

Program Endorsement Brief: 0707.00/Computer Software Development Full Stack

Los Angeles/Orange County Center of Excellence, March 2020

Summary Analysis

The Los Angeles/Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide Los Angeles/Orange County regional labor market supply and demand data for one middle-skill occupation related to full stack development: web developers (15-1134). Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.¹ This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with the relevant occupations.

Based on the available data, there appears to be a supply gap for web developers in the region. **Therefore, the COE endorses this proposed program.** Reasons include:

Demand:

- Over the next five years, there is projected to be **905 jobs available annually** in the region due to new jobs and replacements, **which is more than the 553 awards conferred annually** by educational institutions in the region.
 - The number of annual job openings for web developers may potentially overstate the demand for full stack developers, as not all web developers are full stack developers. Over the past 12 months, there were **2,082 online job postings** for web developers that also mentioned “full stack.” The highest number of job postings were for front-end developer, PHP developer, software development engineer, and full stack developer.
- The national-level educational attainment data indicates that 25.3% of web developers in the field have completed some college or an associate degree.
- The typical **entry-level hourly wage** for web developers throughout the region is \$20.69, **which is higher than the California Family Needs Calculator** hourly wage for one adult in the region (\$15.04 in Los Angeles County and \$17.36 in Orange County)².

¹ The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

² Living wage data was pulled from California Family Needs Calculator on 2/26/20. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

Supply:

- Twenty-two community colleges in the region have web development-related programs, conferring an average of **421 awards annually** between 2016 and 2019.
- Between 2013 and 2016, there were an average of **132 awards conferred annually** in related training programs by seven non-community college institution the region.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for web developers. In Los Angeles/Orange County, the number of jobs is projected to increase 8% through 2023. There will be more than 900 job openings per year through 2023, due to new job growth and replacements.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties³

Geography	2018 Jobs	2023 Jobs	2018-2023 Change	2018-2023 % Change	Annual Openings
Los Angeles	6,906	7,489	583	8%	662
Orange	2,543	2,756	213	8%	243
Total	9,449	10,245	796	8%	905

Wages — The typical entry-level hourly wage for web developers in the region is \$20.69.⁴ This wage surpasses the California Family Needs Calculator hourly wage for one adult in region (Los Angeles County (\$15.04) and Orange County (\$17.36))⁵. The regional average wage is below the average statewide wage of \$38.76 for this occupation. Wage information, by county, is included in Appendix A.

Job Postings — In the past 12 months, there were 13,641 online job postings related to web developers; more than 15% (2,082) of these postings specified a desire for full stack web developers. The highest number of job postings were for front-end developer, PHP developer, software development engineer, and full stack developer. The top skills were: JavaScript, SQL, Git, and AngularJS. The top three employers, by number of job postings, in the region were: Jobot, nuCamp, and iBASEt. Of the 2,082 online job postings for full stack developers, 44% listed a minimum education requirement.

³ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

⁴ Entry-level wage is defined as the twenty-fifth percentile hourly wage. Wages for experienced workers are defined as the seventy-fifth percentile hourly wage.

⁵ Living wage data was pulled from California Family Needs Calculator on 2/26/20. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

Educational Attainment — The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for web developers. The national-level educational attainment data indicates that 25.3% of workers in the field have completed some college or an associate degree. Of the 44% of job postings listing a minimum education requirement in Los Angeles/Orange County, 3% (23) requested high school or vocational training, 1% (12) requested an associate degree, and 96% (875) requested a bachelor’s degree.

Supply

Community College Supply — Exhibit 2 shows the annual and three-year average number of awards conferred by community colleges in the related TOP codes: Website Design and Development (0614.30), Software Applications (0702.10), Computer Software Development (0707.00), Computer Programming (0707.10), and World Wide Web Administration (0709.00). The college with the most completions in the region is Mt. San Antonio. During the last twelve months, there were two other related program recommendation requests from regional community colleges.

Exhibit 2: Regional community college awards (certificates and degrees), 2016-2019

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0614.30	Website Design and Development	LA Pierce	2	-	3	2
		Mt San Antonio	-	9	9	6
		LA Subtotal	2	9	12	8
		Coastline	1	-	1	1
		Fullerton	-	-	3	1
		Irvine	8	2	3	4
		Saddleback	5	4	7	5
		Santa Ana	1	1	-	1
		Santiago Canyon	12	9	24	15
		OC Subtotal	27	16	38	27
		Subtotal/Average	29	25	50	35
0702.10	Software Applications	Cerritos	4	3	-	2
		LA City	2	-	-	1
		LA Mission	2	7	2	4
		LA Southwest	2	2	1	2
		Mt San Antonio	2	3	1	2
		Pasadena	2	-	-	1
		Santa Monica	17	10	18	15
		LA Subtotal	31	25	22	26
		Coastline	9	4	9	7
		Fullerton	1	-	-	0
		Irvine	28	22	39	30
		Saddleback	9	3	2	5
		OC Subtotal	47	29	50	42

		Subtotal/Average	78	54	72	68
0707.00	Computer Software Development	LA City	-	-	1	0
		Pasadena	4	-	-	1
		LA Subtotal	4	0	1	2
		Cypress	1	1	1	1
		Golden West	7	3	4	5
		Orange Coast	5	7	7	6
		Saddleback	3	3	13	6
		OC Subtotal	16	14	25	18
		Subtotal/Average	20	14	26	20
0707.10	Computer Programming	Cerritos	1	4	-	2
		East LA	5	6	6	6
		Glendale	1	2	2	2
		LA City	43	-	-	14
		LA Mission	2	5	4	4
		LA Pierce	6	9	17	11
		LA Southwest	2	1	-	1
		LA Valley	26	10	6	14
		Long Beach	-	2	-	1
		Mt San Antonio	68	62	119	83
		Pasadena	1	8	11	7
		Santa Monica	25	42	44	37
		West LA	-	-	1	0
		LA Subtotal	180	151	210	180
		Cypress	27	18	22	22
		Fullerton	-	-	16	5
		Irvine	16	10	8	11
		Orange Coast	29	29	31	30
		Santa Ana	-	1	13	5
		Santiago Canyon	-	30	9	13
OC Subtotal	72	88	99	86		
		Subtotal/Average	252	239	309	267
0709.00	World Wide Web Administration	Glendale	3	9	6	6
		LA Pierce	5	5	8	6
		Long Beach	5	4	-	3
		West LA	8	24	13	15
		LA Subtotal	21	42	27	30
		Saddleback	5	-	-	2
		OC Subtotal	5	-	-	2

	Subtotal/Average	26	42	27	32
	Total/Average	405	374	484	421

Non-Community College Supply — It is important to consider the supply from non-community college institutions that provide training for web developers in the region. Exhibit 3 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Code: Computer Programming/Programmer, General (11.0201), Web Page, Digital/Multimedia and Information Resources Design (11.0801), and Web/Multimedia Management and Webmaster (11.1004). Due to different data collection periods, the most recent three-year period of available data is from 2013 to 2016. Between 2013 and 2016, non-community college institutions in the region conferred an average of 132 awards annually in related training programs.

Exhibit 3: Regional Non-Community College awards, 2013-2016

CIP Code	Program	College	2013-2014 Awards	2014-2015 Awards	2015-2016 Awards	3-Year Award Average
11.0201	Computer Programming/ Programmer, General	ABCO Technology	-	6	12	6
		Allied American University	13	6	4	8
		University of Phoenix-California	-	-	1	0
		Subtotal/Average	13	12	17	14
11.0801	Web Page, Digital/ Multimedia and Information Resources Design	Advanced Computing Institute	103	73	46	74
		Allied American University	2	8	1	4
		DeVry University-California	36	40	16	31
		Fremont College	3	8	1	4
		InterCoast Colleges-Anaheim	3	-	-	1
		Subtotal/Average	147	129	64	113
11.1004	Web/Multimedia Management and Webmaster	ABCO Technology	-	7	9	5
		Subtotal/Average	-	7	9	5
Supply Total/Average			160	148	90	132

Appendix A: Occupational demand and wage data by county

Exhibit 4. Los Angeles County

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Web Developers (15-1134)	6,906	7,489	583	8%	662	\$21.06	\$31.35	\$46.07

Exhibit 5. Orange County

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Web Developers (15-1134)	2,543	2,756	213	8%	243	\$19.73	\$29.64	\$43.75

Exhibit 6. Los Angeles and Orange Counties

Occupation (SOC)	2018 Jobs	2023 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Web Developers (15-1134)	9,449	10,245	796	8%	905	\$20.69	\$30.91	\$45.46

Appendix B: Sources

- O*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- Employment Development Department, Unemployment Insurance Dataset
- Living Insight Center for Community Economic Development
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

For more information, please contact:

Juan Madrigal, Assistant Director
Los Angeles/Orange County Center of Excellence
jmadrigal@mtsac.edu
March 2020

