**Data Analytics Occupations**

**Labor Market Information Report**

**Las Positas College**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

October 2020

# 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 and Contra Costa Counties). There is a projected annual gap of about 11,503 students in the Bay region and 1,715 students in the East Bay Sub-Region.

This report also provides student outcomes data on employment and earnings for TOP 0702.00-Computer Information Systems 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 Las Positas College and in the region.

**Introduction**

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 Las Positas College.

|  |
| --- |
| * **Computer Occupations, All Other (15-1199 /15-1299**): All computer occupations not listed separately. Excludes “Computer and Information Systems Managers” (11-3021), “Computer Hardware Engineers” (17-2061), “Electrical and Electronics Engineers” (17-2070), “Computer Science Teachers, Postsecondary” (25-1021), “Multimedia Artists and Animators” (27-1014), “Graphic Designers” (27-1024), “Computer Operators” (43-9011), and “Computer, Automated Teller, and Office Machine Repairs” (49-2011). |
| Entry-Level Educational Requirement: Bachelor's degree |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 35% |
|  |
| * **Computer Systems Analysts (15-1121 / 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% |
|  |
| * **Computer User Support Specialists (15-1151 / 15-1232):** Provide technical assistance to computer users. Answer questions or resolve computer problems for clients in person, or via telephone or electronically. May provide assistance concerning the use of computer hardware and software, including printing, installation, word processing, electronic mail, and operating systems. Excludes “Network and Computer Systems Administrators” (15-1142). |
| Entry-Level Educational Requirement: Some college, no degree |
| Training Requirement: None |
| Percentage of Community College Award Holders or Some Postsecondary Coursework: 41% |
|  |
| * **Information Security Analysts (15-1122 / 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% |

**Occupational Demand**

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

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2019 Jobs | 2024 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Computer Occupations, All Other | 38,974 | 42,324 | 3,350 | 9% | 19,456 | 3,891 | $41.02 | $56.51 |
| Computer Systems Analysts | 30,588 | 34,750 | 4,162 | 14% | 15,935 | 3,187 | $44.23 | $56.99 |
| Computer User Support Specialists | 33,416 | 38,498 | 5,081 | 15% | 19,839 | 3,968 | $26.55 | $35.04 |
| Information Security Analysts | 3,718 | 4,953 | 1,234 | 33% | 2,759 | 552 | $44.50 | $59.44 |
| **Total** | **106,696** | **120,524** | **13,828** | **13%** | **57,988** | **11,598** | **$37.53** | **$50.02** |

*Source: EMSI 2020.3*

**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 | 2019 Jobs | 2024 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Open-ings | Average Annual Open-ings | 25% Hourly Wage | Median Hourly Wage |
| Computer Occupations, All Other | 7,618 | 7,631 | 13 | 0% | 3,072 | 614 | $35.28 | $47.58 |
| Computer Systems Analysts | 5,769 | 5,920 | 151 | 3% | 2,261 | 452 | $40.37 | $51.77 |
| Computer User Support Specialists | 6,071 | 6,411 | 340 | 6% | 2,906 | 581 | $24.87 | $31.42 |
| Information Security Analysts | 723 | 863 | 140 | 19% | 420 | 84 | $39.61 | $51.42 |
| **TOTAL** | **20,180** | **20,823** | **643** | **3%** | **8,658** | **1,732** | **$33.76** | **$44.05** |

*Source: EMSI 2020.3*

**East Bay Sub-Region includes**: Alameda and 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 (October 2019 - September 2020)**

| Occupation | Bay Region | East Bay  Sub-Region |
| --- | --- | --- |
| Computer Systems Engineers/Architects | 21,659 | 3,306 |
| Computer Systems Analysts | 16,662 | 3,217 |
| Information Technology Project Managers | 15,550 | 2,881 |
| Computer User Support Specialists | 13,637 | 2,925 |
| Business Intelligence Analysts | 12,375 | 1,852 |
| Software Quality Assurance Engineers and Testers | 11,909 | 2,007 |
| Information Security Analysts | 8,804 | 1,450 |
| Database Architects | 3,205 | 575 |
| Computer Occupations, All Other | 2,323 | 195 |
| Data Warehousing Specialists | 2,262 | 454 |
| Document Management Specialists | 1,475 | 357 |
| Video Game Designers | 1,095 | 132 |
| Search Marketing Strategists | 1,038 | 114 |
| Geospatial Information Scientists and Technologists | 738 | 211 |
| Web Administrators | 315 | 92 |
| Geographic Information Systems Technicians | 154 | 53 |
| Informatics Nurse Specialists | 13 | 4 |
| **TOTAL** | **113,214** | **19,825** |

**Table 4a. Top Job Titles for Data** **Analytics Occupations for latest 12 months (October 2019 - September 2020) Bay Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | Bay | Common Title | Bay |
| Data Analyst | 1,826 | Security Engineer | 299 |
| Business Systems Analyst | 1,089 | It Support Specialist | 277 |
| Project Manager | 793 | Desktop Support Technician | 270 |
| Technical Project Manager | 718 | It Manager | 250 |
| Solutions Architect | 648 | Data Architect | 243 |
| Quality Assurance Engineer | 628 | Quality Assurance Analyst | 234 |
| Scrum Master | 573 | Firmware Engineer | 234 |
| Systems Engineer | 556 | Business Data Analyst | 228 |
| Senior Systems Engineer | 466 | Automation Engineer | 225 |
| It Project Manager | 455 | React Js Developer | 213 |
| Senior Data Analyst | 361 | Business Intelligence Analyst | 209 |
| Desktop Support | 355 | Cloud Architect | 206 |
| Machine Learning Engineer | 351 | Senior Business Systems Analyst | 205 |
| Technical Support Engineer | 330 | Aem Developer | 195 |

**Table 4b. Top Job Titles for Data** **Analytics Occupations for latest 12 months (October 2019 - September 2020) East** **Bay Sub-Region**

|  |  |  |  |
| --- | --- | --- | --- |
| Common Title | **East** Bay | Common Title | **East** Bay |
| Data Analyst | 314 | Gis Developer | 55 |
| Business Systems Analyst | 202 | It Manager | 52 |
| Scrum Master | 149 | Actimize Developer | 52 |
| Project Manager | 135 | It Business Analyst | 51 |
| Systems Engineer | 127 | Senior Data Analyst | 48 |
| Quality Assurance Engineer | 116 | It Support Specialist | 47 |
| Technical Project Manager | 112 | Systems Analyst | 45 |
| It Project Manager | 111 | Aem Developer | 45 |
| Solutions Architect | 109 | Document Control Specialist | 44 |
| Senior Systems Engineer | 93 | Field Service Technician | 41 |
| Desktop Support Technician | 73 | Technical Support Engineer | 40 |
| Desktop Support | 69 | Azure Cloud Architect | 39 |
| Quality Assurance Analyst | 56 | Web Systems Engineer | 38 |
| Security Engineer | 55 | Data Architect | 38 |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries Hiring Data Analytics Workers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Industry – 6 Digit NAICS (No. American Industry Classification) Codes | Jobs in Industry (2019) | Jobs in Industry (2024) | % Change (2019-24) | % Occupation Group in Industry (2019) |
| Custom Computer Programming Services (541511) | 23,373 | 28,082 | 20% | 22% |
| Computer Systems Design Services (541512) | 13,404 | 15,399 | 15% | 13% |
| Software Publishers (511210) | 7,291 | 8,995 | 23% | 7% |
| Internet Publishing and Broadcasting and Web Search Portals (519130) | 5,976 | 7,428 | 24% | 6% |
| Data Processing, Hosting, and Related Services (518210) | 4,825 | 6,448 | 34% | 5% |
| Corporate, Subsidiary, and Regional Managing Offices (551114) | 3,972 | 4,077 | 3% | 4% |
| Electronic Computer Manufacturing (334111) | 3,488 | 3,699 | 6% | 3% |
| Other Computer Related Services (541519) | 3,339 | 4,165 | 25% | 3% |
| Federal Government, Civilian, Excluding Postal Service (901199) | 2,483 | 2,403 | -3% | 2% |
| Colleges, Universities, and Professional Schools (State Government) (902612) | 1,926 | 2,061 | 7% | 2% |
| Colleges, Universities, and Professional Schools (611310) | 1,717 | 1,882 | 10% | 2% |
| Local Government, Excluding Education and Hospitals (903999) | 1,618 | 1,666 | 3% | 2% |
| Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology) (541715) | 1,602 | 1,676 | 5% | 2% |
| Temporary Help Services (561320) | 1,396 | 1,418 | 2% | 1% |
| Administrative Management and General Management Consulting Services (541611) | 1,139 | 1,369 | 20% | 1% |

*Source: EMSI 2020.3*

**Table 6. Top Employers Posting Data** **Analytics Occupations in Bay Region and East** **Bay Sub-Region (October 2019 - September 2020)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Employer** | **Bay** | **Employer** | **Bay** | **Employer** | **East** Bay |
| Apple Inc. | 1,297 | Infobahn Softworld Incorporated | 276 | Wells Fargo | 304 |
| Deloitte | 1,216 | Xoriant Incorporated | 265 | Kaiser Permanente | 182 |
| Amazon | 1,185 | Lockheed Martin Corporation | 264 | Anthem Blue Cross | 174 |
| Wells Fargo | 955 | Ascent Technology Services | 236 | University Of California Berkeley | 160 |
| Cisco Systems Inc | 716 | Tesla | 227 | Facebook | 150 |
| Facebook | 707 | NTT Data | 226 | Workday, Inc | 148 |
| Accenture | 686 | Intelliswift Software | 226 | Tesla | 130 |
| Nvidia Corporation | 620 | Splunk | 222 | Lawrence Livermore National Laboratory | 112 |
| Google Inc. | 599 | Genentech | 222 | Albertsons | 110 |
| Anthem Blue Cross | 577 | Blue Cross Blue Shield of California | 214 | Amazon | 106 |
| IBM | 503 | Palo Alto Networks | 206 | Pacific Gas and Electric Company | 105 |
| Microsoft Corporation | 476 | The Save Mart Companies | 204 | Blue Cross Blue Shield of California | 99 |
| Vmware Incorporated | 394 | Kaiser Permanente | 204 | Tesla Motors | 91 |
| Infosys | 379 | Workday, Inc | 181 | The Save Mart Companies | 84 |
| Wipro | 359 | Splunk, Inc | 181 | Bank of the West | 82 |
| Pacific Gas and Electric Company | 340 | PricewaterhouseCoopers | 179 | Ascent Technology Services | 80 |
| Salesforce | 292 | KPMG | 178 | NTT Data | 79 |

*Source: Burning Glass*

# Educational Supply

There are 10 community colleges in the Bay Region issuing 52 awards on average annually (last 3 years ending 2018-19) on TOP 0702.00-Computer Information Systems. There are four colleges in the East Bay Sub-Region issuing 17 awards on average annually (last 3 years) on this TOP code.

There is one (1) Other Educational Institution in the Bay Region issuing 17 awards on average annually (last 3 years ending 2016-17) on TOP 0702.00-Computer Information Systems. There are no Other Educational Institutions in the East Bay Sub-Region issuing awards on average annually (last 3 years) on this TOP code.

There are three (3) Institutions in the Bay Region issuing 26 Bachelor’s Degrees on average annually (last 3 years ending 2016-17) on TOP 0702.00-Computer Information Systems. There are no Institutions in the East Bay Sub-Region issuing Bachelor’s Degrees on average annually (last 3 years) on this TOP code.

**Table 7a. Community College Awards on TOP 0702.00-Computer Information Systems in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | Certificate Low Unit | Total |
| Alameda | East Bay | 6 | 4 | 10 |
| Chabot | East Bay | 1 | 1 | 2 |
| Evergreen Valley | East Bay | 1 |  | 1 |
| Laney | Silicon Valley | 1 |  | 1 |
| Los Medanos | East Bay | 4 |  | 4 |
| Marin | North Bay |  | 1 | 1 |
| Mission | Silicon Valley | 5 | 6 | 11 |
| Napa | North Bay | 9 | 4 | 13 |
| Skyline | Mid-Peninsula | 2 |  | 2 |
| West Valley | Silicon Valley | 5 | 2 | 7 |
| **Total Bay Region** | | **34** | **18** | **52** |
| **Total East Bay Sub-Region** | | **12** | **5** | **17** |

# Source: Data Mart

Note: The annual average for awards is 2016-17 to 2018-19.

**Table 7b. Other Institution Awards on TOP 0702.00-Computer Information Systems in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| College | Sub-Region | Associates | 1<2 Years | Total |
| Empire College | North Bay | 11 | 6 | 17 |
| **Total Bay Region** | | **11** | **6** | **17** |
| **Total East Bay Sub-Region** | | **0** | **0** | **0** |

# Source: Data Mart

Note: The annual average for awards is 2014-15 to 2016-17.

**Table 7c. Bachelor’s Degree Awards on TOP 0702.00-Computer Information Systems in Bay Region**

|  |  |  |
| --- | --- | --- |
| **College** | **Sub-Region** | **Bachelor’s Degree** |
| Golden Gate University-San Francisco | Mid-Peninsula | 1 |
| Santa Clara University | Silicon Valley | 21 |
| University of San Francisco | Mid-Peninsula | 5 |
| **Total Bay Region** | | **26** |
| **Total East** **Bay Sub-Region** | | **0** |

# Source: Data Mart

Note: The annual average for awards is 2014-15 to 2016-17.

# Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 11,598 annual openings for the Data Analytics occupational cluster and 95 annual (3-year average) awards for an annual undersupply of 11,503 students. In the East Bay Sub-Region, there is also a gap with 1,732 annual openings and 17 annual (3-year average) awards for an annual undersupply of 1,715 students.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0702.00-Computer Information Systems**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2017-18** | **Bay**  All CTE Programs | **Las Positas College** All CTE Programs | **State** 0702.00 | **Bay** 0702.00 | **East Bay**  0702.00 | **Las Positas College** 0702.00 |
| % Employed Four Quarters After Exit | 74% | 70% | 62% | 62% | 62% | 62% |
| Median Quarterly Earnings Two Quarters After Exit | $10,550 | $11,069 | $7,717 | $9,806 | $9.261 | $11,740 |
| Median % Change in Earnings | 46% | 30% | 26% | 17% | 22% | 27% |
| % of Students Earning a Living Wage | 63% | 52% | 50% | 46% | 43% | 58% |

*Source: Launchboard Pipeline (version available on (9/30/20)*

# Skills, Certifications and Education

**Table 9. Top Skills for Data** **Analytics Occupations in Bay Region (October 2019 - September 2020)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Skill** | **Postings** | **Skill** | **Postings** | **Skill** | **Postings** |
| Python | 20,916 | Budgeting | 7,952 | Software as a Service (SaaS) | 5,153 |
| SQL | 20,028 | JavaScript | 7,663 | Business Systems Analysis | 4,836 |
| Project Management | 19,744 | Atlassian JIRA | 7,270 | Enterprise Resource Planning (ERP) | 4,759 |
| Java | 15,306 | Scheduling | 7,175 | Data Warehousing | 4,758 |
| Software Development | 13,772 | Information Systems | 6,922 | Product Management | 4,758 |
| Quality Assurance and Control | 13,009 | C++ | 6,297 | Extraction Transformation and Loading (ETL) | 4,737 |
| Linux | 11,938 | Information Security | 6,144 | Big Data | 4,682 |
| Customer Service | 10,695 | UNIX | 5,801 | Machine Learning | 4,672 |
| Oracle | 10,286 | Salesforce | 5,790 | Git | 4,591 |
| SAP | 10,221 | DevOps | 5,722 | Customer Contact | 4,505 |
| Business Process | 10,164 | Debugging | 5,704 | Data Management | 4,401 |
| Data Analysis | 10,030 | Tableau | 5,702 | Systems Development Life Cycle (SDLC) | 4,263 |
| Technical Support | 9,540 | Systems Engineering | 5,565 | Product Development | 4,231 |
| Software Engineering | 8,718 | Project Planning and Development Skills | 5,257 | Change Management | 4,193 |
| Scrum | 8,121 | Business Analysis | 5,184 | Stakeholder Management | 4,193 |

*Source: Burning Glass*

**Table 10. Certifications for Data** **Analytics Occupations in Bay Region (October 2019 - September 2020)**

Note: 85% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.

|  |  |  |  |
| --- | --- | --- | --- |
| **Certification** | **Postings** | **Certification** | **Postings** |
| Project Management Certification | 3,570 | Information Systems Certification | 811 |
| Certified Information Systems Security Professional (CISSP) | 2,963 | Cisco Certified Network Professional (CCNP) | 585 |
| Project Management Professional (PMP) | 2,392 | Certified in Risk and Information Systems Control | 579 |
| IT Infrastructure Library (ITIL) Certification | 2,090 | CompTIA Security+ | 570 |
| Driver's License | 1,860 | CompTIA Network+ | 476 |
| Certified Information Systems Auditor (CISA) | 1,521 | Microsoft Certified Professional (MCP) | 451 |
| Security Clearance | 1,304 | Cisco Certified Internetwork Expert (CCIE) | 451 |
| Certified Information Security Manager (CISM) | 1,217 | Microsoft Certified Solutions Expert (MCSE) | 449 |
| SANS/GIAC Certification | 1,066 | Microsoft Certified Solutions Associate (MCSA) | 384 |
| Certified ScrumMaster (CSM) | 1,011 | Certified Public Accountant (CPA) | 365 |
| Certified A+ Technician | 971 | SAP Certification | 298 |
| Cisco Certified Network Associate (CCNA) | 945 | Cisco Certified Security Professional | 298 |

*Source: Burning Glass*

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

Note: 46% of records have been excluded because they do not include a degree level. As a result, the chart below may not be representative of the full sample.

|  |  |  |
| --- | --- | --- |
| **Education (minimum advertised)** | **Latest 12 Mos. Postings** | **Percent 12 Mos. Postings** |
| High school or vocational training | 3,671 | 6% |
| Associate Degree | 1,602 | 3% |
| Bachelor’s Degree or Higher | 50,697 | 91% |

*Source: Burning Glass*

# Methodology

Occupations for this report were identified by use of skills listed in O\*Net descriptions and job descriptions in Burning Glass. Labor demand data is sourced from Economic Modeling Specialists International (EMSI) occupation data and Burning Glass job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CTE Launchboard and CCCCO Data Mart.

# Sources

O\*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

CTE LaunchBoard [www.calpassplus.org/Launchboard/](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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