Labor Market Analysis for Existing Low Unit, Local Certificate for State Chartering: 2206.10/Geographic Information Systems *(Certificate of Achievement)*

CVML Center of Excellence, October 2026

Summary

Program LMI Endorsement	Endorsed: All LMI Criteria Met ☒	Endorsed: Some LMI Criteria Met ☐	Not LMI Endorsed ☐

Program LMI Endorsement Criteria

Supply Gap:	Yes ☑	No ☐
	Comments: There are projected to be **15 annual job openings** throughout the NCV/NML subregion for *Surveying and Mapping Technicians*, which **is more than the 14 awards conferred by educational institutions in the NCV/NML subregion.** However, the oversupply is within the COE's margin (25% over or under the number of annual job openings) to be considered "supply met" rather than a "supply gap".	
Living Wage: (Entry-Level as 25th Percentile):	Yes ☑	No ☐
	Comments: Surveying and Mapping Technicians have an entry-level hourly wage **above the NCV/NML living wage of $16.81.**	
Education:	Yes ☑	No ☐
	Comments: The typical entry-level education for *Surveying and Mapping Technicians* is a high school diploma or equivalent. Additionally, **55% have completed some college or an associate degree as their highest level of education.**	

Emerging Occupation(s)

Yes ☐ No ☑

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 North Central Valley/Northern Mother Lode regional labor market related to the following middle-skill occupation:

- Surveying and Mapping Technicians (17-3031)

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 *Surveying and Mapping Technicians*. In addition to this occupation having an entry-level wage above the subregion's living wage, 55% of workers in this field have completed some college or an associate degree as their highest level of education. **Therefore, due to all of 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 *Surveying and Mapping Technicians*.

Exhibit 1: Labor Market Endorsement Summary

Occupation (SOC)	Demand (Annual Openings)	Supply (CC and Non-CC)	Entry-Level Hourly Earnings (25th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Surveying and Mapping Technicians (17-3031)	NCV/NML: 15 SCV/SML: 36	NCV/NML: 14 SCV/SML: 0	NCV/NML: $25.75 SCV/SML: $26.86	High school diploma or equivalent	*55%*
Total	**51**	**14**	-	**-**	**-**

Demand:

- The number of jobs for *Surveying and Mapping Technicians* is projected to increase 11% through 2030. There will be 15 annual job openings in the NCV/NML subregion.
- *Surveying and Mapping Technicians* have an entry-level hourly wage above the living wage of $16.81 in the NCV/NML subregion.
- There were 22 online job postings for *Surveying and Mapping Technicians* over the past 12 months.
- The Bureau of Labor Statistics (BLS) lists a high school diploma or equivalent as the typical entry-level education for *Surveying and Mapping Technicians*.
- National-level educational attainment data indicates that *55%* of *Surveying and Mapping Technicians* have completed some college or an associate degree as their highest level of education.

Supply:

- Between 2022 and 2025, there was an average of 14 awards conferred by community colleges in the NCV/NML subregion.
- Between 2021 and 2024, there were no non-community college institutions in the NCV/NML subregion that conferred awards in relevant programs.

Demand

Occupational Projections

Exhibit 2 shows the annual percent change in jobs for *Surveying and Mapping Technicians* from 2020 through 2030. The NCV/NML subregion experienced the highest growth in 2024 at 3%, compared to the 1% growth across all CA occupations. The NCV/NML subregion experienced the largest decline in 2021 at 11%, compared to the 2% growth across all CA occupations. From 2027 to 2030, growth is projected to fluctuate (between 1% and 3%) in NCV/NML subregion.

Exhibit 2: Annual Percent Change in Jobs for Surveying and Mapping Technicians, 2020-2030

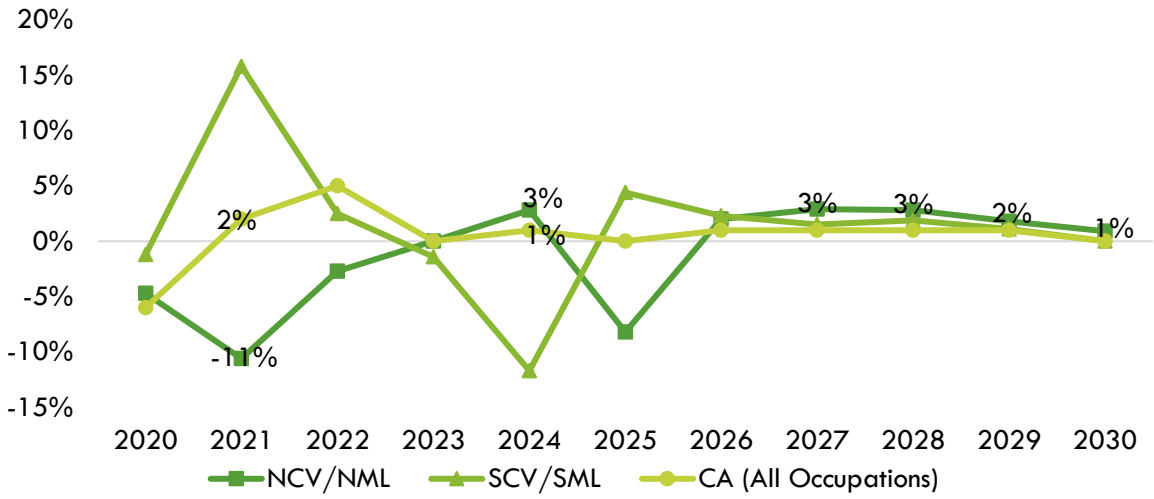


Exhibit 3 shows the five-year occupational demand projections for *Surveying and Mapping Technicians*. In the NCV/NML subregion, the number of jobs related to this occupation is projected to increase by 11% through 2030. There are projected to be 15 jobs available annually in the NCV/NML subregion.

Exhibit 3: Occupational Demand in NCV/NML, SCV/SML, and CVML[1]

Geography	2025 Jobs	2030 Jobs	2025-2030 Change	2025-2030 % Change	Annual Openings
NCV/NML	101	112	11	11%	15
SCV/SML	259	277	18	7%	36
CVML	**360**	**389**	**29**	**8%**	**51**

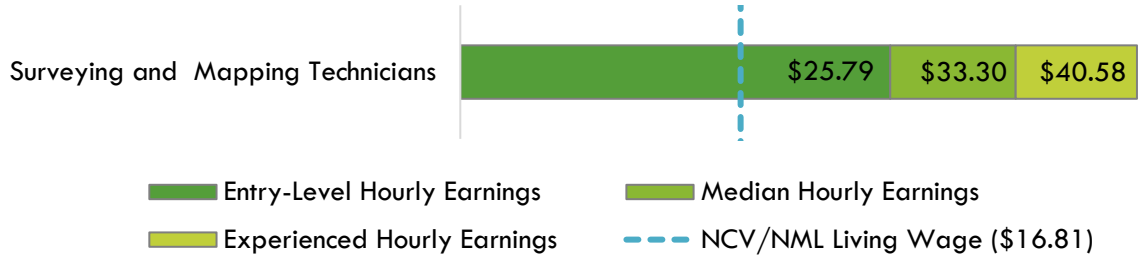
[1]Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for *Surveying and Mapping Technicians* 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 region.

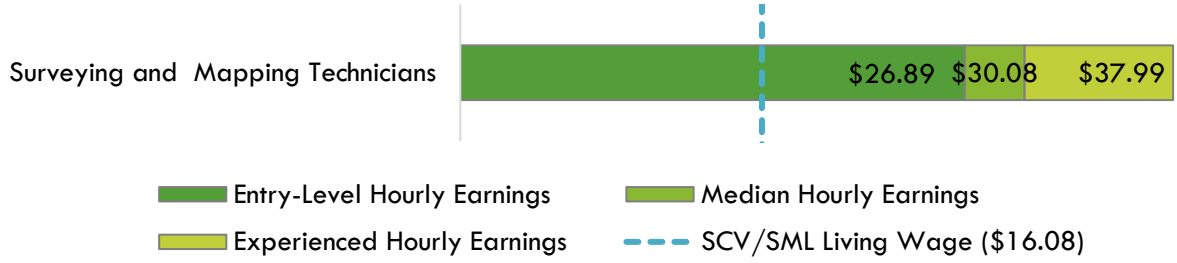
Surveying and Mapping Technicians ($25.79) have an entry-level hourly wage above the living wage for one adult in the NCV/NML subregion ($16.81). The NCV/NML average wage for this occupation is $35.11, which is below the average statewide wage of $38.55. Exhibit 4a shows the wage range for *Surveying and Mapping Technicians* and how they compare to the NCV/NML subregion's living wage.

Exhibit 4a: Wages by Occupation in NCV/NML



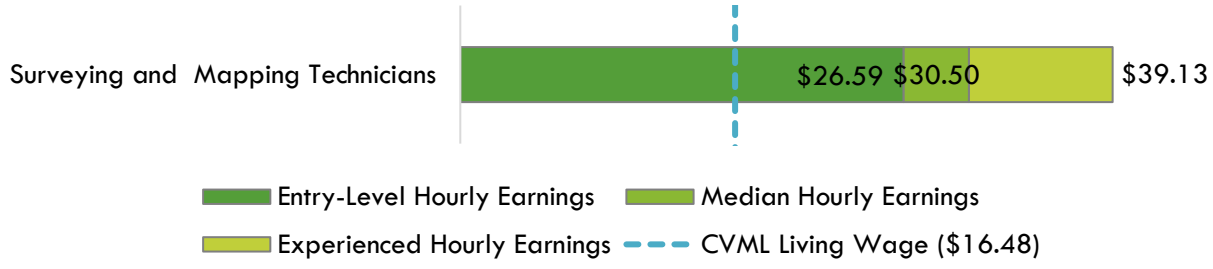
Surveying and Mapping Technicians ($26.89) have an entry-level hourly wage above the living wage for one adult in the SCV/SML subregion ($16.08). The SCV/SML average wage for this occupation is $33.72, which is below the average statewide wage of $38.55. Exhibit 4b shows the wage range for *Surveying and Mapping Technicians* and how they compare to the SCV/SML subregion's living wage.

Exhibit 4b: Wages by Occupation in SCV/SML



Surveying and Mapping Technicians ($26.59) have an entry-level hourly wage above the living wage for one adult in the CVML region ($16.48). The CVML average wage for this occupation is $34.12, which is below the average statewide wage of $38.55. Exhibit 5 shows the wage range for *Surveying and Mapping Technicians* and how they compare 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 of 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 22 online job postings for *Surveying and Mapping Technicians* listed in the past 12 months (Exhibit 6).

Exhibit 6: Number of Job Postings (n=22)

Occupations	Job Postings	Percentage of Job Postings
Surveying and Mapping Technicians	22	100%

The top employers in the region for *Surveying and Mapping Technicians*, by number of job postings, are shown in Exhibit 7.

Exhibit 7: Top Employers by Number of Job Postings (n=22)

Employers	Job Postings	Percentage of Job Postings
California State Water Resources Control Board	3	14%
Ensite Services	3	14%
Waterwise Consulting	3	14%
Towill	2	9%
Westwood Professional Services	2	9%
Aegeus	1	5%
United States Department of the Interior	1	5%
NV5	1	5%
Blew & Associates. P.A.	1	5%
Purple Land Management	1	5%

[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 specialized, common, and software skills for *Surveying and Mapping Technicians* are 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=22)

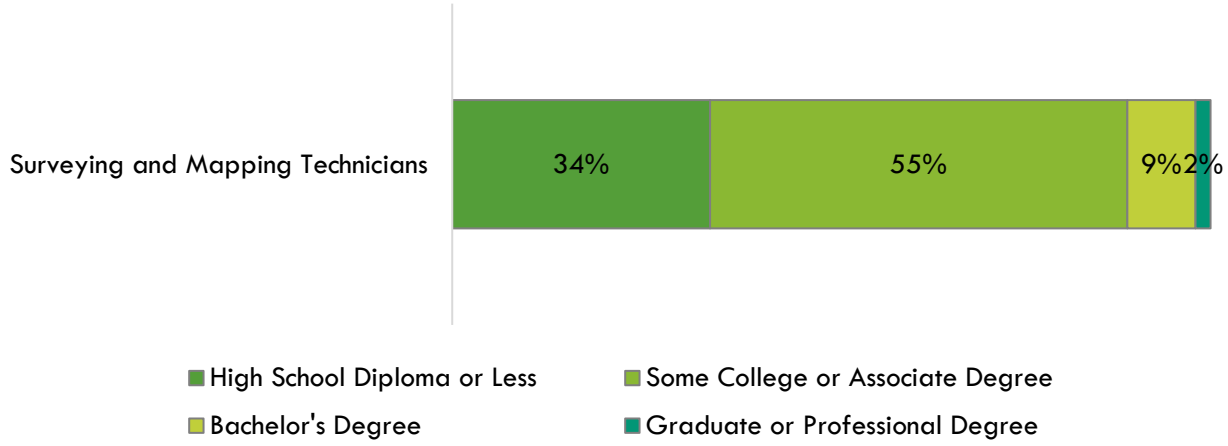
Top Specialized Skills	Top Soft Skills	Top Computer Skills
Surveying (7)	Communication (10)	Microsoft Office (7)
AutoCAD Civil 3D (6)	Research (7)	AutoCAD Civil 3D (6)
Project Management (6)	Microsoft Office (7)	MicroStation (CAD Design Software) (3)
Legal Land Description (5)	Detail Oriented (7)	Operational Databases (2)
Topography (5)	Verbal Communication Skills (6)	Geographic Information Systems (1)
Office Equipment (4)	Quality Control (6)	AutoCAD (1)
Good Driving Record (4)	Smartphone Operation (5)	ArcGIS (GIS Software) (1)
Computer-Aided Design (4)	Operations (5)	Online Databases (1)
Water Resource Development (3)	Coordinating (4)	Proprietary Software (1)
Apple iPad (3)	Multilingualism (3)	-

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a high school diploma or equivalent as the typical entry-level education for *Surveying and Mapping Technicians*. National-level educational attainment data indicates that 55% 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 *Surveying and Mapping Technicians*.

Of the 22 online job postings, 59% (equivalent to 13 postings) of cumulative job postings listed a minimum education requirement in the NCV/NML subregion. Of the 13 postings, 62% (8) requested a high school or GED.

Exhibit 9: National-level Educational Attainment for Surveying and Mapping Technicians



Educational Supply

Community College Supply:

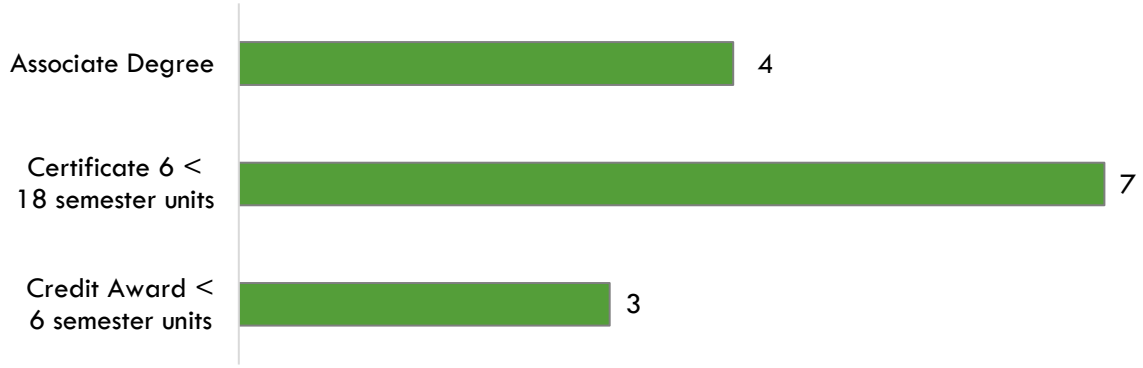
Exhibit 10 shows the annual and three-year average number of awards conferred by community colleges in the programs that have historically trained for the occupation included in this report. Only Columbia conferred awards in the NCV/NML subregion. No awards were conferred by SCV/SML community colleges.

Exhibit 10: NCV/NML Community College Awards (Certificates and Degrees) 2022-23 through 2024-25

TOP Code	Program	College	2022-2023 Awards	2023-2024 Awards	2024-2025 Awards	3-Year Award Average
2206.10	Geographic Information Systems	Columbia	16	19	7	14
Subtotal/Average			**16**	**19**	**7**	**14**
NCV/NML Supply Grand Total			**16**	**19**	**7**	**14**

Exhibit 11 shows the annual average community college awards by type from 2022-23 through 2024-25. Of the 14 awards conferred in the NCV/NML subregion, 29% (4) of these awards were for an associate degree.

Exhibit 11: Annual Average Community College Awards (NCV/NML) by Type, 2022-2025



Community College Student Outcomes:

Exhibit 12 shows the Strong Workforce Program (SWP) metrics for Geographic Information Systems programs in Yosemite Community College District (YCCD), the NCV/NML subregion, the CVML region, and California.

Of the 2,915 geographic information systems program students statewide in the 2024-2025 academic year, 5% (157) attended a CVML institution. YCCD students that exited geographic information systems programs in the 2023-2024 academic year had equal median annual earnings ($48,310) compared to all geographic information systems students in NCV/NML subregion. Notably, 78% of CVML region geographic information systems students attained a living wage, which is greater than the percentage of students who attained a living wage statewide (60%).

Exhibit 12: Geographic Information Systems (2206.10)
Strong Workforce Program Metrics

SWP Metric	YCCD	NCV/NML Subregion	CVML Region	California
SWP Students	97	97	157	2,915
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	49%	49%	36%	25%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	N/A	N/A	N/A	63%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	N/A	N/A	N/A	5%
SWP Students Who Transferred to a Four-Year Postsecondary Institution	N/A	N/A	12%	12%
SWP Students with a Job Closely Related to Their Field of Study	N/A	N/A	N/A	72%
Median Annual Earnings for SWP Exiting Students	$48,310 ($23.23)	$48,310 ($23.23)	$51,066 ($24.55)	$58,802 ($28.27)
Median Change in Earnings for SWP Exiting Students	47%	47%	30%	23%
SWP Exiting Students Who Attained the Living Wage	70%	70%	78%	60%

2024-2025 2023-2024 2022-2023 N/A

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 the occupation studied in this report. This includes examining the annual and three-year average number of awards conferred by non-community college institutions in programs that have historically trained for the occupation of interest.

Between 2021 and 2024, there were no non-community college institutions in the NCV/NML subregion that conferred awards annually in related training programs.

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	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/
Living Wage	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/ Wage figures are used by the CCCCO to calculate the percentage of students that attained the regional living wage.
Typical Education and Training Requirements, and Educational Attainment	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
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	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/
Educational Supply	The CCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu 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
Student Metrics and Demographics	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/
Population and Occupation Demographics	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 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

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