

Program Endorsement Brief: 2206.10/Geographic Information Systems

Geographic Information Systems

Los Angeles/Orange County Center of Excellence, April 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 related to one middle-skill occupation, surveying and mapping technicians (17-3031), and one emerging occupation, geographic information systems (GIS) technicians (15.1199.05). 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 GIS-related occupations in the region. However, since one of the occupations in this report is emerging and data collection is currently underway, it is difficult to accurately measure the local demand for geographic information systems technicians (15.1199.05). **Therefore, the COE cautiously endorses this proposed program.** Reasons include:

Demand:

- Over the next five years, there are projected to be **2,035 jobs available annually** in the region due to new job growth and replacements.
 - The computer occupations, all other (15-1199) SOC code includes a variety of emerging occupations, including geographic information systems technicians. **Since the SOC code does not solely represent this emerging occupation, the number of annual job openings is overstated.**
- Over the past 12 months, there were **211 online job postings for these GIS-related occupations.** The highest number of job postings were for GIS technician, survey technician, mapping technician, and land surveying/mapping technician.
- The national-level educational attainment data indicates between 35.2% and 56.9% of workers in the field have completed some college or an associate degree.
- Typical **entry-level hourly wages** for GIS-related occupations are between \$25.02 and \$26.94, which are higher than the California Family Needs Calculator 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. For more information, visit the California Family Needs Calculator website: <https://insightccd.org/2018-family-needs-calculator/>.

Supply:

- **Three community colleges** in the region conferred an average of **37 awards** in geographic information systems programs between 2016 and 2019. Rio Hondo conferred approximately 75% of all awards in the region.

Occupational Demand

Exhibit 1 shows the five-year occupational demand projections for GIS-related occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 4% through 2024. There will be approximately 2,035 job openings per year through 2024 due to job growth and replacements.

NOTE: *computer occupations, all other (15-1199) includes a variety of emerging occupations and is not solely comprised of occupations related to GIS. Therefore, the data in Exhibit 1 is overstated.*

Exhibit 1: Occupational demand in Los Angeles/Orange County³

Geography	2019 Jobs	2024 Jobs	2019-2024 Change	2019-2024 % Change	Annual Openings
Los Angeles	16,533	17,191	658	4%	1,403
Orange	7,217	7,582	365	5%	633
Total	23,750	24,773	1,023	4%	2,035

Wages — Typical entry-level hourly wages for GIS-related occupations throughout the region are between \$25.02 and \$26.94.⁴ Entry-level wages are 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).⁵ Wage information, by county, is included in Appendix A.

Job Postings — Information from online job postings provides insight into demand for emerging occupations. This section is specific to postings for geographic information systems technicians, and surveying and mapping technicians in Los Angeles/Orange County. In the past 12 months, there have been 211 online job postings for the two occupations of interest. The highest number of job postings were for GIS technician, survey technician, mapping technician, and land surveying/mapping technician. The top skills were: land surveying, ArcGIS, AutoCAD, calculation, and information systems. The top three employers, by number of job postings, in the region were: Los Angeles County Department of Public Works, Michael Baker International, TAIT & Associates – Civil Engineering & Environmental Services. Of the 211 online job postings, 51% 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. For more information, visit the California Family Needs Calculator website: <https://insightccd.org/2018-family-needs-calculator/>.

Educational Attainment — The Bureau of Labor Statistics (BLS) lists a high school diploma as the typical entry-level education for surveying and mapping technicians; and a bachelor’s degree for computer occupations, all other. The national-level educational attainment data indicates between 35.2% and 56.9% of workers in the field have completed some college or an associate degree. Of the GIS-related job postings listing a minimum education requirement in Los Angeles/Orange County, 23% (25) requested a high school diploma or equivalent, 19% (21) requested an associate degree, and 58% (62) 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 Geographic Information Systems (2206.10). The college with the most completions in the region is Rio Hondo. Over the past 12 months, there were two other related program recommendation request 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
2206.10	Geographic Information Systems	LA Pierce	-	-	7	2
		Rio Hondo	28	36	19	28
		LA Subtotal	28	36	26	30
		Cypress	1	12	8	7
		OC Subtotal	1	12	8	7
Supply Total/Average			29	48	34	37

Appendix A: Occupational demand and wage data by county

Exhibit 3. 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 Occupations, All Other (15-1199)	15,699	16,327	628	4%	1,294	\$27.23	\$40.03	\$55.09
Surveying and Mapping Technicians (17-3031)	834	864	30	4%	108	\$24.82	\$37.83	\$46.55
Total	16,533	17,191	658	4%	1,403			

Exhibit 4. Orange County

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Occupations, All Other (15-1199)	6,815	7,170	355	5%	582	\$26.30	\$38.63	\$53.15
Surveying and Mapping Technicians (17-3031)	402	412	10	2%	51	\$25.29	\$38.13	\$46.78
Total	7,217	7,582	365	5%	633			

Exhibit 5. Los Angeles and Orange Counties

Occupation (SOC)	2019 Jobs	2024 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Occupations, All Other (15-1199)	22,514	23,497	983	4%	1,876	\$26.94	\$39.59	\$54.50
Surveying and Mapping Technicians (17-3031)	1,236	1,276	40	3%	159	\$25.02	\$37.92	\$46.63
Total	23,750	24,773	1,023	4%	2,035			

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
- California Family Needs Calculator, Insight Center for Community Economic Development
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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