

# Software Developers, Applications Labor Market Analysis: San Diego County

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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)<sup>1</sup> 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.

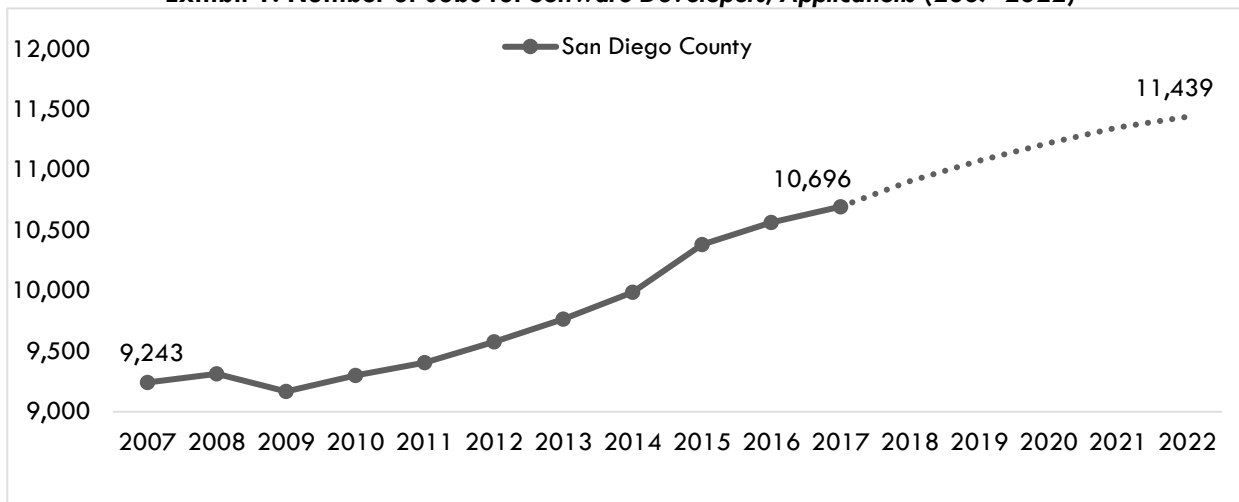
Sample reported job titles include:

- 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)<sup>2</sup>**



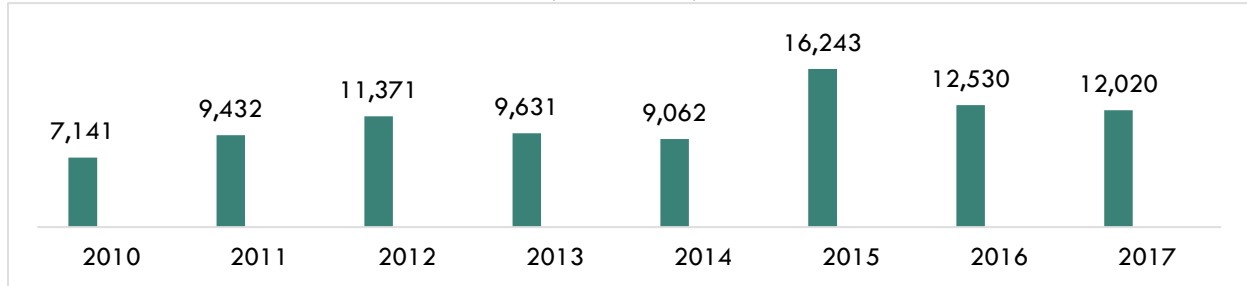
<sup>1</sup> The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc/).

<sup>2</sup> 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).

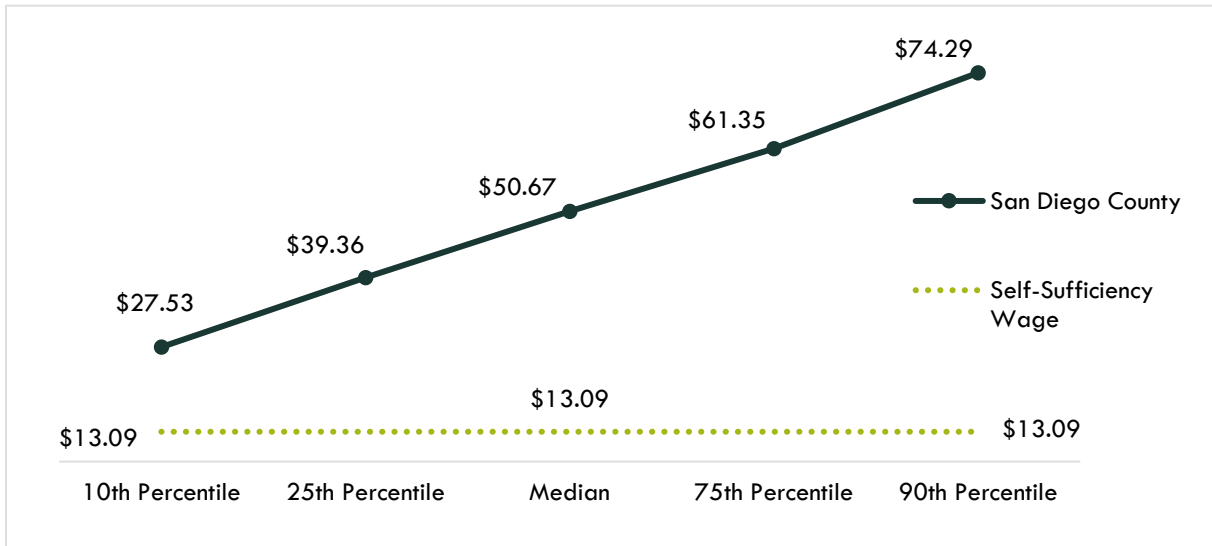
**Exhibit 3: Number of Online Job Postings for Software Developers, Applications in San Diego County (2010-2017)<sup>3</sup>**



## 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).<sup>4</sup>

**Exhibit 4: Hourly Earnings for Software Developers, Applications in San Diego County<sup>5</sup>**



<sup>3</sup> Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2010-2017.

<sup>4</sup> The Self-Sufficiency wage in San Diego for one adult is \$13.09 ([insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california](https://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california)).

<sup>5</sup> 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	<b>5</b>	<b>0</b>	<b>5</b>
	• Palomar	1	0	
	• Southwestern	4	0	
070700	Computer Software Development	<b>20</b>	<b>0</b>	<b>20</b>
	• Palomar	20	0	
070710	Computer Programming	<b>35</b>	<b>0</b>	<b>35</b>
	• Grossmont	8	0	

• MiraCosta	3	0	
• Palomar	3	0	
• San Diego City	18	0	
• San Diego Mesa	1	0	
• Southwestern	2	0	
		<b>Total</b>	<b>60</b>

## Demand vs. Supply

Comparing labor demand (annual openings) with labor supply<sup>6</sup> 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<sup>7</sup> (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 <b>Oversupply</b>
San Diego	845	60	<b>785</b>
California	13,694	877	<b>12,817</b>

**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).

<sup>6</sup> 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.

<sup>7</sup> 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 <sup>8</sup>	261	8,689
Number of students who got a degree or certificate <sup>9</sup>	16	109
Number of students who transferred <sup>10</sup>	32	585
Employed in the second fiscal quarter after exit <sup>11</sup>	73%	61%
Employed in the fourth fiscal quarter after exit <sup>12</sup>	73%	62%
Job closely related to field of study <sup>13</sup>	N/A	N/A
Median earnings in the second fiscal quarter after exit <sup>14</sup>	\$13,421	\$12,500
Median change in earnings <sup>15</sup>	100%	64%
Attained a living wage <sup>16</sup>	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"> <li>• Qualcomm</li> <li>• Northrop Grumman</li> <li>• Teradata</li> <li>• BAE Systems</li> <li>• General Atomics</li> <li>• Booz Allen Hamilton Inc.</li> <li>• Viasat</li> </ul>	<ul style="list-style-type: none"> <li>• Intuit</li> <li>• Accenture</li> <li>• Servicenow</li> <li>• Hewlett-Packard</li> <li>• Illumina Inc.</li> <li>• UnitedHealth Group</li> <li>• Becton Dickinson</li> </ul>

<sup>8</sup> The number of enrollments in courses assigned to the TOP code in the selected year.

<sup>9</sup> The number of unduplicated students who earned a locally-issued certificate, Chancellor's Office approved certificate, associate degree, and/or California Community College bachelor's degree in the selected TOP code.

<sup>10</sup> 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.

<sup>11</sup> Among all exiters with a valid SSN, the percentage who were employed two quarters after exiting California Community Colleges.

<sup>12</sup> Among exiting students with a valid SSN, the percentage who were employed four quarters after exiting California Community Colleges.

<sup>13</sup> Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

<sup>14</sup> Among exiting students, the median second-quarter earnings one year after the year in which they exited California Community Colleges.

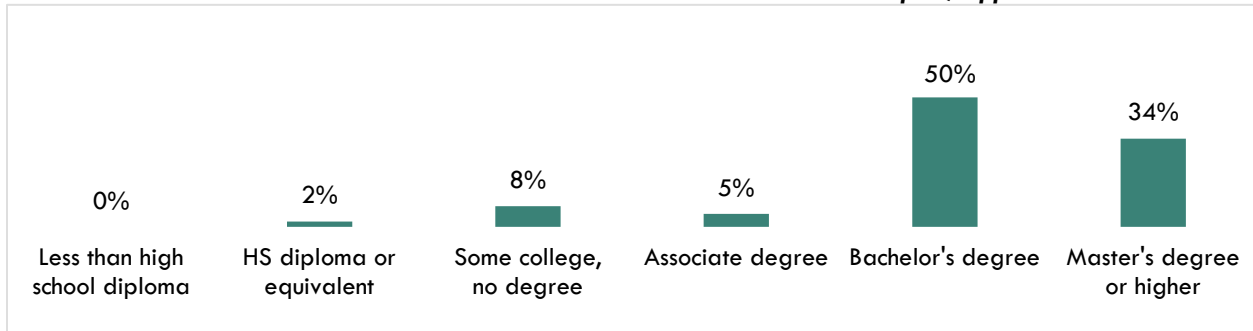
<sup>15</sup> Among exiting students with a valid SSN, the percentage change in earnings one year before and one year after exiting California Community Colleges.

<sup>16</sup> 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**.<sup>17</sup>

**Exhibit 10: National Educational Attainment of Software Developers, Applications** <sup>18</sup>



\*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 Software Developers, Applications in San Diego County**<sup>19</sup>

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

Tina Ngo Bartel, Director  
 John Edwards, Research Analyst  
 Center of Excellence, San Diego-Imperial Region

[tngobartel@miracosta.edu](mailto:tngobartel@miracosta.edu)

[jedwards@miracosta.edu](mailto:jedwards@miracosta.edu)



<sup>17</sup> EMSI. San Diego (6073). 2018.01 Class of Worker. QCEW + Non-QCEW + Self-Employed. 2017-2022.

<sup>18</sup> 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).

<sup>19</sup> Labor Insight Jobs. Burning Glass Technologies. San Diego, CA. Full years 2015-2017.