

Labor Market Assessment: 0707.20/Database Design and Administration

Database Applications Developer (Associate of Arts; Certificate)

Los Angeles Center of Excellence, June 2022

Summary

Program Endorsement:	Endorsed: All Criteria Met	<input checked="" type="checkbox"/>	Endorsed: Some Criteria Met	<input 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, 25 th)	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
Education:	Yes	<input checked="" type="checkbox"/>	No	<input type="checkbox"/>		
Emerging Occupation(s)						
Yes			<input type="checkbox"/>			
			No <input checked="" type="checkbox"/>			

The Los Angeles Center of Excellence for Labor Market Research (LA COE) prepared this report to provide regional labor market supply and demand data related to three middle-skill occupations:

- *Computer network support specialists (15-1231),*
- *Computer network architects (15-1241), and*
- *Web developers and digital interface designers (15-1257),*

and two above middle-skill occupations:

- *Database administrators and architects (15-1245), and*
- *Software developers and software quality assurance analysts and testers (15-1256).*

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 the five IT occupations in this report in the region. Furthermore, entry-level wages exceed the self-sufficiency standard wage in both Los Angeles and Orange counties, and more than one-fourth of current workers in the middle-skill occupations in this report have completed some college or an associate degree.

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.

Therefore, due to all of the criteria being met, the LA COE endorses this proposed program.
Detailed reasons include:

Demand:

- **Supply Gap Criteria** – Over the next five years, there is projected to be **7,634 jobs available annually** in the region due to new job growth and replacements, **which is more than the 1,839 awards conferred annually** by educational institutions in the region.
- **Living Wage Criteria** – Within 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 greater LA/OC region, **82% of the annual job openings** for the IT occupations in this report **typically require a bachelor's degree**.
 - However, the national-level educational attainment data indicates **between 25% and 40% of workers in the field have completed some college or an associate degree**.

Supply:

- There are **25 community colleges** in the greater LA/OC region that issue awards related to the IT occupations in this report, conferring an average of **1,044 awards annually** between 2017 and 2020.
- Between 2016 and 2019, there was an average of **795 awards conferred annually** in related training programs by non-community college institutions throughout the greater LA/OC region.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for these middle-skill IT occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to increase by 3% through 2025. There will be more than 1,600 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.

Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California on 6/8/2022. For more information, visit: <http://selfsufficiencystandard.org/california>.

Exhibit 1: Middle-skill occupational demand in Los Angeles and Orange Counties³

Geography	2020 Jobs	2025 Jobs	2020-2025 Change	2020-2025 % Change	Annual Openings
Los Angeles	14,855	15,249	394	3%	1,136
Orange	6,184	6,405	221	4%	477
Total	21,039	21,654	615	3%	1,613

Exhibit 2 shows the five-year occupational demand projections for the above middle-skill group of IT occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 9% through 2025. There will be more than 6,000 job openings per year through 2025 due to job growth and replacements in the field.

Exhibit 2: Above middle-skill occupational demand in Los Angeles and Orange counties

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	43,711	47,421	3,710	8%	3,994
Orange	21,834	23,834	2,000	9%	2,027
Total	65,545	71,255	5,710	9%	6,021

Wages

The labor market endorsement in this report considers the entry-level hourly wages for all five of the IT occupations in this report 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 greater 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 \$22.84 and \$42.92. Experienced workers can expect to earn wages between \$40.31 and \$72.80, which are higher than the self-sufficiency standard.

Orange County—All five occupations 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 \$21.25 and \$41.37. Experienced workers can expect to earn wages between \$39.50 and \$70.90, which are higher than the self-sufficiency standard.

Job Postings

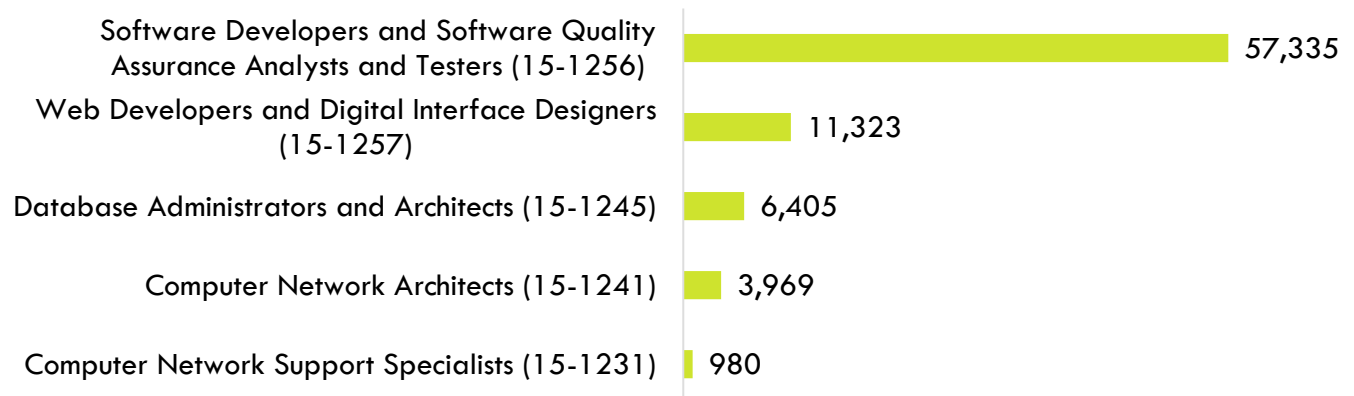
There were 80,012 online job postings related to the IT occupations in this report listed in the past 12 months. Exhibit 3 displays the number of job postings by occupation. The majority of job postings (72%) were for *software developers and software quality assurance analysts and testers*, followed by *web developers and digital interface designers* (14%) and *database administrators and architects* (8%). The highest number of job postings were for software engineers, data engineers,

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.

software developers, DevOps engineers, and network engineers. The top software skills were Java/JavaScript, SQL, Python, Microsoft C#, and C++. The top three employers, by number of job postings, in the region were: The Boeing Company, Amazon, and Anthem Blue Cross.

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 3: Job postings by occupation (last 12 months)



Educational Attainment

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

- **Bachelor's degree:** Computer network architects; database administrators and architects; and software developers and software quality assurance analysts and testers
- **Associate degree:** Computer network support specialists; and web developers and digital interface designers

In the greater LA/OC region, the majority of annual job openings (82%) typically require a bachelor's degree. However, the national-level educational attainment data indicates between 25% and 40% of workers in the middle-skill occupations in this report have completed some college or an associate degree. Of the 62% of relevant IT job postings listing a minimum education requirement in the greater Los Angeles/Orange County region, 5% (2,429) requested high school or vocational training, 2% (1,008) requested an associate degree, and 93% (46,139) requested a bachelor's degree.

Educational Supply

Community College Supply—Exhibit 4 shows the 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.

Exhibit 4: 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
0707.00	Computer Software Development	LA City	-	1	-	0
		LA Subtotal	-	1	-	0
		Cypress	1	1	1	1
		Golden West	3	4	2	3
		Orange Coast	7	7	2	5
		Saddleback	3	13	3	6
		OC Subtotal	14	25	8	16
Supply Subtotal/Average			14	26	8	16
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

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
		Irvine	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
		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

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
		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	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
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

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
		Saddleback	-	-	2	1
		OC Subtotal	-	-	2	1
		Supply Subtotal/Average	42	50	42	45
		Supply Total/Average	797	1,092	1,244	1,044

Non-Community College Supply—For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for these IT occupations. Exhibit 5 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 4. Due to different data collection periods, the most recent three-year period of available data is from 2016 to 2019. Between 2016 and 2019, four-year colleges in the region conferred an average of 795 awards annually in related training programs.

Exhibit 5: 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
		University of California-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
11.0199	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
11.0201	Computer Programming/ Programmer, General	ABCO Technology	18	23	29	23
		Platt College-Anaheim	-	4	4	3
		University of Phoenix-CA	43	27	5	25

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-California	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-California	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			862	828	695	795

Appendix A: Occupational demand and wage data by county

Exhibit 6. Los Angeles County

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry- Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Database Administrators and Architects (15-1245)	3,573	3,608	35	1%	268	\$34.51	\$48.01	\$65.56
Software Developers and Software Quality Assurance Analysts and Testers (15-1256)	40,138	43,814	3,675	9%	3,726	\$42.92	\$57.70	\$71.65
Above Middle-Skill Subtotal	43,711	47,421	3,710	8%	3,994	-	-	-
Computer Network Support Specialists (15-1231)	4,029	4,055	25	1%	302	\$26.93	\$32.50	\$40.31
Computer Network Architects (15-1241)	3,494	3,422	(72)	(2%)	204	\$41.92	\$58.30	\$72.80
Web Developers and Digital Interface Designers (15-1257)	7,331	7,772	440	6%	630	\$22.84	\$34.88	\$49.35
Middle-Skill Subtotal	14,855	15,249	394	3%	1,136	-	-	-
Total	58,567	62,670	4,103	7%	5,130	-	-	-

Exhibit 7. 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)
Database Administrators and Architects (15-1245)	1,491	1,534	43	3%	117	\$33.11	\$46.06	\$62.90
Software Developers and Software Quality Assurance Analysts and Testers (15-1256)	20,342	22,300	1,957	10%	1,910	\$41.37	\$55.51	\$68.87
Above Middle-Skill Subtotal	21,834	23,834	2,000	9%	2,027	-	-	-
Computer Network Support Specialists (15-1231)	1,696	1,746	51	3%	134	\$26.33	\$31.80	\$39.50
Computer Network Architects (15-1241)	1,661	1,676	15	1%	102	\$40.88	\$56.79	\$70.90
Web Developers and Digital Interface Designers (15-1257)	2,828	2,983	155	5%	241	\$21.25	\$32.53	\$46.04
Middle-Skill Subtotal	6,184	6,405	221	4%	477	-	-	-
Total	28,018	30,239	2,221	8%	2,504	-	-	-

Exhibit 8. Los Angeles and Orange Counties

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Database Administrators and Architects (15-1245)	5,064	5,142	78	2%	385	Bachelor's degree
Software Developers and Software Quality Assurance Analysts and Testers (15-1256)	60,481	66,113	5,633	9%	5,636	Bachelor's degree
Above Middle-Skill Subtotal	65,545	71,255	5,710	9%	6,021	-
Computer Network Support Specialists (15-1231)	5,725	5,801	76	1%	436	Associate degree
Computer Network Architects (15-1241)	5,155	5,098	(57)	(1%)	306	Bachelor's degree
Web Developers and Digital Interface Designers (15-1257)	10,159	10,755	595	6%	871	Associate degree
Middle-Skill Subtotal	21,039	21,654	615	3%	1,613	-
Total	86,584	92,909	6,325	7%	7,634	-

Appendix B: Sources

- O*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

For more information, please contact:

Luke Meyer, Director
Los Angeles Center of Excellence
lmeyer7@mtsac.edu

