Labor Market Analysis for Program Recommendation: 3020.20/ Piloting
CIP: 49.0109/ Remote Aircraft Pilot
(Drone Piloting)

Orange County Center of Excellence, January 2026

FOR LABOR MARKET RESEARCH
ORANGE COUNTY

⚠ Endorsed: Caution Advised			
Program LMI Endorsement Criteria			
Supply Gap:	Met ☑	Partially Met ☐	Not Met ☐
	There are projected to be **920 annual job openings** throughout Los Angeles and Orange counties *airline pilots, copilots, and flight engineers*, which **is more than the 147 awards conferred by educational institutions**.		
Self-Sufficiency Standard Living Wage[1]:	Met ☑	Partially Met ☐	Not Met ☐
	The typical entry-level wage for *airline pilots, copilots, and flight engineers* is **$78.21**, which is **above the OC living wage of $27.13**.		
Education:	Met ☐	Partially Met ☐	Not Met ☑
	The typical educational attainment for *airline pilots, copilots, and flight engineers* is a bachelor's degree, with only **18% of workers in the field having completed some college or an associate degree as their highest level of education**, but it is unclear if this applies specifically to those piloting drones as data is unavailable.**.**		

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 and Orange counties regional labor market related to one above middle-skill occupation – denoted with an asterisk (^) throughout this report:

- *Airline Pilots, Copilots, and Flight Engineers (53-2011)^*

While the occupation in this report, *airline pilots, copilots, and flight engineers (53-2011)^*, is classified as above middle-skill and requires Federal Aviation Administration (FAA) licensing,[2] it also encompasses uncrewed aerial system (UAS) and drone operations, which are actively trained for at community colleges. For this report, the occupation was treated as middle-skill with the caveat that the associated demand and wage data include above middle-skill piloting roles.

[1] 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; Orange County's living wage of $27.13, was last updated in March 2024.

[2] "California Licenses: 53-2011.00 - Airline Pilots, Copilots, and Flight Engineers," O*NET OnLine, updated December 16, 2025, https://www.onetonline.org/link/locallicenses/53-2011.00?st=CA.

Based on the available data, there appears to be a supply gap for *airline pilots, copilots, and flight engineers* and all job openings have entry-level wages above the Self-Sufficiency Standard living wage. However, the typical education requirement for this occupation is a bachelor's degree, which is beyond the scope of typical community college training, but it is unclear if this applies specifically to those piloting drones as data is unavailable. **Therefore, due to some of the regional labor market criteria being met, the COE endorses this proposed program.**

Exhibit 1 lists the occupational demand, supply, typical entry-level education, and educational attainment for the middle-skill occupation included in this report.

Exhibit 1: Labor Market Endorsement Summary

Occupation (SOC)	Demand (Annual Openings)	Supply (CC and Non-CC)	Entry-Level Hourly Earnings (25th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Airline Pilots, Copilots, and Flight Engineers (49-3031)^	LA: 872	LA: 60	OC: $78.21*	Bachelor's degree	18%
	OC: 48	OC: 86			
Total	**920***	**147**	**N/A**	**N/A**	**N/A**

Demand

- In Los Angeles and Orange counties, the number of jobs related to *airline pilots, copilots, and flight engineers^* is projected to increase 6% through 2029, equating to 920 annual job openings.
- Hourly entry-level wages for *airline pilots, copilots, and flight engineers^* are $78.21 in Orange County; all annual openings have entry-level wages above the Self-Sufficiency Standard living wage.
- There were 515 online job postings for *airline pilots, copilots, and flight engineers^* over the past 12 months. The highest number of postings were for captains, helicopter pilots, and pilots.
- The typical entry-level education for *airline pilots, copilots, and flight engineers^* is a bachelor's degree.
- Approximately 18% of workers in the field have completed some college or an associate degree as their highest level of educational attainment.

Supply

- Between 2021 to 2024, an average of 147 awards were conferred by 5 community colleges for this above middle-skill occupation in Los Angeles and Orange counties.
- From 2020 to 2023, no awards were conferred by non-community college institutions.

- In the 2022-23 academic year, Orange County community college students that exited piloting programs had a median annual wage of $46,460 ($22.34 per hour) post-exit, and 39% attained the regional living wage.
- Due to the low number of enrollments in piloting programs, there was insufficient data to determine the number of students who were working in a job closely related to their field of study.

Demand

Occupational Projections

Exhibit 2 shows the annual percentage change in jobs for *airline pilots, copilots, and flight engineers*^ from 2019 through 2029. Between 2019 and 2020, employment levels across Los Angeles and Orange counties declined sharply due to the broader economic impacts of the COVID-19 pandemic. From 2021 to 2024, Orange County saw a fluctuation in employment for this occupation—job levels grew 12% in 2021, 20% in 2022, 1% in 2023, then declined by 6% in 2024. Beginning in 2025, Orange County job levels are projected to grow at a similar rate as the average for all occupations through 2029.

Exhibit 2: Annual Percentage Change in Jobs for *Airline Pilots, Copilots, and Flight Engineers*, 2019-2029

Exhibit 3 shows the five-year occupational demand projections for the middle-skill occupation for a*irline pilots, copilots, and flight engineers.*^ In Los Angeles and Orange counties, the number of jobs related to this occupation is projected to increase 6% through 2029, resulting in 920 jobs available annually.

Exhibit 3: Middle-Skill Occupational Demand in Los Angeles and Orange Counties[3]

Geography	2024 Jobs	2029 Jobs	2024-2029 Change	2024-2029 % Change	Annual Openings
Los Angeles	6,726	7,145	418	6%	872
Orange	396	408	12	3%	48
Total	**7,122**	**7,552**	**430**	**6%**	**920**

Wages

The labor market endorsement in this report considers the entry-level hourly wages for *airline pilots, copilots, and flight engineers^* 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.

In addition to the Self Sufficiency Standard living wage, data for the MIT Living Wage (updated on February 10, 2025) is provided as a reference. Currently, the MIT Living Wage in Orange County is $32.20. Both figures account for geographic-specific costs of necessities such as housing, food, health care, and transportation to assess the cost of living, and are notated in the exhibits below.

In Orange County, the typical entry-level wage for *airline pilots, copilots, and flight engineers^* is $78.21, which is above the Self-Sufficiency living wage of $27.13 for a single adult. Exhibit 4 shows the wage range for *airline pilots, copilots, and flight engineers^* in Orange County and how it compares to the regional living wage.

Exhibit 4: Wages by Occupation in Orange County

In Los Angeles County, the typical entry-level wage for *airline pilots, copilots, and flight engineers* is $98.69, which is above the Self-Sufficiency living wage of $24.03 for a single adult. Exhibit 5 shows the wage range for *airline pilots, copilots, and flight engineers^* in Los Angeles County and how it compares to the regional living wage.

[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.

Exhibit 5: Wages by Occupation in Los Angeles County

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

Exhibit 6 shows if each occupation is considered an Orange County Great Recession-Resilient, COVID-19 Pandemic Recession-Resilient Job, or a 2025 U.S. News & World Report (USN&WR) Best Job[4]. *Airline pilots, copilots, and flight engineers^* did not meet the criteria for any of these designations.

Exhibit 6: Resilient Jobs and USN&WR Best Jobs Designations

Occupation	Great Recession-Resilient Job	COVID-19 Pandemic Recession-Resilient Job	2025 USN&WR Best Job
*Airline Pilots, Copilots, and Flight Engineers^*	☐	☐	☐

Job Postings:

Important Job Postings Data Note: *There are limitations when analyzing job postings. A single job posting may not represent a single job opening for a variety of reasons.*

This section provides two job posting analyses to better understand regional demand for drone-related occupations. The first examines all job postings for the occupation, *airline pilots, copilots, and flight engineers^*. The second explores job postings for drone-related keywords across all occupations. Please note, job postings do not equate to labor market demand, though they do provide insights for program development, such as which employers are hiring and the skills they look for from candidates

Job Postings for Airline Pilots, Copilots, and Flight Engineers^

There were 515 online job postings related to *airline pilots, copilots, and flight engineers^* listed in the past 12 months. Exhibit 7 shows the number of job postings by occupation.

Exhibit 7: Number of Job Postings by Occupation (n=515)

Occupation	Job Postings	Percentage of Job Postings
Airline Pilots, Copilots, and Flight Engineers	515	100%
Total Postings	**515**	**100%**

[4] "100 Best Jobs," U.S. News & World Report, accessed January 28, 2025, https://money.usnews.com/careers/best-jobs/rankings/the-100-best-jobs.

The top job titles for *airline pilots, copilots, and flight engineers^* in the region, by number of job postings, are shown in Exhibit 8.

Exhibit 8: Top Job Titles by Number of Job Postings for the Middle-Skill Occupation (n=515)

Job Titles	Job Postings	Percentage
Captains	85	17%
Helicopter Pilots	66	13%
Pilots	58	11%
First Officers	57	11%
Pilots Captain	30	6%
Line Pilots	27	5%
Fixed Wing Pilots	23	4%
Pilots First Officer	21	4%
Lead Captains	15	3%
Rotor Wing Pilots	15	3%

The top employers for *airline pilots, copilots, and flight engineers^* in the region, by number of job postings, are shown in Exhibit 9.

Exhibit 9: Top Employers by Number of Job Postings for Airline Pilots, Copilots, and Flight Engineers (n=515)

Employer	Job Postings	Percentage of Job Postings
Solairus Aviation	299	58%
Reach Air Medical Services	30	6%
Clay Lacy Aviation	19	4%
Jet Aviation	15	3%
Netjets	12	2%
General Dynamics	11	2%
Solarius	6	1%
Northrop Grumman	5	1%
Advanced Air	4	1%
Sun Air Jets	4	1%

The top specialized, soft, and computer skills for *airline pilots, copilots, and flight engineers^* 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 for Airline Pilots, Copilots, and Flight Engineers (n=515)

Top Specialized Skills	Top Soft Skills	Top Computer Skills
Federal Aviation Regulations (376)	Operations (123)	Document Object Model (29)
Federal Aviation Administration (90)	Communication (112)	R (Programming Language) (13)

Top Specialized Skills	Top Soft Skills	Top Computer Skills
Flight Planning (48)	Customer Service (67)	Microsoft Excel (5)
Turbines (45)	Detail Oriented (53)	Microsoft Office (5)
Project Management (30)	Management (51)	Microsoft Outlook (3)
Document Object Model (29)	Leadership (40)	Microsoft PowerPoint (2)
Transportation Security Administration (TSA) (29)	Multitasking (39)	SAP Applications (2)
Weather Reports (28)	Interpersonal Communications (35)	Applicant Tracking Systems (1)
Standard Operating Procedure (25)	Organizational Skills (32)	Aurora (Operating System) (1)
Airworthiness (18)	Lifting Ability (30)	Epic EMR (1)

Job Postings for Drone-Related Keywords

There were 1,366 online postings for drone-related keywords across all occupations within the past 12 months in Los Angeles and Orange counties, as shown in Exhibit 11.

Exhibit 11: Drone-Related Keywords (n = 35)

Keywords			
Aerial Cinematography	Drone Operator	Drone Pilot	UAS Pilot
Autonomous Pilot	Drone Photography	Drone Pilot And Data Analyst	UAS Technician
Drone	Drone Videographer	Drone Technician	UAV Mechanic
Drone Operations	Fixed Wing UAS Operator	Fixed Wing UAS Pilot	UAV Operator
Part 107 Pilot	Remote Pilot In Charge	Remote Pilot In Command	UAV Pilot
sUAS	UAS Mechanic	UAS Operator	UAV Pilot And Data Analyst
UAV Sensor Integration Technician	UAV Technician	Unmanned Aerial System Operator	Unmanned Aerial System Pilot
Unmanned Aerial Vehicle Operator	Unmanned Aerial Vehicle Pilot	Unmanned Aircraft System Operator	Unmanned Aircraft System Pilot
Unmanned Aircraft Vehicle Operator	Unmanned Aircraft Vehicle Pilot	Visual Observer	

Exhibit 12 shows the top occupations that mention drone-related keywords by number of job postings. Of the 1,366 postings, 33.6% (459) were for occupations classified as above middle-skill—with the exception of *photographers (27-4021),* the only middle-skill occupation.

Exhibit 12: Drone-Related Occupations by Number of Job Postings (n=1,366)

Occupation	Job Postings	Percentage of Job Postings
Camera Operators, Television, Video, and Film (27-4031)^	108	8%
Photographers (27-4021)	75	5%
Computer Occupations, All Other (15-1299)^	70	5%
Secondary School Teachers, Except Special and Career/Technical Education (25-2031)^	39	3%
Mechanical Engineers (17-2141)^	34	2%
Aerospace Engineers (17-2011)^	31	2%
Managers, All Other (11-9199)^	29	2%
Industrial Engineers (17-2112)^	27	2%
Postsecondary Teachers (25-1099)^	24	2%
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products (41-4011)^	22	2%

Exhibit 13 shows the top job titles for these drone-related keywords by number of job postings.

Exhibit 13: Drone-Related Top Job Titles by Number of Job Postings (n=1,366)

Job Titles	Job Postings	Percentage of Job Postings
Videographers/Photographers	27	2%
Flight Test Engineers	26	2%
Videographers	26	2%
Drone Pilots	25	2%
Coding Technicians	18	>1%
Luxury Sales Consultants	18	>1%
Digital Imaging Managers	16	>1%
Program Managers	15	>1%
Real Estate Photographers	15	>1%
Assembly Technicians	14	>1%

Educational Attainment

The Bureau of Labor Statistics (BLS) lists bachelor's degree for *airline pilots, copilots, and flight engineers^*.

The national-level educational attainment data indicates that 18% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 14 shows the educational attainment for this occupation.

Exhibit 14: National-level Educational Attainment for Occupations

Requested Minimum Education Requirement

In Los Angeles and Orange Counties, 16% (82) of job postings for *airline pilots, copilots, and flight engineers^* included a stated minimum education requirement:

- 44% (36) requested a high school diploma or associate degree.
- 54% (44) requested a bachelor's degree.

Educational Supply

The following supply tables display the total supply for *airline pilots, copilots, and flight engineers^* that align with these TOP and CIP codes and program needs.

Community College Supply

Exhibit 15 shows the three-year average number of awards conferred by community colleges in the related TOP code: Piloting (3020.20).

The colleges with the most completions in the region are Mount San Antonio (53), followed by Cypress (42), and Orange Coast (38). Over the past 12 months, there was one other related program recommendation request from regional community colleges.

Exhibit 15: Regional Community College Awards (Certificates and Degrees), 2021-2024

TOP Code	Program	College	2021-2022 Awards	2022-2023 Awards	2023-2024 Awards	3-Year Award Average
3020.20	Piloting	Glendale	9	5	9	8
		Mt San Antonio	57	50	51	53
		LA Subtotal	**66**	**55**	**60**	**60**
		Cypress	43	42	41	42
		Fullerton	0	8	10	6
		Orange Coast	40	39	36	38
		OC Subtotal	**83**	**89**	**87**	**86**
		Supply Subtotal/Average	**149**	**144**	**147**	**147**
		Supply Total/Average	**149**	**144**	**147**	**147**

Exhibit 16 shows the annual average community college awards by type from 2021-22 to 2023-24. The plurality of the awards are for associate degrees, followed by certificates between 30 to 60 semester units.

Exhibit 16: Annual Average Community College Awards by Type, 2021-2024

Community College Student Outcomes

Exhibit 17 shows the Strong Workforce Program (SWP) metrics for piloting programs in the Coast Community College District (CCCD), the Orange County Region, and California. Of the 535 Orange County piloting students in the 2023-2024 academic year, 254 (47%) attended a CCCD college.

CCCD students that exited piloting programs in the 2022-23 academic year had lower median annual earnings ($42,834 or $20.59 per hour) compared to all piloting students in Orange County ($46,460 or $22.34 per hour). Similarly, a lower percentage of CCCD piloting students attained the living wage (35%) compared to piloting students in Orange County (39%).

Exhibit 17: Piloting (3020.20) Strong Workforce Program Metrics, 2021-24[5]

SWP Metric	CCCD	OC Region	California
SWP Students	254	535	1,619
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	55%	52%	40%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	Insufficient Data	Insufficient Data	32%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	18	45	113
SWP Students Who Transferred to a Four-Year Postsecondary Institution (2022-23)	Insufficient Data	Insufficient Data	41
SWP Students with a Job Closely Related to Their Field of Study (2021-22)	Insufficient Data	Insufficient Data	59%
Median Annual Earnings for SWP Exiting Students (2022-23)	$42,834 ($20.59)	$46,460 ($22.34)	$45,324 ($21.79)
Median Change in Earnings for SWP Exiting Students (2022-23)	31%	23%	19%
SWP Exiting Students Who Attained the Living Wage (2022-23)	35%	39%	41%

Non-Community College Supply

To comprehensively analyze the regional supply, it is crucial to include data from other institutions offering piloting programs. However, during 2019 to 2022, no awards were conferred by non-community college institutions under the related Classification of Instructional Programs (CIP) codes:

- Airline/Commercial/Professional Pilot and Flight Crew (49.0102)
- Remote Aircraft Pilot (49.0109)

[5] All SWP metrics are for 2023-24 unless otherwise noted.

Regional Demographics

The following section presents occupational, community college program, and population demographic data for Orange County. This comparison can help identify possible equity gaps between the local workforce and the student pipeline who are preparing for this occupation. These insights can inform program development, outreach, and support strategies to better align community college programs with current labor market needs.

Ethnicity

Exhibit 19 compares the ethnicity of Orange County community college students enrolled in piloting programs, the overall Orange County population, and occupation-specific data for *airline pilots, copilots, and flight engineers^* included in this report.

The majority (84%) of *airline pilots, copilots, and flight engineers^* are white, which is much higher than their representation in piloting programs (31%), suggesting that white workers may be entering these jobs through alternate training pathways. In contrast, Hispanic or Latino individuals make up only 5% of the workforce but account for 39% of program enrollment, indicating a potential disconnect between education and employment outcomes.

Exhibit 18: Program and County Demographics by Ethnicity

Age

Exhibit 20 compares the age of Orange County community college students enrolled in piloting programs, the overall Orange County population, and occupation-specific data for *airline pilots, copilots, and flight engineers.*^

Over half (55%) of *airline pilots, copilots, and flight engineers*^ are aged 50 or older, whereas 57% of students training for piloting programs are 24 or younger. This age disparity suggests the occupation may require significant training and experience before workforce entry.

Exhibit 19: Program and County Demographics by Age

Sex

Exhibit 21 compares the sex of Orange County community college students enrolled in piloting programs, the overall Orange County population, and occupation-specific data for *airline pilots, copilots, and flight engineers.*^

Although the general population has a balanced gender distribution, women account for just 3% of the workforce and 28% of piloting program enrollments, highlighting persistent gender disparities in the field.

Exhibit 20: Program and County Demographics by Sex

Appendix A: Methodology

OC COE prepared this report by analyzing occupational and educational program data. Occupational data comes from Lightcast, a labor market analytics firm which compiles information from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS), and other agencies. Analysis of emerging occupations is predicated on online job postings data combined with Occupational Information Network (O*NET) profile descriptions. Program supply data was sourced from the California Community Colleges Chancellor's Office Data Mart (MIS Data Mart) (datamart.cccco.edu) and the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data), also known as IPEDS, which was integrated into the COE's Supply Table. (IPEDS).

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 have 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 each occupation (SOC code) by analyzing the number of 3-year average program completers or awards in related TOP and CIP codes. TOP code data comes from MIS Data Mart and CIP code data comes from the IPEDS. The 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 throughout the United States and Canada. The California Community Colleges are the only system that use TOP codes.

The analysis reflects labor market demand for occupations closely related to the proposed program as expressed by the requesting college in consultation with the OC COE. assess current and projected employment based on data trends for detailed occupations, as well as annual average awards granted by regional postsecondary educational institutions. Real-time labor market information (online job postings) assesses employer preferences but cannot be used to measure the quantity of open positions, number of jobs, or annual openings.

All findings are based on the most current available data and a combination of primary and secondary sources. While care was taken to ensure accuracy, the OC COE, its host district, and the California Community Colleges Chancellor's Office are not responsible for individual decisions made based on this report.

Appendix B: Data Sources

Data Type	Source
Occupational Projections, Wages, and Job Postings	Traditional and real-time labor market information are captured using data from Lightcast (v.2025.4), a labor market analytics firm.
Living Wage	Per the CCCCO'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 ($57,294 annually) in Orange County. The MIT Living Wage, updated on February 10, 2025, is a nationally recognized living wage metric and is provided for reference. The current MIT Living Wage in Orange County is $32.20.
Typical Education and Training Requirements, and Educational Attainment	The Bureau of Labor Statistics (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.
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	The O*NET database includes information on skills, abilities, knowledges, work activities, and interests associated with occupations.
Educational Supply	The CCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions).
Student Metrics and Demographics	Data Vista (v.2.0), a statewide data system supported by the California Community Colleges Chancellor's Office provides data on progress, success, employment, and earnings outcomes for California community college students.
Population and Occupation Demographics	The Census Bureau's American Community Survey (ACS) is the premier source for detailed population and housing information. Data is sourced from IPUMS USA, a database providing access to ACS and other Census Bureau data products.

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