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Computer Occupations, All Other
Labor Market Analysis: San Diego County

March 2018

Summary

The following list summarizes findings from the labor market analysis below for *Computer Occupations, All Other*:

- Between 2017 and 2022, *Computer Occupations, All Other* are projected to increase by 147 jobs or three percent.

- Employers in San Diego County will need to hire 326 workers annually to fill new jobs and backfill jobs due to attrition such as retirement or turnover.

- Between 2010 and 2017, there was an average of 9,157 online job postings per year for *Computer Occupations, All Other* in San Diego County.

- *Computer Occupations, All Other* earn median hourly earnings of $41.93, more than the Self-Sufficiency Standard for a single adult in San Diego County, which is $13.09 per hour.

- According to the California Community Colleges Chancellor's Office Management Information System (MIS) Data Mart, there are five Taxonomy of Programs (TOP) codes associated with this occupation: TOP 061420: Electronic Game Design, 070100: Information Technology, General, 070200: Computer Information Systems, 079900: Other Information Technology, and 220610: Geographic Information Systems.

- According to the TOP data, seven colleges supply the region with awards for this occupation: Palomar College, Southwestern College, MiraCosta College, San Diego City College, San Diego Mesa College, San Diego Miramar College and San Diego Continuing Education.

- Comparing labor demand (annual openings) with labor supply suggests that there is an oversupply for this occupation in San Diego County, with 326 annual openings and 426 awards. Comparatively, there are 3,008 annual openings in California and 1,252 completions.

- Between January 1, 2015 and December 31, 2017, the top five employers in San Diego County for this occupation were Qualcomm, General Atomics, Northrop Grumman, Accenture and Booz Allen Hamilton, Inc.

- The typical entry-level education is a bachelor's degree.

This report provides labor market information in San Diego County for the following occupational code in the Standard Occupational Classification (SOC)[1] system:

Computer Occupations, All Other (SOC 15-1199): All computer occupations not listed separately "All Other" titles represent occupations with a wide range of characteristics which do not fit into one of the detailed O*NET-SOC occupations. O*NET data is not available for this type of title. For more detailed occupations under this title, see below:

- 15-1199.01   Software Quality Assurance Engineers and Testers
- 15-1199.02   Computer Systems Engineers/Architects
- 15-1199.03   Web Administrators
- 15-1199.04   Geospatial Information Scientists and Technologists
- 15-1199.05   Geographic Information Systems Technicians
- 15-1199.06   Database Architects
- 15-1199.07   Data Warehousing Specialists
- 15-1199.08   Business Intelligence Analysts
- 15-1199.09   Information Technology Project Managers
- 15-1199.10   Search Marketing Strategists
- 15-1199.11   Video Game Designers
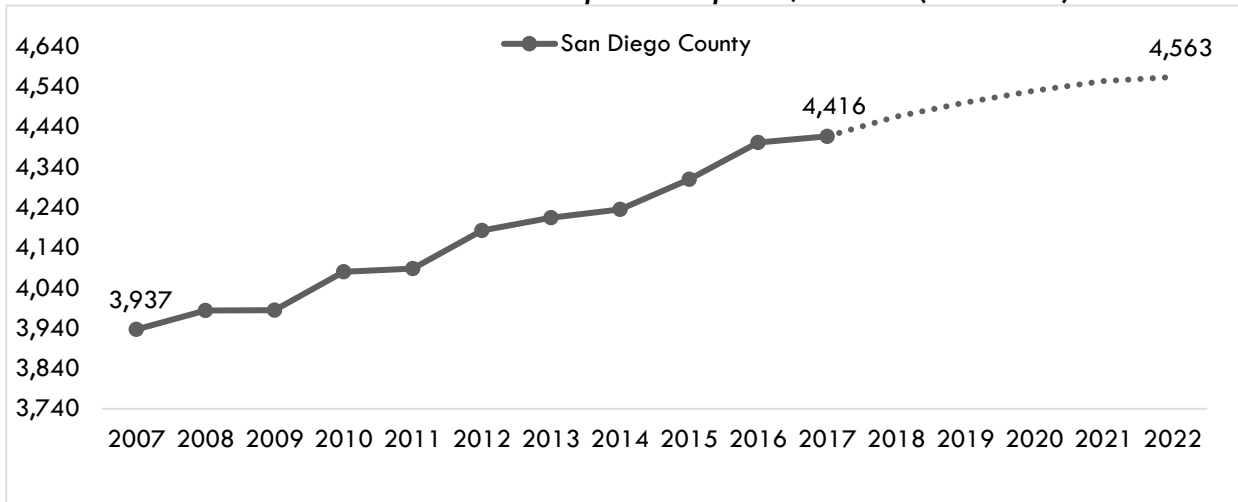- 15-1199.12   Document Management Specialists

Projected Occupational Demand

Between 2017 and 2022, *Computer Occupations, All Other* are projected to increase by 147 jobs or three percent (Exhibit 1). Employers in San Diego County will need to hire 326 workers annually to fill new jobs and backfill jobs due to attrition such as retirement or turnover.

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[1] The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. bls.gov/soc.
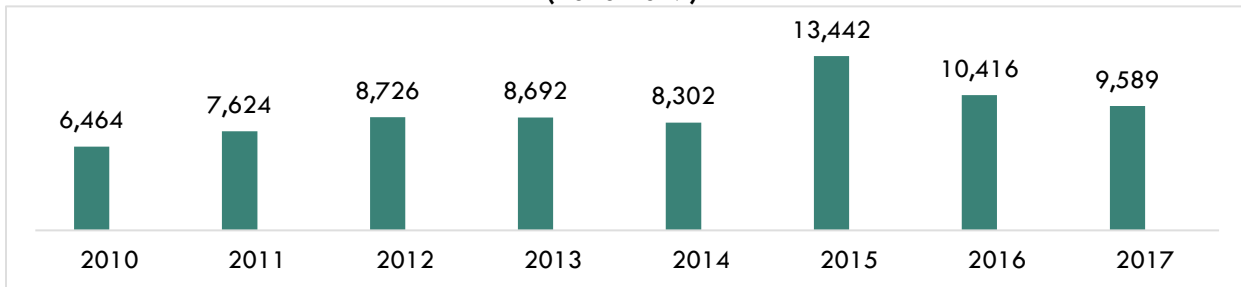
Exhibit 1: Number of Jobs for *Computer Occupations, All Other* (2007-2022)[2]

Online Job Postings

Between 2010 and 2017, there was an average of 9,157 online job postings per year for *Computer Occupations, All Other* in San Diego County (Exhibit 3).

Exhibit 3: Number of Online Job Postings for *Computer Occupations, All Other* in San Diego County (2010-2017)[3]
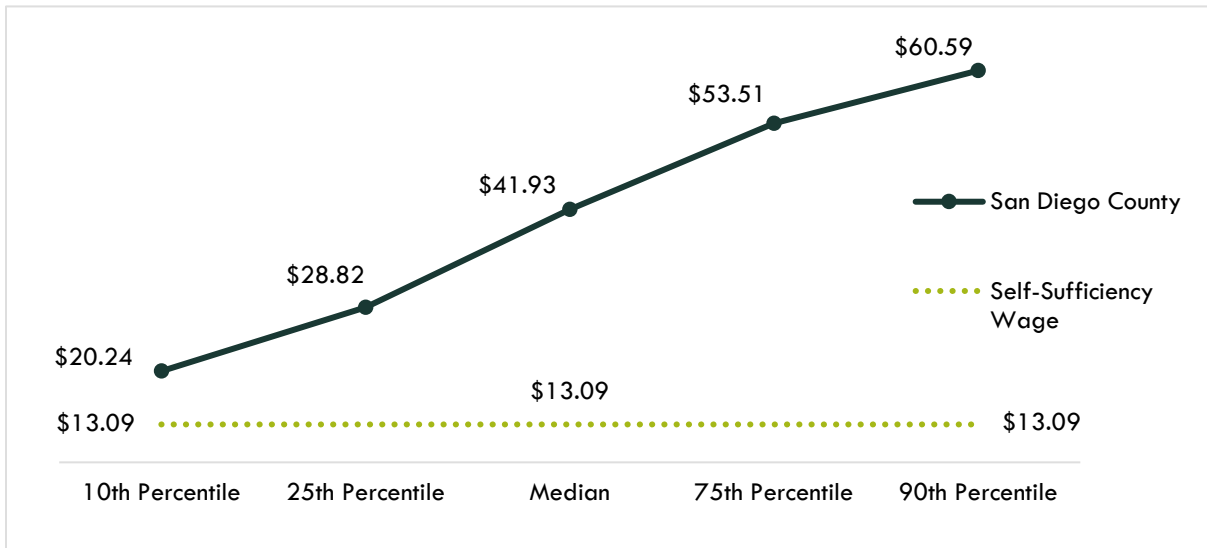

Earnings

Computer Occupations, All Other earn median hourly earnings of $41.93, more than the Self-Sufficiency Standard for a single adult in San Diego County, which is $13.09 per hour (Exhibit 4).[4]

Exhibit 4: Hourly Earnings for *Computer Occupations, All Other* in San Diego County[5]

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of related program completers/graduates/awards in San Diego County. According to the California Community Colleges Chancellor's Office Management Information System (MIS) Data Mart, there are five Taxonomy of Programs (TOP) codes associated with this occupation: TOP 061420: Electronic Game Design, 070100: Information Technology, General, 070200: Computer Information Systems, 079900: Other Information Technology, and 220610: Geographic Information Systems (Exhibit 5).

Exhibit 5: Related TOP Codes in San Diego County

SOC 15-1199: Computer Occupations, All Other
TOP 061420: Electronic Game Design
TOP 070100: Information Technology, General
TOP 070200: Computer Information Systems
TOP 079900: Other Information Technology
TOP 220610: Geographic Information Systems

According to the TOP data, seven colleges supply the region with awards for this occupation: Palomar College, Southwestern College, MiraCosta College, San Diego City College, San Diego Mesa College, San Diego Miramar College and San Diego Continuing Education (Exhibit 6).

Exhibit 6: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions by Occupation (Program Year 2013-14 through PY2016-17 Average)

TOP6	TOP6 Title	3-Yr Annual Average CC Awards (PY14-15 to PY16-17)	Other Educational Institutions 3-Yr Annual Average Awards (PY13-14 to PY15-16)	3-Yr Total Average Supply (PY13-14 to PY16-17)
061420	Electronic Game Design	**5**	**0**	**5**
	• Palomar	1	0	
	• Southwestern	4	0	
070100	Information Technology, General	**7**	**0**	**7**
	• Southwestern	7	0	
070200	Computer Information Systems	**52**	**0**	**52**
	• MiraCosta	0	0	
	• Palomar	15	0	
	• San Diego City	5	0	
	• San Diego Mesa	18	0	
	• San Diego Miramar	11	0	
	• Southwestern	3	0	
079900	Other Information Technology	**334**	**0**	**334**
	• San Diego Cont Ed	334	0	
220610	Geographic Information Systems	**28**	**0**	**28**
	• Palomar	18	0	
	• San Diego Mesa	8	0	
	• Southwestern	2	0	
			Total	**426**

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply[6] suggests that there is an oversupply for this occupation in San Diego County, with 326 annual openings and 426 awards. Comparatively, there are 3,008 annual openings in California and 1,252 completions[7] (Exhibit 7).

Exhibit 7: Labor Demand (Annual Openings) Compared to Labor Supply (Average Annual Awards)

Community Colleges and Other Postsecondary Educational Institutions	Demand (Annual Openings)	Supply (Total Annual Average Supply)	Supply Gap or Oversupply
San Diego	326	426	100
California	3,008	1,252	1,756

Please note: This is a basic analysis of supply and demand of labor for these occupations. This data should be used to discuss the potential gaps or oversupply of workers for these occupations; however, it should not be the only basis for determining whether or not a program should be developed. Additionally, the data does not include workers who are currently in the labor force who could fill these positions or workers who are not captured by publicly available data.

Student Outcomes

Based on the information available in the CTE LaunchBoard, students who took courses in the related TOP codes exhibited the following outcomes (Exhibit 8).

Exhibit 8: Strong Workforce Program Metrics for
TOP 061420: *Electronic Game Design* in the San Diego-Imperial Region (PY2015-16)

Metric	San Diego-Imperial	California
Number of course enrollments[8]	122	2,123
Number of students who got a degree or certificate[9]	N/A	21
Number of students who transferred[10]	N/A	85

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[6] Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.
[7] EMSI. San Diego (6073). 2018.01 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.
[8] The number of enrollments in courses assigned to the TOP code in the selected year
[9] The number of unduplicated students who earned a locally-issued certificate, Chancellor's Office approved certificate, associate degree, and/or California Community Colleges bachelor's degree in the selected TOP code.
[10] Students who took non-introductory courses or completed a California Community Colleges Chancellor's Office award in the selected TOP code in selected year who subsequently enrolled for the first time in a four-year institution the following year

Metric	San Diego-Imperial	California
Employed in the second fiscal quarter after exit[11]	N/A	63%
Employed in the fourth fiscal quarter after exit[12]	N/A	58%
Job closely related to field of study[13]	N/A	N/A
Median earnings in the second fiscal quarter after exit[14]	$2,202	$4,783
Median change in earnings[15]	330%	119%
Attained a living wage[16]	N/A	31%

Top Employers and Work Locations

Between January 1, 2015 and December 31, 2017, the top five employers in San Diego County for this occupation were Qualcomm, General Atomics, Northrop Grumman, Accenture and Booz Allen Hamilton, Inc. (Exhibit 9).

Exhibit 9: Top Employers in San Diego County for *Computer Occupations, All Other*

Top Employers	
• Qualcomm	• Teradata
• General Atomics	• Viasat
• Northrop Grumman	• Becton Dickinson
• Accenture	• General Dynamics
• Booz Allen Hamilton, Inc.	• Hewlett-Packard
• Deloitte	• Illumina Incorporated
• Anthem Blue Cross	• UnitedHealth Group

Skills, Education and Certifications

Exhibit 10 indicates the educational attainment for the occupation found currently in the national labor force. There is no typical on-the-job training for this profession. The typical entry-level education is a bachelor's degree.[17]

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[11] Among all exiters with a valid SSN, the percentage who were employed two quarters after exiting California Community Colleges.
[12] Among exiting students with a valid SSN, the percentage who were employed four quarters after exiting California Community Colleges.
[13] Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.
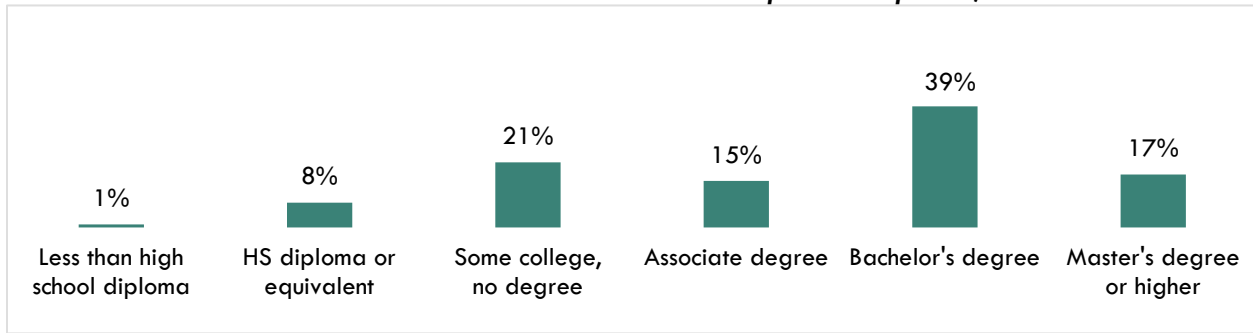[14] Among exiting students, the median second-quarter earnings one year after the year in which they exited California Community Colleges.
[15] Among exiting students with a valid SSN, the percentage change in earnings one year before and one year after exiting California Community Colleges.
[16] Among completers and skills builders who exited, the proportion of students who attained a living wage.
[17] EMSI. San Diego (6073). 2018.01 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.

Exhibit 10: National Educational Attainment of *Computer Occupations, All Other* [18]

1%	8%	21%	15%	39%	17%
Less than high school diploma	HS diploma or equivalent	Some college, no degree	Associate degree	Bachelor's degree	Master's degree or higher

*May not add to 100% due to rounding.

Exhibit 11 lists the top specialized and soft skills that appeared in online job postings between January 1, 2015 and December 31, 2017.

Exhibit 11: Top Skills for *Computer Occupations, All Other* in San Diego County[19]

Specialized Skills	Soft Skills	Software Skills
• Project Management	• Communication Skills	• SQL
• SQL	• Writing	• Microsoft Excel
• Software Development	• Planning	• LINUX
• Systems Engineering	• Problem Solving	• JAVA
• Microsoft Excel	• Troubleshooting	• Microsoft Office
• LINUX	• Team Work/ Collaboration	• Python
• JAVA	• Quality Assurance and Control	• Oracle

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[18] Bureau of Labor Statistics, Educational attainment for workers 25 years and older by detailed occupation. bls.gov/emp/ep_table_111.htm.
[19] Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2015-2017.