



Computer Science

**Program Report
For Greater South Bay and Peninsula Region
(Santa Clara and San Mateo Counties)**

November 2015

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Computer Science

CIP 2010: A program that focuses on computer theory, computing problems and solutions, and the design of computer systems and user interfaces from a scientific perspective. Includes instruction in the principles of computational science, computer development and programming, and applications to a variety of end-use situations.

Target Occupations‡

Computer and Information Systems Managers (11-3021)

Computer and Information Research Scientists (15-1111)

Information Security Analysts (15-1122)

Computer Programmers (15-1131)

Software Developers, Applications (15-1132)

Software Developers, Systems Software (15-1133)

Web Developers (15-1134)

Computer Network Architects (15-1143)

Computer User Support Specialists (15-1151)




Computer Network Support Specialists (15-1152)

Computer Occupations, All Other (15-1199)

‡Based on EMSI crosswalk of the Classification of Instructional Programs (CIP) codes with Standard Occupational Classification (SOC) codes as published by the U.S. Department of Education.

In 2015, the number of computer science jobs in the 11 target occupations in Santa Clara and San Mateo Counties totaled 138,945. The Bureau of Labor Statistics (BLS) expects the total number of positions to increase by almost 7% over the next three years. Regional openings in 2015, which included created jobs and turnover, totaled 5,661. Completions in computer science programs totaled 595 from 13 regional institutions.

Occupation Summary for Computer Science

138,945 Jobs (2015) 315% above National average	6.7% % Change (2015-2018) Nation: 5.9%	\$60.77/hr Median Hourly Earnings Nation: \$40.16/hr
Regional Openings (2015)	5,661	
Regional Program Completions (2014)	595	
All Regional Completions for Target Occupations (2014)	1,592	

Target occupations that are mapped to the Computer Science program are disaggregated to see which occupations are projected to see the highest number of annual openings (Software Developers, Applications), highest percentage rate of growth over the next three year (Information Security Analysts), and the highest median hourly earnings (Computer and Information Systems Managers). All the target occupations are more highly represented and concentrated in our region (Santa Clara and San Mateo Counties) compared to the national average.

Target Occupation Performance

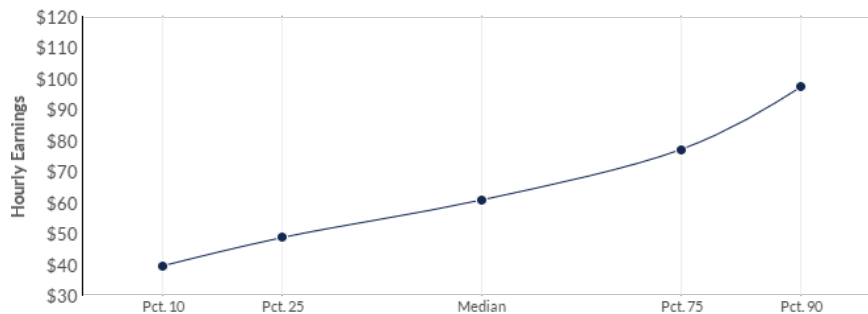
Occupation	2015 Jobs	Annual Openings	Median Hourly Earnings	Growth (2015 - 2018)	Location Quotient (2015)
Software Developers, Applications	45,004	1,914	\$64.91/hr	8.68%	6.08
Software Developers, Systems Software	32,242	872	\$64.35/hr	4.16%	7.85
Computer and Information Systems Managers	16,238	541	\$83.54/hr	5.66%	4.59
Computer User Support Specialists	12,000	603	\$34.74/hr	10.03%	1.83
Computer Programmers	10,349	426	\$42.97/hr	4.23%	3.09

Computer Occupations, All Other	5,488	182	\$53.91/hr	4.68%	2.35
Web Developers	5,067	295	\$45.19/hr	12.35%	3.11
Computer Network Support Specialists	4,656	129	\$43.52/hr	3.48%	2.40
Computer Network Architects	3,746	126	\$66.28/hr	4.67%	2.54
Computer and Information Research Scientists	2,484	78	\$59.76/hr	4.59%	9.23
Information Security Analysts	1,671	102	\$56.01/hr	13.05%	1.96

The percentile earnings table shows the range the Computer Science occupations earn in the region. While the median earnings are \$60.77/hour, wages can range from below \$48/hour to above \$77/hour. Each of the target occupations' range in wages is also displayed.

Target Occupations Percentile Earnings

\$48.63/hr 25th Percentile Earnings	\$60.77/hr Median Earnings	\$77.11/hr 75th Percentile Earnings
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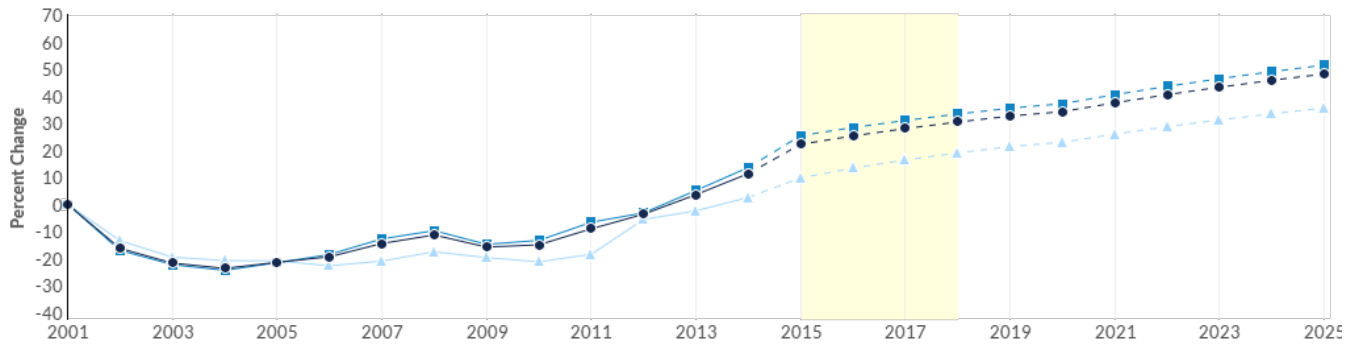
Occupation	25th Percentile Earnings	Median Earnings	75th Percentile Earnings
Computer and Information Systems Managers (11-3021)	\$68.90	\$83.54	\$116.40
Computer and Information Research Scientists (15-1111)	\$50.26	\$59.76	\$78.87
Information Security Analysts (15-1122)	\$45.14	\$56.01	\$68.37
Computer Programmers (15-1131)	\$32.06	\$42.97	\$58.45
Software Developers, Applications (15-1132)	\$52.16	\$64.91	\$79.11
Software Developers, Systems Software (15-1133)	\$52.91	\$64.35	\$79.14
Web Developers (15-1134)	\$33.99	\$45.19	\$59.06
Computer Network Architects (15-1143)	\$53.90	\$66.28	\$78.03
Computer User Support Specialists (15-1151)	\$25.45	\$34.74	\$45.70
Computer Network Support Specialists (15-1152)	\$33.88	\$43.52	\$55.07
Computer Occupations, All Other (15-1199)	\$37.30	\$53.91	\$70.13

Growth in the Computer Science occupations show how each occupation is projected to increase in jobs over the next three years. Modest growth is expected for Computer Network Support Specialists, Computer Programmers and Software Developers-Applications (<5%) while higher growth is expected among Web Developers (12%) and Computer User Support Specialists (10%).

Growth for Computer Science Occupations

	138,945 2015 Jobs	148,305 2018 Jobs	9,360 Change (2015-2018)	6.7% % Change (2015-2018)
Occupation	2015 Jobs	2018 Jobs	Change	% Change
Computer and Information Systems Managers (11-3021)	16,238	17,157	919	6%
Computer and Information Research Scientists (15-1111)	2,484	2,598	114	5%
Information Security Analysts (15-1122)	1,671	1,889	218	13%
Computer Programmers (15-1131)	10,349	10,787	438	4%
Software Developers, Applications (15-1132)	45,004	48,911	3,907	9%
Software Developers, Systems Software (15-1133)	32,242	33,583	1,341	4%
Web Developers (15-1134)	5,067	5,693	626	12%
Computer Network Architects (15-1143)	3,746	3,921	175	5%
Computer User Support Specialists (15-1151)	12,000	13,203	1,203	10%
Computer Network Support Specialists (15-1152)	4,656	4,818	162	3%
Computer Occupations, All Other (15-1199)	5,488	5,745	257	5%

Regional Trends



	Region	2015 Jobs	2018 Jobs	Change	% Change
●	Region	138,945	148,305	9,360	6.7%
●	Santa Clara County, CA	113,280	120,487	7,207	6.4%
●	San Mateo County, CA	25,665	27,818	2,153	8.4%

Program Completion Data

Program data reviews completion information about awards by institution and types of awards conferred in the region (Santa Clara and San Mateo Counties). Foothill College is the one of 13 regional institutions that is supporting and preparing for computer science occupations.





Program Summary for Computer Science

13 Regional Institutions	595 Regional Program Completions (2014) Foothill College Completions: 9	14,360 Annual Openings (2014)
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Regional Completions by Institution

Institution	Certificates (2014)	Degrees (2014)	Total Completions (2014)
Stanford University	0	408	408
San Jose State University	0	169	169
Foothill College	0	9	9
College of San Mateo	0	4	4
San Jose City College	0	3	3
Canada College	0	1	1
Mission College	0	1	1
Silicon Valley University	0	0	0
International Technological University	0	0	0
West Valley College	0	0	0
Skyline College	0	0	0
Opportunities Industrialization Center-West	0	0	0
Notre Dame de Namur University	0	0	0



Regional Completions by Award Level

Award Level	Completions (2014)	Percent
Associates degree	18	3.0% 
Bachelors degree	339	57.0% 
Masters degree	211	35.5% 
Doctors degree	27	4.5% 








Target Occupations Demographics

The demographics among those employed in Computer Science occupations in Santa Clara and San Mateo Counties for 2015 show that almost a majority are male (77%) and a majority are between the ages of 25-44 (63%) and Asian or White (91%).








Occupation Gender Breakdown

Gender	2015 Jobs	2015 Percent
Males	107,169	77.1% 
Females	31,776	22.9% 

Occupation Age Breakdown

Age	2015 Jobs	2015 Percent
14-18	293	0.2% 
19-24	5,156	3.7% 
25-34	37,839	27.2% 
35-44	49,389	35.5% 
45-54	32,443	23.3% 
55-64	11,997	8.6% 
65+	1,827	1.3% 

Occupation Race/Ethnicity Breakdown

Race/Ethnicity	2015 Jobs	2015 Percent
Asian	72,888	52.5% 
White	53,434	38.5% 
Hispanic or Latino	7,366	5.3% 
Black or African American	2,778	2.0% 
Two or More Races	1,878	1.4% 
Native Hawaiian or Other Pacific Islander	403	0.3% 
American Indian or Alaska Native	198	0.1% 

Industries Employing Computer Science Occupations

A number of industries in Santa Clara and San Mateo Counties employ those trained in Computer Science and its related occupations. The following table represents a regional industry breakdown of the number of Computer Science positions employed, the percentage of Computer Science employed by industry and the percentage Computer Science jobs represent within all jobs by each industry. While custom computer programming services employed 21% of all regional Computer Science positions in 2015, those positions represent half all jobs in the custom computer programming services industry (51%).

Top Industries Employing Computer Science Occupations

Industry	Occupation Group Jobs in Industry (2015)	% of Occupation Group in Industry (2015)	% of Total Jobs in Industry (2015)
Custom Computer Programming Services	28,628	20.6%	50.9%
Internet Publishing and Broadcasting and Web Search Portals	18,343	13.2%	38.0%
Computer Systems Design Services	16,756	12.1%	51.7%
Electronic Computer Manufacturing	15,964	11.5%	35.2%
Software Publishers	15,445	11.1%	53.0%

Appendix A - Data Sources and Calculations

Location Quotient

Location quotient (LQ) is a way of quantifying how concentrated a particular industry, cluster, occupation, or demographic group is in a region as compared to the nation. It can reveal what makes a particular region unique in comparison to the national average.

Occupation Data

EMSI occupation employment data are based on final EMSI industry data and final EMSI staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level EMSI earnings by industry.

Completers Data

The completers data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Institution Data

The institution data in this report is taken directly from the national IPEDS database published by the U.S. Department of Education's National Center for Education Statistics.

Industry Data

EMSI industry data have various sources depending on the class of worker. (1) For QCEW Employees, EMSI primarily uses the QCEW (Quarterly Census of Employment and Wages), with supplemental estimates from County Business Patterns and Current Employment Statistics. (2) Non-QCEW employees data are based on a number of sources including QCEW, Current Employment Statistics, County Business Patterns, BEA State and Local Personal Income reports, the National Industry-Occupation Employment Matrix (NIOEM), the American Community Survey, and Railroad Retirement Board statistics. (3) Self-Employed and Extended Proprietor classes of worker data are primarily based on the American Community Survey, Nonemployer Statistics, and BEA State and Local Personal Income Reports. Projections for QCEW and Non-QCEW Employees are informed by NIOEM and long-term industry projections published by individual states.

Staffing Patterns Data

The staffing pattern data in this report are compiled from several sources using a specialized process. For QCEW and Non-QCEW Employees classes of worker, sources include Occupational Employment Statistics, the National Industry-Occupation Employment Matrix, and the American Community Survey. For the Self-Employed and Extended Proprietors classes of worker, the primary source is the American Community Survey, with a small amount of information from Occupational Employment Statistics.

State Data Sources

This report uses state data from the following agencies: California Labor Market Information Department