

LABOR MARKET ANALYSIS

FOR PROGRAM RECOMMENDATION



C·O·E

CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

CARDIOVASCULAR TECHNICIANS IN THE GREATER SACRAMENTO REGION

North (Greater Sacramento)
Center of Excellence

January 2024

TABLE OF CONTENTS

Summary.....	3
Introduction.....	4
Occupational Demand.....	5
Wages.....	7
Job Postings.....	8
About Job Postings Analysis.....	8
Top Employers and Job Titles.....	8
Top Skills and Qualifications.....	10
Education and Training Requirements.....	12
Educational Supply.....	13
Community College Supply.....	13
Other Postsecondary Supply.....	13
Findings.....	14
Recommendations.....	15
Appendix A. Methodology and Sources.....	16
Appendix B. Glossary.....	17

If, for any reason, this document is not accessible or if you have specific needs for readability, please contact us, and we will do our utmost to accommodate you with a modified version. To make a request, contact Ebony J. Benzing by phone at (916) 563-3215 or by email at Ebony.Benzing@losrios.edu.

SUMMARY

The North (Greater Sacramento) Center of Excellence for Labor Market Research prepared this report to provide a labor market analysis of educational supply and occupational demand for middle-skilled careers in the North (Greater Sacramento) subregion. This report aims to determine if demand in the local labor market is unmet by the supply from existing community college programs and other postsecondary training providers.

This report primarily focuses on training that leads to jobs in middle-skilled occupations - jobs that typically require education beyond a high school diploma but less than a bachelor's degree - but may include higher-skilled occupations for training pathways that lead to a bachelor's degree. Lowered skilled occupations are rarely considered in this analysis due to the lessened barriers for entry-level work, such as no formal education and fewer on-the-job training requirements.

Key findings include:

- The North (Greater Sacramento) subregion held 319 jobs for cardiovascular technologists and technicians in 2022. These jobs are projected to increase by 11% over the next five years, adding 36 new jobs to the subregion by 2027.
- Over the next five years, cardiovascular technologists and technicians are projected to have 28 annual openings across the North (Greater Sacramento) subregion.
- Entry-level (25th percentile) wage data shows that cardiovascular technologists and technicians earn \$34.37 per hour, which is above the subregion's living wage of \$18.72 per hour. (See Appendix B for notes about the updated living wage).
- Awards data analysis shows that North (Greater Sacramento) training providers conferred an average of 10 awards (certificates and associate degrees) in cardiovascular technology-related programs over the last two academic years (2019 through 2021).

Recommendations include:

- The North (Greater Sacramento) Center of Excellence recommends community colleges develop new cardiovascular technology-related programs in the subregion.

INTRODUCTION

The North (Greater Sacramento) Center of Excellence (COE) was asked to provide labor market information for a proposed program at a regional community college. This report focuses on the following Standard Occupational Classification (SOC) occupation and code:

- This middle-skill occupation requires more education and training beyond a high school diploma but usually less than a four-year degree:
 - Cardiovascular Technologists and Technicians (29-2031)

A review of related programs revealed the following Taxonomy of Programs (TOP) titles and codes are appropriate for inclusion in this report:

- Cardiovascular Technician (1213.00)
- Electrocardiography (1215.00)

The corresponding Classification of Instructional Program (CIP) title and code are:

- Cardiovascular Technology/Technologist (51.0901)

OCCUPATIONAL DEMAND

Exhibit 1 summarizes the five-year projected job growth for cardiovascular technologists and technicians in North (Greater Sacramento)¹, North/Far North, and California.

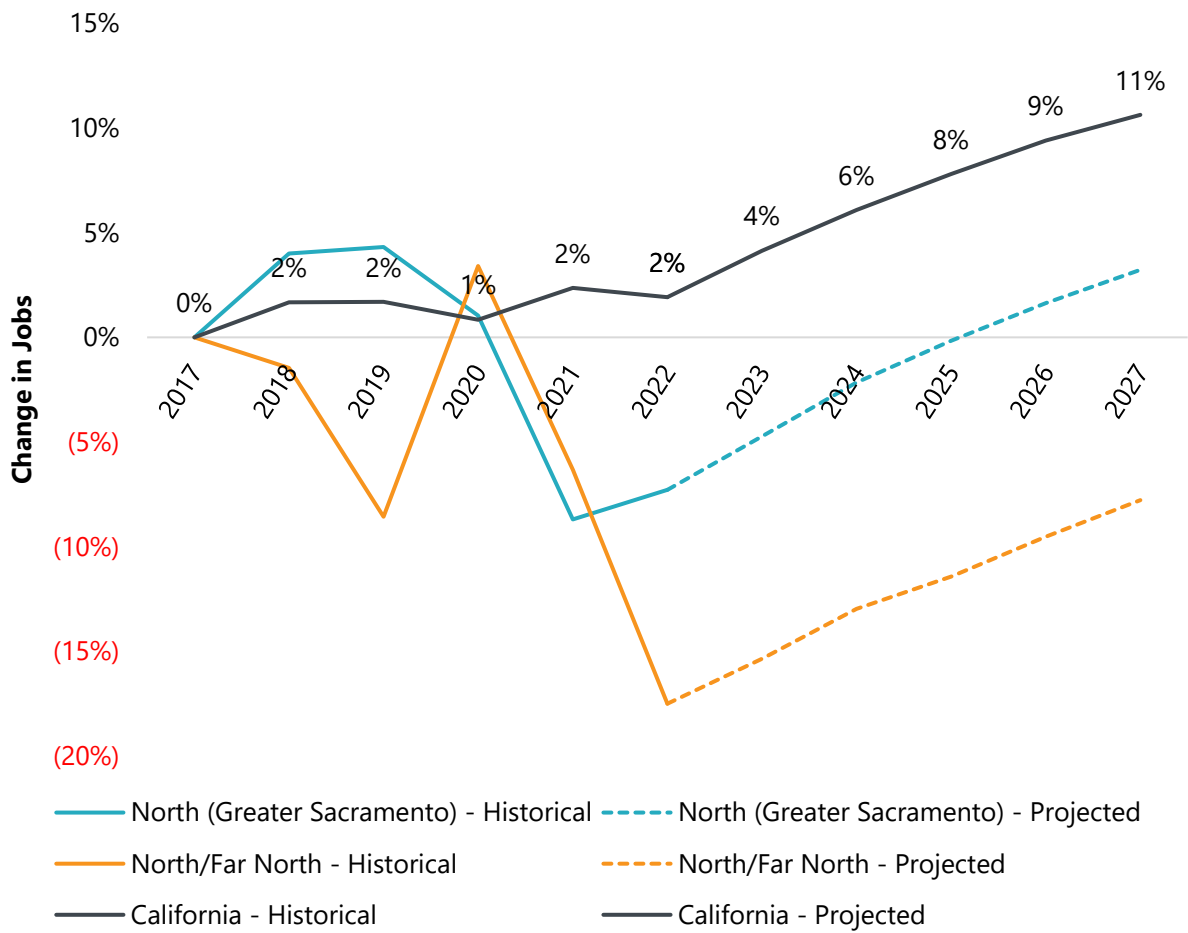
Exhibit 1. Employment and projected demand, 2022-2027

Occupation	2022 Jobs	2027 Jobs	2022-2027 Change	2022-2027 % Change	2022-2027 Annual Openings
Cardiovascular Technologists and Technicians	319	355	36	11%	28
North (Greater Sacramento)	319	355	36	11%	28
Cardiovascular Technologists and Technicians	344	385	41	12%	31
North/Far North	344	385	41	12%	31
Cardiovascular Technologists and Technicians	5,079	5,513	434	9%	411
California	5,079	5,513	434	9%	411

¹ The North (Greater Sacramento) subregion covers seven counties, including El Dorado, Nevada, Placer, Sacramento, Sutter, Yolo, and Yuba.

Exhibit 2 compares the net changes in jobs between 2017 through 2022 and the projected changes through 2027. The rate of change is indexed to the total number of jobs in 2017.

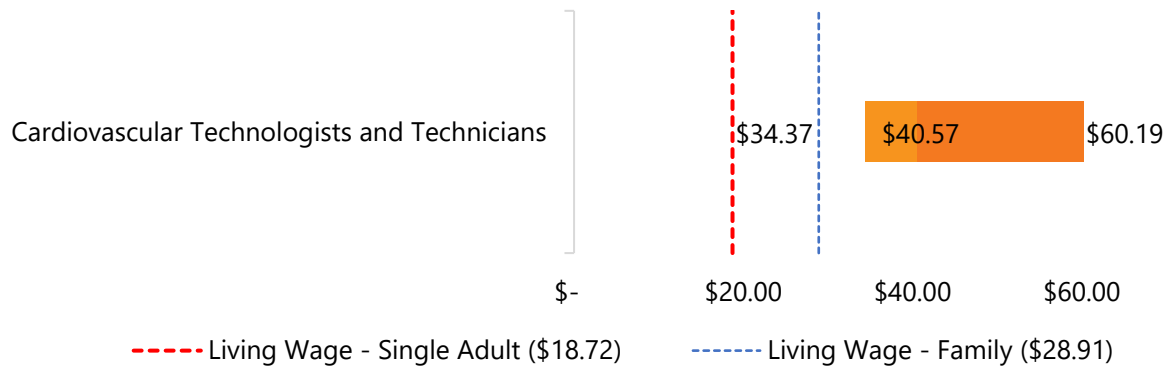
Exhibit 2. Changes in employment, 2017-2027



WAGES

Exhibit 3 compares the 25th percentile, median, and 75th percentile hourly wages for cardiovascular technologists and technicians to the Greater Sacramento living wage for one working adult (\$18.72 per hour) and a small family (\$28.91 per hour).^{2,3} The 25th and 75th percentile hourly wages are used to estimate entry-level and experienced worker wages.

Exhibit 3. Hourly wages by occupation, 2022



² Living wage is defined as the level of income one working adult with no children must earn to meet basic needs, including food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs. Please note that the 25th-percentile and 75th-percentile hourly wages are used as proxy for entry-level and experienced-level wages.

³ A small family is defined as one working adult and one school aged child (between the ages of 5 and 12 years).

JOB POSTINGS

About Job Postings Analysis

This section analyzes recent data from online job postings. Online job postings may provide additional insight into recent changes in the labor market that are not captured by historical trends. However, job postings differ from labor market demand; demand is based on projected annual openings. Job postings should be used to inform community college curriculum development and identify potential employers for targeted experiential learning opportunities.

Please note several limitations to analyzing and interpreting online job postings. Employers may post a position multiple times to increase the number of job applicants. Job postings may remain online after a business chooses not to fill a position. Employers may advertise one posting to fill multiple vacancies. And not all jobs are posted online.

The North COE identified 177 relevant online job postings for cardiovascular technologists and technicians in the seven-county Greater Sacramento subregion. Job posting data comes from Lightcast (formerly Emsi Burning Glass) and represents unique advertisements newly posted online during the last 12 months, from February 2023 through January 2024.

Top Employers and Job Titles

Exhibit 4 details the number of online job postings for cardiovascular technologists and technicians.

Exhibit 4. Job postings by occupation

Occupation	Unique Job Postings	Share of Job Postings
Cardiovascular Technologists and Technicians	185	100%
Total Job Postings	185	100%

Exhibit 5 shows the top 10 relevant job titles with the most job postings.

Exhibit 5. Top jobs titles

Job Title	Number of Job Postings
Monitor Technicians	36
Cardiovascular Techs	14
Perfusionists	13
EKG Technicians	12

Job Title	Number of Job Postings
Echo Technicians	11
Cath Lab Registered Nurses	9
Electrocardiographers	7
Press (aka Echo/Stress) Technicians	6
Telemetry Monitor Technicians	5
Unit Secretaries/Monitor Technicians	5

Exhibit 6 shows the top relevant employers with the most job postings for cardiovascular technologists and technicians.

Exhibit 6. Top Employers

Employer	Number of Job Postings
CommonSpirit Health	35
University of California	22
Sutter Health	17
Kaiser Permanente	13
Adventist Health	11
Sierra Nevada Memorial Hospital	9
UC Davis Health	9
Sutter Medical Center	7
Mercy General Hospital	7
Mercy San Juan Medical Center	6

Top Skills and Qualifications

Exhibit 7 shows the top skills across three categories for cardiovascular technologists and technicians: specialized, essential, and software skills.⁴

Exhibit 7. Most in-demand skills

Specialized Skills	Common Skills	Software Skills
Electrocardiography	Clerical Works	Microsoft Excel
Medical Terminology	Communication	Microsoft Office
Anatomy	Organizational Skills	Microsoft Outlook
Physiology	Cooperation	MEDITECH EHR
Cardiology	Management	Patient Management Software
Cardiac Rhythm	Computer Literacy	Microsoft Access
Cardiac Dysrhythmia	Time Management	Business Software
Cardiopulmonary Resuscitation (CPR)	Leadership	--
Hemodynamics (Fluid Mechanics)	Ability To Meet Deadlines	--
Cardiac Catheterization	Prioritization	--

⁴ Specialized skills are those primarily required to perform specific tasks in an occupation. Essential skills are typically related to employability. These are skills that are prevalent across many occupations, and include both interpersonal attributes and learned skills (aka "soft skills"). Software skills are specific to any software tool or programming component used to support a job.

Exhibit 8 shows the employer's preferred minimum level of education for cardiovascular technologists and technicians-related job postings in the Greater Sacramento subregion.⁵

Exhibit 8. Employer-preferred education

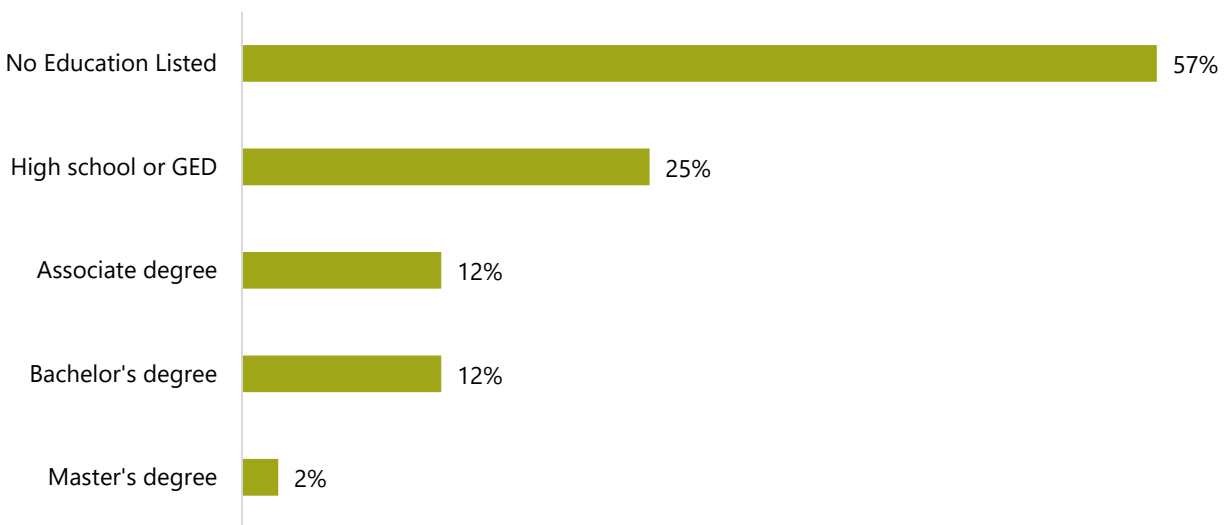
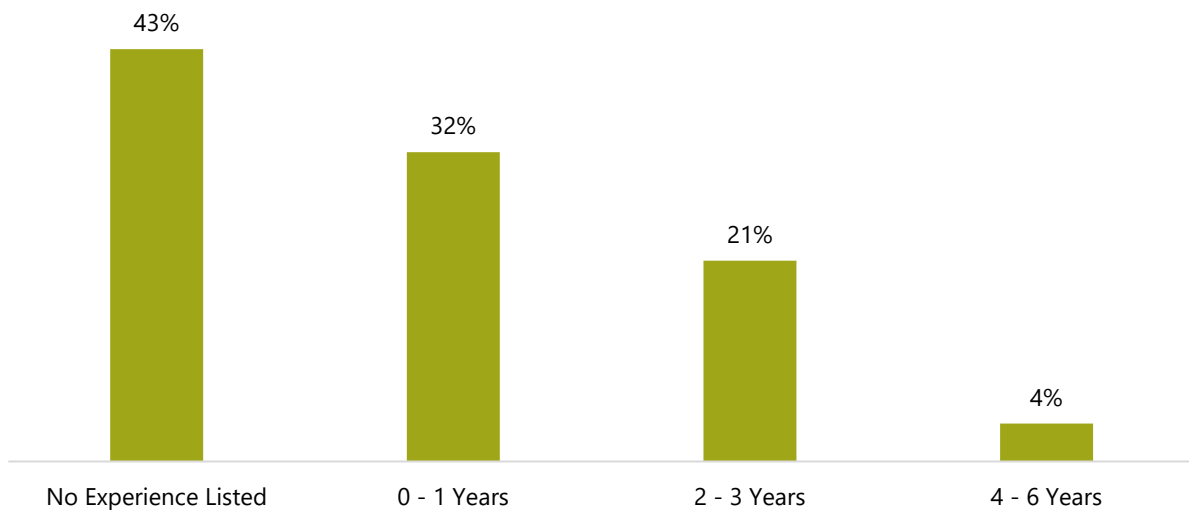


Exhibit 9 shows the employer's preferred minimum experience level for cardiovascular technologists and technicians-related job postings in the Greater Sacramento subregion.⁶

Exhibit 9. Employer-preferred job experience



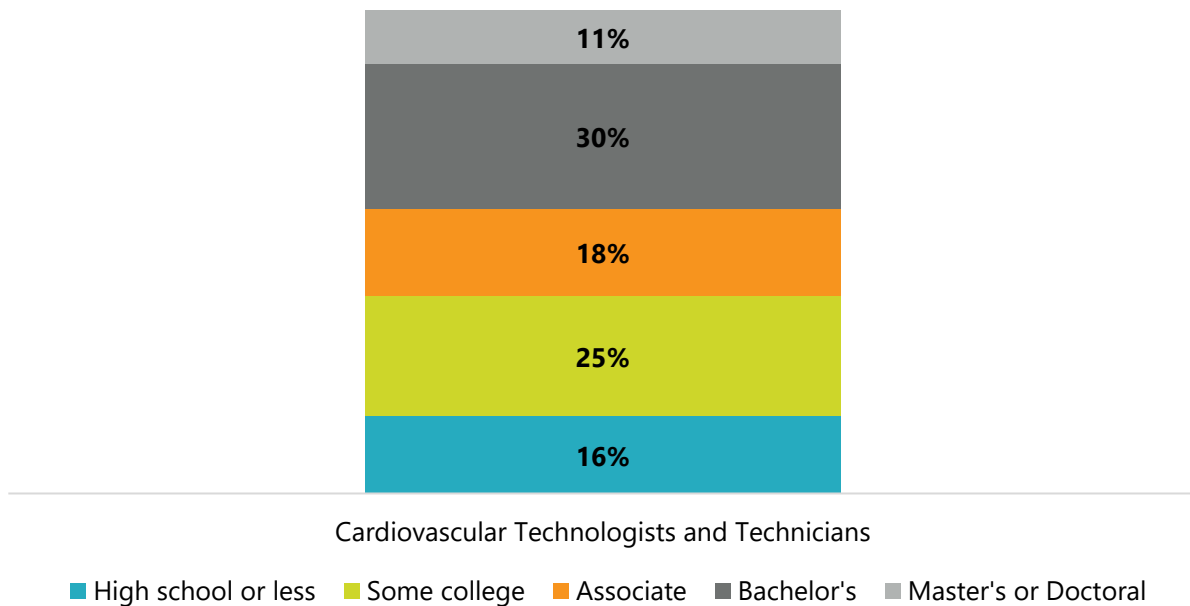
⁵ Employers may include more than one level of education as a hiring requirement in a job posting. As a result, the values in exhibit 8 may sum to greater than 100%.

⁶ Employers may include more than one level of experience as a hiring requirement in a job posting. As a result, the values in exhibit 9 may sum to greater than 100%.

EDUCATION AND TRAINING REQUIREMENTS

The U.S. Census Bureau collects data on the highest education level achieved by workers across all occupations. Exhibit 10 shows California's educational attainment of the current workforce in the selected occupation.

Exhibit 10. California educational attainment for incumbent cardiovascular technologists and technicians, 2021



The U.S. Bureau of Labor Statistics (BLS) uses a categorical system to assign typical entry-level education and job requirements to each occupation for which the BLS publishes projection data. These categories include entry-level education, work experience in a related occupation, and on-the-job training. Exhibit 11 shows the typical entry-level job requirements for cardiovascular technologists and technicians.

Exhibit 11. Typical entry-level job requirements

Occupation	Entry-level Education Requirements	Work Experience Requirements	On-The-Job Training Requirements
Cardiovascular Technologists and Technicians	Associate degree	None	None

EDUCATIONAL SUPPLY

Educational supply for an occupation can be estimated by analyzing the number of awards issued in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes. Exhibit 12 shows the TOP and CIP codes for educational programs related to cardiovascular technologists and technicians.

Exhibit 12. TOP and CIP codes for training programs related to cardiovascular technology

TOP Programs and Codes	Aligned CIP Programs and Codes
Cardiovascular Technician (1213.00)	Cardiovascular Technologists and Technicians (51.0901)
Electrocardiography (1215.00)	

Community College Supply

No community college programs are offered in related TOP codes across the seven-county North (Greater Sacramento) subregion.

Other Postsecondary Supply

Exhibit 13 compares the average number of degrees that non-community college training providers conferred in the Greater Sacramento subregion over the last two academic years. Please note that non-community college data lags by one year.

Exhibit 13. Other postsecondary awards by program

Program - CIP Code	Institution	Annual Awards 2019-20	Annual Awards 2020-21	2-Yr Annual Awards Average
Cardiovascular Technology/Technologist (51.0901)	Sacramento Ultrasound Institute	9	11	10
	Grand Total	9	11	10

FINDINGS

This report focuses on the following occupation: Cardiovascular Technologists and Technicians (29-2031).

Occupational Demand

- The Greater Sacramento subregion held 319 jobs for cardiovascular technologists and technicians in 2022. These jobs are projected to increase by 11% over the next five years, adding 36 new jobs to the subregion by 2027.
- Jobs for cardiovascular technologists and technicians are projected to grow faster in the Greater Sacramento subregion (11%) than in California (9%).
- Over the next five years, cardiovascular technologists and technicians are projected to have 28 annual job openings across the Greater Sacramento subregion.

Wages

- Entry-level (25th percentile) wage data shows that cardiovascular technologists and technicians earn \$34.37 per hour, which is above the subregion's living wage of \$18.72 per hour. (See Appendix B for notes about the updated living wage).

Job Postings

- In the last 12 months, there were 177 relevant online job postings for cardiovascular technologists and technicians in the subregion.
- CommonSpirit Health and UC Davis are the employers with the most job postings for cardiovascular technologists and technicians (35 and 22, respectively). CommonSpirit Health in Greater Sacramento includes six Dignity Health hospitals, Mercy Medical Group, Woodland Clinic Medical Group, and Hills Physicians Medical Group.

Education and Training Requirements

- The typical entry-level education for cardiovascular technologists and technicians is an associate degree. Additionally, 43% of incumbent workers have educational attainment levels consistent with community college offerings (some college or associate degrees).

Postsecondary Supply

- No Greater Sacramento community colleges offer degrees and certificates in programs that have historically trained for the occupation of interest. A review of statewide community college awards shows that only six community colleges have conferred awards in the last three years.⁷

⁷ Community Colleges in California that have conferred awards in Cardiovascular Technician (TOP 1213.00) or Electrocardiography (TOP 1215.00) programs: Allan Hancock, Glendale, Grossmont, LA Pierce, Orange Coast, and San Francisco City.

- Local non-community college postsecondary training providers also offer training related to the studied occupations. Between 2019-20 and 2020-21, non-community college training providers conferred an average of 10 awards in relevant programs over the last two years. Please note that non-community college awards data often lags by one year.

RECOMMENDATIONS

- A comparison of annual openings to average annual awards suggests an undersupply of cardiovascular technicians in the Greater Sacramento subregion.
 - Related training is offered only through the Sacramento Ultrasound Institute, which conferred an average of 10 yearly awards over the last two years. Greater Sacramento community colleges do not provide training in this field.
 - There are 28 projected annual openings for cardiovascular technologists and technicians in the subregion.
- The North (Greater Sacramento) Center of Excellence recommends that community colleges develop new cardiovascular technology-related programs in the subregion.

New Program Recommendation		
<p>Move forward with the new program</p> <p><input checked="" type="checkbox"/></p>	<p>Proceed with caution</p> <p><input type="checkbox"/></p>	<p>A new program is not recommended</p> <p><input type="checkbox"/></p>

APPENDIX A. METHODOLOGY AND SOURCES

This report identified Occupations using the Center of Excellence TOP-to-CIP-to-SOC crosswalk and O*Net OnLine. This report's findings were determined using labor market data from the Bureau of Labor Statistics (BLS), U.S. Census Bureau data from Emsi, and jobs posting data from Burning Glass.

"The Chancellor's Office Curriculum Inventory System (COCI)." California Community Colleges Curriculum Inventory (COCI), 2023. <https://coci2.ccctechcenter.org/>.

Glasmeier, Amy K. "Living Wage Calculator." Living Wage Calculator, 2023. <https://livingwage.mit.edu/>.

Integrated Postsecondary Education Data System (IPEDS). National Center for Education Statistics. U.S. Department of Education. <https://nces.ed.gov/ipeds/>.

Labor Market Information Division. California Employment Development Department. <https://labormarketinfo.edd.ca.gov/>.

Lightcast (Formerly EMSI/Burning Glass); QCEW Employees, Non-QCEW Employees, and Self-Employed. <https://www.economicmodeling.com/>. (Note: EMSI occupational employment data are based on final EMSI industry data and final EMSI 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)).

Management Information Systems (MIS) Data Mart. California Community Colleges Chancellor's Office. <https://datamart.cccco.edu/>.

O*NET OnLine. U.S. Department of Labor/Employment and Training Administration (DOL ETA). <https://www.onetonline.org/>.

Self-Sufficiency Standard Tool for California. The University of Washington. <http://www.selfsufficiencystandard.org/>

"Taxonomy of Programs." California Community Colleges Chancellor's Office. June 2012, 6th Edition. <https://www.cccco.edu/-/media/CCCCO-Website/About-Us/Divisions/Educational-Services-and-Support/Academic-Affairs/What-we-do/Curriculum-and-Instruction-Unit/Files/TOPmanual6200909corrected12513pdf.ashx>

"TOP-CIP-SOC Crosswalk." Centers of Excellence for Labor Market Research. June 2021 Edition. <http://coecc.net/>

APPENDIX B. GLOSSARY

Key Terms	Definition
Occupation	<p>Occupation refers to a category of jobs, careers, or professions that are similar regarding the work performed and the skills the workers possess. Workers who perform essentially the same tasks are in the same occupation, whether in the same industry. Some occupations are concentrated in a few industries, while others are found in many industries.</p> <p>Occupations differ from jobs in that jobs show the number of positions held in each occupation.</p>
Jobs	<p>A job is a specific instance of employment and includes any position where a worker provides labor for monetary compensation.</p> <p>Job numbers include employees (those who work for businesses) and proprietors (those who work for themselves). Full- and part-time jobs are included and counted equally (i.e., not adjusted to full-time equivalents). Data for jobs, or employment, are annual averages.</p>
Employment	<p>Employment refers to filled jobs, whether full- or part-time, temporary or permanent. The scope of "who" is counted as employed is noted in Appendix A. Methodology and Sources.</p>
Job Change	<p>Job change is the net increase or decrease of jobs over a given timeframe.</p>
Job Opening	<p>Job openings are the projected number of positions available for workers entering an occupation.</p> <p>Openings include growth and replacement job counts. Growth job counts are the positive change in the total number of workers employed. Replacement job counts are the estimates of new workers needed to replace workers permanently leaving the occupation.</p>
Percentile Wage (or wages)	<p>A percentile wage is the value of a wage at which a certain percentage of workers falls below. For example, a 25th percentile hourly wage of \$15.00 indicates that 25% of workers earn less than \$15.00, while 75% earn more. Percentile wages are specific to the geography shown in the report.</p> <p>The 25th-percentile and 75th-percentile hourly wages are used as a proxy for entry-level and experienced-level wages.</p>
Living Wage	<p>The living wage is the level of income a single, working adult with no children must earn to meet basic needs. The living wage is calculated using basic allowances for food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs, and assumes full-time employment (40 hours per week, 52 weeks a year).</p> <p>Beginning in 2023-24, NFN COE adopted the MIT calculations for a living wage better aligned to the economic conditions following the pandemic. For additional information, please visit https://livingwage.mit.edu/.</p>

Key Terms	Definition
Educational Attainment	Educational attainment is the highest level of education achieved by workers in an occupation. The data include workers aged 25 years and older.
Typical Entry-level Education	<p>The education level most workers need to gain employment in an occupation. Categories range from "no formal educational credential" and "high school diploma or equivalent" to "doctoral or professional degree." The types most relevant to community training are "some college, no degree," "postsecondary nondegree award," and "associate degree."</p> <p>The typical entry-level education may differ from the actual educational levels attained by workers employed in an occupation.</p>
Typical Work Experience	The relevant prior experience a worker needs to gain employment in an occupation. Categories include "5 years or more", "less than five years," and "none."
Typical On-The-Job (OTJ) Training	The level of on-the-job training a worker needs to obtain for competency in the skills required for an occupation. Categories include "none," "short-term (1 month or less)," "moderate-term (more than one month but less than 12 months)," "long-term (more than 12 months)," "apprenticeship," and "internship/residency."
Awards	Awards are the number of certificates and degrees conferred for a specific course of study each year. Awards count "papers" and, as a result, may be greater than the number of students who complete a program.

Funding Acknowledgement: This report was made available with Strong Workforce Program funding from the North Far North Regional Consortium.

COVID-19 Statement: This report includes employment projection data produced by Lightcast (formerly EMSI). Employment projections are developed using models based on historical data, which in this set of projections covers the period through 2021. Most input data, therefore, precedes the pandemic. Employment projections are long-term projections intended to capture structural changes in the economy, not cyclical fluctuations. As such, projections data are not intended to capture the impacts of the recession that began in February 2020. Cyclical fluctuations, like recessions, impact projections when they become part of the historical data set.

Important Disclaimer: All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. Efforts have been made to qualify and validate the accuracy of the data and the reported findings; however, neither the Centers of Excellence, COE host District, nor California Community Colleges Chancellor's Office are responsible for applications or decisions made by recipient community colleges, or their representatives based upon components or recommendations contained in this study.

© 2024 California Community Colleges Chancellor's Office,
Centers of Excellence for Labor Market Research, Economic and
Workforce Development Program



CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

**FOR MORE INFORMATION,
PLEASE CONTACT:**

Ebony J. Benzing,
Interim Director
North (Greater Sacramento)
Center of Excellence

Ebony.Benzing@losrios.edu

(916) 563 - 3215