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Labor Market Analysis

Drafter



Prepared by Central Valley/Mother Lode Center of Excellence



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Table of Contents

Summary	2
Key Findings.....	2
Recommendation.....	2
Introduction.....	3
Occupational Demand	4
Wages	5
Job Postings	5
Top Employers.....	6
Top Occupational Titles.....	6
Salaries.....	7
Education	7
Baseline, Specialized, and Software Skills.....	8
Certifications.....	8
Education, Work Experience, & Training	9
Supply.....	10
Student Outcomes	11
Recommendation	12
Appendix A: Methodology & Data Sources	13

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 Madera 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 *Drafter Occupations*, which include:

- Architectural and Civil Drafters (SOC 17-3011)
- Electrical and Electronics Drafters (17-3012)
- Mechanical Drafters (SOC 17-3013)
- Drafters, All Other (SOC 17-3019)

Key Findings

- **Occupational Demand** — *Drafter Occupations* have a labor market demand of 91 annual job openings in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. Between 2021 and 2026, architectural and civil drafters are projected to have the most demand with 56 annual job openings and a projected growth rate of three percent.
- **Wages** — Average entry-level earnings of \$21.85/hour for *Drafter Occupations* are higher than the living wage in the SCV/SML subregion, which is \$11.91/hour for a single adult.¹ Electrical and electronics drafters earn the highest entry-level wage, \$26.68/hour.
- **Employers and Occupational Titles** — Employers in the SCV/SML subregion include Divine Power USA, PepsiCo, and CEI Engineering Associates. The most common occupational title in job postings in the subregion is Drafters, All Other. The most common job title is Drafters.
- **Skills and Certifications** — The top baseline skill is communication, the top specialized skill is AutoCAD, and the top software skill is AutoCAD. The most in-demand certification is an Engineer in Training.
- **Education** — An associate degree is typically required for all *Drafter Occupations*.
- **Supply and Demand Analysis** — Based on 91 annual openings (i.e., demand), and 68 postsecondary degrees awarded (i.e., supply), an analysis of supply and demand suggests there is an undersupply of 23 workers in the SCV/SML subregion. In the CVML region, 105 awards were conferred suggesting an undersupply of 44 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 Madera College proceeds with caution in the development of Drafter programs.

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/>.

Introduction

The Central Valley/Mother Lode Center of Excellence developed this report to provide Madera College with labor market information for Drafter. 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 Drafter resulted in the identification of applicable occupations, known as *Drafter 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. Please note that there is no data available for drafters, all other (SOC 17-3019).

Architectural and Civil Drafters (SOC 17-3011)

- **Job Description:** Prepare detailed drawings of architectural and structural features of buildings or drawings and topographical relief maps used in civil engineering projects, such as highways, bridges, and public works. Use knowledge of building materials, engineering practices, and mathematics to complete drawings.
- **Knowledge:** Design, Building and Construction, Engineering and Technology, Computers and Electronics, English Language
- **Skills:** Active Listening, Critical Thinking, Reading Comprehension, Speaking, Writing

Electrical and Electronics Drafters (SOC 17-3012)

- **Job Description:** Prepare wiring diagrams, circuit board assembly diagrams, and layout drawings used for the manufacture, installation, or repair of electrical equipment.
- **Knowledge:** Design, Engineering and Technology, Computers and Electronics, English Language, Mathematics
- **Skills:** Active Listening, Critical Thinking, Judgment and Decision Making, Writing, Complex Problem Solving

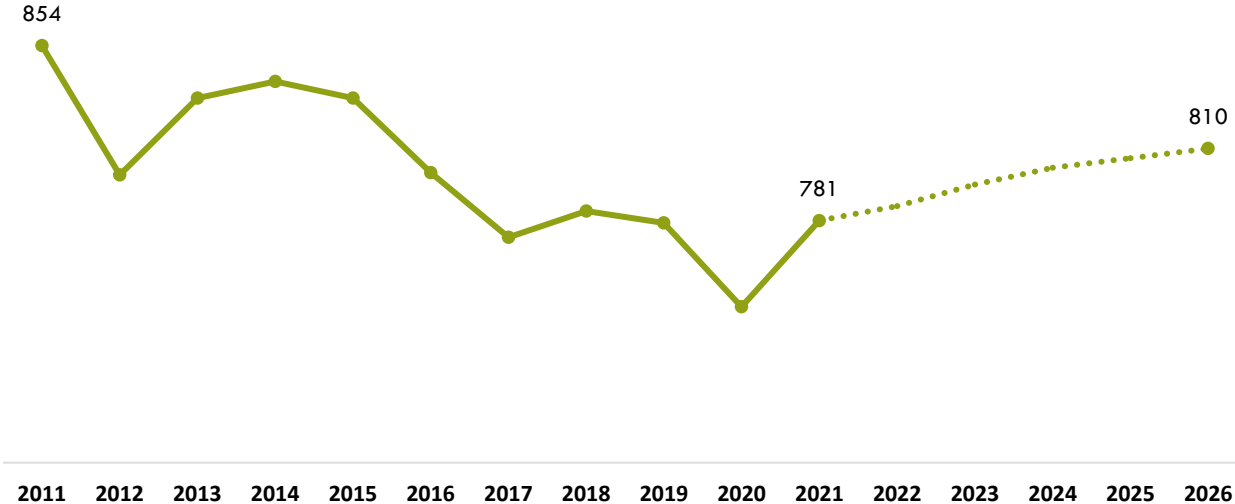
Mechanical Drafters (SOC 17-3013)

- **Job Description:** Prepare detailed working diagrams of machinery and mechanical devices, including dimensions, fastening methods, and other engineering information.
- **Knowledge:** Design, Engineering and Technology, Mechanical, Mathematics, English Language
- **Skills:** Active Learning, Active Listening, Critical Thinking, Mathematics, Reading Comprehension

Occupational Demand

Exhibit 1a shows trends for *Drafter Occupations* in the SCV/SML subregion. Between 2021 to 2026, the number of jobs for *Drafter Occupations* is projected to increase by 29 jobs, or four percent.

Exhibit 1a. Occupational projections for Drafter Occupations in the SCV/SML subregion



Between 2021 to 2026, demand for *Drafter Occupations* in the SCV/SML subregion is 91 annual openings (Exhibit 1b). Architectural and civil drafters are projected to have the most demand with 56 annual job openings and a projected growth rate of three percent.

Exhibit 1b. Occupational projections for Drafter Occupations in the SCV/SML subregion

Occupation	2021 Jobs	2026 Jobs	5-Year Change	5-Year % Change	Annual Openings
Architectural and Civil Drafters	451	465	14	3%	56
Mechanical Drafters	188	195	7	4%	19
Electrical and Electronics Drafters	89	95	6	7%	10
Drafters, All Other	53	55	2	4%	6
TOTAL	781	810	29	4%	91

Wages

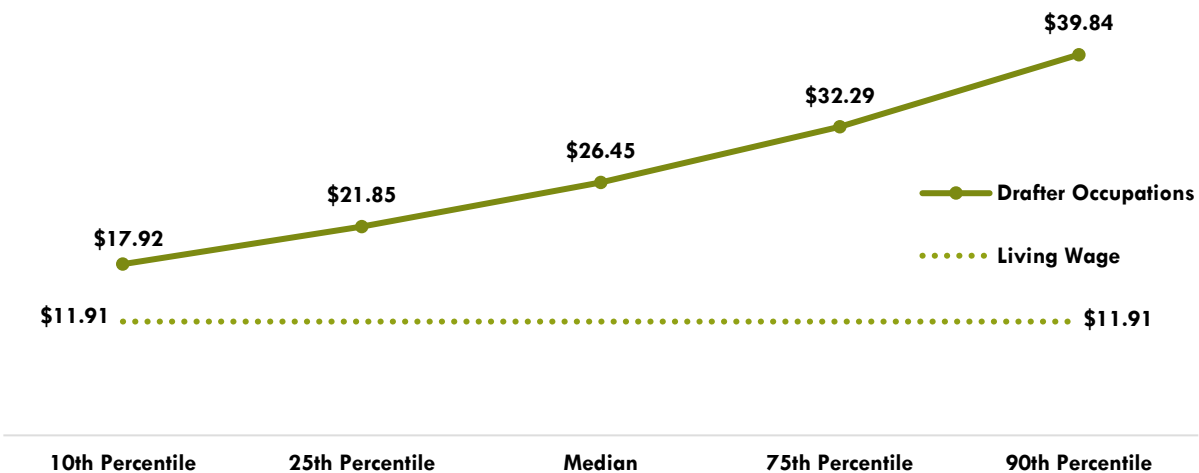
The average living wage for a single adult in the SCV/SML subregion is \$11.91/hour.² Exhibit 2a shows the hourly wages of *Drafter Occupations*. Electrical and electronics drafters earn the highest entry-level wage, \$26.68/hour in the subregion.³ Please note 10th and 25th percentiles are considered entry-level wages while 75th and 90th are considered experienced wages, either by gained by long-term employment, extra training, etc.

Exhibit 2a. Drafter Occupations hourly wages in the SCV/SML subregion

Occupation	Pct. 25 Hourly Earnings	Median Hourly Earnings	Pct. 75 Hourly Earnings
Electrical and Electronics Drafters	\$26.68	\$28.95	\$36.09
Architectural and Civil Drafters	\$22.68	\$28.08	\$32.39
Mechanical Drafters	\$21.95	\$27.63	\$33.93
Drafters, All Other	\$16.09	\$21.15	\$26.73

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

Exhibit 2b. Drafter 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://insightccd.org/tools-metrics/self-sufficiency-standard-tool-for-california/>.

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

Job Postings

There were 203 job postings for *Drafter Occupations* in the SCV/SML subregion from July 2022 to December 2022.⁴

Top Employers

The top employers with the most job postings are listed in Exhibit 3. The top employers in online job postings were Divine Power USA, PepsiCo, and CEI Engineering Associates.

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

Employer
Divine Power USA
PepsiCo
CEI Engineering Associates
Rex Moore
Transbay Fire Protection
CRH
Blair
Jobot
Quad Knopf
International Paper

Top Occupational Titles

Exhibit 4 shows the O*NET OnLine occupational titles for *Drafter Occupations* in the SCV/SML subregion. Common job titles in postings include: Drafter, CAD Drafter, and Electrical Designers.

Exhibit 4. Top occupational titles in job postings for *Drafter Occupations*

Occupational Title
Drafters
CAD Drafters
Electrical Designers
Detailers
PLC Programmers
Drafters/CAD Operators
Survey CAD Technicians
Layout Engineers
Piping Designers
CAD Designers

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 *Drafter 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 5. Market salaries for Drafter Occupations

Market Salary	Job Postings
\$40,000-\$44,999	8
\$35,000-\$39,999	5
\$50,000-\$54,999	3
\$55,000-\$59,999	3
\$45,000-\$49,999	2

Education

Of the 203 job postings, 121 listed a preferred or minimum educational requirement for the position being filled. Among those, 20% requested high school or GED, 20% requested a bachelor’s degree, and 17% requested an associate degree (Exhibit 6).

Exhibit 6. Education levels requested in job postings for Drafter Occupations

Education Level	Job Postings	% of Job Postings
High school or GED	40	20%
Bachelor's degree	40	20%
Associate degree	35	17%
Master's degree	4	2%
Ph.D. or professional degree	2	1%

Baseline, Specialized, and Software Skills

Exhibit 7 depicts the top baseline, specialized, and software skills in job postings. The three most important baseline skills are communication, detail-oriented, and mathematics. The top three specialized skills are AutoCAD, computer-aided design, and Autodesk Revit. The top software is AutoCAD.

Exhibit 7. In-demand *Drafter Occupations* baseline and specialized skills

Baseline Skills	Specialized Skills	Software Skills
Communications	AutoCAD	AutoCAD
Detail-Oriented	Computer-Aided Design	Autodesk Revit
Mathematics	Autodesk Revit	Microsoft Excel
Management	AutoCAD Civil 3D	AutoCAD Civil 3D
Planning	Construction	SolidWorks (CAD)

Certifications

Of the 203 job postings, 19 contained certification data. Among those, 16% indicated a need for engineer in training. The next top certification is Project Management Professional Certification and Top Secret-Sensitive Compartmented Information (TS/SCI Clearance) (Exhibit 8).

Exhibit 8. Top *Drafter Occupations* certifications requested in job postings

Certifications	% of Job Postings
Engineer in Training	16%
Project Management Professional Certification	16%
Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)	11%
Certified Associate in Project Management	5%
Certified Automation Professional	5%

Education, Work Experience, & Training

An associate degree is typically required for all *Drafter Occupations* (Exhibit 9).

Exhibit 9. Education, work experience, training, and Current Population Survey results *Drafter Occupations*⁵

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Architectural and Civil Drafters	Associate degree	None	None	53.4%
Mechanical Drafters	Associate degree	None	None	55.2%
Electrical and Electronics Drafters	Associate degree	None	None	55.2%
Drafters, All Other	Associate degree	None	None	55.2%

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 (Exhibit 10 and 11).

Exhibit 10. TOP and CIP codes for Drafter Occupations

TOP Titles	CIP Titles
095300 - Drafting Technology	15.1301 - Drafting and Design Technology/Technician, General
	15.1302 - CAD/CADD Drafting and/or Design Technology/Technician
	50.0404 - Industrial and Product Design
095340 - Mechanical Drafting	15.1306 - Mechanical Drafting and Mechanical Drafting CAD/CADD

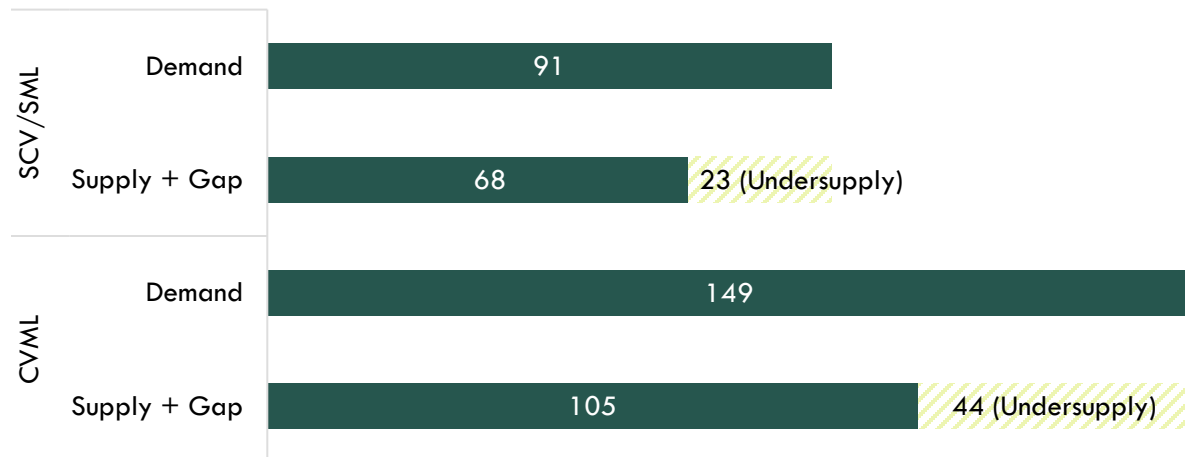
Exhibit 11. Postsecondary supply for Drafter Occupations

TOP/CIP Code	College	Associate Degree	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	Subtotal
095300 - Drafting Technology	Bakersfield	14				2	39		55*
	Fresno City	4				6			10*
	Merced	0							0
	San Joaquin Delta	8			6				14
095340 - Mechanical Drafting	Merced	5		3	4	4			16
	San Joaquin Delta	4		0		3			7
	Sequoias	0	3					0	3*
TOTAL SCV/ SML		18	3	0	0	8	39	0	68
TOTAL CVML		35	3	3	10	15	39	0	105

*SCV/SML awards

There is an undersupply of 23 Drafter workers in the SCV/SML subregion and an undersupply of 44 workers in the region (Exhibit 12).

Exhibit 12. Drafter 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

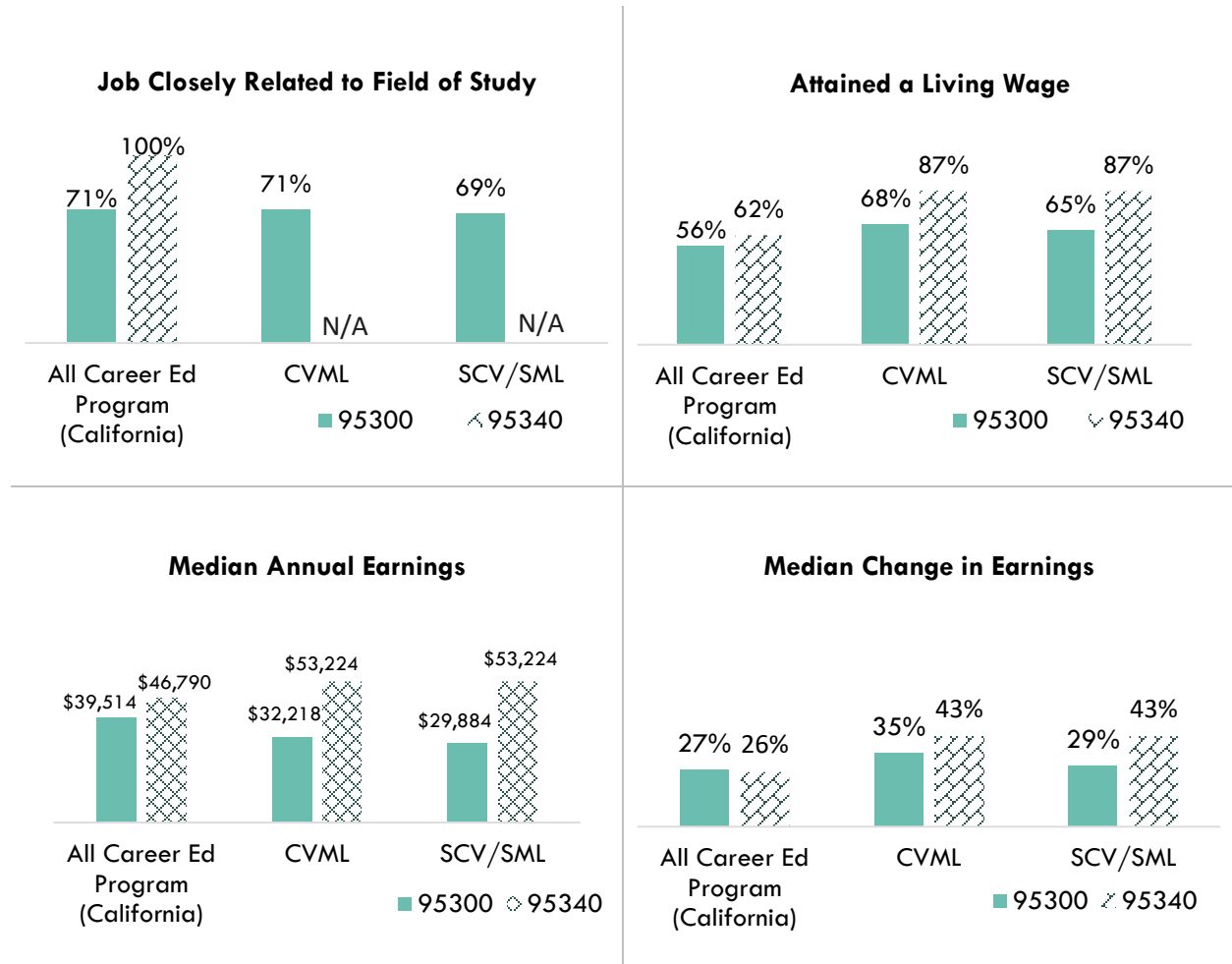
Exhibits 13a -13b summarize outcomes from California Community College Chancellor’s Cal-PASS Plus LaunchBoard for TOP codes related to *Drafter Occupations*. Notably, 71% of students obtained a job closely related to their field of study in the region, and 68% to 87% attained a living wage.

Exhibit 13a. Regional metrics for TOP 095300 - Drafting Technology and 095340 - Mechanical Drafting

Metric	095300 - Drafting Technology	095340 - Mechanical Drafting
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	19	*
Number of Students Who Transferred	20	*

*denotes data not available in table and charts

Exhibit 13b. Metrics for TOP 095300 - Drafting Technology and 095340 - Mechanical Drafting



Recommendation

This report suggests there is a shortage of 23 workers in the SCV/SML subregion and a shortage of 44 workers in the CVML region for *Drafter Occupations*. Based on these findings, it is recommended that Madera College proceeds with caution in the development of Drafter programs.

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 Cal-PASS Plus 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.