

Piloting

Inland Empire/Desert Region (IEDR, Riverside and San Bernardino counties combined) and California

This workforce demand report uses state and federal job projection data that was developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.

Summary

- The knowledge, skills, and abilities provided by the community college *piloting* programs lead to two distinct occupations, collectively referred to as the *piloting occupational group* in this report.
- IEDR employment for the *piloting occupational group* is expected to **increase by 3% between 2019 and 2024**. A total of **125 annual job openings** will be available each year over the five-year timeframe.
- The **entry-level, 25th percentile, hourly wages** for the occupations in this group are between **\$25.03 and \$62.65 per hour, well above the \$21.78 per hour self-sustainable hourly wage** estimate for a single adult with one child.
- Over the last three academic years, there was one credential issued annually in the region from a private educational institution's flight school program. While community IEDR colleges did not confer awards in *piloting*, there were **188 credentials issued from statewide community college** programs related to *piloting* over the last three academic years.
- The COE recommends this program, focusing on the commercial piloting occupations. Please see the [recommendation](#) section of this report for more details.

Introduction

This report provides data on the programs and occupations related to piloting. California Community College piloting (TOP 3020.20) programs prepare students for employment through the instruction of the operation of commercial and private aircraft, including piloting, navigation, and passenger services (Taxonomy of Programs, 2012). A professional pilot must be licensed by the Federal Aviation Administration (FAA). For more information about FAA pilot certifications and FAA-approved pilot schools in California, please visit the resources section on page 8. The knowledge, skills, and abilities trained by this program leads to the occupations below, collectively referred to as the *piloting occupational group*. Definitions, alternative job titles, education, and training requirements for the occupations in this group are available in the appendix.

- Airline Pilots, Copilots, and Flight Engineers (SOC 53-2011)
- Commercial Pilots (SOC 53-2012)

Job Opportunities

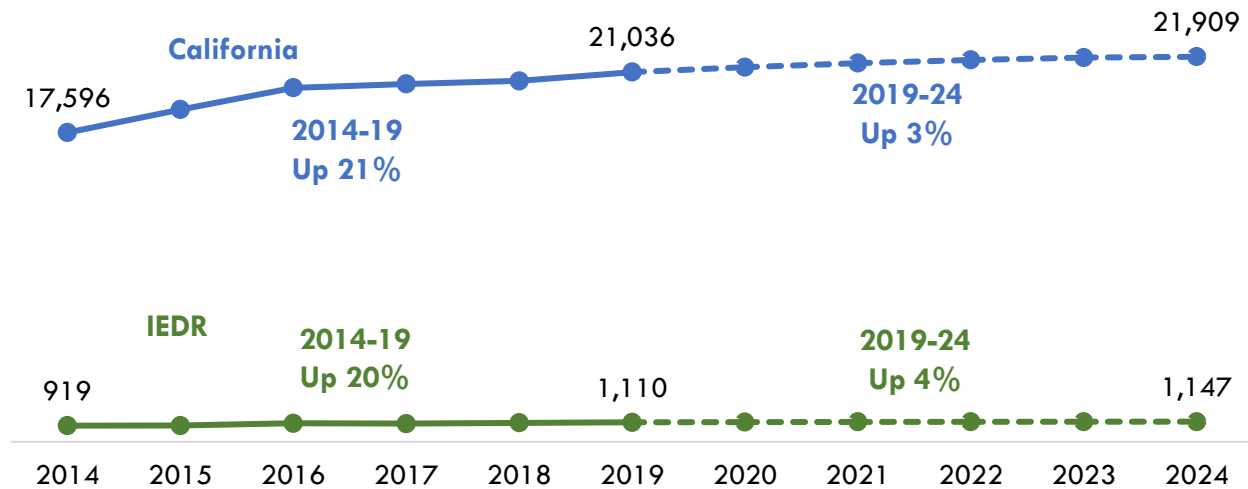
In 2019, there were 1,110 jobs in the *piloting occupational group* in the Inland Empire/Desert region (IEDR), representing 5% of the 21,036 statewide *piloting* jobs. In the IEDR, this occupational group is projected to increase employment by 3% through 2024. Employers are expected to have 625 job openings over the next five years to fill new jobs and backfill jobs that workers are permanently vacating (includes occupational transfers and retirements). Exhibit 1 displays five-year projected job growth, and Exhibit 2 displays historical and projected jobs for the *piloting occupational group* in the IEDR and California.

Exhibit 1: Five-year projections for each occupation in the piloting occupational group, IEDR & California

Occupation	2019 Jobs	2024 Jobs	5-Yr % Change (New Jobs)	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Airline Pilots, Copilots, and Flight Engineers	670	665	(1%)	349	70	9%
Commercial Pilots	441	482	9%	276	55	19%
Inland Empire/Desert Region Total	1,110	1,147	3%	625	125	13%
Airline Pilots, Copilots, and Flight Engineers	15,142	15,516	2%	9,572	1,914	23%
Commercial Pilots	5,894	6,393	8%	3,681	736	22%
California Total	21,036	21,909	4%	13,252	2,650	23%

Source: EMSI 2020.3

Exhibit 2: Historical and projected jobs for the piloting occupational group in the IEDR (green) and California (blue), 2014 – 2024



Source: EMSI 2020.3

Job Postings

Exhibit 3 displays the number of job ads for the *piloting occupational group* posted over the last 12 months, along with the statewide average time to fill. This job posting search was expanded to include all statewide job postings to increase the number of advertisements from which to pull real-time job posting information. Approximately 12% (47) of the statewide *piloting* job postings listed over the past twelve months were in the IEDR. The majority of the IEDR's job postings were listed in Victorville and March Air Reserve Base by either the U.S. government (Department of Defense), defense contractors (Battlespace, Inc.), or emergency response agencies (REACH Air Medical Services).

On average, employers in California fill online job postings for the *piloting occupational group* within 40 days. This statewide average is two days longer than the national average of 38 days and four days longer than the IEDR regional average of 36 days.

Exhibit 3: Job ads and time to fill

Occupation	Job Ads	California Average Time to Fill (Days)
Commercial Pilots	271	40
Airline Pilots, Copilots, and Flight Engineers	112	40
Total	383	40

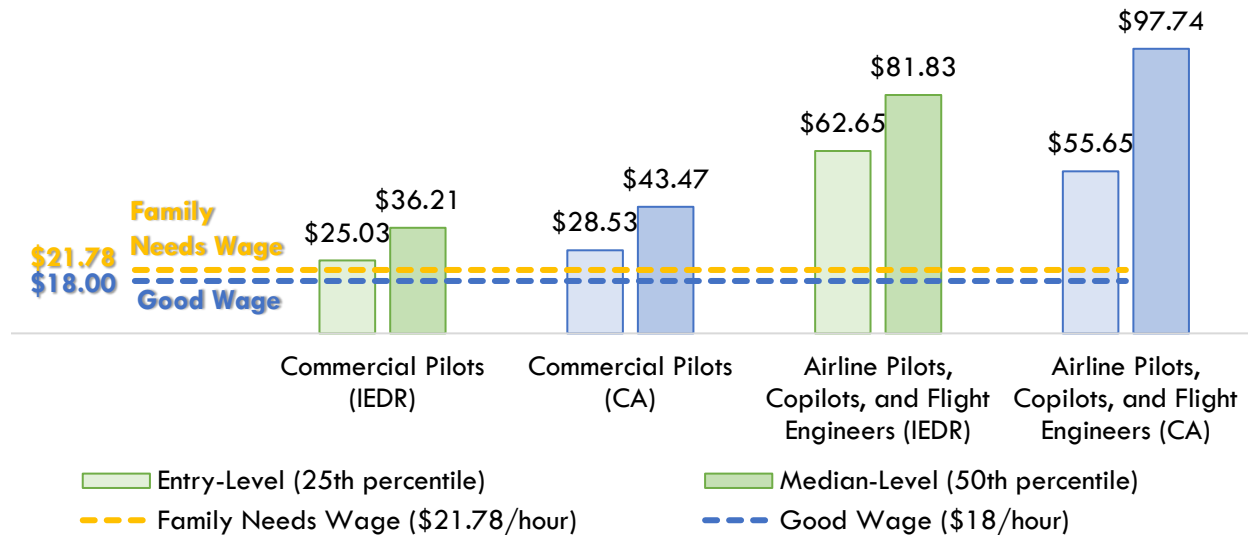
Source: Burning Glass – Labor Insights

Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide a self-sustainable level of income. The Brookings Institute in their Advancing Opportunity in California's Inland Empire report found that a "good job" wage in the region is above \$18.00 per hour, or \$37,440 per year (Shearer, Shah & Gootman, p. 25). The Family Needs Calculator estimates that a self-sustainable wage for a single adult with one school-age child is \$21.78 per hour (Pearce & Manzer, 2020).

The entry-level wages for the *piloting occupational group* surpass the Brookings Institute's "good job" wage. These wages are also above the Family Needs Calculator self-sustainability rate. Exhibit 4, on the next page, displays the hourly earnings for each occupation in the IEDR and California. IEDR data is shown in green, and California data appears in blue.

Exhibit 4: Hourly earnings for the piloting occupational group, IEDR (green) & C.A. (blue)



Source: EMSI 2020.3

Benefits information, typically provided by the occupational guides developed by the California Labor Market Information Division, is not available for the *piloting occupational group* (Detailed Occupational Guides, 2020).

Employers, Skills, Education, Work Experience, and Certifications

Exhibit 5 displays the employers posting the most job ads for the *piloting occupational group* in the state.

Exhibit 5: Employers posting the most job ads for piloting occupations

Occupation	Employers
Commercial Pilots (n=242)	<ul style="list-style-type: none"> Air Methods REACH Medical Holdings, LLC Air Medical Group Holdings, Inc. Clay Lacy Aviation Berry Aviation
Airline Pilots, Copilots, and Flight Engineers (n=97)	<ul style="list-style-type: none"> General Dynamics Jet Aviation Ameriflight Solairus Aviation Dynamic Aviation

Source: Burning Glass – Labor Insights

Exhibit 6, on the next page, displays a sample of specialized and employability skills that employers are seeking when looking for workers to fill positions in the *piloting occupational group*. Specialized skills are occupation-specific skills that employers are requesting for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is often referred to as "soft skills." The skills requested in job postings may be utilized as a helpful guide for curriculum development.

Exhibit 6: Sample of in-demand skills from employer job ads

Occupation	Specialized Skills	Employability Skills
Commercial Pilots (n=219)	<ul style="list-style-type: none"> Federal Aviation Regulations Scheduling Flight Planning Patient Transportation and Transfer 	<ul style="list-style-type: none"> Teamwork/Collaboration Communication Skills Planning Building Effective Relationship
Airline Pilots, Copilots, and Flight Engineers (n=93)	<ul style="list-style-type: none"> Federal Aviation Regulations Flight Planning Aviation Security Aviation Safety 	<ul style="list-style-type: none"> Leadership Communication Skills Planning Teamwork/Collaboration

Source: Burning Glass – Labor Insights

Exhibit 7 displays the entry-level education typically required to enter each occupation according to the Bureau of Labor Statistics (BLS), educational attainment for incumbent workers with "some college, no degree" and an "associate degree" according to the U.S. Census (2016-17) and the real-time minimum advertised education requirement from employer job ads.

Exhibit 7: Typical entry-level education, educational attainment, and minimum advertised education requirements for the *piloting occupational group*

Occupation	Typical Entry-Level Education Requirement	CC-Level Educational Attainment*	Real-Time Minimum Advertised Education Requirement			
			Number of Job Ads	High school diploma or vocational training	Associate degree	Bachelor's degree or higher
Commercial Pilots	High school diploma or equivalent	21%	90	32%	67%	31%
Airline Pilots, Copilots, and Flight Engineers	Bachelor's degree	21%	25	24%	12%	64%

Source: EMSI 2020.3, Burning Glass – Labor Insights

*Percentage of incumbent workers with a Community College Credential or Some Postsecondary Coursework

Exhibit 8, on the next page, displays the work experience typically required to enter each occupation and the real-time work experience requirements from employer job ads.

Exhibit 8: Work experience required and real-time work experience requirements

Occupation	Work Experience Typically Required	Real-Time Work Experience			
		Number of Job Ads	0 – 2 years	3 – 5 years	6+ years
Commercial Pilots	None	78	68%	18%	14%
Airline Pilots, Copilots, and Flight Engineers	Less than 5 years	32	22%	31%	47%

Source: EMSI 2020.3, Burning Glass – Labor Insights

Exhibit 9 displays the certifications required by employers posting job ads for the *piloting occupational group* in the IEDR. The majority of employers sought job candidates with their Airline Transport Pilot License (ATP). The ATP certification is issued by the Federal Aviation Administration (FAA) and is intended to prepare applicants to operate multiengine class rating airplanes, which require an ATP certification by rule. For more information regarding piloting certifications, please visit the FAA website (FAA, 2020).

Exhibit 9: Certifications required by employer job ads for piloting occupations, Aug 2019 – July 2020

Occupation	Certifications
Commercial Pilots (n=109)	<ul style="list-style-type: none"> Airline Transport Pilot License (ATP)
Airline Pilots, Copilots, and Flight Engineers (n=38)	<ul style="list-style-type: none"> Airline Transport Pilot License (ATP)

Source: Burning Glass – Labor Insights

Student Completions and Program Outcomes

The community colleges in the Inland Empire/Desert region do not currently offer piloting programs. Due to a lack of programs in the IEDR, exhibit 10 displays the annual average completion data for statewide California Community College Piloting (0302.20) programs based on the most recent three academic years.

Exhibit 10: 2016-19, Annual average community college credentials for piloting programs in California

3020.20 – Piloting	Associate degree	Certificates (Semester Units)					CCC Annual Average Credentials, Academic Years, 2016-19
		6 to <18	8 to <16	12 to <18	18 to <30	30 to <60	
Cypress	7	42	1	0	0	-	51
Glendale	1	-	-	-	2	-	3
Mt. San Antonio	46	7	-	-	-	-	53
Orange Coast	2	2	-	-	-	3	6
Palomar	1	-	-	-	-	2	3

3020.20 – Piloting	Associate degree	Certificates (Semester Units)					CCC Annual Average Credentials, Academic Years, 2016-19
		6 to <18	8 to <16	12 to <18	18 to <30	30 to <60	
Sacramento City	17	-	-	-	-	11	29
San Diego Miramar	9	28	-	-	5	-	42
Total	84	79	1	0	8	16	188

Source: MIS Data Mart

California program outcome data may provide a useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP codes and region is provided in Exhibit 11. Dashes indicate that there were too few students to obtain reliable program outcome information. The outcome methodology is available in the appendix section of this report.

Exhibit 11: 3020.20 – Piloting strong workforce program outcomes

Strong Workforce Program Metrics: 3020.20 – Piloting Academic Year 2017-18, unless noted otherwise	California
Unduplicated count of enrolled students (2018-19)	1,405
Completed 9+ career education units in one year (2018-19)	37%
Economically disadvantaged students (2018-19)	68%
Students who attained a noncredit workforce milestone in a year	-
Students who earned a degree, certificate, or attained an apprenticeship	74
Transferred to a four-year institution (transfers)	33
Job closely related to the field of study (2016-17)	38%
Median annual earnings (all exiters)	\$37,782
Median change in earnings (all exiters)	20%
Attained a living wage (completers and skills-builders)	56%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Credentials granted from other educational providers outside of the California Community College system are displayed in Exhibit 12 along with the relevant CIP code. Completion data is compiled from the Integrated Postsecondary Education Data System (IPEDS) for the most recent three years available. Over this timeframe, California Baptists University (CBU) issued an average of one bachelor's degree annually from their flight school. CBU earned its FAA accreditation in 2016; the same year they conferred four bachelor degrees in their piloting program (CBU, 2016). While data is not available for most recent academic years, CBU has likely conferred more awards since they received accreditation in 2016.

Exhibit 12: Annual average community college credentials and enrollments for the airline/commercial/professional pilot and flight crew program in the IEDR

49.0102 – Airline/Commercial/Professional Pilot and Flight Crew	Bachelor's degree	Other Educational Providers Annual Average Credentials, Academic Years 2014-17
California Baptist University (CBU)	1	1
Total	1	1

Source: IPEDS

Despite the lack of community college piloting programs in the Inland Empire/Desert region, there are some Federal Aviation Administration (FAA) approved private professional pilot schools nearby. Exhibit 13 lists the local private schools by city and name. To learn more about pilot schools, please visit <https://av-info.faa.gov/PilotSchool.asp>. Please note that the schools displayed below are dedicated piloting schools and do not display colleges like CBU, which offer many other programs in addition to their piloting program.

Exhibit 13: FAA Approved Pilot Schools in the IEDR

City	FAA Approved Pilot Schools
Chino	Accelerated Flight Training LLC, M I Air Corporation
Lake Elsinore	Adventure Flights Incorporated
Murrieta	Executive Flight Institute, Upper Limit Aviation Incorporated
Redlands	Aero Tech Academy Incorporated
Riverside	California Aviation Services, NextGen Flight Academy Inc., Riverside Flight Academy, Western Helicopters Incorporated
San Bernardino	World Wide Wings LLC

Resources

FAA Pilot certifications: https://www.faa.gov/licenses_certificates/

FAA Pilot schools: <https://av-info.faa.gov/PilotSchool.asp>

Recommendation

Piloting community college programs lead to two occupations, collectively referred to as the *piloting occupational group*. These two *piloting occupations* are projected to have 125 combined annual job openings over the next five years in the Inland Empire Desert region (IEDR). *Airline pilots, copilots, and flight engineers* will have 70 annual job openings, and *commercial pilots* are expected to have 39 annual job openings. The entry-level, 25th percentile wages for the *piloting occupational group* are between \$25.03 and \$28.53 per hour, exceeding the \$21.78 per hour self-sustainable wage estimate for a single adult with one child. The typical entry-level education requirement for a *commercial pilot* is a high school diploma and the *airline pilots, copilots, and flight engineers* require a bachelor's degree. Both occupations require a piloting certificate to enter employment.

The piloting (TOP 3020.20) program award data is not available for the 12 IEDR community colleges. However, there was an annual average of 188 credentials awarded over the last three years by seven colleges across the state.

The Centers of Excellence recommends creating piloting programs but focusing only on the *commercial pilots* occupation. This occupation is expected to have 55 annual job openings in the IEDR, 736 in the state, and there are currently no programs in the region. It should be noted that students will be competing for these jobs with incumbent workers, and an unknown supply of qualified workers that may travel from other areas for these jobs. Students may need to seek employment outside of the region to find gainful employment opportunities; this should not be an issue due to the transient nature of this occupation. A piloting certificate is required to enter employment. Colleges should meet with community colleges offering this program and relevant employers to understand their demand for more workers and the specific skills, licensing, and credentials needed for gainful employment in this field.

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Appendix: Occupation definitions, sample job titles, five-year projections for piloting occupations

Occupation Definitions (SOC) code), Education and Training Requirement, Community College Educational Attainment

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

Pilot and navigate the flight of fixed-wing, multiengine aircraft, usually on scheduled air carrier routes, for the transport of passengers and cargo. Requires Federal Air Transport Pilot certificate and rating for specific aircraft type used. Includes regional, National, and international airline pilots and flight instructors of airline pilots.

Sample job titles: Airline Captain, Airline Pilot, Airline Pilot (Captain), Airline Transport Pilot, Captain, Check Airman, Co-Pilot, Commuter Pilot, First Officer, Pilot

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: Between one and twelve months of on-the-job training

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 21%

Commercial Pilots (53-2012)

Pilot and navigate the flight of fixed-winged aircraft on nonscheduled air carrier routes, or helicopters. Requires a Commercial Pilot certificate. Includes charter pilots with similar certification, and air ambulance and air tour pilots.

Sample job titles: Captain, Charter Pilot, Check Airman, Chief Pilot, Commercial Pilot, EMS Helicopter Pilot (Emergency Medical Service Helicopter Pilot), First Officer, Helicopter Pilot, Line Pilot, Pilot

Entry-Level Educational Requirement: High school diploma or equivalent

Training Requirement: Between one and twelve months of on-the-job training

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 21%

Methodology and Data Notes

Exhibit 10 displays the average annual California Community College (CCC) credentials conferred during the three academic years between 2016 and 2019, from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Credentials are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variation that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from records provided by California's Employment Development Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2020a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2020a).

Job postings data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014).

Table 1: 2019 to 2024 job growth, wages, education, training, and work experience required for the piloting occupational group, IEDR

Occupation (SOC)	2019 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage Range (25 th to 75 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Airline Pilots, Copilots, and Flight Engineers (53-2011)	670	(5)	(1%)	70	\$62.65 to \$90.37	\$81.83	\$170,500	Bachelor's degree & 1-12 months	Less than 5 years
Commercial Pilots (53-2012)	441	41	9%	55	\$25.03 to \$56.35	\$36.21	\$88,100	High school diploma or equivalent & 1-12 months	None
Total	1,110	37	3%	125	-	-	-	-	-

Source: EMSI 2020.3

Table 2: 2019 to 2024 job growth, wages, education, training, and work experience required for the piloting occupational group, California

Occupation (SOC)	2019 Jobs	5-Yr Change	5-Yr % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage Range (25 th to 75 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Typical Entry-Level Education & On-The-Job Training Required	Work Experience Required
Airline Pilots, Copilots, and Flight Engineers (53-2011)	15,142	374	2%	1,914	\$55.65 to \$133.53	\$97.74	\$207,300	Bachelor's degree & 1-12 months	Less than 5 years
Commercial Pilots (53-2012)	5,894	499	8%	736	\$28.53 to \$67.70	\$43.47	\$107,700	High school diploma or equivalent & 1-12 months	None
Total	21,036	873	4%	2,650	-	-	-	-	-

Source: EMSI 2020.3