

Labor Market Analysis for Program Exploration: 0953.10/Architectural Drafting (Architectural Drafting)

CVML Center of Excellence, November 2024



Summary

| | | | |
|--|---|--|---|
| Program LMI Endorsement | Endorsed: All LMI Criteria Met <input checked="" type="checkbox"/> | Endorsed: Some LMI Criteria Met <input type="checkbox"/> | Not LMI Endorsed <input type="checkbox"/> |
| Program LMI Endorsement Criteria | | | |
| | Yes <input checked="" type="checkbox"/> | | No <input type="checkbox"/> |
| Supply Gap: | Comments: There are projected to be 44 annual job openings throughout the SCV/SML subregion for <i>Architectural</i> and <i>Civil Drafters</i> , which are more than the 32 awards conferred by educational institutions. | | |
| | Yes <input checked="" type="checkbox"/> | | No <input type="checkbox"/> |
| Living Wage: (Entry-Level, 25 th) | Comments: <i>Architectural</i> and <i>Civil Drafters</i> have entry-level hourly wages (\$23.61) above the SCV/SML living wage of \$16.08. | | |
| | Yes <input checked="" type="checkbox"/> | | No <input type="checkbox"/> |
| Education: | Comments: The typical entry-level education for <i>Architectural</i> and <i>Civil Drafters</i> is an associate degree, and 61% of workers in the field have completed some college or an associate degree as their highest level of education. | | |
| Emerging Occupation(s) | | | |
| | Yes <input type="checkbox"/> | | No <input checked="" type="checkbox"/> |
| | Comments: N/A | | |

The Central Valley/Mother Lode Center of Excellence for Labor Market Research (CVML COE) prepared this report to determine whether there is a supply gap in the South Central Valley/Southern Mother Lode regional labor market related to the following middle-skill occupation:

- Architectural and Civil Drafters (17-3011)

Middle-skill occupations typically require a community college education while above middle-skill occupations typically require at least a bachelor's degree.

Based on the available data, there appears to be a supply gap for *Architectural* and *Civil Drafters*. Additionally, the typical entry-level education requirement for this occupation aligns with a community college education and the entry-level wage is above the regional living wage. **Therefore, due to all 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 *Architectural and Civil Drafters*.

Exhibit 1: Labor Market Endorsement Summary

| Occupation (SOC) | Demand (Annual Openings) | Supply (CC and Non-CC) | Entry-Level Hourly Earnings (25 th Percentile) | Typical Entry-Level Education | Community College Educational Attainment |
|--|--------------------------|------------------------|---|-------------------------------|--|
| Architectural and Civil Drafters (17-3011) | NCV/NML: 27 | NCV/NML: 10 | NCV/NML: \$23.67 | Associate degree | 61% |
| | SCV/SML: 44 | SCV/SML: 32 | SCV/SML: \$23.61 | | |
| Total | 71 | 42 | - | - | - |

Demand:

- The number of jobs for *Architectural and Civil Drafters* is projected to increase 5% through 2028, equating to 44 annual job openings (SCV/SML).
- The entry-level hourly wage for *Architectural and Civil Drafters* is \$23.61 in the South Central Valley/Southern Mother Lode subregion, which is above the living wage of \$16.08.
- There were 93 online job postings for *Architectural and Civil Drafters* over the past 12 months.
- The typical entry-level education for *Architectural and Civil Drafters* is an associate degree.
- 61% of workers in the field have some community college training or an associate degree as their highest level of education.

Supply:

- There was an average of 32 awards conferred by two community colleges in the SCV/SML subregion from 2020 to 2023.
- Between 2019 to 2022, there were no non-community college institutions in the region that conferred any awards in relevant programs.

Demand

Occupational Projections:

Exhibit 2 shows the annual percent change in jobs for *Architectural and Civil Drafters* from 2018 through 2028. Employment in this occupation increased 2% in 2022 (SCV/SML), while there was a 5% increase across all occupations in 2022. However, there was a sharp 7% decrease in 2023 (SCV/SML), before experiencing a 1% increase in 2024. Employment for *Architectural and Civil Drafters* is projected to remain steady (SCV/SML) when compared to all occupations through 2028.

Exhibit 2: Annual Percent Change in Jobs for Architectural and Civil Drafters, 2018-2028

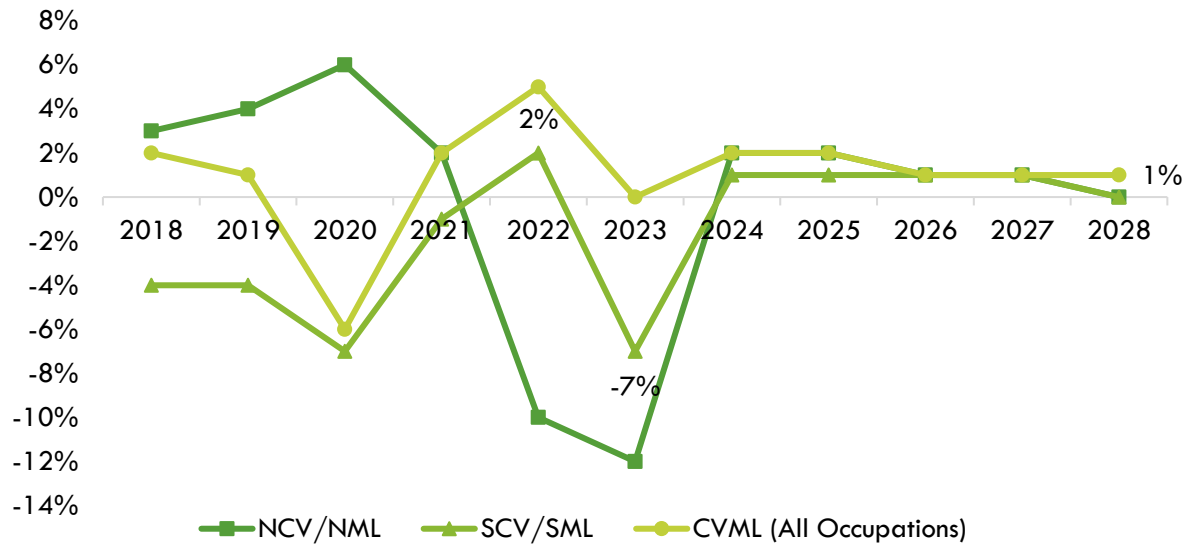


Exhibit 3 shows the five-year occupational demand projections for *Architectural and Civil Drafters*. In the SCV/SML subregion, the number of jobs for *Architectural and Civil Drafters* is projected to increase by 5% through 2028. Additionally, there are projected to be 44 jobs available annually.

Exhibit 3: Occupational Demand in NCV/NML, SCV/SML and CVML¹

| Geography | 2023 Jobs | 2028 Jobs | 2023-2028 Change | 2023-2028 % Change | Annual Openings |
|-------------|------------|------------|------------------|--------------------|-----------------|
| NCV/NML | 248 | 264 | 16 | 7% | 27 |
| SCV/SML | 420 | 440 | 20 | 5% | 44 |
| CVML | 668 | 704 | 36 | 5% | 71 |

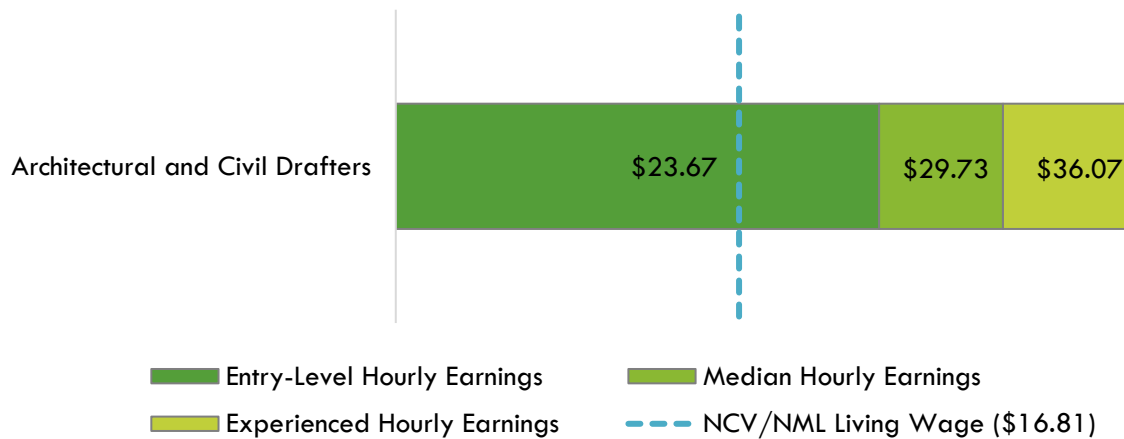
¹ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for *Architectural and Civil Drafters* as they relate to the subregions and region's living wage. NCV/NML, SCV/SML and CVML wages are included below to provide a complete analysis of the subregion.

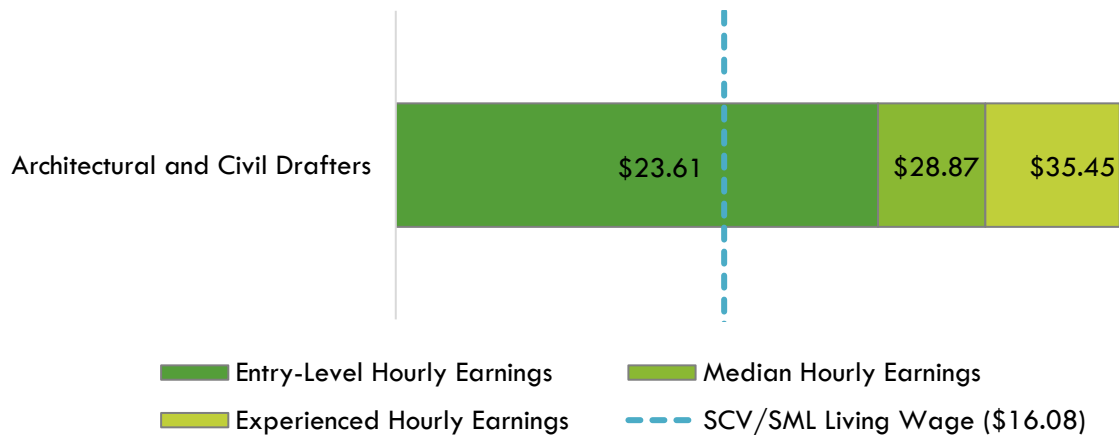
The typical entry-level hourly wage for *Architectural and Civil Drafters* is \$23.67 per hour, which is above the living wage for one adult in the NCV/NML subregion (\$16.81). The NCV/NML average wage for this occupation is \$31.10, which is below the average statewide wage of \$35.65. Exhibit 4a shows the wage range for *Architectural and Civil Drafters* and how it compares to the NCV/NML subregion's living wage.

Exhibit 4a: Wages by Occupation in NCV/NML



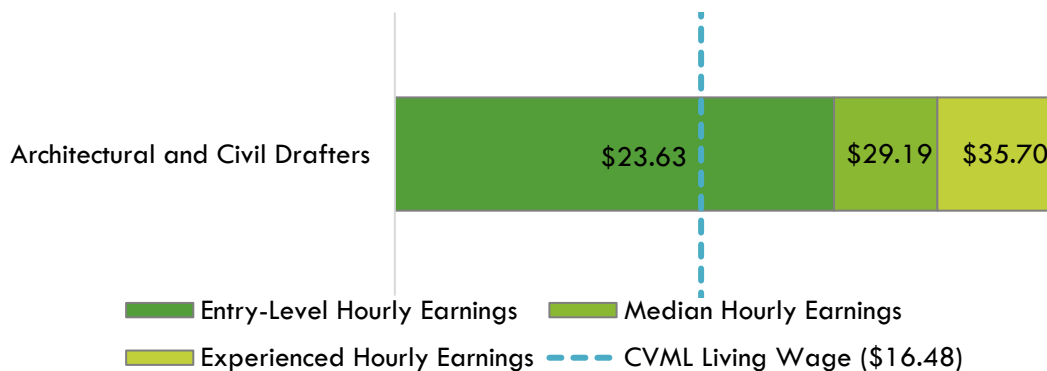
The typical entry-level hourly wage for *Architectural and Civil Drafters* is \$23.61 per hour, which is above the living wage for one adult in the SCV/SML subregion (\$16.08). The SCV/SML subregion's average wage for this occupation is \$30.65, which is below the average statewide wage of \$35.65. Exhibit 4b shows the wage range for *Architectural and Civil Drafters* and how it compares to the SCV/SML subregion's living wage.

Exhibit 4b: Wages by Occupation in SCV/SML



The typical entry-level hourly wage for *Architectural and Civil Drafters* is \$23.63, which is above the living wage for one adult in the CVML region (\$16.48). The CVML average wage for this occupation is \$30.82, which is below the average statewide wage of \$35.65. Exhibit 5 shows the wage range for *Architectural and Civil Drafters* and how it compares to the CVML region’s living wage.

Exhibit 5: Wages by Occupation in CVML



Job Postings:

Important Online Job Postings Data Note: Online job postings data is sourced from Lightcast, a labor market analytics firm that scrapes, collects, and organizes data from online job boards such as LinkedIn, Indeed, Glassdoor, Monster, GovernmentJobs.com, and thousands more. Lightcast uses natural language processing (NLP) to determine the related company, industry, occupation, and other information for each job posting. However, NLP has limitations that include understanding contextual words or phrases; determining differences in words that can be used as nouns, verbs, and/or adjectives; and misspellings or grammatical errors.² For these reasons, job postings could be assigned to the wrong employer, industry, or occupation within Lightcast’s database.

Additionally, there are several limitations when analyzing job postings. A single job posting may not represent a single job opening, as employers may be creating a pool of candidates for future openings or hiring for multiple positions with a single posting. Additionally, not all jobs are posted online, and jobs may be filled through other methods such as internal promotion, word-of-mouth advertising, physical job boards, or a variety of other channels.

There were 93 online job postings for *Architectural and Civil Drafters* listed in the past 12 months (Exhibit 6).

Exhibit 6: Number of Job Postings by Occupation (n=93)

| Occupation | Job Postings | Percentage of Job Postings |
|----------------------------------|--------------|----------------------------|
| Architectural and Civil Drafters | 93 | 100% |

² K. R. Chowdhary, *Fundamentals of Artificial Intelligence* (Basingstoke: Springer Nature, 2020), <https://link.springer.com/book/10.1007/978-81-322-3972-7>.

The top employers in the subregion for *Architectural* and *Civil Drafters*, by number of job postings, are shown in Exhibit 7.

Exhibit 7: Top Employers by Number of Job Postings (n=93)

| Employer | Job Postings | Percentage of Job Postings |
|----------------------------|--------------|----------------------------|
| Actalent | 25 | 27% |
| GPAC | 14 | 15% |
| 84 Lumber | 6 | 6% |
| Teter | 3 | 3% |
| Parsons | 2 | 2% |
| Floor & Decor | 2 | 2% |
| GAF Materials Corporation | 2 | 2% |
| CDM Smith | 2 | 2% |
| Howe Electric Construction | 2 | 2% |
| 4Creeks | 2 | 2% |

The top specialized, common, and software skills for *Architectural* and *Civil Drafters* listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 8.

Exhibit 8: Top Skills by Number of Job Postings (n=93)

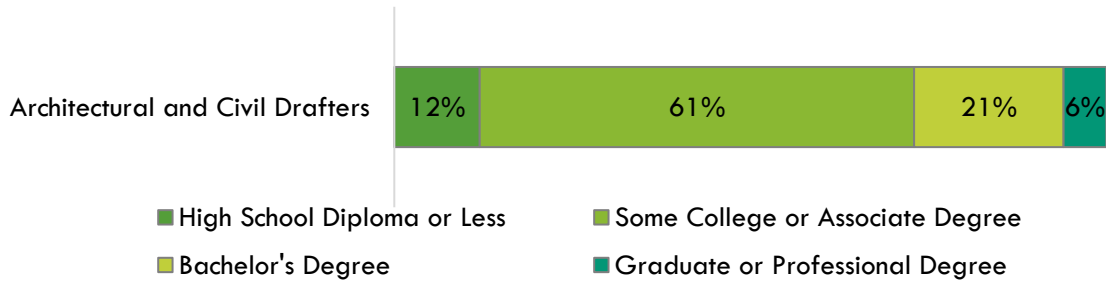
| Top Specialized Skills | Top Common Skills | Top Software Skills |
|----------------------------|-----------------------|--|
| AutoCAD (54) | Communication (34) | AutoCAD (54) |
| Civil Engineering (38) | Detail Oriented (33) | AutoCAD Civil 3D (32) |
| AutoCAD Civil3D (32) | Microsoft Office (19) | Microsoft Office (19) |
| Construction (32) | Customer Service (16) | Autodesk Revit (18) |
| Project Management (30) | Operations (15) | Mechanical Electrical Plumbing (MEP) Design Software (9) |
| Computer-Aided Design (28) | Problem Solving (14) | Microsoft Excel (6) |
| Civil Design (24) | Sales (12) | Microsoft Outlook (6) |
| Land Development (24) | Management (11) | Database Software (5) |
| Engineering Drawings (21) | Planning (10) | Design Software (5) |
| Grading (Landscape) (21) | Leadership (10) | CAD Standards (4) |

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists an associate degree as the typical entry-level education for *Architectural* and *Civil Drafters*. The national-level educational attainment data indicates that 61% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 9 shows the educational attainment for *Architectural* and *Civil Drafters*.

Of the 93 online job postings, 37% (equivalent to 34 postings) of cumulative job postings for *Architectural* and *Civil Drafters* listed a minimum education requirement in the SCV/SML subregion, and 56% (19) requested a bachelor's degree.

Exhibit 9: National-level Educational Attainment for Architectural and Civil Drafters



Educational Supply

Community College Supply:

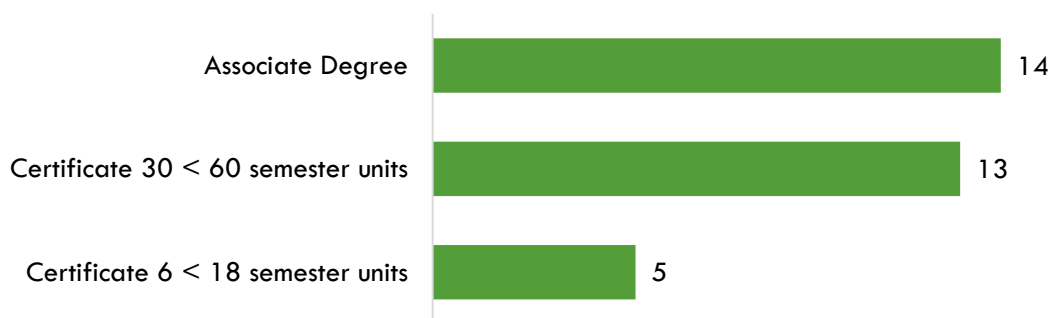
Exhibit 10 shows the annual and three-year average number of awards conferred by community colleges in the related TOP codes: Drafting Technology (0953.00) and Architectural Drafting (0953.10). The four community colleges in the region that have conferred awards between 2020 and 2023 are Merced, San Joaquin Delta, Bakersfield, and Fresno City.

Exhibit 10: Regional Community College Awards (Certificates and Degrees), 2020-2023

| TOP Code | Program | College | 2020-2021 Awards | 2021-2022 Awards | 2022-2023 Awards | 3-Year Award Average |
|--------------------------------|------------------------|--------------------------------|------------------|------------------|------------------|----------------------|
| 0953.00 | Drafting Technology | Merced | 1 | - | - | 0 |
| | | San Joaquin Delta | 4 | 15 | 9 | 9 |
| | | NCV/NML Subtotal | 5 | 15 | 9 | 10 |
| | | Bakersfield | 29 | 11 | 5 | 15 |
| | | Fresno City | 10 | 18 | 22 | 17 |
| | | SCV/SML Subtotal | 39 | 29 | 27 | 32 |
| Supply Subtotal/Average | | | 44 | 44 | 36 | 41 |
| 0953.10 | Architectural Drafting | Merced | 1 | - | - | 0 |
| | | NCV/NML Total | 1 | - | - | 0 |
| | | Supply Subtotal/Average | 1 | - | - | 0 |
| Supply Total/Average | | | 45 | 44 | 36 | 42 |

Exhibit 11 shows the annual average community college awards by type from 2020-21 through 2022-23. Of the 32 awards conferred in the SCV/SML subregion, 44% (14) were for associate degrees, followed by 41% (13) certificates between 30 and less than 60 semester units.

Exhibit 11: Annual Average Community College Awards by Type, 2020-2023



Community College Student Outcomes:

Exhibit 12 shows the Strong Workforce Program (SWP) metrics for the Architectural Drafting program in Kern Community College District (KCCD), the SCV/SML subregion, the CVML region, and California. Of the 1,471 Architectural Drafting statewide students in the 2022-23 academic year, 13% (189) attended a SCV/SML institution.

SCV/SML students that exited Architectural Drafting programs in the 2021-22 academic year had median annual earnings (\$35,716), which is below the statewide median annual earnings (\$43,856). Notably, 72% of SCV/SML Architectural Drafting students attained the living wage, which is higher than the percentage of Architectural Drafting students who attained the living wage statewide (62%).

Exhibit 12: Architectural Drafting (0953.10) Strong Workforce Program Metrics

| SWP Metric | KCCD | SCV/SML Region | CVML Region | California |
|---|------|----------------|-------------|------------|
| SWP Students | N/A | 189 | 189 | 1,471 |
| SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year | N/A | 33% | 33% | 38% |
| SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course | N/A | N/A | N/A | 35% |
| SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status | N/A | N/A | N/A | 6% |
| SWP Students Who Transferred to a Four-Year Postsecondary Institution | N/A | 9% | 9% | 6% |
| SWP Students with a Job Closely Related to Their Field of Study | N/A | N/A | N/A | 73% |

| SWP Metric | KCCD | SCV/SML Region | CVML Region | California |
|--|------|-----------------------|-----------------------|-----------------------|
| Median Annual Earnings for SWP Exiting Students | N/A | \$35,716 (\$17.17) | \$35,716 (\$17.17) | \$43,856 (\$21.08) |
| Median Change in Earnings for SWP Exiting Students | N/A | 30% | 30% | 46% |
| SWP Exiting Students Who Attained the Living Wage | N/A | 72% | 72% | 62% |



Non-Community College Supply:

For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for *Architectural* and *Civil Drafters*. Supply data (2019-2022) shows there were no awards conferred by institutions in the related Classification of Instructional Programs (CIP) Code: Architectural Drafting and Architectural CAD/CADD (15.1303).

Appendix A: Methodology

The CVML COE prepared this report by analyzing data from occupations and education programs. Occupational data is derived from Lightcast, a labor market analytics firm that consolidates data from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS) and other government agencies. Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

Using a TOP-SOC crosswalk, the CVML COE identified middle-skill jobs for which programs within these TOP codes train. Middle-skill jobs include:

- All occupations that require 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 CVML COE determined labor market supply for an occupation or SOC code by analyzing the number of program completers or awards in a related TOP or CIP code. The COE developed a “supply table” with this information, which is the source of the program supply data for this report. TOP code data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP code data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data), also known as IPEDS. 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 in the United States and Canada. Institutions outside of the California Community College system do not use TOP codes in their reporting systems.

Data included in this analysis represent the labor market demand for relevant positions most closely related to the proposed program as expressed by the requesting college in consultation with the CVML COE. Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study which can signal demand and show what employers are looking for in potential employees but is not a perfect measure of the quantity of open positions.

All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

Appendix B: Data Sources

| Data Type | Source |
|---|--|
| Occupational Projections, Wages, and Job Postings | <p>Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics and the American Community Survey. For more information, see https://lightcast.io/</p> |
| Living Wage | <p>The living wage is derived from the Insight Center's California Family Needs Calculator, which measures the income necessary for an individual of family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. For more information, see: https://selfsufficiencystandard.org/California/</p> <p>The living wage for one adult in Kern County is \$15.16 per hour (\$31,532.80) annually. This figure is used by the CCCCCO to calculate the percentage of students that attained the regional living wage.</p> |
| Typical Education and Training Requirements, and Educational Attainment | <p>The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. 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. For more information, see https://www.bls.gov/emp/documentation/education/tech.htm</p> |
| Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences | <p>The O*NET database includes information on skills, abilities, knowledges, work activities, and interests associated with occupations. For more information, see https://www.onetonline.org/help/online/</p> |
| Educational Supply | <p>The CCCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu</p> <p>The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions). For more information, see https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions</p> |
| Student Metrics and Demographics | <p>DataVista, a statewide data system supported by the California Community Colleges Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: https://datavista.cccco.edu/</p> |

| Data Type | Source |
|--|--|
| Population and Occupation Demographics | <p>The Census Bureau’s American Community Survey (ACS) is the premier source for detailed population and housing information. For more information, see: https://www.census.gov/programs-surveys/acs</p> <p>Data is sourced from IPUMS USA, a database providing access to ACS and other Census Bureau data products. For more information, see: https://usa.ipums.org/usa/about.shtml</p> |

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