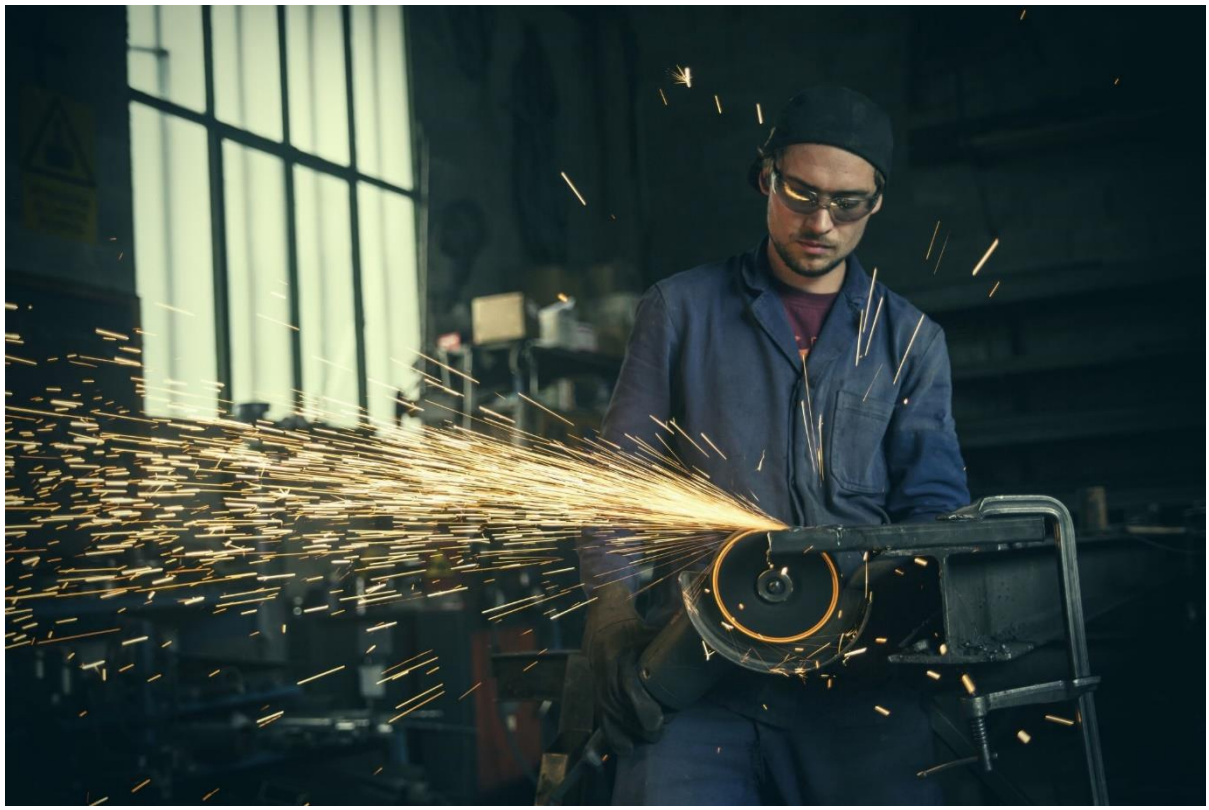
August 2023

Labor Market Analysis

Welding 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 Porterville College to determine whether there is demand in the local labor market that is not being met by the supply from community college programs. This report summarizes labor market demand, wages, skills, and postsecondary supply for *Welding Technology occupations*, which include:

- Welders, Cutters, Solderers, and Brazers (SOC 51-4121)
- Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (51-4122)

Key Findings

- **Occupational Demand —** *Welding Technology occupations* have a labor market demand of 344 annual job openings in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. Between 2021 and 2026, welders, cutters, solderers, and brazers are projected to have the most demand with 336 annual job openings and a projected growth rate of nine percent.

- **Wages —** Average entry-level earnings of $16.81/hour for *Welding Technology occupations* are higher than the living wage in the SCV/SML subregion, which is $11.91/hour for a single adult.[1] Welders, cutters, solderers, and brazers earn the highest entry-level wage, $17.82/hour.

- **Employers —** Employers in the SCV/SML subregion include Randstad, Aerotek, and Volt.

- **Skills and Certifications —** The top baseline skill is lifting ability; the top specialized skill is Metal Inert Gas (MIG) Welding; and the top software skill is fleet maintenance software. The most in-demand certification is an American Welding Society Certification.

- **Education —** A high school diploma or equivalent is typically required for *Welding Technology occupations*.

- **Supply and Demand Analysis —** Based on 344 annual openings (i.e., demand), and 182 postsecondary degrees awarded (i.e., supply), an analysis of supply and demand suggests there is an undersupply of 162 workers in the SCV/SML subregion. In the CVML region, 413 awards were conferred suggesting an undersupply of 156 workers – based on 569 annual openings in CVML.

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 Porterville College work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of Welding Technology workers.

[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://insightcced.org/tools-metrics/self-sufficiency-standard-tool-for-california/.

Introduction

The Central Valley/Mother Lode Center of Excellence developed this report to provide Porterville College with labor market information for Welding 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 Welding Technology resulted in the identification of applicable occupations, known as *Welding Technology occupations*. The Standard Occupational Classification (SOC) System code and occupational titles used in this report from the Bureau of Labor Statistics and O*NET OnLine are shown below.).

Welders, Cutters, Solderers, and Brazers (SOC 51-4121)

- **Job Description:** Use hand-welding, flame-cutting, hand-soldering, or brazing equipment to weld or join metal components or to fill holes, indentations, or seams of fabricated metal products.
- **Knowledge:** Production and Processing, Mechanical
- **Skills:** Quality Control Analysis, Monitoring

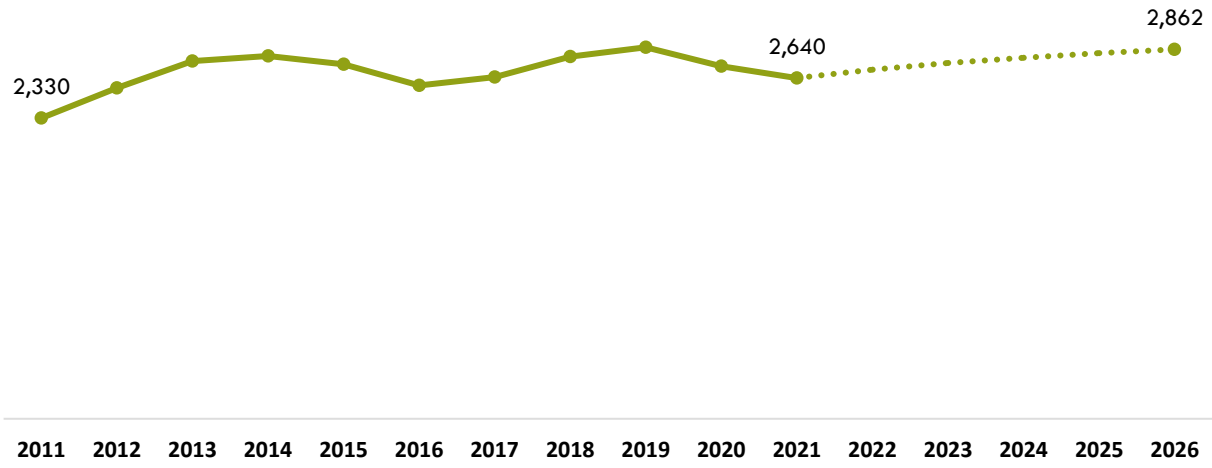
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders (SOC 51-4122)

- **Job Description:** Set up, operate, or tend welding, soldering, or brazing machines or robots that weld, braze, solder, or heat treat metal products, components, or assemblies. Includes workers who operate laser cutters or laser-beam machines.
- **Knowledge:** Mathematics
- **Skills:** Operations Monitoring, Active Listening, Critical Thinking, Operation and Control, Speaking

Occupational Demand

Exhibit 1a shows trends for *Welding Technology occupations* in the SCV/SML subregion. Between 2021 to 2026, the number of jobs for *Welding Technology occupations* is projected to increase by 222 jobs, or eight percent.

Exhibit 1a. Occupational projections for *Welding Technology Occupations* in the SCV/SML subregion



Between 2021 to 2026, demand for *Welding Technology occupations* in the SCV/SML subregion is 344 annual openings (Exhibit 1b). Welders, cutters, solderers, and brazers are projected to have the most demand with 336 annual job openings and a projected growth rate of nine percent.

Exhibit 1b. Occupational projections for *Welding Technology Occupations* in the SCV/SML subregion

Occupation	2021 Jobs	2026 Jobs	5-Year Change	5-Year % Change	Annual Openings
Welders, Cutters, Solderers, and Brazers	2,577	2,796	219	9%	336
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	63	66	3	5%	8
TOTAL	**2,640**	**2,862**	**222**	**8%**	**344**

Wages

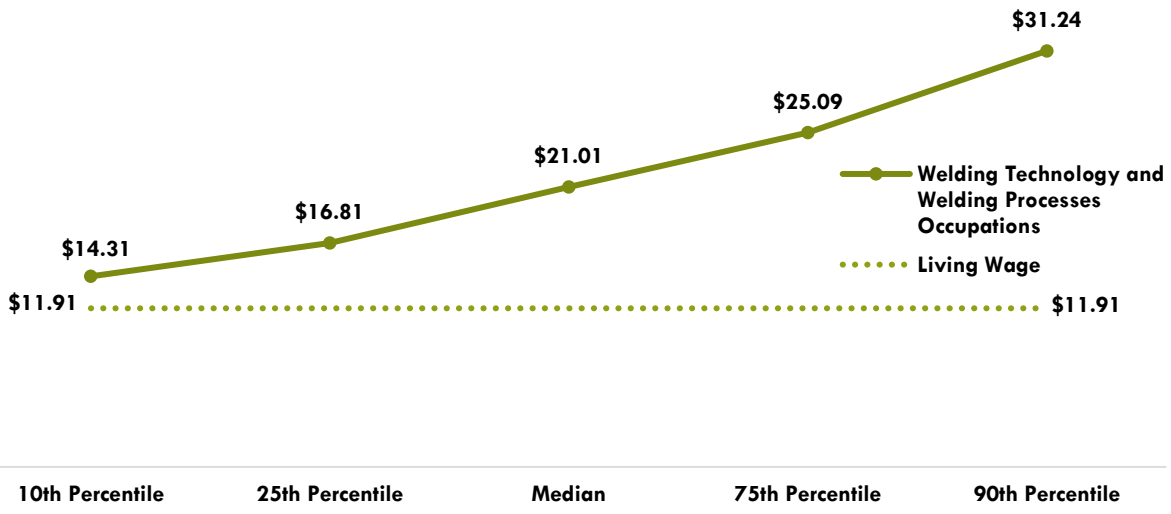
The average living wage for a single adult in the SCV/SML subregion is $11.91/hour.[2] Exhibit 2a shows the hourly wages of *Welding Technology occupations*. Welders, cutters, solderers, and brazers earn the highest entry-level wage, $17.82/hour in the subregion.[3] Please note 10th and 25th percentiles are considered entry-level wages while 75th and 90th are considered experienced wages, either by gained by long-term employment, extra training, etc.

Exhibit 2a. *Welding Technology Occupations* hourly wages in the SCV/SML subregion

Occupation	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings
Welders, Cutters, Solderers, and Brazers	$17.82	$22.05	$25.52
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	$15.80	$19.97	$24.67

Exhibit 2b shows the average hourly wages for *Welding Technology occupations*; the average entry-level wage is more than the average entry-level living wage for the SCV/SML subregion.

Exhibit 2b. *Welding Technology Occupations* average hourly wages in the SCV/SML subregion



[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://insightcced.org/tools-metrics/self-sufficiency-standard-tool-for-california/.

[3] Entry-level wages are derived from the 25th percentile.

Job Postings

There were 318 job postings for *Welding Technology occupations* in the SCV/SML subregion from February to July 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 Randstad, Aerotek, and Volt.

Exhibit 3. Top employers of *Welding Technology Occupations* by number of job postings

Employer
Randstad
Aerotek
Volt
PCL Construction
CRH
Bluescope Building North America
Mid Cal Labor Solutions
Waste Management
Baltimore Aircoil Company
Express Employment Professionals

Salaries

Exhibit 4 shows the "Market Salaries" for *Welding Technology occupations*. 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 4. Market salaries for *Welding Technology Occupations*

Market Salary	Job Postings
$40,000-$43,999	42
$56,000-$59,999	23
$36,000-$39,999	21
$32,000-$35,999	19
$44,000-$47,999	17

[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.

Education

Of the 318 job postings, 52 listed a preferred or minimum educational requirement for the position being filled. Among those, 88% requested a high school or GED, 7% requested an associate degree, and 5% bachelor's degree (Exhibit 5).

Exhibit 5. Education levels requested in job postings for *Welding Technology Occupations*

Education Level	Job Postings	% of Job Postings
High school or GED	39	75%
Associate degree	9	17%
Bachelor's degree	4	8%

Baseline, Specialized, and Software Skills

Exhibit 6 depicts the top baseline, specialized, and software skills in job postings. The top baseline skills are lifting ability, tape measure, and management. The top specialized skills are Metal Inert Gas (MIG) Welding, welding, and fabrication. The top software is Fleet Maintenance Software.

Exhibit 6. In-demand *Welding Technology Occupations* baseline, specialized, and software skills

Baseline Skills	Specialized Skills	Software Skills
Lifting Ability	Metal Inert Gas (MIG) Welding	Fleet Maintenance Software
Tape Measure	Welding	Microsoft Edge
Management	Fabrication	Microsoft Word
Communications	Gas Tungsten Arc Welding	JavaScript (Programming Language)
Mathematics	American Welding Society Codes	IWork

Certifications

Of the job postings that contained certification data, 19% indicated a need for an American Welding Society Certification and Certified Welding Inspector (Exhibit 7).

Exhibit 7. Top *Welding Technology Occupations* certifications requested in job postings

Certifications	% of Job Postings
American Welding Society Certification	19%
Certified Welding Inspector	19%
Forklift Certification	9%
6G Welding Certification	6%
Certified Welder	3%

Education, Work Experience, & Training

A high school diploma or equivalent is typically required for *Welding Technology occupations* (Exhibit 8).

Exhibit 8. Education, work experience, training, and Current Population Survey Results *Welding Technology Occupations*[5]

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Welders, Cutters, Solderers, and Brazers	High school diploma or equivalent	None	Moderate-term	32%
Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders	High school diploma or equivalent	None	Moderate-term	32%

[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, 182 awards were conferred in the SCV/SML subregion (Exhibits 9 and 10).

Exhibit 9. TOP and CIP codes for *Welding Technology Occupations*

TOP Titles	CIP Titles
0956.50 - Welding Technology	150614 - Welding Engineering Technology/Technician 480508 - Welding Technology/Welder

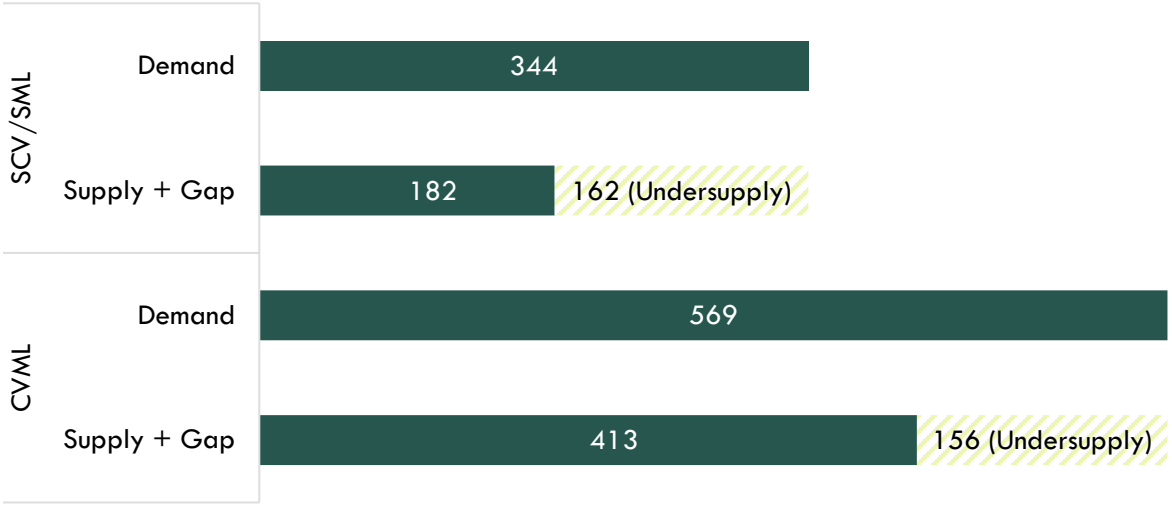
Exhibit 10. Postsecondary supply for *Welding Technology Occupations*

TOP/ CIP Code- Title	College	Associate Degree	Award < 1 Academic Year	Award 1 < 2 Academic Years	Certificate 12 < 18 Semester Units	Certificate 16 < 30 Semester Units	Certificate 18 < 30 Semester Units	Certificate 30 < 60 Semester Units	Certificate 6 < 18 Semester Units	Certificate 8 < 16 Semester Units	TOTAL
095650 - Welding Technology	Bakersfield	6						6	38		50*
	Cerro Coso	5				7	8	10			30*
	Columbia									2	2
	Fresno City	7			7	9		5			28*
	Merced	6				16	2		50		74
	Modesto	4							11		15
	Porterville								14		14*
	Reedley College	3				14	1	8			26*
	San Joaquin Delta					4	15	14			33
	Sequoias	10				6	9				25*
	Taft	1			3				1	1	6*
	West Hills Coalinga					3					3*
48.0508 - Welding Technology/Welder	Advanced Career Institute		106	1							107
TOTAL SCV/SML		**32**	**0**	**0**	**10**	**39**	**18**	**29**	**53**	**1**	**182**
TOTAL CVML		**42**	**106**	**1**	**10**	**59**	**35**	**43**	**114**	**3**	**413**

*SCV/SML awards

There is an undersupply of 162 Welding Technology workers in the SCV/SML subregion and an undersupply of 156 workers in the region (Exhibit 11).

Exhibit 11. *Welding Technology Occupations* workforce demand (annual job openings), postsecondary awards (supply), and additional students needed to fill gap in the SCV/SML subregion and region



Student Outcomes

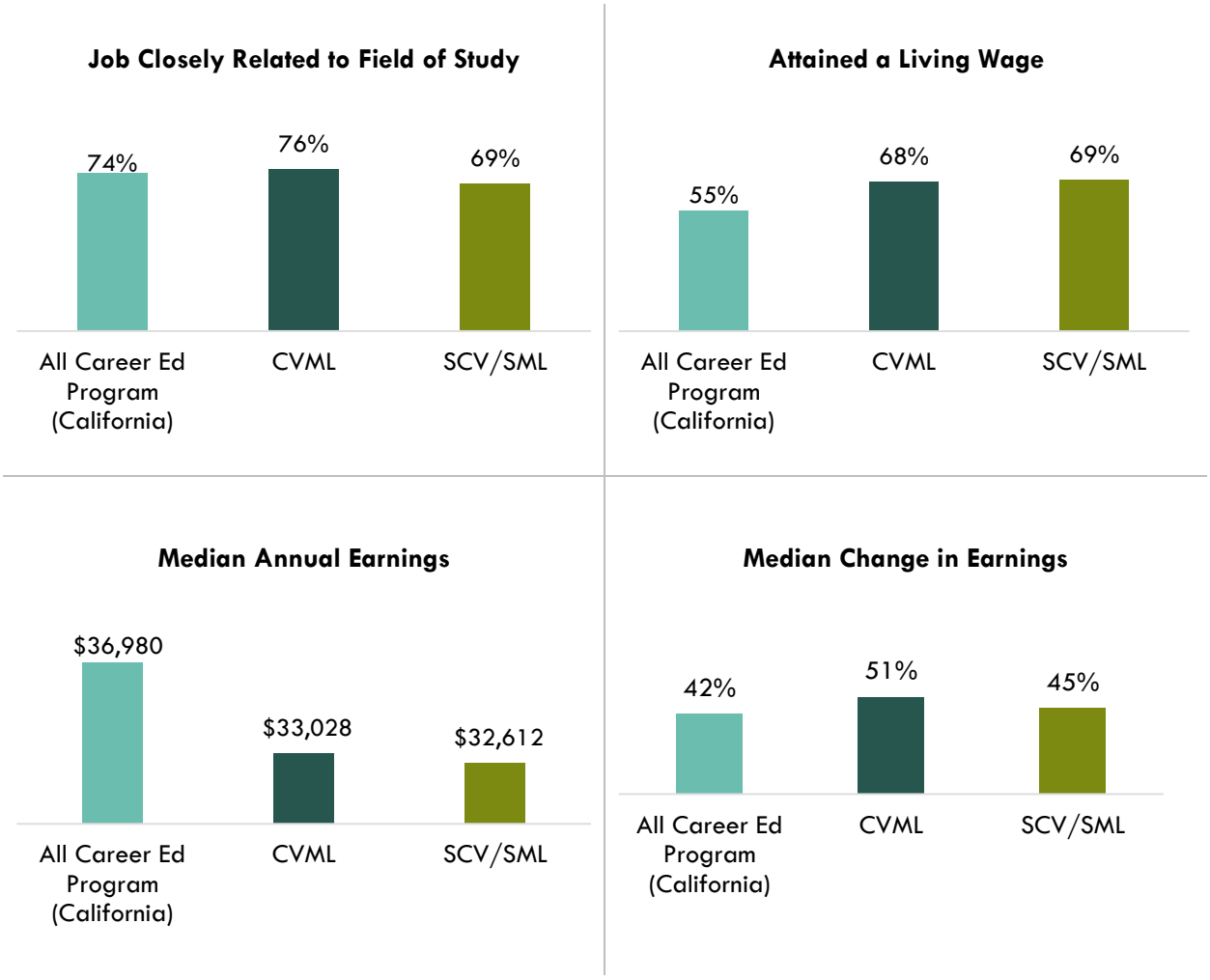
Exhibits 12a – 12b summarize outcomes from California Community College Chancellor's LaunchBoard for Welding Technology. Notably, 69% of students obtained a job closely related to their field of study in the subregion and 69% attained a living wage in the subregion.

Exhibit 12a. Regional metrics for TOP 0956.50 - Welding Technology

Metric	
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	65
Number of Students Who Transferred	10

*denotes data not available in table and charts

Exhibit 12b. Metrics for TOP 0956.50 - Welding Technology



Recommendation

This report suggests there is a shortage of 162 workers in the SCV/SML subregion and a shortage of 156 workers in the CVML region for *Welding Technology occupations*. Based on these findings, it is recommended that Porterville College work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of Welding 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	Lightcast.
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 occupations 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.