**** **Web Developer Occupations**

**Labor Market Information Report**

Prepared by the San Francisco Bay Center of Excellence

for Labor Market Research

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# Recommendation

Based on all available data, there appears to be an undersupply of Web Developers compared to the demand for this cluster of occupations in the Bay region and in the North Bay sub-region (Marin, Napa, Solano, and Sonoma Counties). The annual gap is about 1,305 students annually in the Bay region and 55 in the North Bay.

This report also provides student outcomes data on employment and earnings for programs on TOP code 0614.30 - Website Design and Development in the state and region. It is recommended that this 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 College of Marin and in the region.

# Introduction

This report profiles Web Developers in the 12 county Bay region and in the North Bay sub-region for a new program at College of Marin.

|  |
| --- |
| * **Web Developers (SOC 15-1134):** Design, create, and modify Web sites. Analyze user needs to implement Web site content, graphics, performance, and capacity. May integrate Web sites with other computer applications. May convert written, graphic, audio, and video components to compatible Web formats by using software designed to facilitate the creation of Web and multimedia content. Excludes “Multimedia Artists and Animators” (27-1014). |
| *Entry-Level Educational Requirement: Associate's degree* |
| *Training Requirement: None* |
| *Percentage of Community College Award Holders or Some Postsecondary Coursework: 25%* |

# Occupational Demand

**Table 1. Employment Outlook for Web Developer Occupations in Bay Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Openings | Annual Openings | 10% Hourly Wage | Median Hourly Wage |
| Web Developers | 11,456 | 13,966 | 2,510 | 22% | 6,872 | 1,374 | $19.32 | $39.07 |

*Source: EMSI 2018.2*

**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 Web Developer Occupations in North Bay Sub-Region**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Occupation | 2017 Jobs | 2022 Jobs | 5-Yr Change | 5-Yr % Change | 5-Yr Openings | Annual Openings | 10% Hourly Wage | Median Hourly Wage |
| Web Developers | 674 | 715 | 41 | 6% | 280 | 56 | $19.35 | $23.78 |

*Source: EMSI 2018.2*

**North Bay Sub-Region** includes Marin, Napa, Solano, and Sonoma Counties

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

**Table 3. Number of Job Postings by Occupation for latest 12 months (May 2017 - April 2018)**

|  |  |  |
| --- | --- | --- |
| Occupation | Bay | North Bay |
| Web Developers | 15,784 | 434 |

*Source: Burning Glass*

**Table 4. Top Job Titles for Web Developer Occupations for latest 12 months (May 2017 - April 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Common Title | Bay | North Bay | Common Title | Bay | North Bay |
| User Experience (UX) Designer | 1,357 | 32 | Back End Engineer | 109 |  |
| Web Developer | 1,138 | 41 | Senior Ui Engineer | 104 |  |
| Front End Developer | 1,063 | 10 | Ui Engineer | 101 |  |
| User Interface (UI) Developer | 846 | 5 | Frontend Engineer | 92 |  |
| Software Development Engineer | 821 |  | User Interface (UX)/User Experience (UX) Developer | 85 |  |
| PHP Developer | 753 | 155 | Lead Engineer | 80 |  |
| User Interface (UX)/User Experience (UX) Designer | 534 | 8 | Ruby Developer | 80 |  |
| Front End Engineer | 434 |  | Back End Developer | 77 |  |
| Web Engineer | 328 |  | Senior Developer | 70 | 5 |
| Senior Engineer | 304 |  | Senior Back End Engineer | 69 |  |
| Senior Front End Engineer | 297 |  | Content Producer | 68 |  |
| Ruby on Rails Developer | 254 | 3 | Ui Architect | 65 |  |
| Engineer | 215 |  | User Experience Researcher | 65 |  |
| Senior Javascript Engineer | 210 | 38 | Ux Engineer | 65 |  |
| Ux Researcher | 196 |  | User Experience (UX) Architect | 64 |  |
| Front End Web Developer | 186 | 2 | Lead Front End Engineer | 62 | 2 |
| Backend Engineer | 182 |  | Python Developer | 62 |  |
| User Interface (UI) Designer | 177 |  | Senior Ux Researcher | 60 |  |
| Javascript Developer | 162 | 2 | ASP .Net Developer | 58 | 10 |
| Senior Backend Engineer | 160 |  | E-Commerce Developer | 58 |  |
| Java Developer | 154 |  | Ruby On Rails Engineer | 58 |  |
| Web Designer | 149 | 3 | Full Stack Developer | 57 |  |
| Javascript Engineer | 141 |  | Web Architect | 57 |  |
| Web Applications Developer | 137 | 11 | Web Analyst | 55 |  |
| Developer | 134 |  | Software Developer | 52 | 6 |
| Web Producer | 132 |  | Javascript Front End Developer | 48 |  |

*Source: Burning Glass*

# Industry Concentration

**Table 5. Industries hiring Web Developers in Bay Region**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Industry – 6 Digit NAICS (No. American Industry Classification) Codes** | **Jobs in Industry (2017)** | **Jobs in Industry (2021)** | **% Change (2017-21)** | **% in Industry (2017)** |
| News Syndicates (519110) | 22 | 25 | 14.84% | 4.5% |
| Libraries and Archives (519120) | 11 | 12 | 8.90% | 3.9% |
| Internet Publishing and Broadcasting and Web Search Portals (519130) | 2,887 | 3,469 | 52.48% | 3.8% |
| Computer Facilities Management Services (541513) | 76 | 75 | 41.81% | 2.6% |
| Other Computer Related Services (541519) | 363 | 427 | 22.14% | 2.5% |
| Custom Computer Programming Services (541511) | 2,255 | 2,573 | 19.37% | 2.2% |
| Computer Systems Design Services (541512) | 1,316 | 1,488 | 17.86% | 2.0% |
| Book Publishers (511130) | 54 | 52 | -6.79% | 2.0% |
| Periodical Publishers (511120) | 54 | 58 | 19.16% | 1.8% |
| Data Processing, Hosting, and Related Services (518210) | 470 | 583 | 56.58% | 1.8% |
| Public Relations Agencies (541820) | 63 | 71 | 17.16% | 1.6% |
| Media Representatives (541840) | 26 | 25 | 41.47% | 1.6% |
| Advertising Agencies (541810) | 124 | 145 | 8.51% | 1.5% |
| Outdoor Advertising (541850) | 11 | 13 | 17.94% | 1.3% |
| Other Services Related to Advertising (541890) | 39 | 40 | 13.85% | 1.3% |
| Telecommunications Resellers (517911) | 14 | 14 | 7.16% | 1.3% |
| Electronic Shopping and Mail-Order Houses (454110) | 261 | 340 | 50.46% | 1.2% |
| All Other Telecommunications (517919) | 22 | 26 | 44.52% | 1.1% |
| Industrial Design Services (541420) | 14 | 15 | 20.86% | 1.1% |
| Other Specialized Design Services (541490) | 13 | 16 | 22.41% | 1.1% |
| Graphic Design Services (541430) | 77 | 81 | -6.48% | 1.1% |
| Television Broadcasting (515120) | 27 | 29 | 8.09% | 1.1% |
| Interior Design Services (541410) | 55 | 61 | 18.86% | 1.0% |

*Source: EMSI 2018.2*

**Table 6. Top Employers Web Developer Occupations in Bay and North Bay (May 2017 - April 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Employer** | **Bay** | **Employer** | **Bay** | **Employer** | **North Bay** |
| Capital Markets Placement | 410 | Sony Electronics Incorporated | 46 | Capital Markets Placement | 105 |
| Apple Inc. | 278 | Xoriant Incorporated | 46 | Microsoft Corporation | 33 |
| Amazon | 113 | Avesta Computer Services | 45 | Take-Two Interactive | 6 |
| Microsoft Corporation | 112 | Etouch Systems Corporation | 45 | Computershare | 5 |
| Google Inc. | 100 | Infoobjects Inc | 45 | Radiant Logic Incorporated | 5 |
| Cisco Systems Incorporated | 83 | Oracle | 45 | Wikia, Inc | 5 |
| Redolent, Inc | 81 | Vmware Incorporated | 45 | Autodesk Incorporated | 4 |
| Walmart / Sam's | 80 | JP Morgan Chase Company | 44 | Telltale, Inc | 4 |
| eBay | 79 | United States Technical Solutions | 43 | Accelon Corporation | 3 |
| Salesforce | 74 | Redpoint Ventures | 41 | Booz Allen Hamilton Inc. | 3 |
| Paypal | 63 | Wells Fargo | 41 | Gym Mark, Inc | 3 |
| Facebook | 60 | Armada Group | 40 | Net Matrix Solutions | 3 |
| Accenture | 54 | Okaya Infocom | 40 | Revature | 3 |
| Tesla Motors | 50 |  |  | Validatek | 3 |

*Source: Burning Glass*

# Educational Supply

There are ten colleges in the Bay Region issuing 43 awards annually on TOP Code 0614.30 - Website Design and Development. There are three other educational institutions issuing 25 awards annually on CIP code 11.0801 - Web Page, Digital/Multimedia and Information Resources Design, which is cross walked to TOP 0614.30, for a total of 68 awards annually in the region.

**Table 7. Awards on TOP 0614.30 - Website Design and Development**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| College | Sub-Region | Headcount | Associates | Certificates | Total |
| Berkeley City | East Bay | 215 | 1 | 6 | 7 |
| Cabrillo | Santa Cruz & Monterey | n/a | 4 | 15 | 19 |
| Canada | Mid-Peninsula | n/a | 0 | 4 | 4 |
| Mission | Silicon Valley | 139 | 0 | 2 | 2 |
| Ohlone | East Bay | 27 | 0 | 2 | 2 |
| San Francisco | Mid-Peninsula | 262 | 0 | 1 | 1 |
| San Jose City | Silicon Valley | 34 | 1 | 2 | 3 |
| Santa Rosa | North Bay | 293 | 0 | 1 | 1 |
| Skyline | Mid-Peninsula | n/a | 2 | 1 | 3 |
| West Valley | Silicon Valley | n/a | 0 | 1 | 1 |
| Academy of Art University | Mid-Peninsula | n/a | 16 | 0 | 16 |
| Argosy University-The Art Institute of California-San Francisco | Mid-Peninsula | n/a | 3 | 2 | 6 |
| Argosy University-The Art Institute of California-Silicon Valley | Silicon Valley | n/a | 2 | 1 | 3 |
| **Total Bay Region** | | **970** | **29** | **38** | **68** |
| **Total North Bay Sub-Region** | | **293** | **0** | **1** | **1** |

# *Source: IPEDS, Data Mart and Launchboard*

NOTE: Headcount of students who took one or more courses is for 2016-17. The annual average for awards is 2014-17 unless there are only awards in 2016-17.

# Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 1,374 annual openings for Web Developers and 68 annual awards for an annual gap of 1,306. In the North Bay, there is also a gap with 56 annual openings and 1 annual award for an annual gap of 55.

# Student Outcomes

**Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on 0614.30 - Website Design and Development**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **2015-16** | **Bay  (All CTE Programs)** | **Marin**  **(All CTE Programs)** | **State (061430)** | **Bay (061430)** | **North Bay (061430)** | **College of Marin**  **(061430)** |
| % Employed Four Quarters After Exit | 74% | 65% | 60% | 62% | 64% | 48% |
| Median Earnings Two Quarters After Exit | $10,310 | $9,635 | $7,483 | $8,500 | $9,874 | $10,238 |
| Median % Change in Earnings | 46% | 34% | 52% | 56% | 45% | 52% |
| % of Students Earning a Living Wage | 63% | 61% | 55% | 57% | 59% | 43% |

*Source: Launchboard Pipeline (version available on 6/5/18)*

# Skills, Certificates and Education

**Table 9. Top Skills for Web Developers in Bay Region (May 2017 - April 2018)**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Skill** | **Postings** | **Skill** | **Postings** | **Skill** | **Postings** |
| JavaScript | 7,937 | Syntactically Awesome Style Sheets (SASS) | 1,356 | Grunt (JavaScript) | 745 |
| Teamwork / Collaboration | 4,679 | Prototyping | 1,340 | C++ | 737 |
| HTML5 | 3,573 | Web Site Design | 1,316 | Gulp.js | 719 |
| Web Application Development | 3,475 | MySQL | 1,290 | Product Development | 718 |
| Java | 3,426 | Visual Design | 1,246 | Human Computer Interaction | 688 |
| AngularJS | 3,148 | Interaction Design | 1,206 | Oracle | 687 |
| Web Development | 2,954 | Ruby on Rails | 1,203 | Software as a Service (SaaS) | 685 |
| Software Engineering | 2,906 | Bootstrapping | 1,134 | Relational Databases | 678 |
| CSS | 2,661 | JavaScript Object Notation (JSON) | 1,099 | Microsoft C# | 674 |
| jQuery | 2,372 | Agile Development | 1,045 | ECMAScript 2015 (ES2015 / ES6) | 644 |
| Software Development | 2,198 | Scrum | 1,027 | Adobe Acrobat | 643 |
| Front-end Development | 2,169 | User Research | 1,001 | Process Design | 635 |
| Python | 1,997 | Quality Assurance and Control | 987 | UNIX | 621 |
| Git | 1,883 | Linux | 975 | Data Structures | 620 |
| User Interface (UI) Design | 1,881 | Scalability Design | 953 | Adobe Creative Suite | 616 |
| Hypertext Preprocessor (PHP) | 1,845 | Ruby | 946 | Product Design | 615 |
| SQL | 1,805 | Backbone.js | 905 | Adobe Illustrator | 594 |
| Adobe Photoshop | 1,796 | Graphic Design | 863 | GitHub | 584 |
| Node.js | 1,716 | PostgreSQL | 852 | Frontend Technology | 569 |
| AJAX | 1,435 | Project Management | 845 | Information Architecture | 554 |
| E-Commerce | 1,432 | Debugging | 803 | Software Architecture | 547 |
| Object-Oriented Analysis and Design (OOAD) | 1,430 | Extensible Markup Language (XML) | 764 | Big Data | 537 |
| UX Wireframes | 1,430 | Continuous Integration (CI) | 757 | Psychology | 527 |
| Product Management | 1,425 | Adobe Indesign | 751 | Jasmine | 522 |
| Unit Testing | 1,383 | NoSQL | 747 | Test Driven Development (TDD) | 512 |

*Source: Burning Glass*

**Table 10. Certifications for Web Developers in the Bay Region (May 2017 – April 2018)**

Note: 99% of records have been excluded because they do not include a certification. As a result, the table has not been included in this report.

*Source: Burning Glass*

**Table 11. Education Requirements for Web Developers in Bay Region**

Note: 56% 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** |
| High school or vocational training | 93 (1%) |
| Associate's degree | 69 (1%) |
| Bachelor's degree | 6,959 (98%) |

*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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