

**Program Endorsement Brief: 0709.00 – World Wide Web Administration
Computer Web Support and Database Administration (Associate Degree & Certificate)**
Los Angeles/Orange County Center of Excellence, November 2021

Summary Analysis

Program Endorsement:	Endorsed: All Criteria Met <input type="checkbox"/>	Endorsed: Some Criteria Met <input checked="" type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>
Living Wage: (Entry-Level, 25th)	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>
Education:	Yes <input type="checkbox"/>		No <input checked="" type="checkbox"/>
Emerging Occupation(s)			
	Yes <input type="checkbox"/>		No <input checked="" type="checkbox"/>

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 related to five occupations:

- *Computer network support specialists (15-1231);*
- *Computer network architects (15-1241);*
- *Network and computer systems administrators (15-1244);*
- *Database administrators and architects (15-1245); and*
- *Web developers and digital interface designers (15-1257).*

Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree.¹ Although some of the occupations in this report typically require a bachelor's degree, they are included in this report because there are community colleges that offer training for these pathway occupations. 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 the five occupations of interest. While all five occupations have entry-level wages exceeding the self-sufficiency standard wage in both Los Angeles and Orange counties, the majority (54%) of annual openings for these occupations typically require a bachelor's degree. **Due to some of the criteria being met, the COE endorses this proposed program.** Detailed reasons include:

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.

Demand:

- **Supply Gap Criteria** – Over the next five years, there is projected to be **2,503 jobs available annually** in the region due to new job growth and replacements, **which is more than the 2,297 awards conferred annually** by educational institutions in the region.
- **Living Wage Criteria** – In Los Angeles County, **all five occupations have entry-level wages above the self-sufficiency standard hourly wage** (\$18.10/hour).²
- **Educational Criteria** – Within the LA/OC region, **nearly half (46%) of the annual job openings for these occupations typically require an associate degree.**
 - National-level educational attainment data indicates that between 19% and 40% of workers in the field have completed some college or an associate degree – with database administrators and architects (19%) and web developers and digital interface designers (25%) having less than one-third of workers in the field who have completed some college or an associate degree.

Supply:

- Between 2017 and 2020, **27 community colleges** in the LA/OC region issued awards in programs that have historically trained for the occupations of interest, conferring an average of **1,175 awards.**
- Between 2016 and 2019, non-community college institutions in the region conferred an average of **1,122 awards in relevant programs.**

² Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California on 11/15/2021. For more information, visit: <http://selfsufficiencystandard.org/california>.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for the five occupations of interest. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 3% through 2025. There will be more than 2,500 job openings per year through 2025 due to job growth and replacements.

This report includes employment projection data by Emsi which uses EDD information. Emsi's projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy, during the projection period, will be at approximately full employment. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, it may impact the projections. At this time, it is not possible to quantify the full impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the full impacts of COVID-19 into account.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties³

Geography	2020 Jobs	2025 Jobs	2020-2025 Change	2020-2025 % Change	Annual Openings
Los Angeles	26,029	26,648	619	2%	1,753
Orange	10,752	11,124	372	3%	750
Total	36,781	37,772	991	3%	2,503

Wages

The labor market endorsement in this report considers the hourly wages for the five occupations in Los Angeles County, as they relate to the county's self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the LA/OC region. Detailed wage information, by county, is included in Appendix A.

Los Angeles County — All five occupations in this report have entry-level wages **above** the self-sufficiency standard wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$23.53 and \$41.80. Experienced workers can expect to earn wages between \$40.09 and \$72.55, which are above the self-sufficiency standard wage.

Orange County — All five occupations in this report have entry-level wages **above** the self-sufficiency standard wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages are in a range between \$22.01 and \$40.98. Experienced workers can expect to earn wages between \$39.83 and \$71.04, which are above the self-sufficiency standard wage.

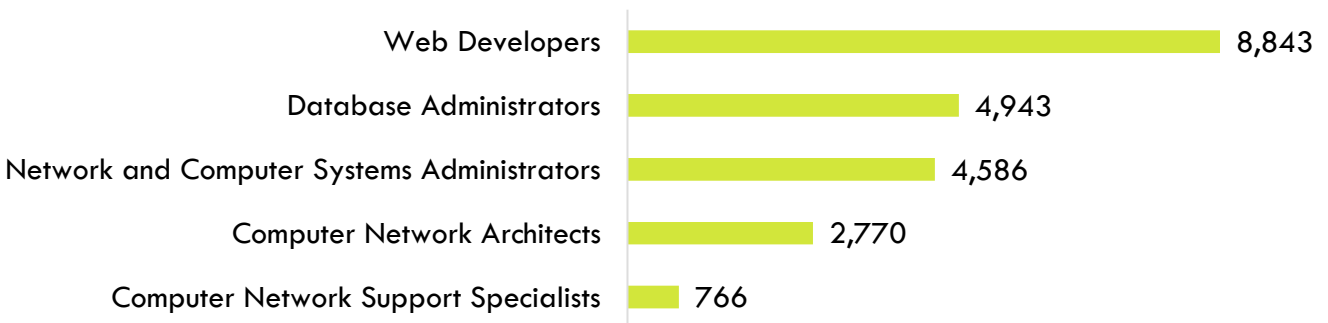
³ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Job Postings

Over the past 12 months, there have been 21,908 online job postings related to the five occupations of interest. Exhibit 2 displays the number of job postings by occupation. The majority of job postings (40%) were for *web developers*, followed by *database administrators* (23%) and *network and computer systems administrators* (21%). The highest number of job postings were for *systems administrator, data engineer, senior data engineer, front-end developer, and network engineer*. The top skills were SQL, JavaScript, Python, systems administration, and Linux. The top employers, by number of job postings, in the region were Anthem Blue Cross, Northrop Grumman, Deloitte, Amazon, Raytheon, Disney, and Boeing.

It is important to note that the job postings data included in this section reflects online job postings listed in the past 12 months and does not yet demonstrate the full impact of COVID-19. While employers have generally posted fewer online job postings since the beginning of the pandemic, the long-term effects are currently unknown.

Exhibit 2: Job postings by occupation (last 12 months)



Educational Attainment

The Bureau of Labor Statistics (BLS) lists the following typical entry-level education for the occupations in this report:

- **Bachelor's degree:** *computer network architects; network and computer systems administrators; and database administrators and architects*
- **Associate degree:** *computer network support specialists; and web developers and digital interface designers*

In the LA/OC region, nearly half of annual job openings (46%) typically require an associate degree. National-level educational attainment data indicates that between 19% and 40% of workers in the field have completed some college or an associate degree – with *database administrators and architects* (19%) and *web developers and digital interface designers* (25%) having less than one-third of workers in the field who have completed some college or an associate degree. Of the 56% of job postings listing a minimum education requirement in Los Angeles/Orange County, 11% (1,345) requested high school or vocational training, 4% (473) requested an associate degree, and 85% (10,539) requested a bachelor's degree.

Educational Supply

Community College Supply — Exhibit 3 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Mt. San Antonio, Long Beach, and Cypress. Over the past 12 months, there were 40 other related program recommendation requests from regional community colleges.

Exhibit 3: Regional community college awards (certificates and degrees), 2017-2020

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
0701.00	Information Technology, General	East LA	15	23	10	16
		LA Harbor	6	-	-	2
		LA Mission	1	1	3	2
		Long Beach	25	34	64	41
		Mt San Antonio	79	74	90	81
		Santa Monica	-	39	-	13
		West LA	4	4	5	4
		LA Subtotal	130	175	172	159
Supply Subtotal/Average			130	175	172	159
0702.00	Computer Information Systems	Citrus	7	5	8	7
		Compton	-	1	-	0
		East LA	16	19	15	17
		El Camino	18	14	21	18
		Glendale	-	-	5	2
		LA City	4	1	1	2
		LA Mission	9	5	1	5
		LA Trade-Tech	14	8	20	14
		Mt San Antonio	-	-	79	26
		Pasadena	1	-	-	0
		Rio Hondo	19	21	10	17
		West LA	6	8	10	8
		LA Subtotal	94	82	170	115
		Cypress	8	5	4	6
		Fullerton	20	15	11	15
		Irvine Valley	-	-	2	1
		Orange Coast	3	4	2	3
		Santa Ana	6	4	2	4
		Santiago Canyon	2	3	4	3
		OC Subtotal	39	31	25	32
Supply Subtotal/Average			133	113	195	147

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
0707.10	Computer Programming	Cerritos	4	-	2	2
		Citrus	-	-	1	0
		East LA	6	8	4	6
		Glendale	2	2	3	2
		LA City	-	-	6	2
		LA Mission	5	6	4	5
		LA Pierce	9	18	4	10
		LA Southwest	1	-	1	1
		LA Valley	10	7	6	8
		Long Beach	2	4	5	4
		Mt San Antonio	62	119	114	98
		Pasadena	8	11	21	13
		Santa Monica	42	44	46	44
		West LA	-	1	-	0
		LA Subtotal	151	220	217	196
		Cypress	18	22	20	20
		Fullerton	-	16	28	15
		Irvine Valley	10	8	4	7
		Orange Coast	29	31	157	72
		Santa Ana	1	13	1	5
Santiago Canyon	30	9	3	14		
OC Subtotal	88	99	213	133		
Supply Subtotal/Average			239	319	430	329
0707.20	Database Design and Administration	Citrus	-	1	1	1
		Long Beach	1	3	1	2
		Mt San Antonio	4	11	12	9
		Pasadena	-	-	4	1
		Santa Monica	2	1	5	3
		LA Subtotal	7	16	23	15
		Santa Ana	4	1	8	4
OC Subtotal	4	1	8	4		
Supply Subtotal/Average			11	17	31	20
0707.30	Computer Systems Analysis	Cerritos	4	2	3	3
		East LA	-	-	1	0
		LA Mission	-	-	1	0
		LA Subtotal	4	2	5	4

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
		Cypress	5	2	-	2
		OC Subtotal	5	2	-	2
Supply Subtotal/Average			9	4	5	6
0708.00	Computer Infrastructure and Support	Cerritos	-	-	4	1
		Glendale	-	-	3	1
		LA City	-	-	3	1
		LA Harbor	1	1	1	1
		LA Mission	-	2	12	5
		LA Valley	8	5	2	5
		Long Beach	1	3	8	4
		Mt San Antonio	20	24	24	23
		Pasadena	-	1	1	1
		Rio Hondo	-	-	9	3
		West LA	-	4	15	6
		LA Subtotal	30	40	82	51
		Coastline	65	49	46	53
		Cypress	1	2	3	2
		Orange Coast	-	-	7	2
		OC Subtotal	66	51	56	58
Supply Subtotal/Average			96	91	138	108
0708.10	Computer Networking	Cerritos	8	11	9	9
		Glendale	6	3	3	4
		LA City	37	23	-	20
		LA Pierce	23	39	20	27
		Long Beach	27	55	47	43
		Mt San Antonio	2	8	11	7
		Rio Hondo	-	5	7	4
		West LA	43	77	48	56
		LA Subtotal	146	221	145	171
		Coastline	12	38	59	36
		Cypress	37	70	95	67
		Irvine Valley	12	11	21	15
		Saddleback	17	10	21	16
		Santa Ana	7	14	12	11
		OC Subtotal	85	143	208	145
Supply Subtotal/Average			231	364	353	316

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
0708.20	Computer Support	Citrus	-	-	1	0
		Glendale	3	10	7	7
		LA Pierce	7	9	8	8
		Long Beach	1	8	14	8
		Pasadena	3	7	30	13
		LA Subtotal	14	34	60	36
		Cypress	1	3	5	3
		Santa Ana	10	9	-	6
		OC Subtotal	11	12	5	9
Supply Subtotal/Average			25	46	65	45
0709.00	World Wide Web Administration	Glendale	9	6	7	7
		LA Pierce	5	9	-	5
		Long Beach	4	22	24	17
		West LA	24	13	9	15
		LA Subtotal	42	50	40	44
		Saddleback	-	-	2	1
		OC Subtotal	-	-	2	1
Supply Subtotal/Average			42	50	42	45
Supply Total/Average			916	1,179	1,431	1,175

Non-Community College Supply — For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that may provide training programs for the occupations of interest. Exhibit 4 shows the annual and three-year average number of awards conferred by these institutions in programs crosswalked to the community college programs listed in Exhibit 3. Due to different data collection periods, the most recent three-year period of available data is from 2016 to 2019. Between 2016 and 2019, non-community college institutions in the region conferred an average of 1,122 awards.

Exhibit 4: Regional non-community college awards, 2016-2019

CIP Code	Program	Institution	2016-17 Awards	2017-18 Awards	2018-19 Awards	3-Year Average
11.0101	Computer and Information Sciences, General	Azusa Pacific University	19	26	30	25
		Brand College	-	2	-	1
		Brandman University	26	20	20	22
		Chapman University	5	12	13	10
		Loyola Marymount University	19	42	32	31
		Pacific States University	1	-	2	1
		The Master's University and Seminary	7	6	7	7
		UC-Irvine	1	-	1	1
		University of La Verne	19	18	39	25
		University of the People	57	100	80	79
		Vanguard University of Southern California	-	1	-	0
11.0103	Information Technology	Abraham Lincoln University	-	1	1	1
		Brand College	28	37	50	38
		California Intercontinental University	1	-	-	0
		CSU-Dominguez Hills	-	1	5	2
		CSU-Los Angeles	117	162	158	146
		CSU-Northridge	43	54	54	50
		Platt College-Anaheim	-	1	11	4
		Platt College-Los Angeles	-	-	6	2
		Stanbridge University	25	-	-	8
		Trident University International	74	93	75	81
		University of La Verne	-	-	3	1
		University of Phoenix-CA	16	60	57	44
11.0199	Computer and Information Sciences, Other	Antioch University-LA	20	47	4	24
		Brand College	2	-	2	1
		CSU-Dominguez Hills	66	59	55	60
		CSU-Northridge	77	77	87	80

CIP Code	Program	Institution	2016-17 Awards	2017-18 Awards	2018-19 Awards	3-Year Average
11.0301	Data Processing and Data Processing Technology/ Technician	Premiere Career College	11	6	1	6
11.0501	Computer Systems Analysis/Analyst	Brand College	4	2	-	2
		DeVry University-CA	94	55	49	66
		University of Phoenix-CA	4	4	-	3
11.0802	Data Modeling/ Warehousing and Database Administration	ABCO Technology	3	6	7	5
		University of Phoenix-CA	8	4	1	4
11.0901	Computer Systems Networking and Telecommunications	Brand College	2	-	2	1
		DeVry University-CA	135	106	86	109
		Mt Sierra College	5	4	-	3
		University of Phoenix-CA	27	18	3	16
11.1001	Network and System Administration/ Administrator	ABCO Technology	-	13	5	6
		Brand College	2	6	23	10
		California Intercontinental University	-	1	3	1
		University of Phoenix-CA	1	12	13	9
11.1002	System, Networking, and LAN/WAN Management/ Manager	ABCO Technology	10	7	9	9
11.1003	Computer and Information Systems Security/Information Assurance	Azusa Pacific University	3	-	-	1
		Learnet Academy	48	17	-	22
		Mt Sierra College	8	13	-	7
		University of Phoenix-CA	71	42	32	48
11.1004	Web/Multimedia Management and Webmaster	ABCO Technology	12	17	24	18
		Pepperdine University	-	2	-	1
		University of Phoenix-CA	4	-	1	2
11.1005	Information Technology Project Management	California Intercontinental University	2	-	1	1
11.1006	Computer Support Specialist	Southern California Institute of Technology	16	26	25	22
		University of Phoenix-CA	1	2	-	1
15.1202	Computer Technology/ Computer Systems Technology	Learnet Academy	11	1	-	4
Supply Total/Average			1,105	1,183	1,077	1,122

Appendix A: Occupational demand and wage data by county

Exhibit 5. Los Angeles County

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Network Support Specialists (15-1231)	4,017	4,146	129	3%	299	\$26.78	\$32.32	\$40.09
Computer Network Architects (15-1241)	3,491	3,507	16	0%	201	\$41.80	\$58.05	\$72.55
Network and Computer Systems Administrators (15-1244)	7,912	7,983	71	1%	475	\$35.43	\$45.81	\$57.01
Database Administrators and Architects (15-1245)	3,561	3,669	107	3%	245	\$34.65	\$48.07	\$65.55
Web Developers and Digital Interface Designers (15-1257)	7,049	7,343	295	4%	533	\$23.53	\$35.67	\$49.81
Total	26,029	26,648	619	2%	1,753			

Exhibit 6. Orange County

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Network Support Specialists (15-1231)	1,685	1,747	63	4%	127	\$26.58	\$32.07	\$39.83
Computer Network Architects (15-1241)	1,658	1,704	46	3%	104	\$40.98	\$56.88	\$71.04
Network and Computer Systems Administrators (15-1244)	3,218	3,313	95	3%	209	\$34.80	\$45.01	\$56.06
Database Administrators and Architects (15-1245)	1,485	1,543	58	4%	105	\$33.49	\$46.46	\$63.38
Web Developers and Digital Interface Designers (15-1257)	2,706	2,817	110	4%	204	\$22.01	\$33.48	\$46.89
Total	10,752	11,124	372	3%	750			

Exhibit 7. Los Angeles and Orange Counties

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Computer Network Support Specialists (15-1231)	5,701	5,893	192	3%	426	Associate degree
Computer Network Architects (15-1241)	5,149	5,211	62	1%	305	Bachelor's degree
Network and Computer Systems Administrators (15-1244)	11,130	11,296	166	1%	684	Bachelor's degree
Database Administrators and Architects (15-1245)	5,046	5,212	166	3%	351	Bachelor's degree
Web Developers and Digital Interface Designers (15-1257)	9,755	10,160	405	4%	737	Associate degree
Total	36,781	37,772	991	3%	2,503	

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
- 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)

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