Software Developers, Mobile Platforms

Los Angeles, Riverside, and San Bernardino counties, and California

Summary

- Employment for Software Developers, Applications in Los Angeles, Riverside, and San Bernardino counties is expected to **increase by 8%** through 2021, more than **1,600 job openings** will be available.

- Software developers have **entry-level wages above the MIT Living Wage of $12.10 per hour for the Riverside-San Bernardino MSA,** or $25,172 annually for a single adult living in the region, and **above the MIT Living Wage of $13.08 per hour for Los Angeles County,** or $27,206 annually.

- Based on the average annual number of program completions between the selected community college programs (**181 completions**), and the annual openings for software developers in the local region (**1,605 annual job openings**), there appears to be an **opportunity for program growth to meet regional demand.**

- Although the typical entry-level education for software developers is a Bachelor's degree, **14% of all workers in this occupation only possess a community college award or some postsecondary coursework.**

Job Opportunities

In 2016, there were more than 136,700 software developer jobs in California. About 15% or just over 20,100 of these job opportunities were in Los Angeles, Riverside, and San Bernardino counties. Across the local region, employment related to software developers is expected to increase 8% through 2021, about half as fast as the state overall at 15% growth during the same timeframe. Employers in Los Angeles, Riverside, and San Bernardino counties will need to hire more than 8,000 workers over the next five years to fill new jobs and to backfill jobs that workers are leaving permanently (includes retirements). Appendix A, Table 1 shows additional projected job growth for software developers.

Exhibit 1: Five-year projections for software developers in Los Angeles, Riverside, and San Bernardino counties and California

Software Developers, Applications	2016 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Los Angeles, Riverside, and San Bernardino counties combined	20,106	8%	8,023	1,605	12%
California	136,742	15%	65,945	13,189	11%

Source: EMSI 2017.3

According to real-time job posting data, there were a total of 1,264 job advertisements (ads) for software developers in Los Angeles, Riverside, and San Bernardino counties during the last 12 months (October 2016 to September 2017). In the full-year 2016 there were 2,254 job ads; 3,917 job ads in 2015; 1,609 job ads in 2014; and 1,023 job ads in 2013. The average time to fill these openings in the state of California is 52 days, which is harder to fill than software developers openings across the rest of the nation. Exhibit 2 shows the top job titles in job ads posted during the last 12 months for software developers focusing specifically on mobile software platforms.

Exhibit 2: Top job titles for software developers jobs in Los Angeles, Riverside, and San Bernardino counties during the last 12 months (Oct 2016 – Sep 2017)

Occupation	Job Postings
iOS Developer	378
Android Developer	269
Mobile App Developer	89
Applications Developer	79
iOS Engineer	58
Software Development Engineer	50
Senior Android Engineer	47
Senior iOS Engineer	45
Android Engineer	44

Source: Burning Glass – Labor Insights

Earnings

Software developers have entry-level wages above the MIT Living Wage of $12.10 per hour, or $25,172 annually for a single adult living in the Riverside-San Bernardino MSA, and above the MIT Living Wage of $13.08 per hour for Los Angeles County, or $27,206 annually. The average annual earnings for software developers in the region is $104,100 per year, assuming full-time employment. See Exhibit 3 for wage information in Los Angeles, Riverside, and San Bernardino counties and California.

Exhibit 3: Earnings for software developers in the Los Angeles, Riverside, and San Bernardino counties

Occupation	Entry to Experienced Hourly Earnings Range*		Avg. Annual Earnings	
	LA-Riv-SB counties	California	LA-Riv-SB counties	California
Software Developers, Applications	$28.98 to $73.22	$32.95 to $82.75	$104,100	$119,500

Source: EMSI 2017.3

*Entry Hourly is 10th percentile wage, median is 50th percentile wage, experienced is 90th percentile wage.

Work Locations, Employers, Skills, Education, and Experience

The top worksite cities in the region were Los Angeles, Santa Monica, El Segundo, and Culver City. The top employers in the region were Disney, Hired, Krg Technologies, Swenson He, and the Search Solutions, Llc. Exhibit 4 lists the top specialized, baseline, and software and programming skills employers are seeking when looking for workers to fill software developers positions.

Exhibit 4: Top skills in greatest demand for software developers in Los Angeles, Riverside, and San Bernardino counties, Oct 2016-Sep 2017

Occupation	Specialized skills	Baseline (Soft) skills	Software and Programming skills
Software Developers, Applications	• Objective C • JAVA • Swift • Android • Android Software Development Kit (SDK)	• Communication Skills • Writing • Teamwork/ Collaboration • Problem Solving	• Objective C • JAVA • Swift • Android • Android Software Development Kit (SDK) • C++ • iPhone Software Development Kit (SDK)

Source: Burning Glass – Labor Insights

Exhibit 5 displays the entry-level education level education typically required to enter each occupation according to the Bureau of Labor Statistics, educational attainment for incumbent workers with "some college, no degree" and an "associate degree" according to the U.S. Census, and the minimum advertised education requirement requested by employers in online job ads.

Exhibit 5: Educational attainment and online job ads with minimum advertised education requirements for software developers in Los Angeles, Riverside, and San Bernardino counties, Oct 2016-Sep 2017

Occupation	Typical Entry-Level Education Requirement	Educational Attainment (Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework)	Minimum Advertised Education Requirement from Job Ads		
			High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Software Developers, Applications	Bachelor's degree	14%	<1%	-	99%

Source: EMSI 2017.3, Burning Glass – Labor Insights

Industry

Exhibit 6 displays the industries that employ the most software developers in Los Angeles, Riverside, and San Bernardino counties.

Exhibit 6: Top industries employing software developers in the Los Angeles, Riverside, and San Bernardino counties

Occupation	Top Industries EMSI (NAICS)	Top Industries Burning Glass (NAICS)
Software Developers, Applications	• Computer Systems Design and Related Services (5415) • Software Publishers (5112) • Other Information Services (5191)	• Other Information Services (5191) • Motion Picture and Video Industries (5121) • Other Amusement and Recreation Industries (7139)

Source: EMSI 2017.3

Exhibit 7 contains the level of experience employers are requesting when seeking different types of software developers. The majority of job ads seeking software developers are requesting 3-5 years of experience (73%). Opportunities for entry level (0-2 years of experience) software developers across the various facets involved in software development (Development, Security, and Programming) appear to most plentiful on the Android platform.

Exhibit 7: Experience requested in job ads for software developers in Los Angeles, Riverside, and San Bernardino counties, Oct 2016-Sep 2017

Keyword search terms	# of job ads	0-2 years experience	3-5 years experience	6-8 years experience	9+ years experience
iOS	830	21%	73%	4%	2%
Android	722	26%	68%	4%	2%
Web	454	17%	71%	9%	3%
iOS Development	655	19%	73%	5%	3%
Android Development	600	25%	67%	5%	3%
Web Development	403	18%	69%	10%	3%
iOS Security	146	23%	73%	3%	1%
Android Security	188	27%	67%	5%	1%
Web Security	108	25%	67%	9%	-
iOS Programming	155	25%	64%	9%	2%
Android Programming	150	32%	60%	6%	2%
Web Programming	118	18%	68%	11%	3%
TOTAL	**1,264**	**21%**	**73%**	**4%**	**2%**

Source: Burning Glass – Labor Insights

Student Completions

Exhibits 8, 9, and 10 show the annual average regional community college awards (associate degrees and certificates) conferred during the three academic years between 2013 and 2016, as well as other awards granted outside the California Community Colleges from 2012-2015, with the relevant TOP code. Please note, an award is not equivalent to a single person in search of a job opening since a student may earn more than one award, such as an associate degree in addition to a certificate.

Community College student outcome information was obtained from the CTE LaunchBoard based on the selected TOP code(s) and region:

Exhibit 8: Annual average community college student completions for the information technology program in the Riverside-San Bernardino-Ontario MSA

0701.00 – Information Technology, General	Annual Avg. CC Headcount (2015-16)	CC Annual Avg. Awards (2013-16)	Other Educational Institutions Annual Avg. Certificates or Other Credit Awards (2012-15)
Milan Institute-Palm Desert			
Award 1 < 2 academic yrs			1
Riverside	34		
Certificate 6 to < 18 semester units		19	
Chaffey	96		
Copper Mountain	170		
Crafton Hills	689		
Moreno Valley	13		
Mt. San Jacinto	199		
Palo Verde	512		
San Bernardino Valley	305		
Victor Valley	702		
Total CC Headcount (2015-16)	**2,718**		
Total annual average community college awards		**19**	
Total annual average other awards			**1**

Source: LaunchBoard, IPEDS

0701.00 – Information Technology, General program outcomes in the Riverside-San Bernardino-Ontario MSA in academic year 2014-15:

- The median annual wage after program completion is $14,858.
- 37% of students are earning a living wage.
- Median change in earnings was 39%
- 50% of students are employed within six months after completing a program

Exhibit 9: Annual average community college student completions for the computer information systems program in the Riverside-San Bernardino-Ontario MSA

0702.00 – Computer Information Systems, General	Annual Avg. CC Headcount (2015-16)	CC Annual Avg. Awards (2013-16)	Other Educational Institutions Annual Avg. Certificates or Other Credit Awards (2012-15)
Westwood College-Inland Empire			
Associate Degree			5
Barstow	387		
Associate Degree		5	
Certificate 18 to < 30 semester units		1*	
Chaffey	1,829		
Associate Degree		18	
Certificate 30 to < 60 semester units		6	
Copper Mountain			
Associate Degree		5	
Crafton Hills			
Associate Degree		6	
Certificate 18 to < 30 semester units		1*	
Certificate 6 to < 18 semester units		7	
Desert	1,033		
Associate Degree		3	
Certificate 30 to < 60 semester units		2	
Mt. San Jacinto	770		
Associate Degree		24	
Certificate 30 to < 60 semester units		2	
San Bernardino	126		
Associate Degree		3	
Certificate 18 to < 30 semester units		2	
Palo Verde			
Associate Degree		1	
Certificate 6 to < 18 semester units		48	
Victor Valley	23		
Associate Degree		12	
Moreno Valley	623		
Norco	616		
Riverside	1.444		
Total CC Headcount (2015-16)	**6,830**		
Total annual average community college awards		**144**	
Total annual average other awards			**5**

Source: LaunchBoard, IPEDS

*Barstow awarded 1 certificate in 2013-14, Crafton Hill awarded 1 Certificate 18 to < 30 semester units in 2015-16

0702.00 – Computer Information Systems, General program outcomes in the Riverside-San Bernardino-Ontario MSA in academic year 2014-15:

- The median annual wage after program completion is $18,168.
- 40% of students are earning a living wage.
- Median change in earnings was 36%
- 63% of students are employed within six months after completing a program

Exhibit 10: Annual average community college student completions for the software applications program in the Riverside-San Bernardino-Ontario MSA

0702.10 – Software Applications	Annual Avg. CC Headcount (2015-16)	CC Annual Avg. Awards (2013-16)
Norco College	143	
Associate Degree		2
Certificate 30 to < 60 semester units		1
Copper Mountain	207	
Certificate 30 to < 60 semester units		3
Moreno Valley	125	
Associate Degree		1
Certificate 30 to < 60 semester units		1
Palo Verde	97	
Certificate 6 to < 18 semester units		1
Riverside	59	
Associate Degree		6
Certificate 30 to < 60 semester units		5
Barstow	141	
Chaffey	86	
Crafton Hills	28	
Mt. San Jacinto	74	
Total CC Headcount (2015-16)	**957**	
Total annual average community college awards		**18**

Source: LaunchBoard, IPEDS

0702.10 – Software Applications program outcomes in the Riverside-San Bernardino-Ontario MSA in academic year 2014-15:

- The median annual wage after program completion is $16,778.
- 34% of students are earning a living wage.
- Median change in earnings was 30%
- 51% of students are employed within six months after completing a program

Sources

O*Net Online

Labor Insight/Jobs (Burning Glass)

Economic Modeling Specialists International (EMSI)

Employment Development Department, Labor Market Information Division, OES

Employment Development Department, Unemployment Insurance Dataset

CTE LaunchBoard

Statewide CTE Outcomes Survey

Living Insight Center for Community Economic Development

California Community Colleges Chancellor's Office Management Information Systems (MIS)

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Appendix A: Occupation definition, five-year projections, and earnings for software developers

Occupation Definitions (SOC code), Education and Training Requirement, Community College Education Attainment

Software Developers, Applications (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.

Reported job titles: Application Developer, Application Integration Engineer, Applications Developer, Computer Consultant, Information Technology Analyst (IT Analyst), Software Architect, Software Developer, Software Development Engineer, Software Engineer, Technical Consultant

Entry-Level Educational Requirement: Bachelor's degree
Training Requirement: None
Percentage of incumbent workers with a Community College Award or Some Postsecondary Coursework: 14%

Table 1. Job Growth for software developers, Los Angeles, Riverside, and San Bernardino counties

Occupation (SOC)	2016 Jobs	2021 Jobs	5-Yr Change	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)
Software Developers, Applications (15-1132)	20,106	21,759	1,653	8%	8,023	1,605

Source: EMSI 2017.3