



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 |
| Total | 38,649 | 42,296 | 3,647 | 9% | 17,831 | 3,566 | | |

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 |
| Total | 7,089 | 7,197 | 108 | 2% | 2,655 | 532 | | |

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 |
| Total | | 10 | 10 |

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 CCCCCO 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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