



Software Developers, Applications

Labor Market Analysis: San Diego County

March 2018

Summary

The following list summarizes findings from the labor market analysis below for *Software Developers, Applications*:

- Between 2017 and 2022, *Software Developers, Applications* are projected to increase by 743 jobs or seven percent.
- Employers in San Diego County will need to hire 845 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 10,929 online job postings per year for *Software Developers, Applications* in San Diego County.
- *Software Developers, Applications* earn median hourly earnings of \$50.67, 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 three Taxonomy of Programs (TOP) codes associated with this occupation: TOP 061420: Electronic Game Design, 070700: Computer Software Development, and 070710: Computer Programming.
- According to the TOP data, six colleges supply the region with awards for this occupation: Palomar College, Southwestern College, Grossmont College, MiraCosta College, San Diego City College, and San Diego Mesa College.
- Comparing labor demand (annual openings) with labor supply suggests that there is a supply gap for this occupation in San Diego County, with 845 annual openings and 60 awards. Comparatively, there are 13,694 annual openings in California and 877 completions.
- Between January 1, 2015 and December 31, 2017, the top five employers in San Diego County for this occupation were Qualcomm, Northrop Grumman, Teradata, BAE Systems, and General Atomics.
- 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:

Software Developers, Applications (SOC 15-1132): Develop, create, and modify general computer applications software or specialized utility programs. Analyze user needs and develop software solutions. Design software or customize software for client use with the aim of optimizing operational efficiency. May analyze and design databases within an application area, working individually or coordinating database development as part of a team. May supervise computer programmers.

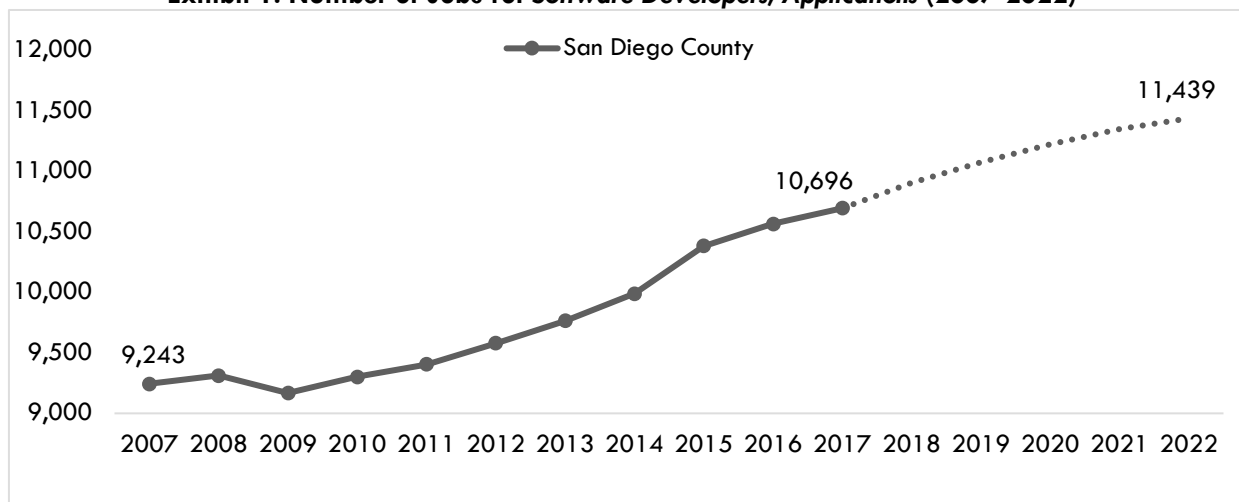
Sample reported job titles include:

- Software Developer
- Applications Developer
- .NET Developer
- Software Engineer
- Software Development Engineer
- Information Technology Analyst (IT Analyst)
- Application Integration Engineer
- Technical Consultant
- Software Architect
- Computer Consultant

Projected Occupational Demand

Between 2017 and 2022, *Software Developers, Applications* are projected to **increase** by **743** jobs or **seven** percent (Exhibit 1). Employers in San Diego County will need to hire **845** workers annually to fill new jobs and backfill jobs due to attrition such as retirement or turnover.

Exhibit 1: Number of Jobs for Software Developers, Applications (2007-2022)²



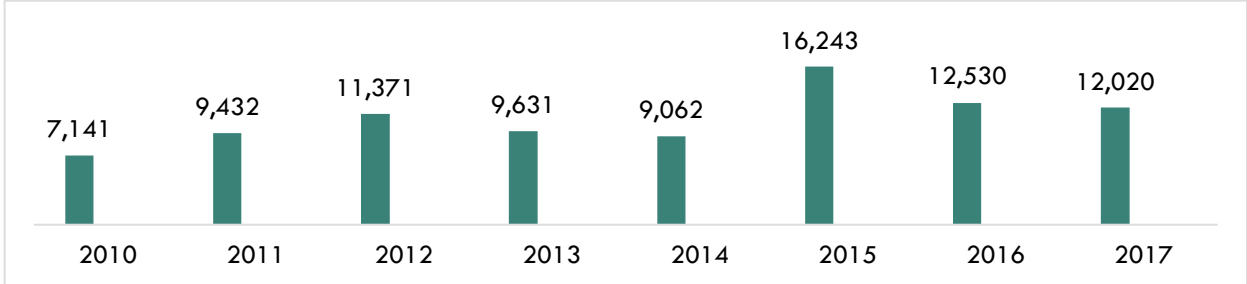
¹ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc/).

² Economic Modeling Specialists, Int'l. (EMSI). San Diego (6073). 2018.01 Class of Worker. QCEW + Non-QCEW+ Self-employed. 2007-2022.

Online Job Postings

Between 2010 and 2017, there was an average of 10,929 online job postings per year for Software Developers, Applications in San Diego County (Exhibit 3).

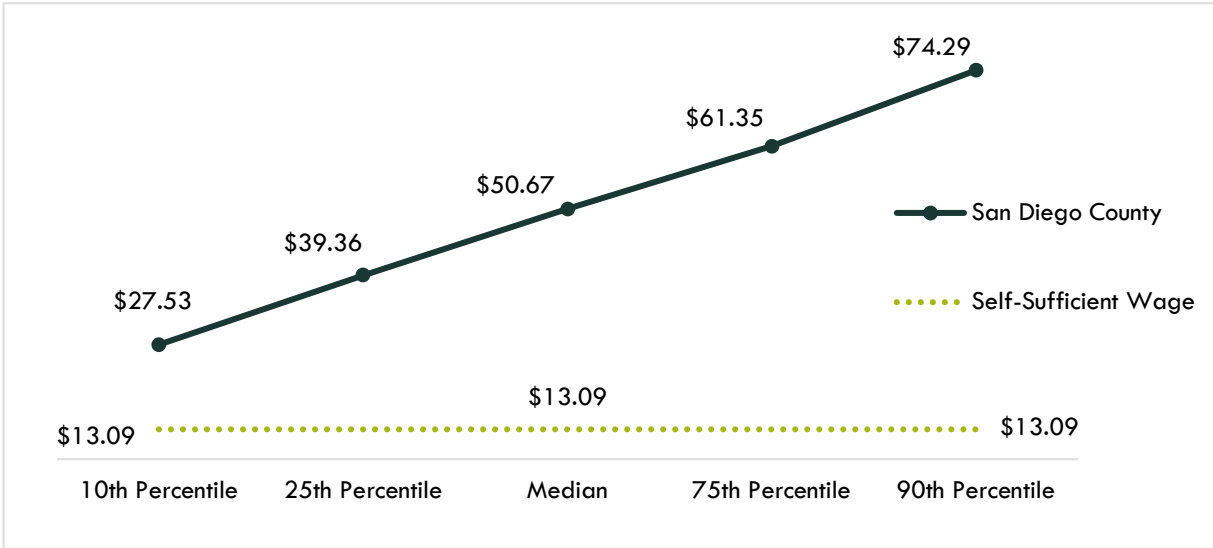
Exhibit 3: Number of Online Job Postings for Software Developers, Applications in San Diego County (2010-2017)³



Earnings

Software Developers, Applications earn median hourly earnings of \$50.67, 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 Software Developers, Applications in San Diego County⁵



³ Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2010-2017.
⁴ The self-sufficient wage in San Diego for one adult is \$13.09 (insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california).
⁵ EMSI. San Diego (6073). 2018.01 Class of Worker. QCEW + Non-QCEW + Self-employed. 2017-2022.

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 **three** Taxonomy of Programs (TOP) codes associated with this occupation: TOP 061420: Electronic Game Design, 070700: Computer Software Development, and 070710: Computer Programming (Exhibit 5).

Exhibit 5: Related TOP Codes in San Diego County

SOC 15-1132: Software Developers, Applications
TOP 061420: Electronic Game Design
TOP 070700: Computer Software Development
TOP 070710: Computer Programming

According to the TOP data, **six** colleges supply the region with awards for this occupation: **Palomar College, Southwestern College, Grossmont College, MiraCosta College, San Diego City College, and San Diego Mesa College** (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
	<ul style="list-style-type: none"> Palomar Southwestern 	1 4	0 0	
070700	Computer Software Development	20	0	20
	<ul style="list-style-type: none"> Palomar 	20	0	
070710	Computer Programming	35	0	35
	<ul style="list-style-type: none"> Grossmont 	8	0	

• MiraCosta	3	0	
• Palomar	3	0	
• San Diego City	18	0	
• San Diego Mesa	1	0	
• Southwestern	2	0	
		Total	60

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply⁶ suggests that there is a **supply gap** for this occupation in San Diego County, with **845** annual openings and **60** awards. Comparatively, there are **13,694** annual openings in California and **877** completions⁷ (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	845	60	785
California	13,694	877	12,817

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 that could fill these positions or workers that 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).

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.

**Exhibit 8: Strong Workforce Program Metrics for
TOP 070700: Computer Software Development in the San Diego-Imperial Region (PY2015-16)**

Metric	San Diego-Imperial	California
Number of course enrollments ⁸	261	8,689
Number of students who got a degree or certificate ⁹	16	109
Number of students who transferred ¹⁰	32	585
Employed in the second fiscal quarter after exit ¹¹	73%	61%
Employed in the fourth fiscal quarter after exit ¹²	73%	62%
Job closely related to field of study ¹³	N/A	N/A
Median earnings in the second fiscal quarter after exit ¹⁴	\$13,421	\$12,500
Median change in earnings ¹⁵	100%	64%
Attained a living wage ¹⁶	78%	67%

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, Northrop Grumman, Teradata, BAE Systems, and General Atomics** (Exhibit 9).

**Exhibit 9: Top Employers in San Diego County for
Software Developers, Applications**

Top Employers	
<ul style="list-style-type: none"> • Qualcomm • Northrop Grumman • Teradata • BAE Systems • General Atomics • Booz Allen Hamilton Inc. • Viasat 	<ul style="list-style-type: none"> • Intuit • Accenture • Servicenow • Hewlett-Packard • Illumina Incorporated • UnitedHealth Group • Becton Dickinson

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 CCC bachelor's degree in the selected TOP code

¹⁰ Students who took non-introductory courses or completed a CCCC award in the selected TOP code in selected year who subsequently enrolled for the first time in a four-year institution the following year

¹¹ Among all exiters with a valid SSN, the percentage who were employed two quarters after exiting the Community college system

¹² Among Exiting students with a valid SSN, the percentage who were employed four quarters after exiting the California community college system

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 the California community college system

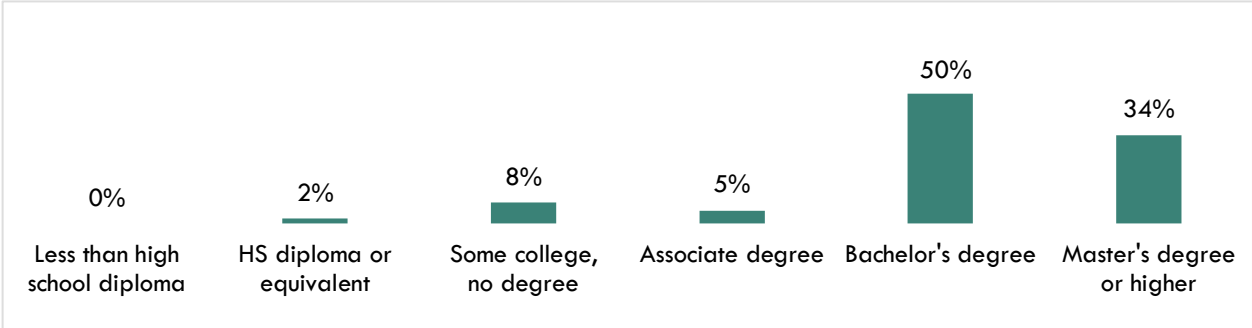
¹⁵ Among exiting students with a valid SSN, the percentage change in earnings one year before and one year after exiting the California community college system

¹⁶ Among completers and skills-builders who exited, the proportion of students who attained a living wage

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

Exhibit 10: National Educational Attainment of Software Developers, Applications ¹⁸



*May not add to 100% due to rounding.

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

Exhibit 11: Top Skills for Software Developers, Applications in San Diego County¹⁹

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • Software Engineering • Software Development • JAVA • SQL • JavaScript • LINUX 	<ul style="list-style-type: none"> • Communication Skills • Writing • Team Work/ Collaboration • Problem Solving • Troubleshooting • Planning 	<ul style="list-style-type: none"> • JAVA • SQL • JavaScript • LINUX • Microsoft C# • C++

Tina Ngo Bartel, Director
 John Edwards, Research Analyst
 Center of Excellence, San Diego-Imperial Region
tngobartel@miracosta.edu
jedwards@miracosta.edu



¹⁷ EMSI. San Diego (6073). 2018.01 Class of Worker. QCEW + Non-QCEW + Self-employed. 2017-2022.
¹⁸ Bureau of Labor Statistics, Educational attainment for workers 25 years and older by detailed occupation. [bls.gov/emp/ep_table_111.htm](https://www.bls.gov/emp/ep_table_111.htm)
¹⁹ Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2015-2017.