

Labor Market Analysis for Program Recommendation:
 0514.00/Office Technology/Office Computer Applications
 (Artificial Intelligence (AI) for Business Certificate of Achievement)
 (Artificial Intelligence (AI) for Business AS Degree)

Orange County Center of Excellence, December 2024

Program LMI Endorsement	Endorsed: All LMI Criteria Met <input type="checkbox"/>	Endorsed: Some LMI Criteria Met <input checked="" type="checkbox"/>	Not LMI Endorsed <input type="checkbox"/>
Program LMI Endorsement Criteria			
	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>
Supply Gap:	Comments: there is projected to be 1,357 annual job openings throughout Los Angeles and Orange counties for <i>office and administrative support workers, all other*</i> , which is more than the 1,016 awards conferred by educational institutions .		
	Yes <input type="checkbox"/>		No <input checked="" type="checkbox"/>
Self-Sufficiency Standard Living Wage ¹ :	Comments: entry-level hourly wages for office and administrative support workers, all other* are \$17.12, which is significantly below the OC living wage of \$20.63 .		
	Yes <input checked="" type="checkbox"/>		No <input type="checkbox"/>
Education:	Comments: though the typical entry-level education for <i>office and administrative support workers, all other*</i> is a high school diploma or equivalent, 40% of workers in the field have completed some college or an associate degree as their highest level of education .		
Additional Considerations			
	Yes <input type="checkbox"/>	Some <input type="checkbox"/>	No <input checked="" type="checkbox"/>
Emerging Occupation(s):	Comments: The occupation is not emerging; however, the related skills are.		
	Yes <input type="checkbox"/>	Some <input type="checkbox"/>	No <input checked="" type="checkbox"/>
OC Resilient Job(s):	Comments: See Resilient Jobs and US News & World Report Best Jobs		
	Yes <input type="checkbox"/>	Some <input type="checkbox"/>	No <input checked="" type="checkbox"/>
U.S. News & World Report 2024 Best Jobs List ² :	Comments: See Resilient Jobs and US News & World Report Best Jobs		

Literature Review

AI Overview

McKinsey & Company, one of the largest consulting companies in the world, labeled 2023 as “generative AI’s breakout year.”³ According to McKinsey’s annual AI survey, one-third of respondents said their organizations were using generative AI, which is a form of artificial intelligence “that can be used to create

¹ At the direction of the California Community College Chancellor’s Office, the living wage endorsement criteria in this report uses the University of Washington’s Center for Women’s Welfare Self-Sufficiency Standard, which the COE refers to as a living wage, to determine Orange County’s living wage of \$27.13, last updated in March 2024.

² “100 Best Jobs of 2024,” U.S. News & World Report, accessed May 7, 2024, <https://money.usnews.com/careers/best-jobs/rankings/the-100-best-jobs>.

³ “The State of AI in 2023: Generative AI’s Breakout Year,” McKinsey & Company, last modified August 1, 2023, <https://www.mckinsey.com/capabilities/quantumblack/our-insights/the-state-of-ai-in-2023-generative-ais-breakout-year>.

new content, including audio, code, images, text, simulations, and videos.”⁴ ChatGPT (developed by the company OpenAI) and Gemini (developed by Google) are two of the most commonly known generative AI programs. Organizations and individuals can use generative AI tools for writing, coding, programming, and creating images. Though AI may appear to be “creative when producing outputs” (such as text and images) and even lifelike due to the vast amounts of data used to train algorithms outputs are not always accurate.⁵

In a 2023 analysis, the Pew Research Center found that “19% of American workers were in jobs that are the most exposed to AI, in which the most important activities may be either replaced or assisted by AI.”⁶ Jobs are considered to be more exposed to AI if it can “either perform their most important activities entirely or help with them.”⁷ Notably, jobs with a higher level of exposure to AI tend to be in higher-paying fields that typically require a college education and analytic skills.

Despite increased exposure, a report from Vanguard notes that technology, including AI, is automating some tasks but not eliminating jobs. Additionally, “since 2000, the activities in every occupation have shifted from basic repetitive tasks towards advanced tasks. We spend less time collecting data and more time solving problems.”⁸ The Indeed Hiring Lab reports similar findings, noting that “though AI can learn to do some tasks reasonably well, it is unlikely to fully replace many jobs — especially those that require manual skills and/or deep personal connections.”⁹

Occupations Utilizing AI

Determining which occupations are most likely to use generative AI is related to the degree to which those occupations are exposed to AI. For example, the Indeed Hiring Lab notes that generative AI could plan a trucking route but does not have the ability to turn a steering wheel, though other (non-generative) AI technologies will. Therefore, truckers have lower exposure to AI and are less likely to utilize it. Conversely, AI models can likely write code or prepare technical documentation, so software developers have high exposure to AI.

Understanding which occupations have high exposure to AI can identify jobs that could utilize AI to automate tasks or improve efficiency. Exhibit 1 lists the 20 occupations that are most likely to have high exposure to AI, as identified by the Pew Research Center. Notably, 65% (13) of these occupations are considered middle-skill and 40% (8) of the overall 20 occupations are business-related.

⁴ "What is Generative AI?," McKinsey & Company, last modified January 19, 2023, <https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-generative-ai>.

⁵ *Ibid.*

⁶ Janakee Chavda, "Which U.S. Workers Are More Exposed to AI on Their Jobs?," Pew Research Center's Social & Demographic Trends Project, last modified July 26, 2023, <https://www.pewresearch.org/social-trends/2023/07/26/which-u-s-workers-are-more-exposed-to-ai-on-their-jobs/>.

⁷ *Ibid.*

⁸ "Megatrends - The Future of Work," Vanguard, accessed April 8, 2024, https://corporate.vanguard.com/content/dam/corp/research/pdf/megatrends_the_future_of_work_final.pdf.

⁹ Annina Hering, "Indeed's AI at Work Report: How GenAI Will Impact Jobs and the Skills Needed to Perform Them," Indeed Hiring Lab, last modified January 29, 2024, <https://www.hiringlab.org/2023/09/21/indeed-ai-at-work-report/>.

Exhibit 1: Pew Research Center – 20 Occupations Most Likely to Have High Exposure to AI¹⁰

Occupation (SOC)	
Below Middle-Skill	
Billing and Posting Clerks (43-3021)	Switchboard Operators, Including Answering Service (43-2011)
Middle-Skill	
Architectural and Civil Drafters (17-3011)	Medical Transcriptionists (31-9094)
Biological Technicians (19-4021)	Paralegals and Legal Assistants (23-2011)
Bookkeeping, Accounting, and Auditing Clerks (43-3031)	Payroll and Timekeeping Clerks (43-3051)
Court Reporters and Simultaneous Captioners (27-3092)	Production, Planning, and Expediting Clerks (43-5061)
Data Entry Keyers (43-9021)	Tax Preparers (13-2082)
Drafters, All Other (17-3019)	Title Examiners, Abstractors, and Searchers (23-2093)
Loan Interviewers and Clerks (43-4131)	
Above Middle-Skill	
Commercial and Industrial Designers (27-1021)	Judicial Law Clerks (23-1012)
Computer Hardware Engineers (17-2061)	Proofreaders and Copy Markers (43-9081)
Credit Analysts (13-2041)	

Results from McKinsey’s annual AI survey note that the three most common areas utilizing generative AI are: marketing and sales, product and service development, and service operations. The most regularly reported use-cases of AI are related to drafting, summarizing, or editing documents.

Endorsement Summary

The Orange County Center of Excellence for Labor Market Research (OC COE) prepared this report to determine whether there is a supply gap in the Los Angeles/Orange County regional labor market related to one below middle-skill occupation, denoted with an asterisk (*) throughout this report:

- *Office and Administrative Support Workers, All Other (43-9199)**

While the proposed program is intended to train students to use generative AI in a variety of occupational settings, this occupation is the only one that, without any additional education or training, a student would be prepared for upon completion. Thus, is the occupation used for the traditional labor market aspects of this brief. An additional job postings analysis was conducted to account for AI, specifically.

Based on the available data there appears to be a supply gap for *office and administrative support workers, all other** and typical education requirements for this occupation aligns with a community college education. However, typical entry-level wages are below the Self-Sufficiency Standard living wage.

¹⁰ 20 Occupations Most Likely to Have High Exposure to AI," Pew Research Center’s Social & Demographic Trends Project, last modified July 25, 2023, https://www.pewresearch.org/social-trends/2023/07/26/2023-ai-and-jobs-appendix/st_2023-07-26_ai-and-jobs_a-03//

Therefore, due to some of the regional labor market criteria being met, the COE endorses this proposed program.

Exhibit 2 lists the occupational demand, supply, typical entry-level education, and educational attainment for the occupations included in this report.

Exhibit 2: Labor Market Endorsement Summary

Occupation (SOC)	Demand (Annual Openings)	Supply (CC and Non-CC)	Entry-Level Hourly Earnings (25 th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Office and Administrative Support Workers, All Other (43-9199)*	LA: 1,032 OC: 325	LA: 690 OC: 326	OC: \$17.12	High school diploma or equivalent	40%
Total	1,357	1,016	N/A	N/A	N/A

Demand:

- The number of jobs related to *office and administrative support workers, all other** is projected to decrease 2% through 2028, equating to 1,357 annual job openings.
- Hourly entry-level wages for *office and administrative support workers, all other** are \$17.12, which is significantly below the Self-Sufficiency Standard living wage.
- There were 301 online job postings over the past 12 months in Los Angeles and Orange counties. The highest number of postings were for escrow assistants, operations associates, and escrow officers.
- The typical entry-level education for *office and administrative support workers, all other** is a high school diploma or equivalent.
- Approximately 40% of workers in the field have completed some college or an associate degree as their highest level of educational attainment.

Supply:

- There was an average of 1,016 awards conferred by 26 community colleges in Los Angeles and Orange Counties from 2020 to 2023.
- Non-community college institutions conferred an average of 0 awards from 2019 to 2022.
- Orange County community college students that exited office technology/office computer applications programs in the 2020-21 academic year had a median annual wage of \$40,996 (\$19.71 per hour) after exiting the program and 45% attained the regional living wage.
- Throughout Orange County, 65% of office technology/office computer applications students that exited their program in 2019-20 reported that they are working in a job closely related to their field of study.

Demand

Occupational Projections:

Exhibit 3 shows the annual percent change in jobs for *office and administrative support workers, all other** from 2018 through 2028. Though there was a 7% decline across all occupations in Los Angeles and

Orange counties from 2019 to 2020 due to the COVID-19 pandemic, employment in *office and administrative support workers, all other** in Orange County decreased each year from 2018 to 2023.

In the two years preceding the pandemic as well as in 2023, employment for this occupation decreased in Orange County. Employment for *office and administrative support workers, all other** in Orange County is projected to decrease by 1% through 2028, experiencing a lower rate relative to all occupations in Los Angeles and Orange counties.

Exhibit 3: Annual Percent Change in Jobs for Office and Administrative Support Workers, All Other*, 2018-2028

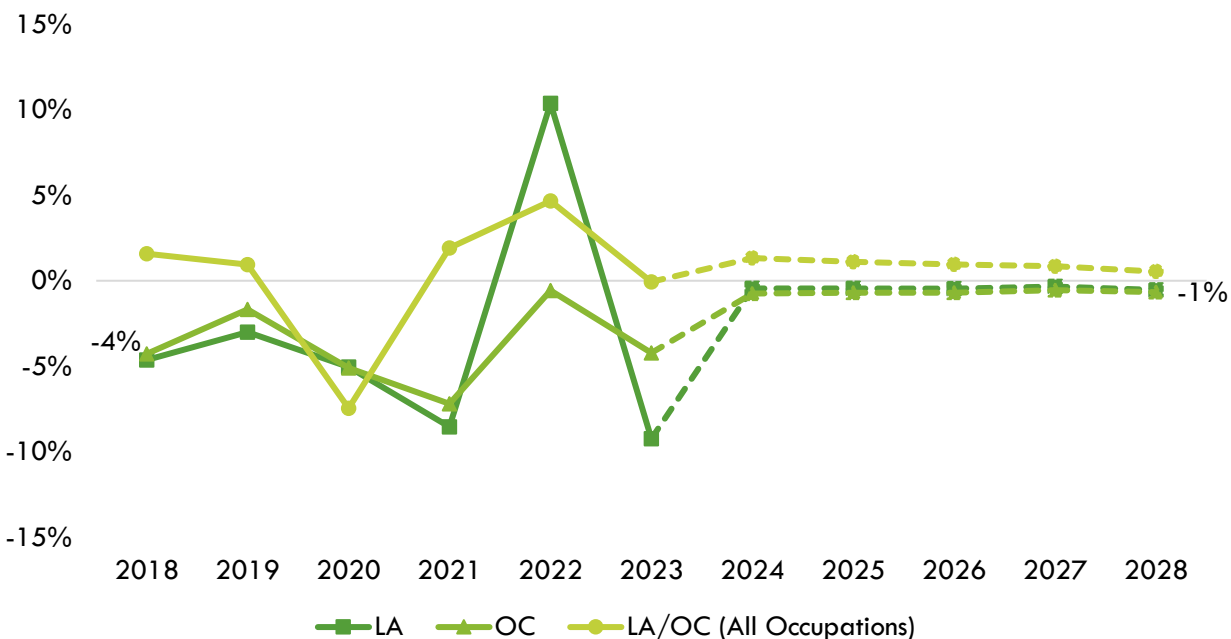


Exhibit 4 shows the five-year occupational demand projections for *office and administrative support workers, all other**. In Los Angeles/Orange County, the number of jobs related to this occupation is projected to decrease by 2% through 2028. There is projected to be 1,357 jobs available annually.

Exhibit 4: Occupational Demand in Los Angeles and Orange Counties¹¹

Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
Los Angeles	9,916	9,695	(221)	(2%)	1,032
Orange	3,141	3,036	(104)	(3%)	325
Total	13,057	12,732	(325)	(2%)	1,357

Wages:

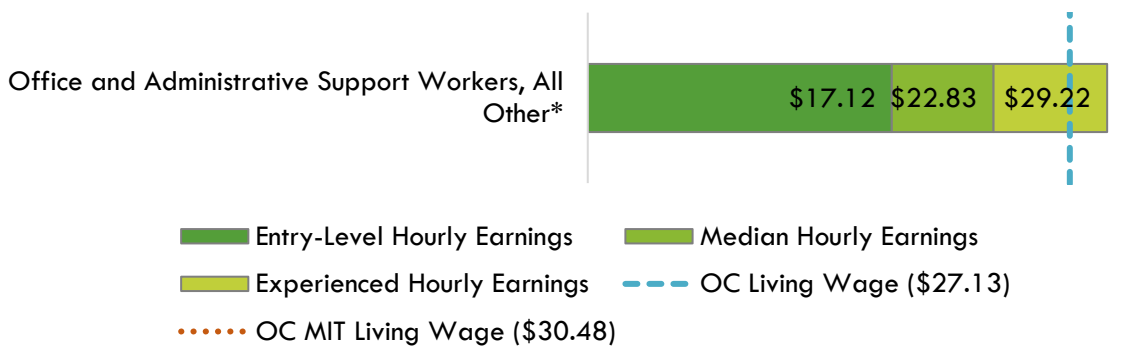
The labor market endorsement in this report considers the entry-level hourly wages for *office and administrative support workers, all other** in Orange County as they relate to the county’s living wage. Los Angeles County wages are included below to provide a complete analysis of the LA/OC region.

¹¹ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

At the direction of the California Community College Chancellor’s Office, the living wage endorsement criteria in this report uses the University of Washington’s Center for Women’s Welfare Self-Sufficiency Standard, which the COE refers to as a living wage, to determine Orange County’s living wage of \$27.13, last updated in March 2024. Additionally, data for the MIT Living Wage, updated on February 14, 2024, is provided as a reference. Currently, the MIT Living Wage in Orange County is \$30.48. Both figures, which account for geographic-specific costs of necessities such as housing, food, health care, and transportation to assess the cost of living, are notated in the exhibits below.

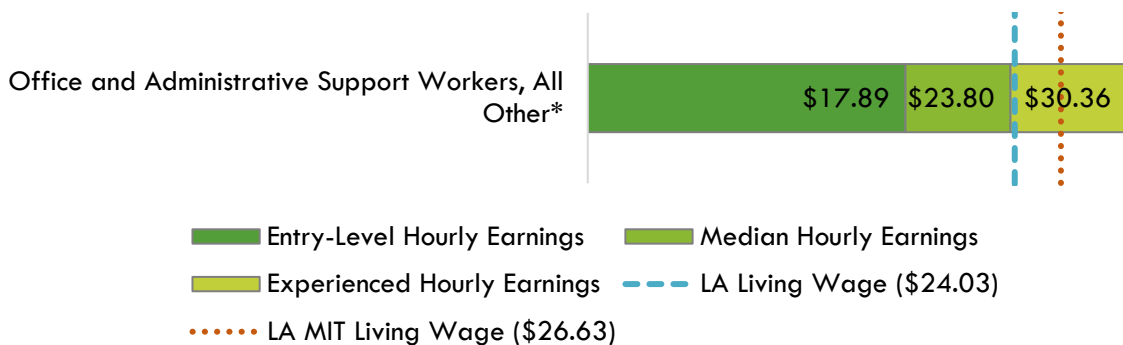
Entry-level hourly wages for *office and administrative support workers, all other** are \$17.12 and median wages are \$22.83, both of which are significantly below the living wage for one adult (\$27.13 in Orange County). Experience-level wages are \$29.22 and are above the living wage. Orange County’s average wages of \$25.90 are below the average statewide wage of \$26.55 for this occupation. Exhibit 5 shows the wage range for *office and administrative support workers, all other** in Orange County and how it compares to the regional living wage.

Exhibit 5: Wages by Occupation in Orange County



Entry-level hourly wages for *office and administrative support workers, all other** are \$17.89 and median wages are \$23.80, both of which are below the living wage for one adult (\$24.03 in Los Angeles County). Experience-level wages are \$30.36 and are above the living wage. Los Angeles County’s average wages of 26.80 are slightly above the average statewide wage of \$26.55 for this occupation. Exhibit 6 shows the wage range for *office and administrative support workers, all other** in Los Angeles County and how it compares to the regional living wage.

Exhibit 6: Wages by Occupation in Los Angeles County



Resilient Jobs and U.S. News & World Report Best Jobs:

Exhibit 7 shows if an occupation is considered an Orange County Great Recession-Resilient, COVID-19 Pandemic Recession-Resilient Job, or a 2024 U.S. News & World Report (USN&WR) Best Job. *Office and*

administrative support workers, all other* did not meet the criteria to be considered any of the three designations.

Exhibit 7: Resilient Jobs and USN&WR Best Jobs Designations

Occupation	Great Recession-Resilient Job	COVID-19 Pandemic Recession-Resilient Job	2024 USN&WR Best Job
Office and Administrative Support Workers, All Other*	☐	☐	☐

Occupational Job Postings:

Important Online Job Postings Data Note: For the purposes of this analysis, online job postings data for the Machining group was sourced from JobsEQ, rather than Lightcast.¹²

Additionally, there are several limitations when analyzing job postings. A single job posting may not represent a single job opening, as employers may be creating a pool of candidates for future openings or hiring for multiple positions with a single posting. Additionally, not all jobs are posted online, and jobs may be filled through other methods such as internal promotion, word-of-mouth advertising, physical job boards, or a variety of other channels.

There were 301 online job postings related to office and administrative support workers, all other* listed in the past 12 months. Exhibit 8 shows the number of job postings for this occupation.

Exhibit 8: Number of Job Postings by Occupation (n=301)

Occupation	Job Postings	Percentage of Job Postings
Office and Administrative Support Workers, All Other*	301	100%
Total Postings	301	100%

The top employers in the region, by number of job postings, are shown in Exhibit 9.

Exhibit 9: Top Employers by Number of Job Postings (n=301)

Employer	Job Postings	Percentage of Job Postings
Certified Mobile Notary Service	55	18%
First American	31	10%
Jobtracks	6	2%
Marquee Staffing	6	2%
Axelon Services, Corp	5	2%
Professional Alternatives	4	1%
Advantage One Escrow	3	1%
COAST Staffing	3	1%
JohnHart Real Estate	3	1%
LUXRE Realty	3	1%

¹² An analysis of Lightcast job postings data for Office and Administrative Support Workers, All Other (43-9199)* showed that there were no postings for this occupation in the last 12 months in Los Angeles and Orange counties. To overcome this limitation, the OC COE utilized JobsEQ, another labor market and job postings data analysis tool, to analyze postings for Office and Administrative Support Workers, All Other (43-9199)* in this section.

The top specialized and soft skills listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 10.

Exhibit 10: Top Skills by Number of Job Postings (n=301)

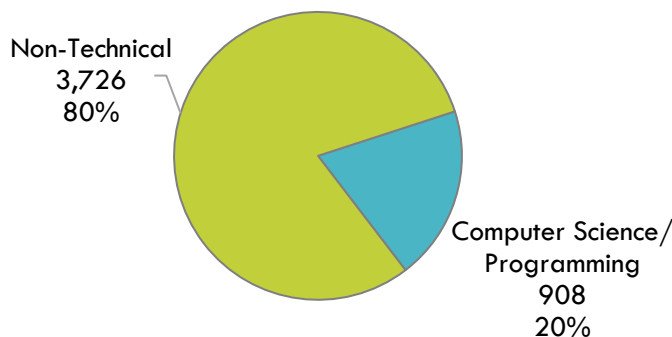
Top Specialized Skills	Top Soft Skills
Microsoft Office (92)	Communication (Verbal and written skills) (203)
IT Support (33)	Detail Oriented/Meticulous (161)
Microsoft Excel (33)	Organization (131)
Microsoft Outlook (21)	Customer Service (108)
Real Estate (17)	Cooperative/Team Player (81)
Microsoft PowerPoint (16)	Problem Solving (72)
Microsoft Word (16)	Ability to Work in a Fast Paced Environment (48)
English (9)	Prioritize (48)
Spanish (9)	Interpersonal Relationships/Maintain Relationships (46)
Bilingual (7)	Self-Motivated/Ability to Work Independently/Self Leadership (46)

Artificial Intelligence Job Postings:

Important Online Job Postings Data Note: Online job postings data is sourced from Lightcast, a labor market analytics firm that scrapes, collects, and organizes data from online job boards such as LinkedIn, Indeed, Glassdoor, Monster, GovernmentJobs.com, and thousands more. Lightcast uses natural language processing (NLP) to determine the related company, industry, occupation, and other information for each job posting. However, NLP has limitations that include understanding contextual words of phrases; determining differences in words that can be used as nouns, verbs, and/or adjectives; and misspellings or grammatical errors.¹³ For these reasons, job postings could be assigned to the wrong employer, industry, or occupation within Lightcast’s database.

To further understand regional demand for jobs that utilize AI, this section analyzes online job postings in Los Angeles and Orange counties over the past 12 months that included the following keywords: artificial intelligence, artificial intelligence development, artificial intelligence systems, generative artificial intelligence, deep learning, and deep learning methods. There were 4,634 online job postings that included these keywords over the past 12 months. Nearly 80% (3,726) of these postings were in non-technical/programming roles and approximately 20% (908) were computer science/programming related, as shown in Exhibit 11.

Exhibit 11: AI Job Postings in LA/OC (n=4,634)



¹³ K. R. Chowdhary, Fundamentals of Artificial Intelligence (Basingstoke: Springer Nature, 2020), <https://link.springer.com/book/10.1007/978-81-322-3972-7>.

The remainder of this section analyzes online job postings for the 3,726 non-technical occupations.

Occupations

Exhibit 12 shows the top 15 occupations in online job postings that included keywords related to AI. These 15 occupations account for 39% of non-technical AI postings. Of these 15 occupations, 60% are related to business.

Exhibit 12: Number of Job Postings by Occupation (n=3,726)

Occupation	Job Postings	Percentage of Job Postings
Marketing Managers	232	6%
Market Research Analysts and Marketing Specialists	144	4%
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	130	3%
Writers and Authors	103	3%
Sales Managers	102	3%
Lawyers	98	3%
Project Management Specialists	81	2%
First-Line Supervisors of Office and Administrative Support Workers	81	2%
General and Operations Managers	80	2%
Graphic Designers	75	2%
Postsecondary Teachers	69	2%
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	68	2%
Security Guards	62	2%
Magnetic Resonance Imaging Technologists	61	2%
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	60	2%

Employers

The top employers in the region for these AI roles, by number of job postings, are shown in Exhibit 13. The top employer is Medtronic, a company that produces healthcare solutions and technologies to treat many health conditions.¹⁴

Exhibit 13: Top Employers by Number of Job Postings (n=3,726)

Employer	Job Postings	Percentage of Job Postings
Medtronic	111	3%
Outlier	79	2%
Accenture	72	2%
Amazon	71	2%
Sage	63	2%

¹⁴ <https://www.medtronic.com/en-us/our-company/key-facts.html>

Employer	Job Postings	Percentage of Job Postings
Superior Protection Services	61	2%
University of California	47	1%
KPMG	40	1%
Fastaff	39	1%
PricewaterhouseCoopers	39	1%

Skills

The top specialized, soft, and computer skills listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 14. Three of the top specialized skills are specifically related to AI: artificial intelligence, automation, and generative artificial intelligence.

Exhibit 14: Top Skills by Number of Job Postings (n=3,726)

Top Specialized Skills	Top Soft Skills	Top Computer Skills
Artificial Intelligence (3,417)	Communication (1,901)	Generative Artificial Intelligence (508)
Marketing (877)	Management (1,048)	Microsoft Excel (378)
Project Management (647)	Leadership (967)	Microsoft Office (336)
Generative Artificial Intelligence (508)	Sales (959)	Microsoft PowerPoint (322)
Automation (429)	Operations (762)	Adobe Photoshop (182)
Data Analysis (373)	Research (761)	Salesforce (166)
Workflow Management (343)	Detail Oriented (755)	ChatGPT (151)
Finance (317)	Innovation (712)	Adobe Creative Suite (142)
New Product Development (286)	Writing (670)	Microsoft Outlook (141)
Business Development (263)	Problem Solving (648)	Google Workspace (129)

Education Requirements

Of the 59% of online job postings that included a minimum level of education, 83% (1,839) requested a bachelor's degree or above and 17% (371) requested a high school diploma or equivalent or an associate degree.

AI Job Description Analysis

The occupations, employers, and skills analyzed above provide an overview of non-technical AI job postings in Los Angeles and Orange counties over the last 12 months. The data is representative of all postings that included at least one keyword related to AI. However, it does not consider the context on how AI will be used in these jobs; to better understand that, the OC COE analyzed job descriptions included in online job postings for the top 10 occupations (as shown above in Exhibit 12). The groups are defined as:

- Marketing and Sales
 - Marketing Managers
 - Market Research Analysts and Marketing Specialists
 - Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
 - Sales Managers

- Writing
 - *Writers and Authors*
- Legal
 - *Lawyers*
- Management and Operations
 - *Project Management Specialists*
 - *First-Line Supervisors of Office and Administrative Support Workers*
 - *General and Operations Managers*
- Graphic Design
 - *Graphic Designers*

Generally, base knowledge and expertise in an existing occupational area is required and AI knowledge is an additional skill preference for these jobs.

Marketing and Sales

Collectively, the four occupations in this group accounted for 608 online job postings that included at least one AI keyword. Of those, 62% (376) were for the marketing occupations and 38% (232) were for the two sales occupations.

Postings for the two marketing occupations generally do not require experience with AI; however, some employers like Amazon make mention of AI knowledge and/or experience as a requirement or preferred qualification within its job descriptions. Amazon is the top employer for marketing job postings. Of the 23 job postings it published, 17 held direct mention of AI and many of these postings detailed experience or knowledge of AI or gen-AI as a requirement or preferred skill.

Job postings for the two sales occupations usually involve business development, account management, or client retention. The top employer for these two occupations is Sage, a company provides HR, payroll, and finance software and solutions for clients, which range from startups to enterprise and scale-up businesses.¹⁵ However, none of the postings from this company have direct mention of AI within any of the job descriptions; there is no mention of AI knowledge required for these roles.

Writing

There were 103 online job postings for *writers and authors* that included at least one AI keyword. Of those, 11% (11) were posted by Circle – Data Annotation, the most postings by any single business. Circle – Data Annotation specializes in data collection, processing, and annotation for AI and machine learning projects. Over half of these positions were for “Service Writers,” which were full-time or part-time, remote contract roles that start at \$20 per hour. Notably, these positions train AI chatbots to improve their accuracy and utility for end-users. Following is the job description included in the posting notes:

[Circle –]Data Annotation is committed to creating quality AI. Join our team to help train AI chatbots while gaining the flexibility of remote work and choosing your own schedule. We are looking for a professional content writer and copy editor to join our team and teach AI chatbots. You will have conversations with chatbots in order to measure their progress, as well as write novel conversations in order to teach them what to say.

The company with the second largest number of postings (8) for *writers and authors* was Outlier. Half of these postings were for “Writers” (2) or “Content Writers” (2), both of which would examine the quality of AI-generated responses and help train/improve models.

Legal

There were 98 postings for *lawyers*, with Medtronic having the highest number of postings (10). Of the 98 total postings, only 28 (29%) postings were not for job titles related to legal counsels, associates,

¹⁵ <https://www.sage.com/en-us/company/about-sage/>

attorneys, and lawyers. A sample of job titles included in these postings were: “Knowledge Management Managers” (4), “Artificial Intelligence Managers” (3), “Business Immigration Analysts” (3), and “Knowledge Management Analysts” (3). However, when examining the job descriptions for many of these postings, it was clear that attorneys or lawyers were being sought after.

Management and Operations

There were 242 postings for this group of occupations. The top employer was Accenture, with 14 postings. Of the 14 postings, 43% (6) were for *general and operations managers*, 43% (6) were for *first-line supervisors of office and administrative support workers*, and (14%) 2 were for *project management specialists*. Generally, many of these postings detail engagement with AI or AI specialists in the business’s approach with client engagement while some of the remaining postings list AI experience/knowledge as a requirement for roles aimed at helping integrate AI or consulting clients with AI integration within their work.

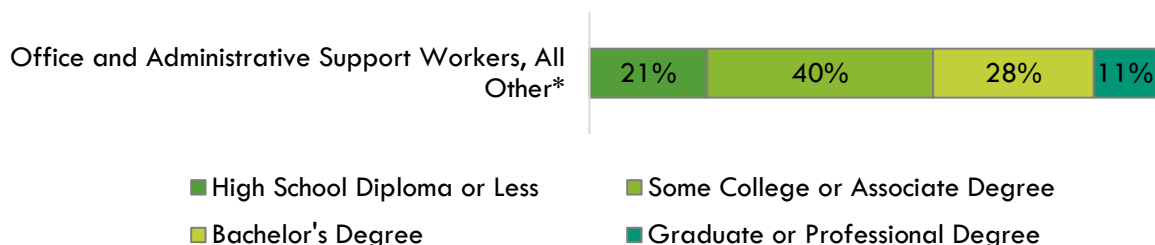
Graphic Design

There were 75 postings for *graphic designers*, with Canteen Vending, Lululemon, and Meta having the highest number of postings (3 each). Posting with the “Graphic Design” job title were the most prevalent (34), followed distantly by “Apparel Graphic Designers” (6). Of the total 75 postings, 55% (41) included a minimum education requirement, 83% of which required a bachelor’s degree. Generally, many postings require AI knowledge and/or experience, in addition to other software-related expertise, to create, develop, or improve graphics or animations.

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a high school diploma or equivalent as the typical entry-level education for *office and administrative support workers, all other**. However, the national-level educational attainment data indicates 40% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 15 shows the educational attainment for this occupation.

Exhibit 15: National-level Educational Attainment for Occupations



Of the 42% of the cumulative job postings for this occupation that listed a minimum education requirement in Los Angeles/Orange County, 82% (102) requested a high school diploma or an associate degree and 18% (22) requested a bachelor’s degree.

Educational Supply

Community College Supply:

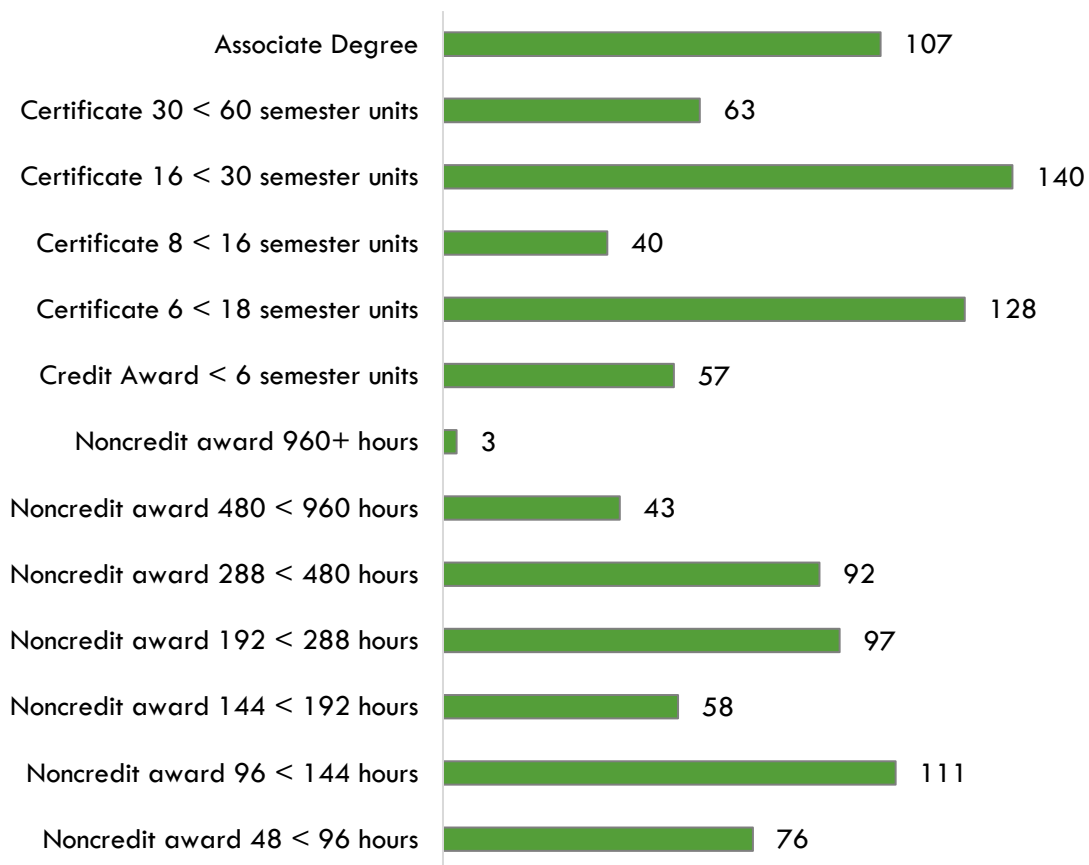
Exhibit 16 shows the three-year average number of awards conferred by community colleges in the related TOP code: Office Technology/Office Computer Applications (0514.00). The colleges with the most completions in the region are Mt. San Antonio, Santa Ana, and Long Beach. Over the past 12 months, there were no other related program recommendation requests from regional community colleges.

Exhibit 16: Regional Community College Awards (Certificates and Degrees), 2020-2023

TOP Code	Program	College	2020-2021 Awards	2021-2022 Awards	2022-2023 Awards	3-Year Award Average		
0514.00	Office Technology / Office Computer Applications	Cerritos	14	14	20	16		
		Citrus	0	3	2	2		
		East LA	51	47	17	38		
		El Camino	3	1	2	2		
		Glendale	30	53	94	59		
		LA City	5	35	43	28		
		LA Harbor	7	13	0	7		
		LA Mission	11	17	16	15		
		LA Pierce	75	66	38	60		
		LA Southwest	6	9	1	5		
		LA Trade	21	24	14	20		
		LA Valley	80	65	98	81		
		Long Beach	88	92	74	85		
		Mt San Antonio	183	233	210	209		
		Pasadena	59	43	21	41		
		Rio Hondo	16	9	0	8		
		Santa Monica	8	11	8	9		
		West LA	1	0	19	7		
		LA Subtotal	658	735	677	690		
		Coastline	1	0	0	0		
		Cypress	8	5	3	5		
		Irvine	9	12	11	11		
		North Orange Adult	37	34	54	42		
		Orange Coast	0	1	24	8		
		Saddleback	7	4	46	19		
		Santa Ana	246	130	133	170		
		Santiago Canyon	71	100	42	71		
		OC Subtotal	379	286	313	326		
		Supply Total/Average			1,037	1,021	990	1,016

Exhibit 17 shows the annual average community college awards by type from 2020-21 to 2022-23. The plurality of the awards are for certificates between 16 and less than 30 semester units, followed by certificates between 6 and less than 18 semester units and noncredit awards between 96 and less than 144 hours.

Exhibit 17: Annual Average Community College Awards by Type, 2020-2023



Community College Student Outcomes:

Exhibit 18 shows the Strong Workforce Program (SWP) metrics for office technology/office computer applications programs in Rancho Santiago Community College District (RSCCD), the Orange County Region, and California. Of the 2,431 Orange County office technology/office computer applications students in the 2021-22 academic year, 1,832% (1,832) attended an RSCCD college.

RSCCD students that exited office technology/office computer applications programs in the 2021-22 academic year had higher median annual earnings (\$42,056 or \$20.22 per hour) compared to all office technology/office computer applications students in Orange County (\$40,996 or \$19.71 per hour). A higher percentage of RSCCD office technology/office computer applications students attained the living wage (48%) when compared to all office technology/office computer applications students in Orange County (45%).

**Exhibit 18: Office Technology/Office Computer Applications (0514.00)
Strong Workforce Program Metrics, 2021-22¹⁶**

SWP Metric	RSCCD	OC Region	California
SWP Students	1,832	2,431	33,230
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	18%	19%	29%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	85%	85%	77%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	145	161	1,525
SWP Students Who Transferred to a Four-Year Postsecondary Institution (2019-20)	56	127	2,270
SWP Students with a Job Closely Related to Their Field of Study (2019-20)	63%	65%	65%
Median Annual Earnings for SWP Exiting Students (2020-21)	\$42,056 (\$20.22)	\$40,996 (\$19.71)	\$40,436 (\$19.44)
Median Change in Earnings for SWP Exiting Students (2020-21)	6%	11%	17%
SWP Exiting Students Who Attained the Living Wage (2020-21)	48%	45%	55%

Non-Community College Supply:

To comprehensively analyze the regional supply, it is crucial to include data from other institutions offering artificial intelligence for business training programs. However, there are currently no Classification of Instructional Programs (CIP) codes connected with *office and administrative support workers, all other** as evidenced by [2020 CIP/SOC Crosswalk](#) provided by National Center for Education Statistics.¹⁷

¹⁶ All SWP metrics are for 2021-22 unless otherwise noted.

¹⁷ "CIP: The Classification of Instructional Programs," National Center for Education Statistics (NCES), accessed December 11, 2024, <https://nces.ed.gov/ipeds/cipcode/default.aspx?y=56>.

Regional Demographics

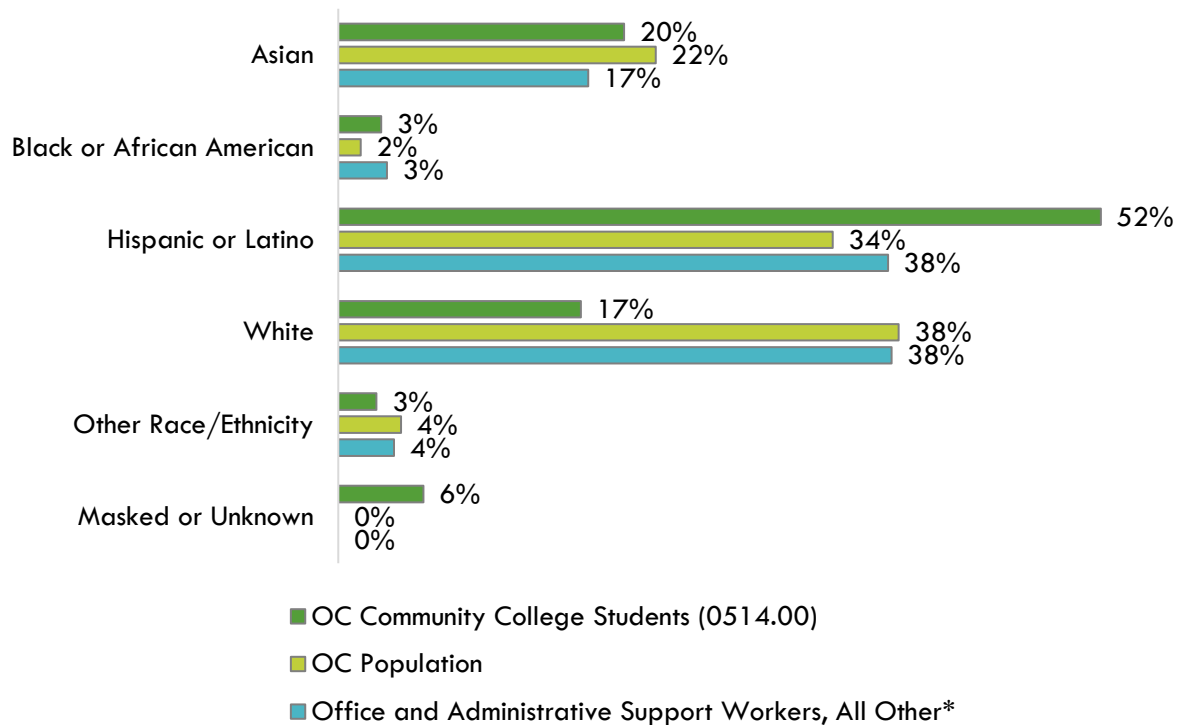
This section examines demographic data for Orange County community college students in office technology/office computer applications compared to the OC population, along with occupational data, to identify potential diversity and equity issues addressable by community college programs.

Ethnicity:

Exhibit 19 compares the ethnicity of Orange County community college students enrolled in office technology/office computer applications programs, the overall Orange County population, and occupation-specific data for *office and administrative support workers, all other**.

Notably, white individuals account for 38% of workers in the field and aligns with the population but is significantly higher than the percentage of community college office technology/office computer application students (17%). Conversely, Hispanic or Latino individuals account for 38% of the workers in the field, which relatively aligns with the population (34%) but is significantly below community college office technology/office computer application students (52%).

Exhibit 19: Program and County Demographics by Ethnicity

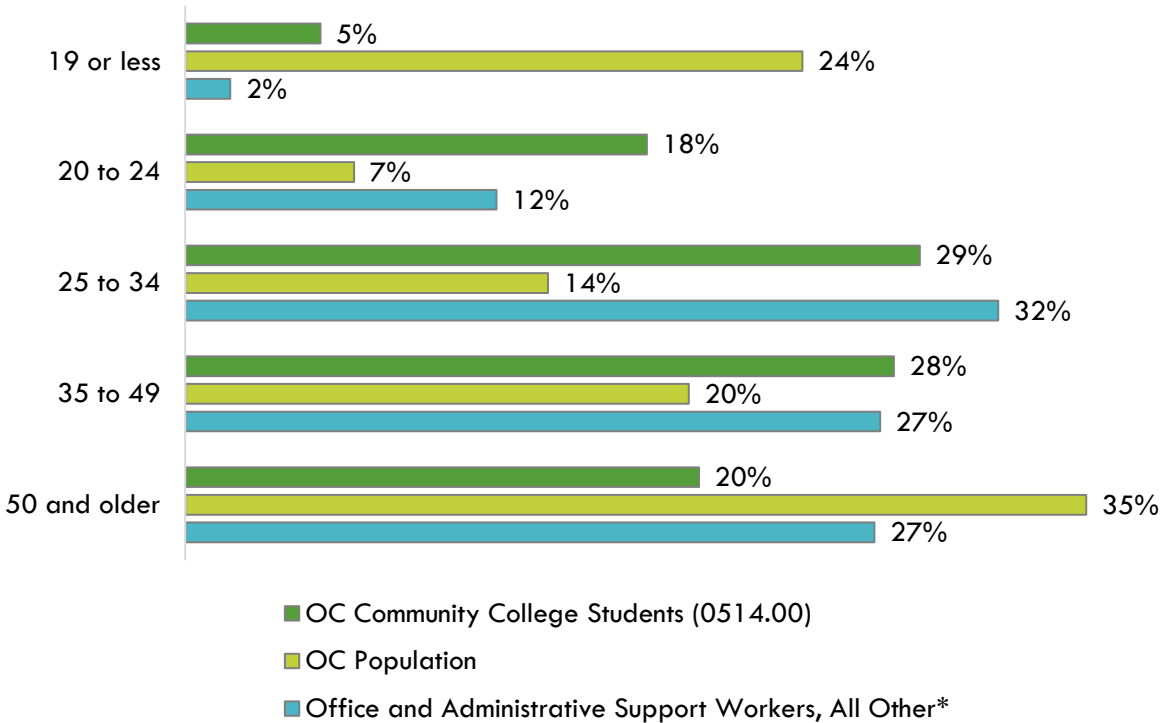


Age:

Exhibit 20 compares the age of Orange County community college students enrolled in office technology/office computer applications programs, the overall Orange County population, and occupation-specific data for office and administrative support workers, all other*.

Across all population groups, individuals are almost evenly split between persons 34 and younger and persons 35 and older. Specifically, individuals 34 and younger account for 52% of community college office technology/office computer applications students, 45% of the population, and 46% of workers in the field. Whereas individuals 35 and older account for 48% of community college office technology/office computer applications students, 55% of the population, and 54% of workers in the field.

Exhibit 20: Program and County Demographics by Age



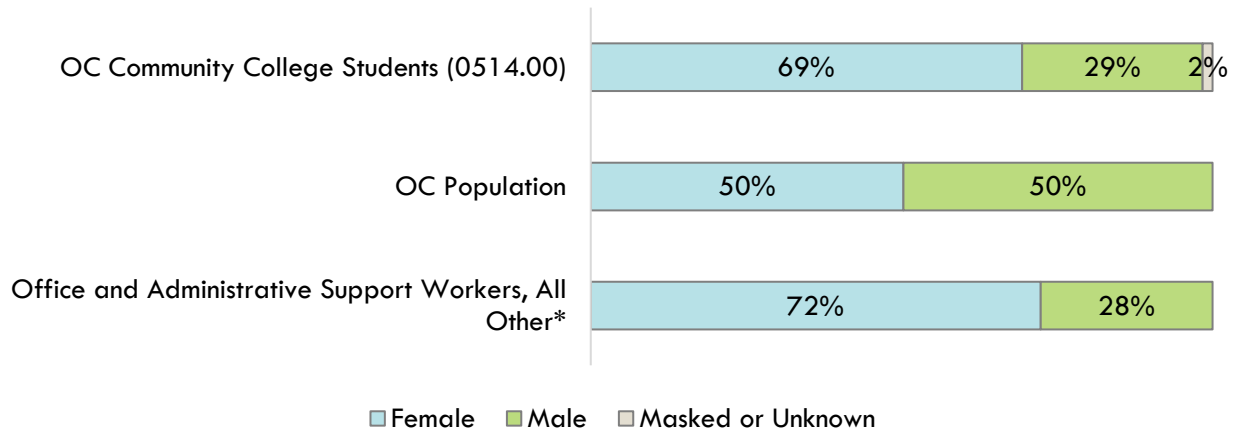
Sex:

Though the population is split evenly between women and men, only 29% of community college office technology/office computer applications students and 28% of workers in the field are men.

Exhibit 21 compares the sex of Orange County community college students enrolled in office technology/office computer applications programs, the overall Orange County population, and occupation-specific data for *office and administrative support workers, all other**.

Though the population is split evenly between women and men, only 29% of community college office technology/office computer applications students and 28% of workers in the field are men.

Exhibit 21: Program and County Demographics by Sex



Appendix A: Methodology

The OC COE prepared this report by analyzing data from occupations and education programs. Occupational data is derived from Lightcast, a labor market analytics firm that consolidates data from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS) and other government agencies. Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

Using a TOP-SOC crosswalk, the OC COE identified middle-skill jobs for which programs within these TOP codes train. Middle-skill jobs include:

- 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.

The OC COE determined labor market supply for an occupation or SOC code by analyzing the number of program completers or awards in a related TOP or CIP code. The COE developed a “supply table” with this information, which is the source of the program supply data for this report. TOP code data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP code data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data), also known as IPEDS. TOP is a system of numerical codes used at the state level to collect and report information on California community college programs and courses throughout the state that have similar outcomes. CIP codes are a taxonomy of academic disciplines at institutions of higher education in the United States and Canada. Institutions outside of the California Community College system do not use TOP codes in their reporting systems.

Data included in this analysis represent the labor market demand for relevant positions most closely related to the proposed program as expressed by the requesting college in consultation with the OC COE. Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study which can signal demand and show what employers are looking for in potential employees but is not a perfect measure of the quantity of open positions.

All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

Appendix B: Data Sources

Data Type	Source
Occupational Projections, Wages, and Job Postings	<p>Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics and the American Community Survey. For more information, see https://lightcast.io/</p> <p>An analysis of Lightcast job postings data showed that there were no postings for the analyzed occupation in the last 12 months in Los Angeles and Orange counties. To overcome this limitation, the OC COE utilized JobsEQ, another labor market and job postings data analysis tool, to analyze postings for the occupation examined in this report. For more information on this tool, see https://www.chmura.com/. However, Lightcast was still used for the artificial intelligence job posts.</p>
Living Wage	<p>“Living Wage” measures the income necessary for an individual or family to afford basic expenses by assessing the costs such as housing, food, child care, health care, transportation, and taxes.</p> <p>Per the CCCCCO’s this report’s endorsement criteria uses the University of Washington’s Center for Women’s Welfare Self-Sufficiency Standard last updated in March 2024, which is \$27.13 per hour (\$56,451 annually) in Orange County. For more information, see: http://www.selfsufficiencystandard.org/California</p> <p>The MIT Living Wage, updated on February 14, 2024, is a nationally recognized living wage metric and is provided for reference. The current MIT Living Wage in Orange County is \$30.48. For more information, see: https://livingwage.mit.edu/counties/06059</p>
Typical Education and Training Requirements, and Educational Attainment	<p>The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, see https://www.bls.gov/emp/documentation/education/tech.htm</p>
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	<p>The O*NET database includes information on skills, abilities, knowledges, work activities, and interests associated with occupations. For more information, see https://www.onetonline.org/help/online/</p>

Data Type	Source
Educational Supply	<p>The CCCC Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu</p> <p>The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions). For more information, see https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions</p>
Student Metrics and Demographics	<p>LaunchBoard, a statewide data system supported by the California Community Colleges Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: https://www.calpassplus.org/LaunchBoard/Home.aspx</p>
Population and Occupation Demographics	<p>The Census Bureau's American Community Survey (ACS) is the premier source for detailed population and housing information. For more information, see: https://www.census.gov/programs-surveys/acs</p> <p>Data is sourced from IPUMS USA, a database providing access to ACS and other Census Bureau data products. For more information, see: https://usa.ipums.org/usa/about.shtml</p>

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