

**Program Endorsement Brief: 0702.00 – Computer Information Systems
Business Data Analytics**

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 checked="" type="checkbox"/>	No <input 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 four occupations related to the field of data analytics: *computer systems analysts* (15-1211); *database administrators and architects* (15-1245); *computer occupations, all other* (15-1299); and *data scientists and mathematical science occupations, all other* (15-2098); and one emerging occupation: *business intelligence analysts* (15-1199.08).

Currently, there is not a standard occupational classification (SOC) code for a middle-skill occupation in the field of data analytics. While the occupations in this report typically require a bachelor’s degree and are not traditionally considered middle-skill¹, these occupations are most closely aligned with the knowledge, skills, and abilities required for an entry-level job seeker in the emerging field of data analytics. 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.

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.

Based on the available data, there appears to be a supply gap for the occupations of interest. While all four occupations have entry-level wages exceeding the self-sufficiency standard wage for one adult in both Los Angeles and Orange counties, each occupation in this report typically requires a bachelor's degree. **Therefore, due to some of the criteria being met, the COE endorses this proposed program.** Detailed reasons include:

Demand:

- **Supply Gap Criteria** – Over the next five years, there is projected to be **3,422 jobs available annually** in the region due to new job growth and replacements, **which is more than the 1,815 awards conferred annually** by educational institutions in the region.
 - **Not every worker in these occupations will be engaged in data analytics; therefore, the demand is overstated.**
- **Living Wage Criteria** – In Los Angeles County, **all four occupations have entry-level wages above the self-sufficiency standard hourly wage** (\$18.10/hour).²
- **Educational Criteria** – The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for the four occupations of interest.
 - Furthermore, national-level educational attainment data indicates **between 11% and 27% of workers in the field have completed some college or an associate degree.**

Supply:

- Between 2017 and 2020, **25 community colleges** in the LA/OC region issued awards in programs that have historically trained for the occupations of interest, conferring an average of **685 awards**.
- Between 2016 and 2019, non-community college institutions in the region conferred an average of **1,130 awards** in relevant programs.
 - **The programs listed in this report are not focused solely on data analytics; therefore, the supply in this report is overstated.**

² Self-Sufficiency Standard Wage data was pulled from The Self-Sufficiency Standard Tool for California on 10/13/2021. For more information, visit: <http://selfsufficiencystandard.org/california>.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for the four 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 3,422 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	33,205	34,017	812	2%	2,357
Orange	14,414	14,952	538	4%	1,064
Total	47,619	48,969	1,350	3%	3,422

Wages

The labor market endorsement in this report considers the hourly wages for the four occupations of interest 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 four occupations 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 \$28.13 and \$39.80. Experienced workers can expect to earn wages between \$55.61 and \$70.47, which are above the self-sufficiency standard wage estimate.

Orange County — All four 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 \$27.19 and \$38.88. Experienced workers can expect to earn wages between \$53.74 and \$68.32, which are above the self-sufficiency standard wage estimate.

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 19,090 online job postings related to the occupations of interest. The highest number of job postings were for data analyst, data engineer, business systems analyst, senior data engineer, and systems analyst. The top skills were SQL, data analysis, Python, project management, and Tableau. The top employers, by number of job postings, in the region were Anthem Blue Cross, Deloitte, Accenture, Northrop Grumman, 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.

Educational Attainment

The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for all four occupations in this report. Furthermore, national-level educational attainment data indicates between 11% and 27% of workers in the field have completed some college or an associate degree. Of the 66% of job postings listing a minimum education requirement in Los Angeles/Orange County, 8% (1,001) requested a high school or vocational training, 3% (423) requested an associate degree, and 89% (11,091) requested a bachelor's degree.

Educational Supply

Community College Supply — Exhibit 2 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 11 other related program recommendation requests from regional community colleges.

Exhibit 2: 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

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
		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
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
0708.10	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

TOP Code	Program	College	2017-18 Awards	2018-19 Awards	2019-20 Awards	3-Year Average
		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
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
0799.00	Other Information Technology	LA Harbor	1	-	-	0
		Mt San Antonio	5	13	15	11
		LA Subtotal	6	13	15	11
Supply Subtotal/Average			6	13	15	11
Supply Total/Average			534	715	805	685

Non-Community College Supply — For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for the occupations of interest. Exhibit 3 shows the annual and three-year average number of awards conferred in programs crosswalked to the TOP in Exhibit 2. 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 conferred an average of 1,130 awards.

Exhibit 3: 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 & 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
11.0103	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		

CIP Code	Program	Institution	2016-17 Awards	2017-18 Awards	2018-19 Awards	3-Year Average
		University of Phoenix-California	16	60	57	44
11.0199	Computer and Information Sciences, Other	Antioch University-Los Angeles	20	47	4	24
		Brand College	2	-	2	1
		CSU-Dominguez Hills	66	59	55	60
		CSU-Northridge	77	77	87	80
11.0501	Computer Systems Analysis/Analyst	Brand College	4	2	-	2
		DeVry University-California	94	55	49	66
		University of Phoenix-California	4	4	-	3
11.0899	Computer Software and Media Applications, Other	Art Center College of Design	7	8	12	9
		California Institute of the Arts	-	-	7	2
		Learnet Academy	41	14	-	18
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-California	27	18	3	16
11.1001	Network and System Administration/Administrator	ABCO Technology	-	13	5	6
		Brand College	2	6	23	10
		California Intercontinental Univ.	-	1	3	1
		University of Phoenix-California	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-California	71	42	32	48

CIP Code	Program	Institution	2016-17 Awards	2017-18 Awards	2018-19 Awards	3-Year Average
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-California	1	2	-	1
11.1099	Computer/ Information Technology Services Administration and Management, Other	ABCO Technology	4	9	5	6
		California Intercontinental University	2	1	-	1
11.9999	Computer and Information Sciences and Support Services, Other	Brand College	1	-	1	1
		Los Angeles Pacific College	-	-	12	4
		Mt Sierra College	2	6	-	3
		Pitzer College	1	-	-	0
15.1202	Computer Technology/ Computer Systems Technology	Learnet Academy	11	1	-	4
Supply Total/Average			1,125	1,186	1,080	1,130

Appendix A: Occupational demand and wage data by county

Exhibit 4. 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 Systems Analysts (15-1211)	12,711	13,119	408	3%	895	\$39.80	\$52.32	\$65.54
Database Administrators and Architects (15-1245)	3,561	3,669	108	3%	245	\$34.65	\$48.07	\$65.55
Computer Occupations, All Other (15-1299)	15,801	15,927	126	1%	1,088	\$28.13	\$40.06	\$55.61
Data Scientists and Mathematical Science Occupations, All Other (15-2098)	1,132	1,302	170	15%	129	\$37.30	\$52.89	\$70.47
Total	33,205	34,017	812	2%	2,357			

Exhibit 5. 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 Systems Analysts (15-1211)	5,809	6,076	267	5%	427	\$38.88	\$51.09	\$64.04
Database Administrators and Architects (15-1245)	1,485	1,543	58	4%	105	\$33.49	\$46.46	\$63.38
Computer Occupations, All Other (15-1299)	6,609	6,736	127	2%	472	\$27.19	\$38.70	\$53.74
Data Scientists and Mathematical Science Occupations, All Other (15-2098)	510	597	87	17%	60	\$36.23	\$51.33	\$68.32
Total	14,414	14,952	538	4%	1,064			

Exhibit 6. Los Angeles and Orange Counties

Occupation (SOC)	2020 Jobs	2025 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Typical Entry-Level Education
Computer Systems Analysts (15-1211)	18,521	19,195	674	4%	1,322	Bachelor's degree
Database Administrators and Architects (15-1245)	5,046	5,212	166	3%	351	Bachelor's degree
Computer Occupations, All Other (15-1299)	22,410	22,664	254	1%	1,560	Bachelor's degree
Data Scientists and Mathematical Science Occupations, All Other (15-2098)	1,642	1,899	257	16%	189	Bachelor's degree
Total	47,619	48,969	1,350	3%	3,422	

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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November 2021

