

June 2023

Labor Market Analysis

Aeronautical and Aviation Technology



Prepared by Central Valley/Mother Lode Center of Excellence



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COVID-19 Statement: This report includes employment projection data by Lightcast. Lightcast’s projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy during the projection period will be at approximately full employment or potential output. To the extent that a recession or labor shock, such as the economic effects of COVID-19, can cause long-term structural change, they may impact the projections. At this time, it is not possible to quantify the impact of COVID-19 on projections of industry and occupational employment. Other measures such as unemployment rates and monthly industry employment estimates will reflect the most recent information on employment and jobs in the state and, in combination with input from local employers, may help validate current and future employment needs as depicted here.

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Summary

The Central Valley/Mother Lode Center of Excellence developed this report for Cerro Coso College to determine whether there is demand in the local labor market that is not being met by the supply from postsecondary programs. This report summarizes labor market demand, wages, skills, and postsecondary supply for *Aeronautical and Aviation Technology*, which includes:

- Aerospace Engineering and Operations Technologists and Technicians (SOC 17-3021)
- Avionics Technicians (SOC 49-2091)
- Aircraft Mechanics and Service Technicians (SOC 49-3011)
- Aircraft Structure, Surfaces, Rigging, and Systems Assemblers (SOC 51-2011)

Key Findings

- **Occupational Demand** — Occupations related to *Aeronautical and Aviation Technology* have a labor market demand of 209 annual job openings in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. Between 2021 and 2026, aircraft mechanics and service technicians are projected to have the most demand with 153 annual job openings and are projected to grow by 5%.
- **Wages** — Average entry-level earnings of \$26.89/hour for occupations related to *Aeronautical and Aviation Technology* are higher than the living wage in the SCV/SML subregion, which is \$11.91/hour for a single adult.¹ Avionics technicians earn the highest entry-level wage, \$33.30/hour.
- **Employers and Occupational Titles** — Employers in the SCV/SML subregion include Amentum, Northrop Grumman, and Aerotek. The most common occupational title in the subregion is aircraft mechanics and service technicians. The most common job title is aircraft mechanics.
- **Skills and Certifications** — The top baseline skill is troubleshooting (problem solving), the top specialized skill is aircraft maintenance, and the top software skill is Disassembler. The most in-demand certification is an Airframe & Powerplant (A&P) Certificate.
- **Education** — A high school diploma or equivalent is typically required for aircraft structure, surfaces, rigging, and systems assemblers. A postsecondary nondegree award is typically required for aircraft mechanics and service technicians. An associate degree is typically required for avionics technicians and aerospace engineering and operations technologists and technicians.
- **Supply and Demand Analysis** — Based on 209 annual openings (i.e., demand), and 54 postsecondary degrees awarded (i.e., supply), an analysis of supply and demand suggests there is an undersupply of 155 workers in the SCV/SML subregion. In the CVML region, 54 awards were conferred suggesting an undersupply of 224 workers.

Recommendation

Based on a comparison of demand and supply, there is an undersupply of trained workers in the SCV/SML subregion and the CVML region. The Center of Excellence recommends that Cerro Coso College work with

¹ The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center's California Family Needs Calculator for each county in the subregion: <https://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

the regional directors, the college's advisory board, and local industry in the development of programs to address the shortage of Aeronautical and Aviation Technology workers.

Introduction

The Central Valley/Mother Lode Center of Excellence developed this report to provide Cerro Coso College with labor market information for *Aeronautical and Aviation Technology*. The geographical focus for this report is the South Central Valley/Southern Mother Lode (SCV/SML) subregion, but regional demand and supply data has been included for broader applicability and use. Analysis of the program and occupational data related to *Aeronautical and Aviation Technology* is included in the report. The Standard Occupational Classification (SOC) System codes and occupational titles used in this report from the Bureau of Labor Statistics and O*NET OnLine is shown below.

Aerospace Engineering and Operations Technologists and Technicians (SOC 17-3021)

- **Job Description:** Operate, install, adjust, and maintain integrated computer/communications systems, consoles, simulators, and other data acquisition, test, and measurement instruments and equipment, which are used to launch, track, position, and evaluate air and space vehicles. May record and interpret test data.
- **Knowledge:** Mechanical, Engineering and Technology, Mathematics, Production and Processing, Customer and Personal Service
- **Skills:** Critical Thinking, Operations Monitoring, Quality Control Analysis, Reading Comprehension, Active Listening

Avionics Technicians (SOC 49-2091)

- **Job Description:** Install, inspect, test, adjust, or repair avionics equipment, such as radar, radio, navigation, and missile control systems in aircraft or space vehicles.
- **Knowledge:** Computers and Electronics, Mechanical, English Language, Engineering and Technology, Customer and Personal Service
- **Skills:** Equipment Maintenance, Repairing, Troubleshooting, Critical Thinking, Operations Monitoring

Aircraft Mechanics and Service Technicians (SOC 49-3011)

- **Job Description:** Diagnose, adjust, repair, or overhaul aircraft engines and assemblies, such as hydraulic and pneumatic systems.
- **Knowledge:** Mechanical, English Language, Engineering and Technology, Customer and Personal Service, Mathematics
- **Skills:** Operation and Control, Operations Monitoring, Active Listening, Critical Thinking, Monitoring

Aircraft Structure, Surfaces, Rigging, and Systems Assemblers (SOC 51-2011)

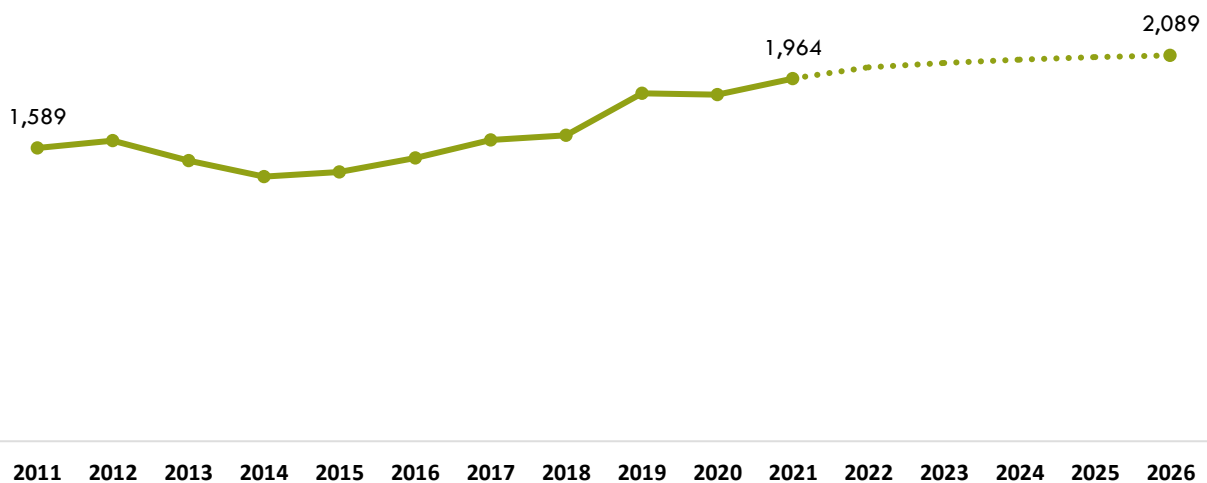
- **Job Description:** Assemble, fit, fasten, and install parts of airplanes, space vehicles, or missiles, such as tails, wings, fuselage, bulkheads, stabilizers, landing gear, rigging and control equipment, or heating and ventilating systems.

- **Knowledge:** Education and Training, Mathematics, English Language, Mechanical, Design
- **Skills:** Quality Control Analysis, Active Listening, Critical Thinking, Monitoring, Complex Problem Solving

Employment

Exhibit 1a shows trends for occupations related to *Aeronautical and Aviation Technology* in the SCV/SML subregion. Between 2011 to 2026, the number of jobs for *Aeronautical and Aviation Technology* is projected to increase by 125 jobs, or 6%.

Exhibit 1a. Historical employment and projected occupational demand for occupations related to *Aeronautical and Aviation Technology* in the SCV/SML subregion, 2011-2026



Occupations related to *Aeronautical and Aviation Technology* in the SCV/SML subregion employed 1,964 workers in 2021 (Exhibit 1b). Aircraft mechanics and service technicians are projected to grow by 5% over the next five years and have projected annual openings of 153.

Exhibit 1b. Current employment and projected occupational demand for occupations related to *Aeronautical and Aviation Technology* in the SCV/SML subregion, 2021-2026

Occupation	2021 Jobs	2026 Jobs	5-Year Change	5-Year % Change	Annual Openings
Aircraft Mechanics and Service Technicians	1,517	1,597	80	5%	153
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	202	224	21	11%	29
Avionics Technicians	215	232	17	8%	22
Aerospace Engineering and Operations Technologists and Technicians	30	37	7	22%	5
TOTAL	1,964	2,090	126	6%	209

Wages

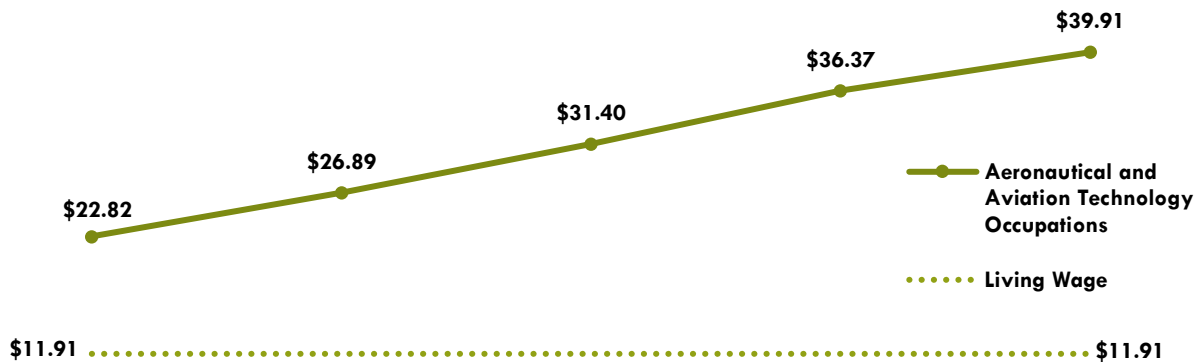
The average living wage for a single adult in the SCV/SML subregion is \$11.91/hour.² Exhibit 2a shows wages for occupations related to *Aeronautical and Aviation Technology*. Avionics technicians have the highest entre-level wages at \$33.30/hour;³ whereas, aerospace engineering and operations technologists and technicians have the highest experienced-level wages at \$47.44/hour.

Exhibit 2a. Hourly wages for occupations related to *Aeronautical and Aviation Technology* in the SCV/SML subregion

Occupation	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings
Avionics Technicians	\$33.30	\$35.97	\$39.02
Aerospace Engineering and Operations Technologists and Technicians	\$29.77	\$37.57	\$47.44
Aircraft Mechanics and Service Technicians	\$29.66	\$35.28	\$36.84
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	\$14.84	\$16.76	\$22.16

Exhibit 2b shows the average hourly wages for occupations related to *Aeronautical and Aviation Technology*. The average entry-level wage is more than the average entry-level living wage for the SCV/SML subregion.

Exhibit 2b. Average hourly wages for occupations related to *Aeronautical and Aviation Technology* in the SCV/SML subregion



10th Percentile 25th Percentile Median 75th Percentile 90th Percentile

² The term "living wage" in Center of Excellence reports is calculated by averaging the self-sufficiency wages from the Insight Center's California Family Needs Calculator for each county in the subregion: <https://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

³ Please note 10th and 25th percentiles are considered entry-level wages while 75th and 90th are considered experienced wages, either gained by long-term employment, extra training, etc.

Job Postings

There were 255 job postings for occupations related to *Aeronautical and Aviation Technology* in the SCV/SML subregion from November 2022 to April 2023.⁴

Top Employers

The top employers with the most job postings are listed in Exhibit 3. The top employers in online job postings were Amentum, Northrop Grumman, and Aerotek.

Exhibit 3. Top employers of occupations related to *Aeronautical and Aviation Technology* in job postings

Employer
Amentum
Northrop Grumman
Aerotek
Vertex Aerospace
Kay and Associates
Lockheed Martin
PKL Services
Builders FirstSource
Reach Air Medical Services
Air Methods

Top Occupational Titles

Exhibit 4 shows the O*NET OnLine occupational titles for *Aeronautical and Aviation Technology* in the SCV/SML subregion. Common job titles in postings include: Rotor Wing Pilots, Helicopter Pilots, and Fixed Wing Pilots.

Exhibit 4. Top occupational titles in job postings for occupations related to *Aeronautical and Aviation Technology*

Occupational Title
Aircraft Mechanics and Service Technicians
Avionics Technicians
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
Aerospace Engineering and Operations Technologists and Technicians

⁴ Other than occupation titles and job titles, the categories below can be counted one or multiple times per job posting, and across several areas in a single posting. For example, a skill can be counted in two different skill types, and an employer can indicate more than one education level.

Salaries

Exhibit 5 shows the “Market Salaries” for *Aeronautical and Aviation Technology*. These are calculated by Lightcast using a machine learning model built from millions of job postings every year. This accounts for adjustments based on location, industry, skills, experience, education, among other variables.

Exhibit 5. Market salaries for occupations related to *Aeronautical and Aviation Technology*

Market Salary	Job Postings
\$75,000-\$82,999	34
\$67,000-\$74,999	24
\$35,000-\$42,999	13
\$83,000-\$90,999	12
\$51,000-\$58,999	9

Education

Of the 255 unique job postings, 148 listed a preferred or minimum educational requirement for the position being filled. Among those, 89% requested a high school or GED, 5% requested an associate degree, and 5% requested a bachelor’s degree (Exhibit 6).

Exhibit 6. Education levels requested in job postings for occupations related to *Aeronautical and Aviation Technology*

Education Level	Job Postings	% of Job Postings
High school or GED	131	89%
Associate degree	7	5%
Bachelor's degree	8	5%
Master's degree	1	1%
Ph.D. or professional degree	1	1%

Baseline, Specialized, and Software Skills

Exhibit 7 depicts the top baseline, specialized, and software skills in job postings. The most important baseline skill is troubleshooting (problem solving). The top specialized skill is aircraft maintenance. The top software skill is Disassembler.

Exhibit 7. In-demand baseline, specialized, and software skills for occupations related to *Aeronautical and Aviation Technology*

Baseline Skills	Specialized Skills	Software Skills
Troubleshooting (Problem Solving)	Aircraft Maintenance	Disassembler
Operations	Hand Tools	SAP Applications
Management	Blueprinting	LabVIEW
Communications	Power Tool Operation	AutoCAD
Planning	Sheet Metal	JIRA

Certifications

Of the 255 job postings, there were 271 certifications listed. Among those, 28% indicated a need for a Airframe & Powerplant (A&P) Certificate. The next top certification is CompTIA Security+ (Exhibit 8).

Exhibit 8. Top Aeronautical and Aviation Technology certifications requested in job postings

Certifications	% of Job Postings
Airframe & Powerplant (A&P) Certificate	28%
CompTIA Security+	1%
Air Operations Area (AOA) Badge	1%
FCC General Radiotelephone Operator License (GROL)	0.4%

Education, Work Experience, & Training

A high school diploma or equivalent is typically required for aircraft structure, surfaces, rigging, and systems assemblers. A postsecondary nondegree award is typically required for aircraft mechanics and service technicians. An associate degree is typically required for avionics technicians and aerospace engineering and operations technologists and technicians (Exhibit 9).

Exhibit 9. Education, work experience, training, and Current Population Survey results for occupations related to Aeronautical and Aviation Technology⁵

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Aircraft Mechanics and Service Technicians	Postsecondary nondegree award	None	None	58.4%
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	High school diploma or equivalent	None	Moderate-term	29.7%
Avionics Technicians	Associate degree	None	None	60.5%
Aerospace Engineering and Operations Technologists and Technicians	Associate degree	None	None	50.7%

⁵ "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, <https://www.bls.gov/cps/>.

Supply

An analysis of program data from the Integrated Postsecondary Education Data System (IPEDS) for the last three program years shows that, on average, 54 awards were conferred in the SCV/SML subregion (Exhibits 10 and 11).

Exhibit 10. TOP and CIP codes for Aeronautical and Aviation Technology

TOP Titles	CIP Titles
050600 - Business Management	52.0201 - Business Administration and Management, General
	52.0701 - Entrepreneurship/Entrepreneurial Studies

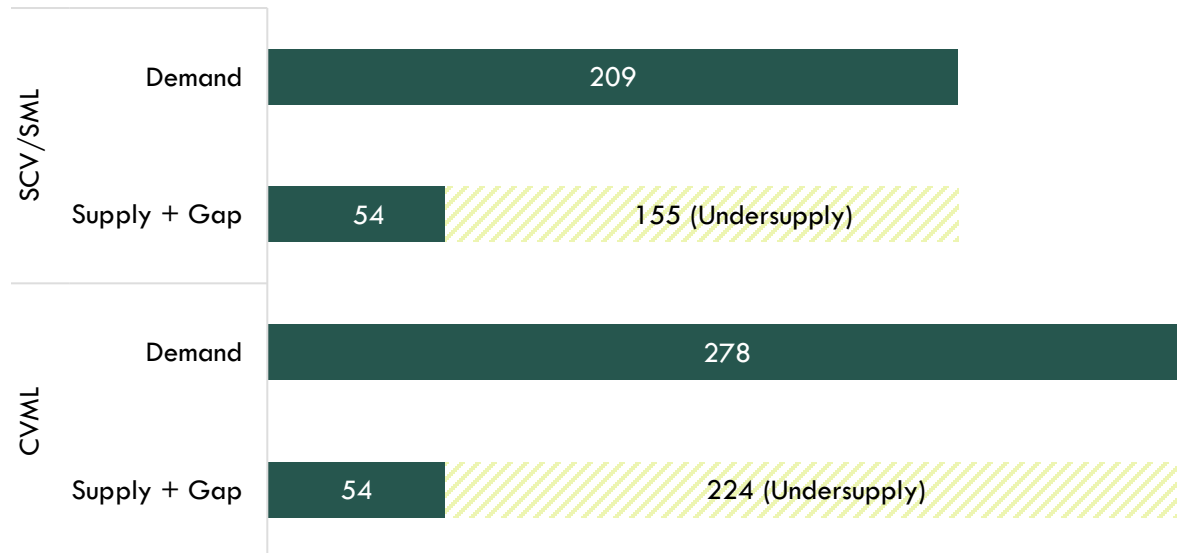
Exhibit 11. Postsecondary supply for Aeronautical and Aviation Technology

TOP/ CIP Code- Title	College	Associate Degree	Award 2 < 4 Academic Years	Certificate 60+ Semester Units	Total
095000 - Aeronautical and Aviation Technology	Reedley College	7		10	17*
47.0607 - Airframe Mechanics and Aircraft Maintenance Technology/Technician	San Joaquin Valley College-Fresno Aviation	1	11		12*
	San Joaquin Valley College-Visalia	22	3		25*
SCV/ SML TOTAL		30	14	10	54
CVML TOTAL		30	14	10	54

*SCV/SML awards

There is an undersupply of 155 *Aeronautical and Aviation Technology* workers in the SCV/SML subregion and an undersupply of 224 workers in the region (Exhibit 12).

Exhibit 12. *Aeronautical and Aviation Technology* workforce demand (annual job openings), postsecondary awards (supply), and additional students needed to fill gap in the SCV/SML subregion and region



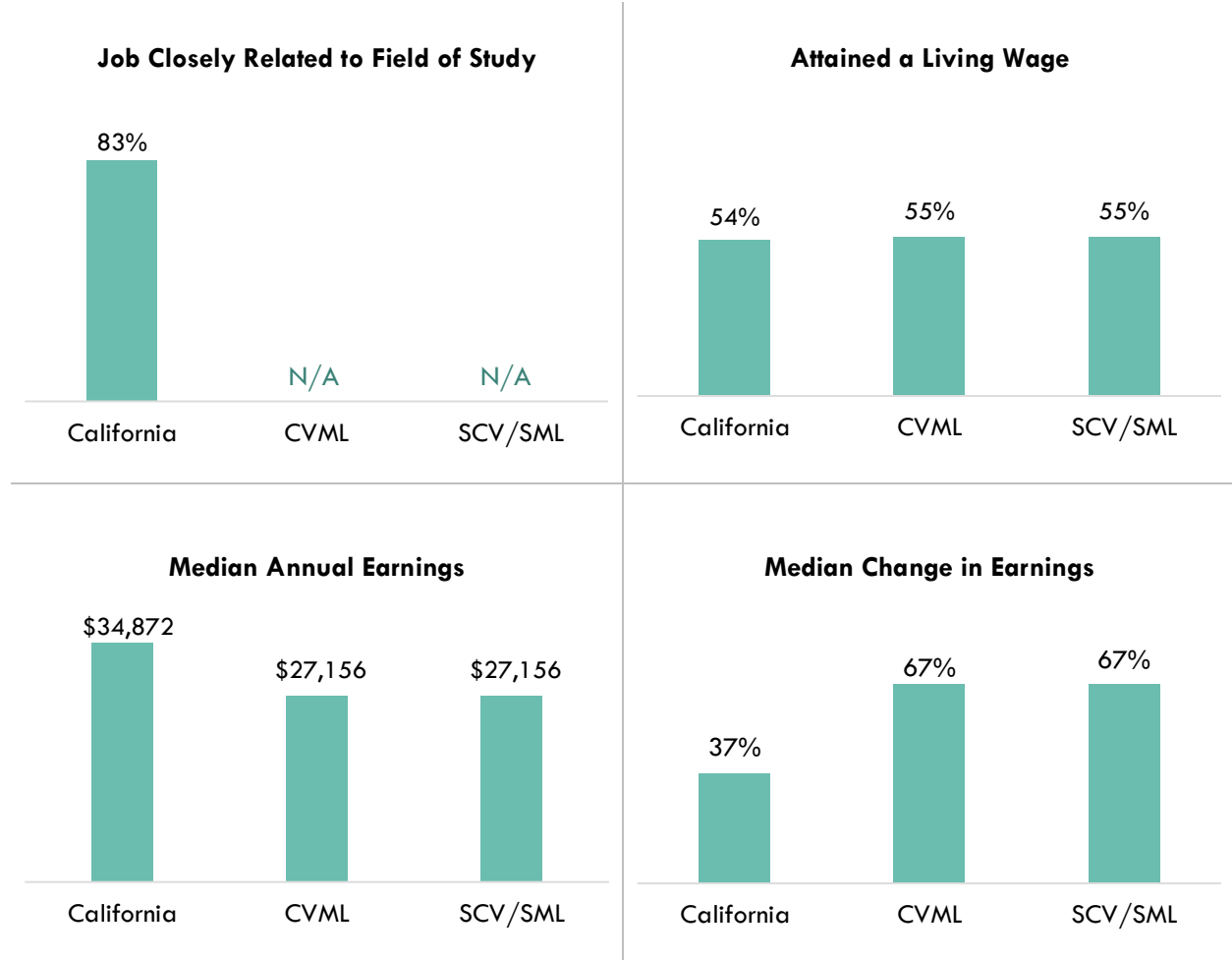
Student Outcomes

Exhibits 11 summarize outcomes from California Community College Chancellor’s LaunchBoard for TOP codes related to *Aeronautical and Aviation Technology*. Notably, 83% of students obtained a job closely related to their field of study in California and 55% attained a living wage in the subregion.

Exhibit 11a. LaunchBoard metrics for TOP 095000 - *Aeronautical and Aviation Technology* in the SCV/SML subregion

Metric	
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	12
Number of Students Who Transferred	*

Exhibit 11. LaunchBoard metrics for TOP 095000 - Aeronautical and Aviation Technology in California, CVML region, and SCV/SML subregion



Recommendation

This report suggests there is a shortage of 155 workers in the SCV/SML subregion and a shortage of 224 workers in the CVML region for *Aeronautical and Aviation Technology*. Based on these findings, it is recommended that Cerro Coso College work with the regional directors, the college’s advisory board, and local industry in the development of programs to address the shortage of *Aeronautical and Aviation Technology* workers in the region.

Appendix: Methodology & Data Sources

Data Sources

Labor market and educational supply data compiled in this report derive from a variety of sources. Data were drawn from external sources, including the Economic Modeling Specialists, Inc., the California Community Colleges Chancellor’s Office Management Information Systems Data Mart and the National Center for Educational Statistics (NCES) Integrated Postsecondary Education Data System (IPEDS). Below is the summary of the data sources found in this study.

Data Type	Source
Labor Market Information/Population Estimates and Projections/Educational Attainment	Economic Modeling Specialists, Intl. (Lightcast). Lightcast occupational employment data are based on final LIGHTCAST industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics (QCEW and Non-QCEW Employees classes of worker) and the American Community Survey (Self-Employed and Extended Proprietors). Occupational wage estimates also affected by county-level Lightcast earnings by industry: economicmodeling.com.
Typical Education Level and On-the-job Training	Bureau of Labor Statistics (BLS) uses a system to assign categories for entry-level education and typical on-the-job training to each occupation for which BLS publishes projections data: https://www.bls.gov/emp/tables/educational-attainment.htm .
LaunchBoard	Chancellor’s LaunchBoard. https://www.calpassplus.org/LaunchBoard/SWP.aspx
Labor Force, Employment and Unemployment Estimates	California Employment Development Department, Labor Market Information Division: labormarketinfo.edd.ca.gov .
Job Posting and Skills Data	Burning Glass: burning-glass.com/ .
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 as well as information on skills, abilities, knowledge, work activities and interests associated with specific occupations: onetonline.org .

Key Terms and Concepts

Annual Job Openings: Annual openings are calculated by dividing the number of years in the projection period by total job openings.

Education Attainment Level: The highest education attainment level of workers age 25 years or older.

Employment Estimate: The total number of workers currently employed.

Employment Projections: Projections of employment are calculated by a proprietary Economic Modeling Specialists, Intl. (LIGHTCAST) formula that includes historical employment and economic indicators along with national, state and local trends.

LaunchBoard (Attained the Living Wage): Among SWP students who exited college and did not transfer to any postsecondary institution, the proportion who attained the district county living wage for a single adult measured immediately following academic year of exit

LaunchBoard (Median Annual Earnings): Among SWP students who exited the community college system and who did not transfer to any postsecondary institution, median earnings following the academic year of exit.

LaunchBoard (Median Change in Earnings): Among SWP students who exited and who did not transfer to any postsecondary institution, median change in earnings between the second quarter prior to the beginning of the academic year of entry and the second quarter after the end of the academic year of exit from the last college attended.

LaunchBoard (Job Closely Related to Field of Study): Among SWP students who responded to the CTE Outcomes Survey and did not transfer to any postsecondary institution, the proportion who reported that they are working in a job very closely or closely related to their field of study.

Living Wage: The cost of living in a specific community or region for one adult and no children. The cost increases with the addition of children.

Occupation: An occupation is a grouping of job titles that have a similar set of activities or tasks that employees perform.

Percent Change: Rate of growth or decline in the occupation for the projected period; this does not factor in replacement openings.

Replacements: Estimate of job openings resulting from workers retiring or otherwise permanently leaving an occupation. Workers entering an occupation often need training. These replacement needs, added to job openings due to growth, may be used to assess the minimum number of workers who will need to be trained for an occupation.

Total Job Openings (New + Replacements): Sum of projected growth (new jobs) and replacement needs. When an occupation is expected to lose jobs, or retain the current employment level, number of openings will equal replacements.

Typical Education Requirement: represents the typical education level most workers need to enter an occupation.

Typical On-The-Job Training: indicates the typical on-the-job training needed to attain competency in the skills needed in the occupation.