



Labor Market Analysis for Program Recommendation Research, Design, and Development Occupations Foothill College

Prepared by the San Francisco Bay Center of Excellence for Labor Market Research
June 2022

Recommendation

Based on all available data, there appears to be an “undersupply” of Research, Design, and Development 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 1,512 students in the Bay region and 533 students in the Silicon Valley Sub-Region.

Introduction

This report provides student outcomes data on employment and earnings for TOP 0860.00 Educational Technology 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 Foothill College and in the region.

This report profiles Research, Design, and Development Occupations in the 12 county Bay region and in the Silicon Valley sub-region for a proposed new Research, Design, and Development for Global Good program at Foothill College.

- **Web Developers and Digital Interface Designers (15-1257):** 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: 26%
- **Social Science Research Assistants (19-4061):** Assist social scientists in laboratory, survey, and other social science research. May help prepare findings for publication and assist in laboratory analysis, quality control, or data management. Excludes “Graduate Teaching Assistants” (25-1191).
Entry-Level Educational Requirement: Bachelor’s degree
Training Requirement: None
Percentage of Community College Award Holders or Some Postsecondary Coursework: 37%
- **Commercial and Industrial Designers (27-1021):** Develop and design manufactured products, such as cars, home appliances, and children’s toys. Combine artistic talent with research on product use, marketing, and materials to create the most functional and appealing product design.
Entry-Level Educational Requirement: Bachelor’s degree

Training Requirement: None

Percentage of Community College Award Holders or Some Postsecondary Coursework: 24%

Occupational Demand

Table 1. Employment Outlook for Research, Design, and Development Occupations in Bay Region

Occupation	2020 Jobs	2025 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Web Developers and Digital Interface Designers	11,176	12,696	1,520	14%	5,829	1,166	\$32	\$49
Social Science Research Assistants	1,591	1,704	113	7%	1,126	225	\$21	\$26
Commercial and Industrial Designers	1,215	1,260	44	4%	620	124	\$31	\$41
Total	13,982	15,661	1,679	12%	7,575	1,515		

Source: EMSI 2021.4

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 Research, Design, and Development Occupations in Silicon Valley Sub-region

Occupation	2020 Jobs	2025 Jobs	5-yr Change	5-yr % Change	5-yr Total Openings	Annual Openings	25% Hourly Earning	Median Hourly Wage
Web Developers and Digital Interface Designers	3,537	4,142	604	17%	1,988	398	\$34	\$50
Social Science Research Assistants	715	756	41	6%	487	97	\$21	\$25
Commercial and Industrial Designers	367	385	18	5%	190	38	\$31	\$47
Total	4,619	5,284	665	14%	2,666	533		

Source: EMSI 2021.4

Silicon Valley Sub-Region includes: Santa Clara County

Job Postings in Bay Region and Silicon Valley Sub-Region

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

Occupation	Bay Region	Silicon Valley
Web Developers	20,398	7,510
Commercial and Industrial Designers	5,535	1,812
Social Science Research Assistants	819	332
City and Regional Planning Aides	26	9

Source: Burning Glass

Table 4a. Top Job Titles for Research, Design, and Development Occupations for latest 12 months - Bay Region

Title	Bay	Title	Bay
Product Designer	732	Web Developer	330
Backend Engineer	691	Backend Engineer - Remote	301
Front End Engineer	637	Front End Engineer - Remote	297
Senior Backend Engineer	578	Senior Ux Designer	284
Senior Product Designer	559	Ui Developer	265
Senior Front End Engineer	549	Ui/Ux Designer	182
Front End Developer	532	Lead Product Designer	165
Ux Designer	521	Ux Research Associate	163
Ux Researcher	401	Senior Frontend Engineer	149

Source: Burning Glass

Table 4b. Top Job Titles for Research, Design, and Development Occupations for latest 12 months - Silicon Valley Sub-Region

Title	Silicon Valley	Title	Silicon Valley
Front End Developer	256	Senior Product Designer	108
Ux Designer	234	Ux Researcher	99
Backend Engineer	227	Senior Ux Designer	98
Front End Engineer	151	Senior Backend Engineer	93
Ui Developer	141	Ruby On Rails Developer	71
Product Designer	138	Backend Developer	63
Web Developer	130	Frontend Developer	63
Ux Research Associate	123	Product Engineer	63
Senior Front End Engineer	113	Ui/Ux Designer	61

Source: Burning Glass

Industry Concentration

Table 5. Industries hiring Research, Design, and Development Workers in Bay Region

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2020)	Jobs in Industry (2025)	% Change (2020-25)	% Occupation Group in Industry (2020)
Internet Publishing and Broadcasting and Web Search Portals	2,166	584	15%	2%
Custom Computer Programming Services	2,208	298	16%	2%

Industry - 6 Digit NAICS (No. American Industry Classification) Codes	Jobs in Industry (2020)	Jobs in Industry (2025)	% Change (2020-25)	% Occupation Group in Industry (2020)
Software Publishers	1,437	315	10%	2%
Computer Systems Design Services	1,198	102	9%	2%
Data Processing, Hosting, and Related Services	472	104	3%	1%
Research and Development in the Physical, Engineering, and Life Sciences (except Nanotechnology and Biotechnology)	494	33	4%	1%
Colleges, Universities, and Professional Schools (State Government)	402	3	3%	1%
Other Computer Related Services	339	49	2%	2%
Colleges, Universities, and Professional Schools	299	21	2%	1%
Research and Development in the Social Sciences and Humanities	288	3	2%	11%

Source: EMSI 2021.4

Table 6. Top Employers Posting Research, Design, and Development Occupations in Bay Region and Silicon Valley Sub-Region

Employer	Bay	Employer	Silicon Valley
Amazon	324	Apple Inc.	283
Apple Inc.	301	Google Inc.	146
Google Inc.	244	Amazon	122
Facebook	239	Cisco Systems Incorporated	113
Uber	215	Intuit	105
Braintrust Group	160	Intel Corporation	88
Cisco Systems Incorporated	154	Stanford University	78
Intuit	128	Rivian	77
Stanford Medicine	112	Uber	73
Adobe Systems	106	Palo Alto Networks	69

Source: Burning Glass

Educational Supply

There is a one (1) community college in the Bay Region issuing three (3) awards on average annually (last 3 years ending 2018-19) on TOP 0860.00 Educational Technology. In the Silicon Valley Sub-Region, there are no community colleges that issued awards on average annually (last 3 years) on this TOP code.

Table 7. Community College Awards on TOP 0860.00 Educational Technology in Bay Region

College	Subregion	Certificate Low	Total
Merritt	East Bay	3	3
Total		3	3

Source: Data Mart

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

Gap Analysis

Based on the data included in this report, there is a large labor market gap in the Bay region with 1,515 annual openings for the Research, Design, and Development occupational cluster and three (3) annual (3-year average) awards for an annual undersupply of 1,512 students. In the Silicon Valley Sub-Region, there is also a gap with 533 annual openings and no annual (3-year average) awards for an annual undersupply of 533 students.

Student Outcomes

Table 8. Four Employment Outcomes Metrics for Students Who Took Courses on TOP 0860.00 Educational Technology

Metric Outcomes	Bay All CTE Programs	Foothill All CTE Programs	State 0860.00	Bay 0860.00	Silicon Valley 0860.00	Foothill 0860.00
Students with a Job Closely Related to Their Field of Study	74%	91%	88%	90%	86%	86%
Median Annual Earnings for SWP Exiting Students	\$47,419	\$66,288	\$85,341	\$90,496	\$94,740	\$94,188
Median Change in Earnings for SWP Exiting Students	23%	43%	9%	9%	10%	10%
Exiting Students Who Attained the Living Wage	52%	64%	77%	82%	80%	83%

Source: Launchboard Strong Workforce Program Median of 2017 to 2020.

Skills, Certifications and Education

Table 9. Top Skills for Research, Design, and Development Occupations in Bay Region

Skill	Posting	Skill	Posting
JavaScript	8,726	Web Application Development	3,135
Software Engineering	5,966	Ruby on Rails	3,035
Front-end Development	4,639	Visual Design	3,008
React Javascript	4,558	Git	2,991
Java	4,538	UX Wireframes	2,928
Web Development	4,091	Product Management	2,874
Python	4,011	Ruby	2,822
Product Design	3,752	AngularJS	2,747

Skill	Posting	Skill	Posting
User Research	3,705	Adobe Indesign	2,744
Adobe Photoshop	3,574	Adobe Acrobat	2,603
Software Development	3,557	Adobe Creative Suite	2,583
Prototyping	3,479	Interaction Design	2,582
Product Development	3,258	User Interface (UI) Design	2,578
SQL	3,201	Adobe Illustrator	2,570

Source: Burning Glass

Table 10. Certifications for Research, Design, and Development Occupations in Bay Region

Certification	Posting	Certification	Posting
Certified Scrum Trainer (CST)	77	Certified Novell Administrator	15
Driver's License	70	Mbe Certified	13
Project Management Certification	49	Certified Information Systems Security Professional (CISSP)	11
Security Clearance	38	Certified Clinical Research Professional	9
Certified Quality Engineer (CQE)	38	Six Sigma Certification	8
Certified Reliability Engineer	34	Agile Certification	8
American Society For Quality (ASQ) Certification	34	Six Sigma Black Belt Certification	7
IT Infrastructure Library (ITIL) Certification	27	Automation Certification	7
Certified ScrumMaster (CSM)	25	Six Sigma Green Belt Certification	6
Project Management Professional (PMP)	21		

Source: Burning Glass

Note: 98% 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.

Table 11. Education Requirements for Research, Design, and Development Occupations in Bay Region

Education (minimum advertised)	Latest 12 Mos. Postings	Percent 12 Mos. Postings
High school or vocational training	257	2%
Associate's degree	147	1%
Bachelor's degree and higher	15,282	97%

Source: Burning Glass

Note: 41% 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.

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 CCCCCO Data Mart.

Sources

O*Net Online
Labor Insight/Jobs (Burning Glass)
Economic Modeling Specialists International (EMSI)
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

For more information, please contact:

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