

**Program Endorsement Brief: 0708.00/Computer Infrastructure and Support
Data Analytics Certificate**

Orange County Center of Excellence, March 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 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 one above middle-skill occupation: *computer systems analysts* (15-1211). Middle-skill occupations typically require some postsecondary education, but less than a bachelor’s degree.¹ Currently, there is not a standard occupational classification (SOC) code for a middle-skill occupation in the field of data management. Although *computer systems analysts* typically requires a bachelor’s degree and is not traditionally considered middle-skill, this occupation is most closely aligned with the knowledge, skills and abilities required for an entry-level job seeker in the emerging field of data management. 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 *computer systems analysts* in the region and entry-level wages exceed the living wage in both Los Angeles and Orange counties. However, the Bureau of Labor Statistics (BLS) lists a bachelor’s degree as the typical entry-level education and nearly three-quarters of the workforce holds a bachelor’s degree or higher level of education. **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 **1,451 jobs available annually** in the region due to new job growth and replacements, **which is**

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.

more than the 1,054 awards conferred annually by educational institutions in the region.

- **Living Wage Criteria** – Within Orange County, **typical entry-level hourly wages** for this occupation are **\$60.44, which is higher than the California Family Needs Calculator** hourly wage (living wage) for one adult in the region (17.36 in Orange County).²
- **Educational Criteria** – The Bureau of Labor Statistics (BLS) lists **a bachelor's degree as the typical entry-level education** for computer systems analysts.
 - Furthermore, the national-level educational attainment data indicates only **20.6% of workers in the field have completed some college or an associate degree**, while **73.5% of computer systems analysts hold a bachelor's degree** or higher level of education.

Supply:

- There are **21 community colleges** in the LA/OC region that issue awards related to information technology and/or computer systems, conferring an average of **268 awards annually** between 2016 and 2019.
- Between 2014 and 2017, there was an average of **786 awards conferred annually** in related training programs by non-community college institutions throughout the region.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for *computer systems analysts* in the region. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 5% through 2024. There will be more than 1,400 job openings per year through 2024 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 impact of COVID-19 on projections of industry and occupational employment. Therefore, the projections included in this report do not take the impacts of COVID-19 into account.

² Living wage data was pulled from California Family Needs Calculator on 3/24/2021. For more information, visit the California Family Needs Calculator website: <https://insightcced.org/2018-family-needs-calculator/>.

Exhibit 1: Occupational demand in Los Angeles and Orange Counties³

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	12,075	12,641	566	5%	990
Orange	5,554	5,843	289	5%	461
Total	17,629	18,484	854	5%	1,451

Wages

The labor market endorsement in this report considers the entry-level hourly wages for *computer systems analysts* in Orange County as they relate to the county’s living wage. Los Angeles 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.

Orange County— The typical entry-level hourly wages for *computer systems analysts* are \$37.02, which is above the living wage for one adult (\$17.36 in Orange County). Experienced workers can expect to earn wages of \$60.44, which is higher than the living wage estimate. Orange County’s average wages are below the average statewide wage of \$53.42 for this occupation.

Los Angeles County— The typical entry-level hourly wages for *computer systems analysts* are \$38.07, which is above the living wage for one adult (\$15.04 in Los Angeles County). Experienced workers can expect to earn wages of \$62.18, which is higher than the living wage estimate. Los Angeles County’s average wages are below the average statewide wage of \$53.42 for this occupation.

Job Postings

There were 6,849 online job postings related to *computer systems analysts* listed in the past 12 months. The highest number of job postings were for business systems analysts, systems analysts, IT business analysis, IT generalists, and technical business analysts. The top skills were: SQL, project management, business process, business systems analysis, and systems analysis. The top three employers, by number of job postings, in the region were: Anthem Blue Cross, The Boeing Company, and Northrop Grumman.

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 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 *computer systems analysts*. Furthermore, the national-level educational attainment data indicates only 20.6% of workers in the field have completed some college or an associate degree, while 73.5% of *computer systems analysts* hold a bachelor’s degree or higher level of education. Of the 57% of *computer systems analysts* job postings listing a minimum education

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.

requirement in Los Angeles/Orange County, 87% (3,420) requested a bachelor’s degree, 9% (347) requested a high school diploma and 4% (146) requested an associate degree.

Educational Supply

Community College Supply—Exhibit 2 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Information Technology, General (0701.00), Computer Information Systems (0702.00), and Computer Systems Analysis (0707.30). The colleges with the most completions in the region are: Mt. San Antonio, East LA, and Long Beach. Over the past 12 months, there were five 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
0701.00	Information Technology, General	East LA	8	15	23	15
		LA Harbor	7	6	-	4
		LA Mission	4	1	1	2
		Long Beach	27	25	34	29
		Mt San Antonio	61	79	74	71
		Santa Monica	-	-	39	13
		West LA	3	4	4	4
		LA Subtotal	110	130	175	138
		Cypress	1	-	-	0
		OC Subtotal	1	0	0	0
Supply Subtotal/Average			111	130	175	139

TOP Code	Program	College	2016-2017 Awards	2017-2018 Awards	2018-2019 Awards	3-Year Award Average
0702.00	Computer Information Systems	Citrus	5	7	5	6
		Compton	1	-	1	1
		East LA	14	16	19	16
		El Camino	15	18	14	16
		Glendale	2	-	-	1
		LA City	3	4	1	3
		LA Mission	3	9	5	6
		LA Trade	23	14	8	15
		Pasadena	2	1	-	1
		Rio Hondo	10	19	21	17
		West LA	13	6	8	9
		LA Subtotal	91	94	82	89
		Cypress	5	8	5	6
		Fullerton	7	20	15	14
		Orange Coast	-	3	4	2
		Santa Ana	18	6	4	9
		Santiago Canyon	2	2	3	2
OC Subtotal	32	39	31	34		
Supply Subtotal/Average			123	133	113	123
0707.30	Computer Systems Analysis	Cerritos	6	4	2	4
		LA Subtotal	6	4	2	4
		Cypress	-	5	2	2
		OC Subtotal	0	5	2	2
Supply Subtotal/Average			6	9	4	6
Supply Total/Average			240	272	292	268

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 *computer systems analysis*. Exhibit 3 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Codes: Computer and Information Sciences, General (11.0101), Information Technology (11.0103), Computer and Information Sciences, Other (11.0199), Computer Systems Analysis/Analyst (11.0501), and Computer Technology/Computer Systems Technology (15.1202). Due to different data collection periods, the most recent three-year period of available data is from 2014 to 2017. Between 2014 and 2017, four-year colleges in the region conferred an average of 786 awards annually in related training programs.

Exhibit 3: Regional non-community college awards, 2014-2017

CIP Code	Program	College	2014-2015 Awards	2015-2016 Awards	2016-2017 Awards	3-Year Award Average
11.0101	Computer and Information Sciences, General	ABCO Technology	15	-	-	5
		Azusa Pacific University	10	20	19	16
		Brand College	1	2	-	1
		Brandman University	19	14	26	20
		California Institute of Technology	48	56	-	35
		Chapman University	6	7	5	6
		Loyola Marymount University	15	16	19	17
		Pacific States University	-	2	1	1
		UC-Irvine	31	3	1	12
		University of La Verne	14	21	19	18
		University of the People	-	36	57	31
		11.0103	Information Technology	Argosy University-Orange County	-	1
Bethesda University	1			1	-	1
Brand College	55			42	28	42
California Int'l University	-			-	1	0
CSU-Los Angeles	102			92	117	104
CSU-Northridge	49			48	43	47
Stanbridge University	29			21	25	25
Trident University International	96			77	74	82
University of Phoenix	2			3	16	7
11.0199	Computer and Information Sciences, Other	Antioch University-Los Angeles	-	-	20	7
		Brand College	1	4	2	2
		CSU-Dominguez Hills	32	36	66	45
		CSU-Northridge	30	50	77	52
		Learnet Academy	40	-	-	13
		Pitzer College	1	-	-	0

CIP Code	Program	College	2014-2015 Awards	2015-2016 Awards	2016-2017 Awards	3-Year Award Average
11.0501	Computer Systems Analysis/Analyst	Brand College	1	2	4	2
		DeVry University-California	110	103	94	102
		University of Phoenix-California	9	8	4	7
15.1202	Computer Technology/Computer Systems Technology	Advanced Computing Institute	67	74	92	78
		Learnet Academy	-	13	11	8
Supply Total/Average			784	752	821	786

Appendix A: Occupational demand and wage data by county

Exhibit 4. Orange County

Occupation (SOC)	2019 Jobs	2024 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)
Computer Systems Analysts (15-1211)	5,554	5,843	289	5%	461	\$37.02	\$47.85	\$60.44

Exhibit 5. Los Angeles County

Occupation (SOC)	2019 Jobs	2024 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)
Computer Systems Analysts (15-1211)	12,075	12,641	566	5%	990	\$38.07	\$49.24	\$62.18

Exhibit 6. Los Angeles and Orange Counties

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings
Computer Systems Analysts (15-1211)	17,629	18,484	854	5%	1,451

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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