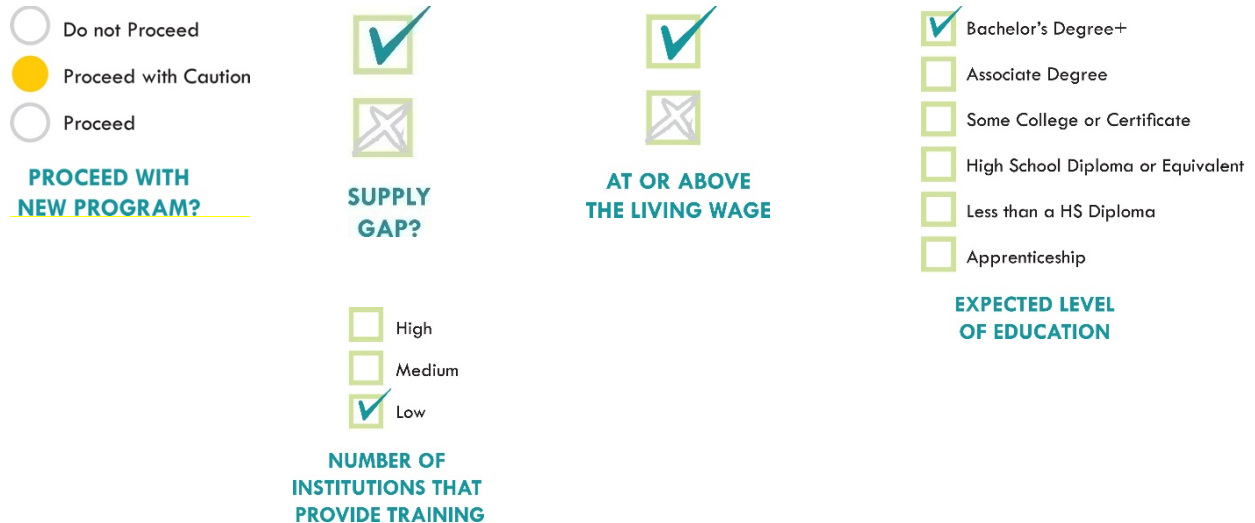


Other Information Technology

Labor Market Analysis for San Diego Continuing Education

September 2019

Summary



This report provides labor market information for occupation(s) selected by San Diego Continuing Education for its Other Information Technology (TOP¹ 079900) program. The training provided by this program is likely to lead to employment as *Computer Occupations, All Other*. According to available labor market information, this occupation has a labor market demand of 680 annual job openings, while average demand for an occupation in San Diego County is 277 annual job openings. San Diego Continuing Education supplies 10 noncredit awards, but no community college reported supplying for-credit awards for Other Information Technology (TOP 079900). However, there are a variety of programs in the region that train for *Computer Occupations, All Other*; this occupational title consists of various occupations such as business intelligence analysts, database architects, videogame designers, etc. While there appears to be a supply gap (10 noncredit awards vs. 680 annual job openings), this brief recommends proceeding with caution in developing a new program because this TOP code may be used by institutions to provide a variety of programs that train for different occupations, which affects the accuracy of the labor market demand and supply analysis.

¹ Taxonomy of Programs (TOP) is a system of codes used by the California Community Colleges for the purpose of collecting, calculating, or disseminating data about similar training programs.

Introduction

This report provides labor market information (LMI) in San Diego County for occupations related to the six-digit Taxonomy of Programs² (TOP) code, Other Information Technology (TOP 079900). The purpose of this brief is to assist noncredit program providers in the region, such as San Diego Continuing Education (SDCE), with program development and review. SDCE identified one occupation from the Standard Occupational Classification (SOC)³ system for *Other Information Technology*, which will be the focus of this report:

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 OnLine is an application developed by the U.S. Department of Labor to provide the general public access to labor market information.) 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

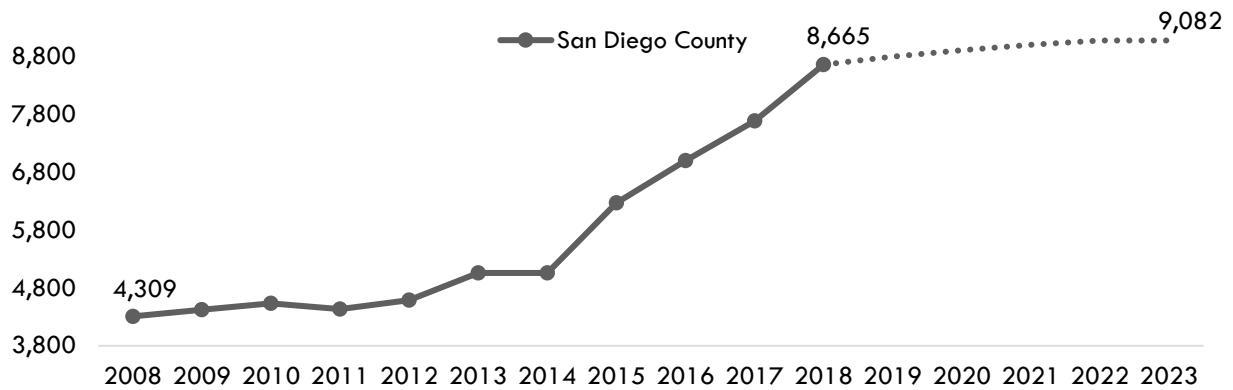
² Taxonomy of Programs (TOP) is a system of codes used by the California Community Colleges for the purpose of collecting, calculating, or disseminating data about similar training programs.

³ 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.

Projected Occupational Demand

Between 2018 and 2023, *Computer Occupations, All Other* are projected to increase by 417 net jobs or five percent (Exhibit 1). Employers in San Diego County will need to hire 680 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

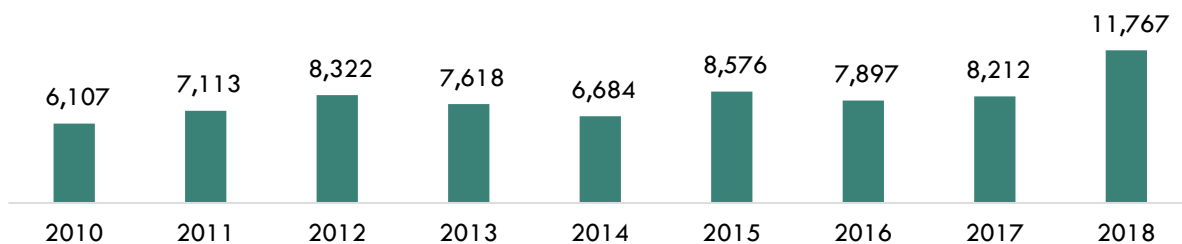
Exhibit 1: Number of Jobs for Computer Occupations, All Other (2008-2023)⁴



Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market demand that are not captured by historical data. Between 2010 and 2018, there was an average of 8,032 online job postings per year for *Computer Occupations, All Other* in San Diego County (Exhibit 2).

Exhibit 2: Number of Online Job Postings for Computer Occupations, All Other in San Diego County (2010-2018)⁵



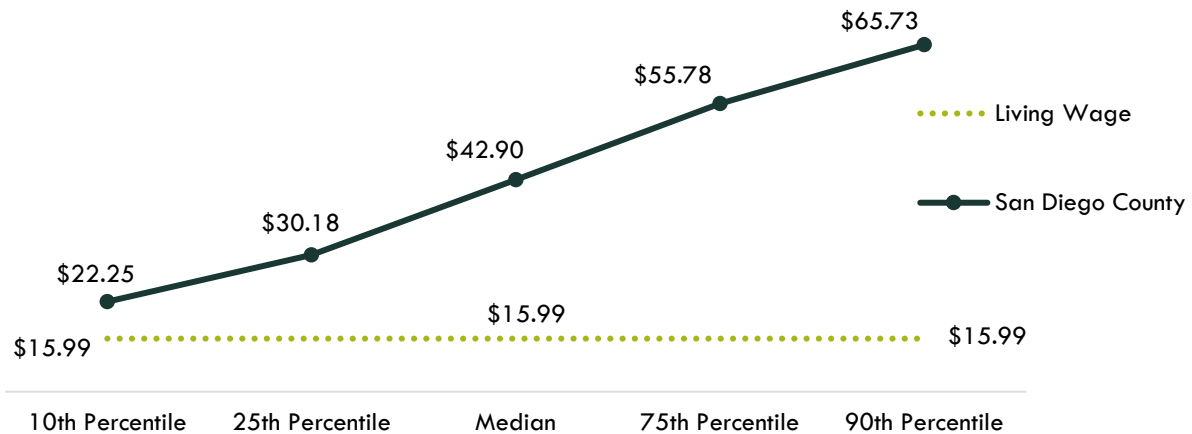
⁴ Emsi 2019.03; QCEW, Non-QCEW, Self-Employed.

⁵ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2010-2018.

Earnings

Computer Occupations, All Other receive median hourly earnings of \$42.90; this is more than the living wage for a single adult in San Diego County, which is \$15.99 per hour (Exhibit 3).⁶

Exhibit 3: Hourly Earnings⁷ for Computer Occupations, All Other in San Diego County⁸



Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards conferred by a course or program in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.⁹ According to TOP and CIP¹⁰ data, no community college reported supplying the region with for-credit awards for Other Information Technology (TOP 079900). However, San Diego Continuing Education provides noncredit awards for Other Information Technology (TOP 079900), with an average of 10 noncredit awards between program years 2015-16 and 2017-18 (Exhibit 4).

⁶ "California Family Needs Calculator." Insight Center for Community Economic Development, last updated 2018. insightccd.org/2018-family-needs-calculator.

⁷ 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

⁸ Emsi 2019.03; QCEW, Non-QCEW, Self-Employed.

⁹ TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data)

¹⁰ There are three CIP codes related to Other Information Technology (TOP 079900): Computer Software and Media Applications, Other (CIP 110899), Computer/Information Technology Services Administration and Management, Other (CIP 111099), and Computer and Information Sciences and Support Services, Other (CIP 119999).

**Exhibit 4: Number of Noncredit Awards (Certificates and Degrees) Conferred by SDCE
(Program Years 2015-16 through 2017-18)**

Program Title	Award Type	PY 15-16	PY 16-17	PY 17-18	3-Year Avg
Cisco Certified Network Associate (CCNA); Computer Repair and Service Technician; Network Security Specialist Certificate; Network Systems Specialist; Web Server	Program Award	29	0	0	10

Demand vs. Supply

In short, the region supplies 10 for-credit and noncredit awards for 680 annual job openings, suggesting that there is a labor market supply gap (Exhibit 5).

Exhibit 5: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

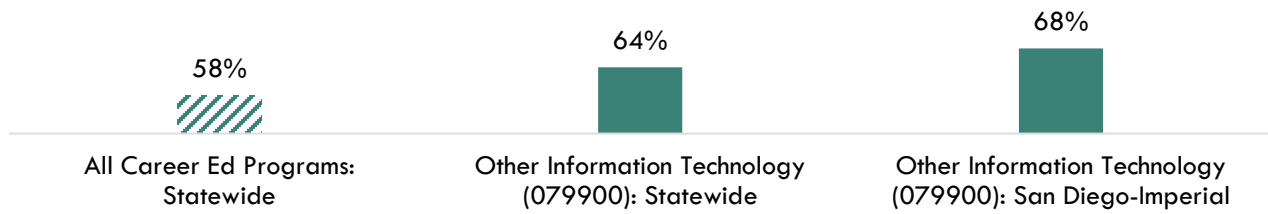
TOP6 Program	Demand (Annual Openings)	Supply (Total Annual Average Supply)		Supply Gap or Oversupply
		Noncredit	For-Credit	
Other Information Technology (TOP 079900)	680	10	0	670

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

Student Outcomes and Regional Comparisons

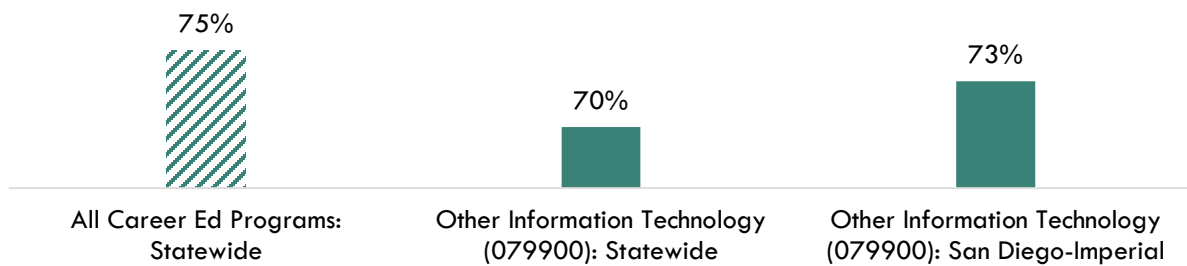
According to the California Community Colleges LaunchBoard, 68 percent of students in the San Diego-Imperial region earned a living wage after completing an Other Information Technology (079900) program, compared to 64 percent statewide and 58 percent of students in Career Education programs in general across the state (Exhibit 6a).

Exhibit 6a: Proportion of Students Who Earned a Living Wage, PY2015-16¹¹



According to the California Community Colleges LaunchBoard, **73** percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing an Other Information Technology (079900) program, compared to **70** percent statewide and 75 percent of students in Career Education programs in general across the state (Exhibit 6b).

Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study, PY2014-15¹²



Top Employers and Work Locations

Between January 1, 2016 and December 31, 2018, the top five employers in San Diego County for this occupation were [Qualcomm](#), [General Atomics](#), [Booz Allen Hamilton](#), [Northrop Grumman](#), and [Accenture](#) (Exhibit 7).

Exhibit 7: Top Employers in San Diego County for Computer Occupations, All Other¹³

Top Employers	
<ul style="list-style-type: none"> Qualcomm General Atomics Booz Allen Hamilton Inc. Northrop Grumman Accenture 	<ul style="list-style-type: none"> Terada Operations, Inc. ViaSat Deloitte BAE Systems Becton Dickinson

¹¹ Among completers and skills builders who exited, the proportion of students who attained a living wage.

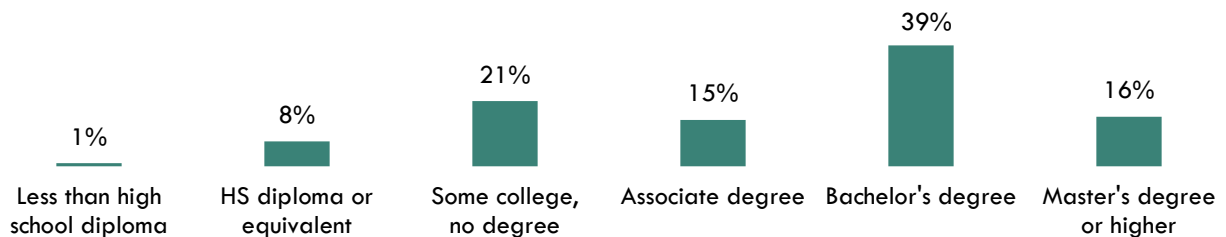
¹² Most recent year with available data is Program Year 2014-15. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

¹³ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.

Skills, Education, and Certifications

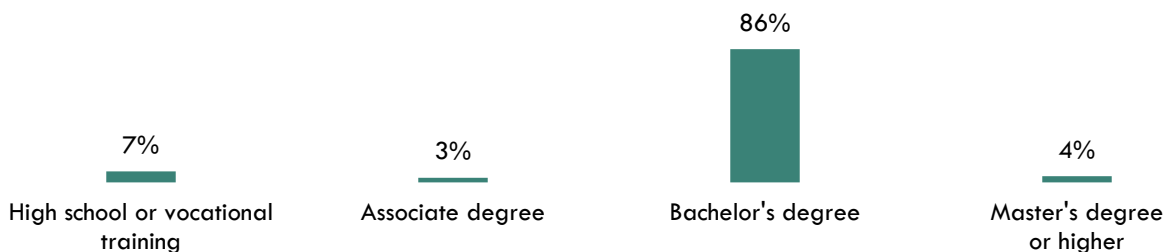
Exhibit 8a indicates the educational attainment for the occupation found currently in the national labor force. There is no typical on-the-job training for this occupation. The typical entry-level education is a [bachelor's degree](#).¹⁴

Exhibit 8a: National Educational Requirements for Computer Occupations, All Other¹⁵



Based on online job postings between January 1, 2016 and December 31, 2018, the top listed educational requirement for *Computer Occupations, All Other* was also a [bachelor's degree](#) (Exhibit 8b).¹⁶

Exhibit 8b: Educational Requirements for Computer Occupations, All Other in San Diego County in Online Job Postings¹⁷



¹⁴ Emsi 2019.03; QCEW, Non-QCEW, Self-Employed.

¹⁵ Emsi 2019.03; QCEW, Non-QCEW, Self-Employed.

¹⁶ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.

¹⁷ "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified October 18, 2018. bls.gov/emp/tables/educational-attainment.htm.

Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2016 and December 31, 2018.

Exhibit 10: Top Skills for Computer Occupations, All Other in San Diego County¹⁸

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • Project Management • Systems Engineering • Quality Assurance and Control • Scheduling • Budgeting 	<ul style="list-style-type: none"> • Communication Skills • Planning • Teamwork / Collaboration • Problem Solving • Troubleshooting 	<ul style="list-style-type: none"> • Software Development • SQL • Microsoft Excel • Linux • Java

Prepared by:

Tina Ngo Bartel, Director

John Edwards, Research Analyst

San Diego-Imperial Center of Excellence for Labor Market Research

tngobartel@miracosta.edu

jedwards@miracosta.edu



Important Disclaimers

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor’s Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

¹⁸ Burning Glass Technologies, “Labor Insight Real-Time Labor Market Information Tool.” 2016-2018.