b>	<b>7,089</b>	<b>7,197</b>	<b>108</b>	<b>2%</b>	<b>2,655</b>	<b>532</b>		

Source: Lightcast 2022.3

**East Bay Sub-Region includes:** Alameda, Contra Costa Counties

## Job Postings in Bay Region and East Bay Sub-Region

**Table 3. Number of Job Postings by Occupation for latest 12 months (Jan. 2022 - Dec. 2022)**

Occupation	Bay Region	East Bay
Data Scientists	18,738	2,754
Computer Systems Analysts	13,641	2,604

Occupation	Bay Region	East Bay
Database Administrators	9,190	1,508
Database Architects	4,531	965

Source: Lightcast

**Table 4a. Top Job Titles for Data Analytics Occupations for latest 12 months (Jan. 2022 - Dec. 2022)  
Bay Region**

Title	Bay	Title	Bay
Data Scientists	3,098	Data Center Technicians	346
Data Analysts	2,292	Data Analytics Scientists	339
Data Engineers	2,248	Data Architects	296
Business Systems Analysts	1,710	Business Data Analysts	278
Machine Learning Engineers	1,173	Principal Data Scientists	268
Business Intelligence Analysts	623	Database Administrators	253
Data Science Managers	528	Clinical Data Managers	252
Big Data Engineers	470	Lead Data Scientists	226
Salesforce Administrators	409	Systems Analysts	226

Source: Lightcast

**Table 4b. Top Job Titles for Data Analytics Occupations for latest 12 months (Jan. 2022 - Dec. 2022)  
East Bay Sub-Region**

Title	East Bay	Title	East Bay
Data Analysts	392	Database Administrators	55
Business Systems Analysts	377	SQL Database Administrators	55
Data Scientists	343	Oracle Database Administrators	51
Data Engineers	248	IT Business Analysts	46
Business Intelligence Analysts	141	Database Engineers	44
Machine Learning Engineers	113	ETL Developers	41
Big Data Engineers	76	Data Center Technicians	40
Clinical Data Managers	61	Data Modelers	39
Data Architects	55	Master Data Engineers	35

Source: Lightcast

## Industry Concentration

**Table 5. Industries hiring Data Analytics 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 (2021)
Custom Computer Programming Services	7,773	8,874	14%	20%
Computer Systems Design Services	4,234	4,566	8%	11%
Internet Publishing and Broadcasting and Web Search Portals	2,818	3,566	27%	7%
Software Publishers	2,247	2,520	12%	6%
Data Processing, Hosting, and Related Services	1,756	2,135	22%	5%
Corporate, Subsidiary, and Regional Managing Offices	2,115	1,945	-8%	5%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	1,285	1,401	9%	3%
Other Computer Related Services	1,003	1,155	15%	3%
Electronic Computer Manufacturing	1,018	1,110	9%	3%
Research and Development in Biotechnology (except Nanobiotechnology)	763	936	23%	2%

Source: Lightcast 2022.3

**Table 6. Top Employers Posting Data Analytics Occupations in Bay Region and East Bay Sub-Region (Jan. 2022 - Dec. 2022)**

Employer	Bay	Employer	East Bay
Cynet Systems	638	Robert Half	215
Meta	624	Lucid Motors	184
Randstad	511	Workday	126
Jobot	478	Elevance Health	117
Elevance Health	462	Kaiser Permanente	117
Google	462	PG&E	110
Accenture	405	Meta	107
Robert Half	400	Cognizant Technology Solutions	100
Uber	392	Albertsons	94
Apple	391	University of California	90

Source: Lightcast

## Educational Supply

There are two (2) community colleges in the Bay Region issuing 10 awards on average annually (last 3 years ending 2019-20) on TOP 0707.20 - Database Design and Administration. In the East Bay Sub-Region, there is one (1) community college that issued seven (7) 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 Bay Region**

College	Subregion	Low unit Certificate	Total
De Anza	Silicon Valley	3	3
Ohlone	East Bay	7	7
<b>Total</b>		<b>10</b>	<b>10</b>

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 3,566 annual openings for the Data Analytics occupational cluster and 10 annual (3-year average) awards for an annual undersupply of 3,556 students. In the East Bay Sub-Region, there is also a gap with 532 annual openings and seven (7) annual (3-year average) awards for an annual undersupply of 525 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 Programs	Laney All CTE Programs	State 0707.20	Bay 0707.20	East Bay 0707.20	Laney 0707.20
Students with a Job Closely Related to Their Field of Study	74%	73%	75%	75%	N/A	N/A
Median Annual Earnings for SWP Exiting Students	\$48,926	\$41,990	\$65,652	\$80,065	\$76,325	N/A
Median Change in Earnings for SWP Exiting Students	23%	15%	14%	18%	26%	N/A
Exiting Students Who Attained the Living Wage	50%	48%	70%	68%	87%	N/A

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

## Skills, Certifications and Education

**Table 9. Top Skills for Data Analytics Occupations in Bay Region (Jan. 2022 - Dec. 2022)**

Skill	Posting	Skill	Posting
SQL (Programming Language)	17,532	Java (Programming Language)	6,115
Python (Programming Language)	16,636	Dashboard	6,067
Computer Science	13,679	R (Programming Language)	5,987
Data Analysis	11,909	Amazon Web Services	5,962

Skill	Posting	Skill	Posting
Data Science	10,049	Apache Spark	5,934
Machine Learning	8,776	Data Modeling	5,640
Tableau (Business Intelligence Software)	6,589	Business Requirements	5,586
Data Engineering	6,437	Big Data	5,550
Agile Methodology	6,319	Scalability	5,534
Extract Transform Load (ETL)	6,184	Automation	5,527

Source: Lightcast

**Table 10. Certifications for Data Analytics Occupations in Bay Region (Jan. 2022 - Dec. 2022)**

Certification	Posting	Certification	Posting
Master Of Business Administration (MBA)	1,039	Enterprise Desktop Administrator (Microsoft Certified IT Professional)	109
Salesforce Certified Administrator	562	Agile Certification	106
Certified Power Quality Professional	517	ITIL Certifications	105
Project Management Professional Certification	292	CompTIA A+	97
Security Clearance	238	Certified Information System Auditor (CISA)	96
Salesforce Certification	193	Microsoft Certified Professional	96
Functional Skills Qualification	184	Software Development Engineer in Test	88
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	150	Certified Public Accountant	82
Certified Information Systems Security Professional	119	Secret Clearance	80
Bachelor of Science In Business	114	Certified Business Analysis Professional	69

Source: Lightcast

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

Education Level	Job Postings	% of Total
High school or GED	1,048	3%
Associate degree	931	2%
Bachelor's degree & higher	38,918	95%

Source: Lightcast

Education Level	Job Postings	% of Total
-----------------	--------------	------------

Note: 40% 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 CCCC 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

For more information, please contact:

- Leila Jamoosian, Research Analyst, for Bay Area Community College Consortium (BACCC) and Centers of Excellence (COE), [leila@baccc.net](mailto:leila@baccc.net)
- John Carrese, Director, San Francisco Bay Center of Excellence for Labor Market Research, [jcarrese@ccsf.edu](mailto:jcarrese@ccsf.edu) or (415) 267-6544