

Computer Infrastructure and Support (TOP 0708.00)

Regional Program Demand Report

Foothill College, San Francisco larger MSA

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Purpose and Goals

This report is designed to integrate and analyze data from multiple sources to help educational institutions discover regional labor market needs for certain postsecondary programs of study. The overall goal is to help a college align their program offerings the economy and labor market of its service region. To do this, the report selects a set of focus occupations, determines the regional job outlook for them, and compares this to the number of recent graduates in related programs at regional educational institutions. While this is a first step toward a supply/demand analysis, for increased accuracy it could be extended with survey-based information from local employers regarding their hiring outlook and recruitment sources.

The occupation employment and wage numbers are from EMSI's national Complete Employment database, which is built using numerous published data sources from the federal Bureau of Labor Statistics, Bureau of Economic Analysis, and Bureau of the Census. In addition, the report uses industry/occupation data and projections created by the State of AnyState. The completions-by-program and program-to-occupation links use data from the U.S. Department of Education.

These data sources have been specially processed and harmonized to provide more complete and detailed data than any individual source used. For more information, see the final page of this report.

Focus College

Foothill College

Region Definition

Alameda, Contra Costa, Marin, San Francisco, San Mateo, Santa Clara

Key Terms and Concepts

Programs: Courses of postsecondary study defined by CIP (Classification of Instructional Programs) codes.

Occupation: A category of workers defined by the Standard Occupational Classification (SOC).

Relating occupations to Programs: EMSI determines these links using information from the U.S. Department of Education.

Replacement Jobs: The estimated number of job openings in an occupation due to retirement, turnover, and other factors aside from job growth. Based on national percentages by occupation.

Annual openings: The sum of new jobs and estimated replacement jobs for a given occupation, divided by the number of years in the timeframe.

Earnings: For industries, total annual earnings per worker is reported; these earnings include wages, salaries, profits, and benefits. Occupational earnings are reported as median hourly wage only.

Jobs: Full-time and part-time positions held by proprietors and payroll employees in the public or private sector. May exceed actual worker count.

Projections: Estimates of future job or population numbers based on (1) recent historical regional trends and (2) published forecasts created by a consensus of state and federal agencies.

Executive Summary

Overview

This report focuses on **2 occupations** which are expected to provide **1,218 annual job openings** from 2008-2013 in the San Francisco larger MSA 6-county area. Meanwhile, in 2007, area colleges produced **1,556 graduates in 15 programs** related to these occupations. The numbers do not conclusively show an opportunity for area colleges to expand their offerings in this field.¹

Focus Occupations

The following occupations were selected for analysis in this report:²

- Computer and information systems managers
- Network and computer systems administrators

Focus Programs

The key occupations above correspond to the following standard postsecondary program titles:³

- Computer and Information Sciences, General
- Computer and Information Sciences, Other
- Information Science/Studies
- Computer Systems Analysis/Analyst
- Computer Science
- Computer Systems Networking and Telecommunications
- System Administration/Administrator
- System, Networking, and LAN/WAN Management/Manager
- Computer and Information Systems Security
- Computer/Information Technology Services Administration and Management, Other
- Computer and Information Sciences and Support Services, Other
- Operations Management and Supervision
- Management Information Systems, General
- Information Resources Management/CIO Training
- Knowledge Management

1. Annual job openings: new plus replacement jobs divided by years in the timeframe. Note that openings may be filled from various sources besides new graduates, and that graduates may work in occupations unrelated to their degree.

2. Occupations are defined by the federal SOC system.

3. Programs are defined by the federal CIP system. The occupation-program crosswalk is based on the CIP-SOC crosswalk published by the U.S. Department of Education.

Labor Market Outlook

Aggregated data for all focus occupations:

	Region	State[s]	U.S.
2008 total jobs	29,337	79,632	635,305
2013 total jobs	32,630	87,817	697,554
2008-2013 growth	3,293	8,185	62,249
2008-2013 repl. jobs	2,795	7,680	57,712
Median hourly earnings	\$52.54	\$44.39	\$38.62

Focus Program Completions

"Completions" represents the total number of students to attain an award or degree at each given level in all the above college programs.

Award Level	2007 Completions (Foothill College)	2007 Completions (All Colleges in Region)
Award < 2 years	21	189
Associate's	5	157
Bachelor's	-	589
Postbaccalaureate Certificate	-	4
Master's	-	545
Doctor's	-	72
Professional	-	-
TOTAL	26	1556

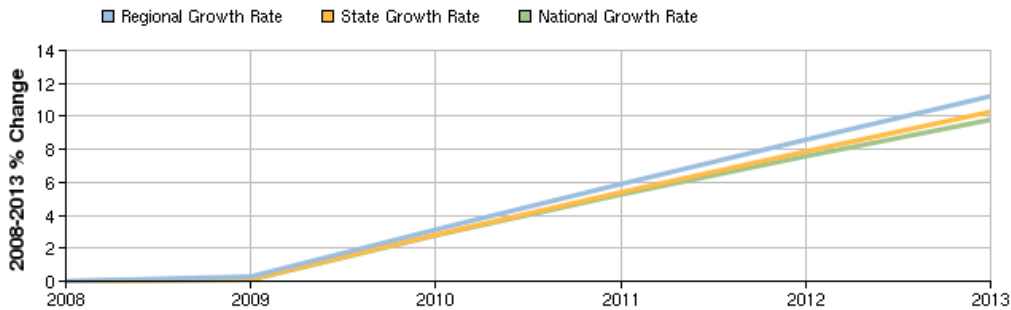
Source: U.S. Department of Education, National Center for Education

Statistics: Integrated Postsecondary Education Data System (IPEDS).

Job Outlook Summary

Percent Change in Employment, All Focus Occupations

This graph shows yearly percent growth compared to 2008.



The table summarizes the regional job outlook for the focus occupations using employment projections and current wage data, indicating the demand for these kinds of workers and their pay scale. Colleges which strive to be labor market responsive, maximize their economic impact, and generate a return on investment for public funds should generally focus program resources to support high-growth, high-wage occupations.

Detailed Information by Occupation

Occupation Title	2008-13 Avg. Annual Openings			Median Hourly Earnings		
	Region	State[s]	U.S.	Region	State[s]	U.S.
Network and computer systems administrators	644	1,831	15,543	\$40.60	\$33.90	\$30.03
Computer and information systems managers	573	1,342	8,449	\$61.43	\$53.57	\$48.64
TOTAL	1,218	3,173	23,992	\$52.54	\$44.39	\$38.62

Source: EMSI Complete Employment, 3/2008.

Average annual openings: total new plus replacement jobs over the entire timeframe divided by number of years in the timeframe.

1. Projected new and replacement jobs can indicate demand, but are not necessarily equivalent to demand. The number is based on past regional performance of the industries that employ workers in the given occupations, combined with official, biannual state and federal ten-year estimates. Projections may underestimate demand if employers need these kinds of workers but are unable to hire qualified individuals to meet their needs, or if unforeseen business recruitment and growth outpace past trends. Similarly, projections may overestimate demand if there are unforeseen contractions in key employers, entire industries, or the national economy as a whole.

Regional Job Outlook

The table summarizes the regional job outlook for the focus occupations using employment projections and current wage data, indicating the demand for these kinds of workers and their pay scale. Colleges which strive to be labor market responsive, maximize their economic impact, and generate a return on investment for public funds should generally focus program resources to support high-growth, high-wage occupations. Occupations are sorted by total 2008 jobs.

Occupation Title	2008 Jobs	2013 Jobs	New Jobs	New & Rep. Jobs	Median Hourly Earnings
Computer and information systems managers	16,871	18,375	1,504	2,866	\$61.43
Network and computer systems administrators	12,466	14,255	1,789	3,222	\$40.60
	29,337	32,630	3,293	6,088	\$52.54

Source: EMSI Complete Employment - Spring 2009.

State & National Job Outlook

These two tables summarize the state and national job outlook for the focus occupations using employment projections and current wage data, indicating the demand for these kinds of workers and their pay scale. Occupations are in the same order as they are in the regional job outlook table on the previous page.

State Job Outlook

Occupation Title	2008 Jobs	2013 Jobs	New Jobs	New & Rep. Jobs	Median Hourly Earnings
Computer and information systems managers	42,665	45,938	3,273	6,709	\$53.57
Network and computer systems administrators	36,967	41,879	4,912	9,156	\$33.90
	79,632	87,817	8,185	15,865	\$44.39

Source: EMSI Complete Employment - Spring 2009.

National Job Outlook

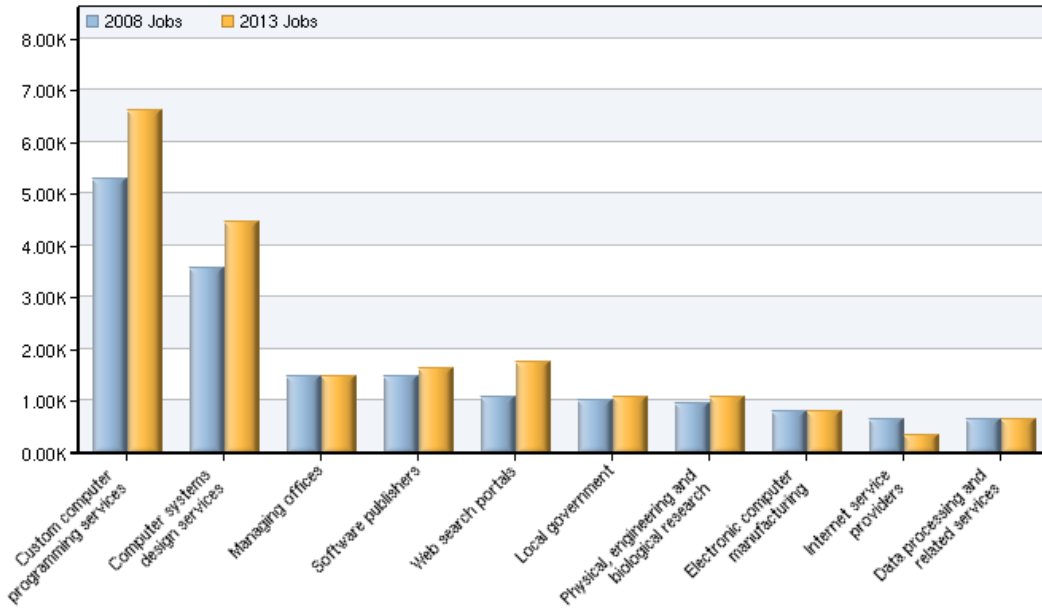
Occupation Title	2008 Jobs	2013 Jobs	New Jobs	New & Rep. Jobs	Median Hourly Earnings
Network and computer systems administrators	340,677	382,113	41,436	77,715	\$30.03
Computer and information systems managers	294,628	315,441	20,813	42,246	\$48.64
	635,305	697,554	62,249	119,961	\$38.62

Source: EMSI Complete Employment - Spring 2009.

Inverse Staffing Patterns

Industrial Makeup

These are your region's top ten growing industries in the selected occupations.



NAICS Code	Description	2008 Jobs	2013 Jobs	Change	% Change
541511	Custom computer programming services	5,281	6,609	1,328	25%
541512	Computer systems design services	3,582	4,448	866	24%
551114	Managing offices	1,481	1,465	-16	-1%
511210	Software publishers	1,462	1,615	153	11%
518112	Web search portals	1,065	1,747	682	64%
930000	Local government	1,020	1,091	71	7%
541710	Physical, engineering and biological research	955	1,091	136	14%
334111	Electronic computer manufacturing	810	799	-11	-1%
518111	Internet service providers	651	345	-306	-47%
518210	Data processing and related services	634	642	8	1%

Regional Graduation Summary

Regional graduations ("completions" or number of awards/degrees granted) in the programs tied to the focus occupations are one indicator of workforce supply. (Other sources include in-migration of new workers to the region, promotion from within firms, and currently unemployed workers in the same or similar occupations.) The following table breaks down these graduations by program and award level at AnyRegion college and at all institutions in the region. A zero entry for completers indicates the program is offered but had no completions, while a "-" indicates the program is not offered.

CIP Code	Program Title	Award Level	2007 Completions, Your College	2007 Completions, Entire Region
11.0101	Computer and Information Sciences, General	Award of less than 1 academic year	-	3
		Bachelor's degree	-	11
		Postbaccalaureate certificate	-	-
		Master's degree	-	8
11.0199	Computer and Information Sciences, Other	[all]	-	-
11.0401	Information Science/Studies	Bachelor's degree	-	96
		Master's degree	-	107
		Doctor's degree	-	1
11.0501	Computer Systems Analysis/Analyst	[all]	-	-
11.0701	Computer Science	Award of at least 1 but less than 2 academic years	-	-
		Associate's degree	5	14
		Bachelor's degree	-	428
		Master's degree	-	337
		Doctor's degree	-	70
11.0901	Computer Systems Networking and Telecommunications	Award of less than 1 academic year	20	45
		Award of at least 1 but less than 2 academic years	-	4
		Associate's degree	-	21
		Bachelor's degree	-	2
		Master's degree	-	3
11.1001	System Administration/Administrator	Award of less than 1 academic year	1	9
		Award of at least 1 but less than 2 academic years	-	2
		Associate's degree	-	7
11.1002	System, Networking, and LAN/WAN Management/Manager	[all]	-	-
11.1003	Computer and Information Systems Security	Associate's degree	-	20
11.1099	Computer/Info Tech Services Administration & Management, Other	Bachelor's degree	-	1
11.9999	Computer and Information Sciences and Support Services, Other	Award of less than 1 academic year	-	117
		Award of at least 1 but less than 2 academic years	-	9
		Associate's degree	-	95

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CIP Code	Program Title	Award Level	2007 Completions, Your College	2007 Completions, Entire Region
		Bachelor's degree	-	10
		Postbaccalaureate certificate	-	4
		Master's degree	-	44
		Doctor's degree	-	1
52.0205	Operations Management and Supervision	Bachelor's degree	-	1
		Master's degree	-	1
52.1201	Management Information Systems, General	Award of less than 1 academic year	-	-
		Award of at least 1 but less than 2 academic years	-	-
		Associate's degree	-	-
		Bachelor's degree	-	40
		Master's degree	-	41
52.1206	Information Resources Management/CIO Training	Master's degree	-	4
52.1207	Knowledge Management	[all]	-	-
TOTAL			26	1,556

Source: U.S. Department of Education, National Center for Education Statistics: Integrated Postsecondary Education Data System (IPEDS).

Occupational Programs & Completers

The following section provides detailed information for each focus occupation, including the job outlook information provided above. Each occupation is also associated with one or more postsecondary programs (defined by standard CIP 2000 codes) using information published by the U.S. Department of Education with customizations by EMSI.

A zero entry for completers indicates the program is offered but had no completions, while a "-" indicates the program is not offered.

Summary Table

Occupation	2008-2013 Avg. Annual Openings	2007 Completions, All Related Programs (College)	2007 Completions, All Related Programs (Region)	Total Related Programs	Total Occs. Sharing Same Programs
Network and computer systems administrators	644	21	620	9	8
Computer and information systems managers	573	6	1,180	9	26

Source: EMSI Complete Employment; U.S. Department of Education, IPEDS & Occupational Code Crosswalk - CIP 2000.

An occupation may be related to multiple programs and vice versa. Completions may be double-counted if related to multiple occupations; **do not total**. See columns "Total Related Programs" and "Total Occs. Sharing Same Programs" to refine interpretation of openings versus completions.

Detail Tables

The following tables provide detailed information for focus occupations and related programs, comparing estimated average annual openings in each occupation with recent completions (awards/degrees) in related programs at both AnyRegion College and at all institutions in the region. Many postsecondary programs are linked to multiple occupations; this is shown in the final column of each table and is one indication that fewer program completers will likely enter the given occupation than the overall total would suggest.

Sources for this section: EMSI Complete Employment, 3/2008; U.S. Department of Education, IPEDS.

Computer and information systems managers

2008-2013 Avg. Annual Openings: **573**

Median Hourly Earnings: **\$61.43**

Related Programs	2007 Completions, College	2007 Completions, Entire Region	Other Occupations Linked to Program
TOTAL, ALL RELATED PROGRAMS	6	1,180	26
Computer and Information Sciences, General	-	22	7
Computer and Information Sciences, Other	-	-	-
Information Science/Studies	-	204	1
Computer Science	5	849	1
System Administration/Administrator	1	18	-
Operations Management and Supervision	-	2	16
Management Information Systems, General	-	81	1
Information Resources Management/CIO Training	-	4	-
Knowledge Management	-	-	-

Network and computer systems administrators

2008-2013 Avg. Annual Openings: **644**

Median Hourly Earnings: **\$40.60**

Related Programs	2007 Completions, College	2007 Completions, Entire Region	Other Occupations Linked to Program
TOTAL, ALL RELATED PROGRAMS	21	620	8
Computer and Information Sciences, General	-	22	7
Information Science/Studies	-	204	1
Computer Systems Analysis/Analyst	-	-	-
Computer Systems Networking and Telecommunications	20	75	-
System Administration/Administrator	1	18	-
System, Networking, and LAN/WAN Management/Manager	-	-	-
Computer and Information Systems Security	-	20	-
Computer/Information Technology Services Administration and Management, Other	-	1	-
Computer and Information Sciences and Support Services, Other	-	280	-

About the Data

Introduction

EMSI data is a compilation and harmonization of more than 80 government and private-sector sources. Updated every six months and based on the most recent data available, the dataset covers the entire US population and economy, down to each individual ZIP code. It includes data for industries, occupations, demographics, postsecondary institutions, and selected economic indicators.

Occupation Data

Organizing regional employment information by occupation provides a workforce-oriented view of the regional economy. EMSI's occupation data are based on EMSI's industry data and regional "staffing patterns" (showing the average mix of job types in various industries) taken from the Occupational Employment Statistics program (U.S. Bureau of Labor Statistics). Wage information is augmented by data from the American Community Survey (U.S. Census). Replacement jobs and annual openings estimates are based on national survey data by occupation. As in the official government statistics, occupations are categorized by Standard Occupational Classification (SOC) codes and titles.

Completions Data

Completions are voluntarily reported by postsecondary institutions through the U.S. Department of Education's Integrated Postsecondary Education Data System (IPEDS). Completions are organized by program using the Classification of Instructional Programs (CIP) codes and titles.

Relating Occupations to Postsecondary Programs

The occupation-to-program (SOC-to-CIP) "crosswalk" is a large table that describes which occupations are generally trained for by each standard postsecondary program (based on Classification of Instructional Programs [CIP] codes and titles, last updated in 2000). EMSI starts with the official crosswalk published by the U.S. Department of Education and customizes it in various ways to make it more accurate and practical for comparing programs to regional labor markets.

About Economic Modeling Specialists

Products and Services

EMSI provides integrated regional economic and labor market data, web-based analysis tools, data-driven reports, and custom consulting services. EMSI specializes in detailed information about regional economies for assessment and planning purposes, bringing together industry, workforce, economic development, and education/training perspectives.

EMSI's expertise is centered on regional economics, data integration and analysis, programming, and design so that it can provide the best available products and services for regional decision makers. EMSI recently merged with its sister company CCbenefits Inc.-well known for conducting socioeconomic impact studies for over 800 community and technical colleges across the nation-to offer an integrated portfolio of solutions for college, workforce, and economic development professionals.

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EMSI's client base includes hundreds of colleges, workforce boards, economic development organizations, governmental agencies, economists, consultants, academics, and private-sector analysts. With over four thousand current clients in the U.S., Canada, and the United Kingdom, EMSI's products and services are critical for informing regional policy.

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