

LABOR MARKET ANALYSIS

FOR PROGRAM RECOMMENDATION



C·O·E

CENTERS OF EXCELLENCE
FOR LABOR MARKET RESEARCH

ADVANCED AUTOMOTIVE TECHNOLOGY

IN THE FAR NORTH

Far North
Center of Excellence

SEPTEMBER 2022

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SUMMARY

The Far North 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 career pathways in the Far North 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 on-the-job training requirements.

Key findings include:

- The Far North held 2,025 advanced automotive vehicle technology occupational pathway jobs in 2021. The number of these jobs is projected to increase by stay about the same over the next five years, losing 5 jobs in the subregion by 2026.
- Over the next five years, advanced automotive vehicle technology jobs are projected to have 231 annual openings in the Far North subregion.
- Wage data shows that workers employed in these occupations earn \$2 to \$24 above the subregion's living wage of \$14.53 per hour. Experienced automotive service technicians and mechanics make slightly more than the small family living wage for the region.
- Awards data analysis shows that Far North training providers conferred an average of 52 awards (certificates and associate degrees) in two related programs- Electronic Equipment Installers and Repairers, Motor Vehicles and Automotive Service Technicians and Mechanics- over the last three academic years.

Recommendations include:

- The Far North Center of Excellence recommends moving forward with the program.

INTRODUCTION

The Far North Center of Excellence (COE) was asked to provide labor market information for two certificate programs related to advanced automotive vehicle technology at a regional community college: advanced chassis and hybrid/electric vehicle technology. Labor market information for occupations related to the proposed programs are captured in the following Standard Occupational Classification (SOC) occupations and codes:

- These middle-skill occupations require more education and training beyond a high school diploma but less than a four-year degree:
 - Electronic Equipment Installers and Repairers, Motor Vehicles (49-2096)
 - Automotive Service Technicians and Mechanics (49-3023)

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

- Automotive Technology (0948.00)
- Alternative Fuels and Advanced Transportation Technology (0948.40)*

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

- Automobile/Automotive Mechanics Technology/Technician (47.0604)*
- Alternative Fuel Vehicle Technology/Technician (47.0614)*

* There were no programs offered in these TOP or CIP codes within the study region.

OCCUPATIONAL DEMAND

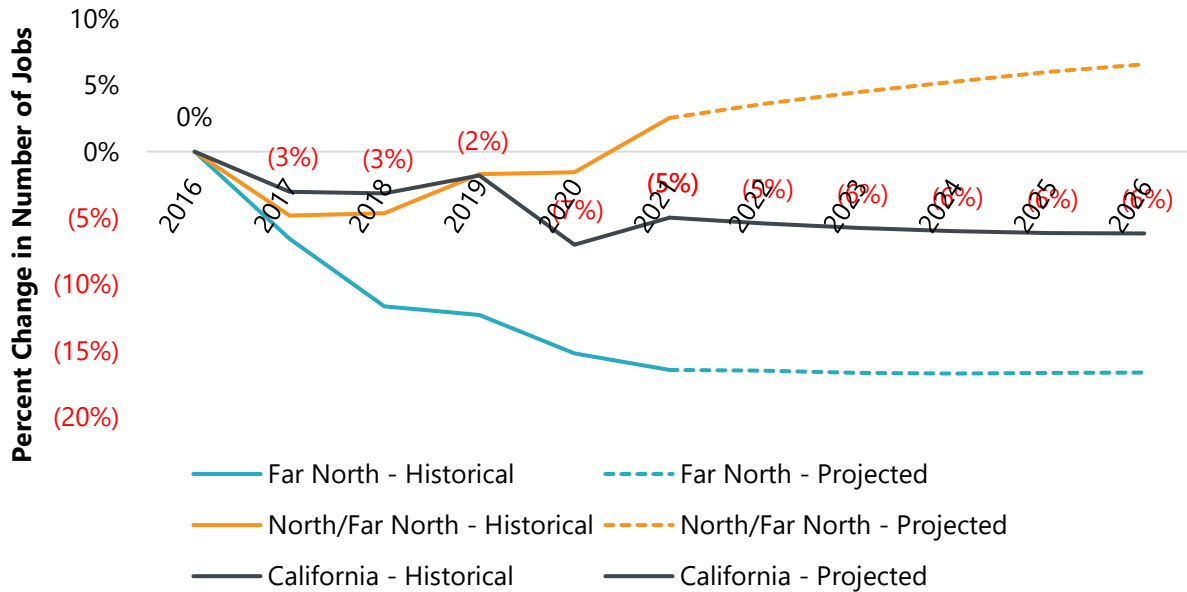
Exhibit 1 summarizes the five-year projected job growth for middle-skill and high-skill occupations in the Far North, North/Far North, and California.

Exhibit 1. Employment and projected demand, 2021-2026

Occupation	2021 Jobs	2026 Jobs	2021-2026 Change	2021-2026 % Change	2021-2026 Annual Openings
Electronic Equipment Installers and Repairers, Motor Vehicles	12	10	(2)	(19%)	7
Automotive Service Technicians and Mechanics	2,013	2,010	(3)	0%	224
Far North	2,025	2,020	(5)	0%	231
Electronic Equipment Installers and Repairers, Motor Vehicles	45	40	(4)	(10%)	11
Automotive Service Technicians and Mechanics	8,667	9,015	348	4%	994
North/Far North	8,712	9,055	343	4%	1,005
Electronic Equipment Installers and Repairers, Motor Vehicles	643	531	(112)	(17%)	132
Automotive Service Technicians and Mechanics	80,871	79,960	(911)	(1%)	8,864
California	81,514	80,491	1,023	(1%)	8,996

Exhibit 2 compares the percent change in jobs between 2016 through 2021 and the projected changes through 2026. The rate of change is indexed to the total number of jobs in 2016.

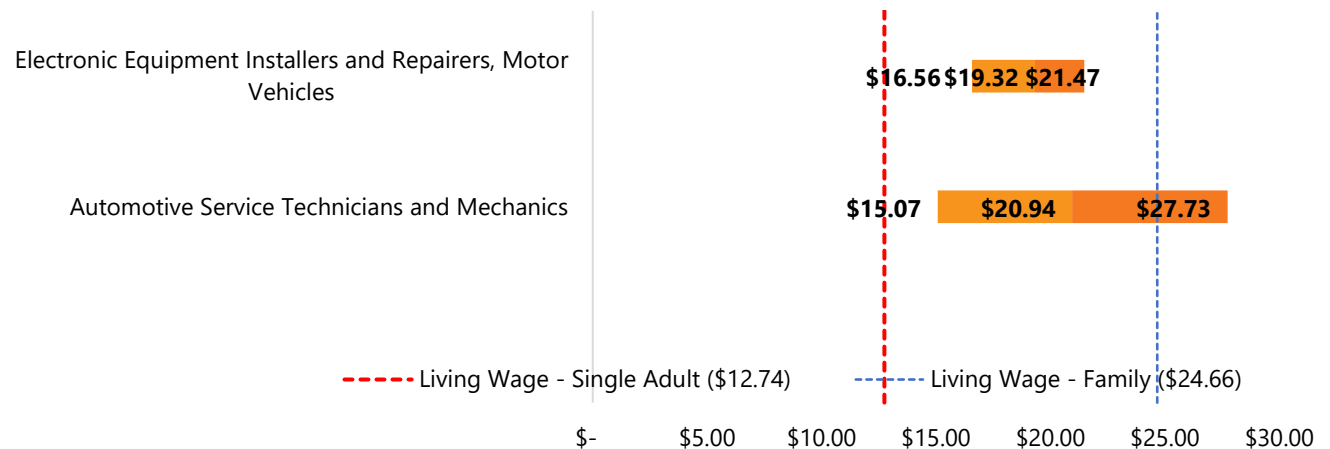
Exhibit 2. Changes in employment, 2016-2026



WAGES

Exhibit 3 compares the entry-level, median, and experienced wages for the selected occupations to the Far North living wage for a single adult (\$12.74 per hour) and a small family¹ (\$24.66 per hour).

Exhibit 3. Comparison of wages by occupation, 2021



¹ A small family is defined as a single adult and one school aged child (between the ages of 5 and 12 years).

JOB POSTINGS

This section analyzes recent data from online job postings (real-time LMI). Online job postings may provide additional insight into recent changes in the labor market that are not captured by historical trends.

The Far North COE identified 385 online job postings for the selected occupations in the 15-county Far North subregion. Job posting data comes from Burning Glass Labor Insights and represents new listings posted online within the last year, from September 1, 2021, to August 31, 2022.

Occupations and Job Titles

Exhibit 4 details the number of online job postings for the selected occupations.

Exhibit 4. Number of job postings by occupation

Occupation	Job Postings	Share of Job Postings
Electronic Equipment Installers and Repairers, Motor Vehicles	379	98%
Automotive Service Technicians and Mechanics	6	2%
Total Job Postings	385	100%

Exhibit 5 shows the top 10 job titles with the most job postings and the share. All job postings included a job title.

Exhibit 5. Top jobs titles

Job Title	Job Postings	Share of Job Postings
Automotive Technician	33	9%
Service Technician	20	5%
Lube Technician	13	3%
Tire Team	12	3%
Truck Service Onsite Technician	10	3%
Shop Technician	8	2%

Job Title	Job Postings	Share of Job Postings
Truck Service Oil/Lube Technician	8	2%
Automotive Technician/Mechanic	7	2%
Mac Tools Mechanic - Automotive Technician - Full Training	7	2%
Auto Mechanic	5	1%

Employers

Exhibit 6 shows the top 10 employers with the most job postings for the selected occupations. Forty-eight percent (n= 186) of job postings did not include an employer.

Exhibit 6. Employers with the most job postings

Employer	Job Postings	Share of Job Postings
Les Schwab Tire Center	20	10%
TravelCenters of America	17	8%
Les Schwab	17	8%
Lithia Motors Incorporated	15	7%
United Parcel Service Incorporated	11	5%
Suburban Propane	7	3%
Pep Boys	7	3%
Pape Machinery Incorporated	6	3%
Pape Group Incorporated	5	2%
LKQ Corporation	5	2%

Certifications, Skills, and Experience

Exhibit 7 shows the most relevant certifications requested by employers for the selected occupations. Fifty-two percent (n = 199) of job postings did not include certification information.

Exhibit 7. Most in-demand certifications

Certification	Job Postings	Share of Job Postings
Automotive Service Excellence (ASE) Certification	40	22%
Epa 609	6	3%
Certified Fraud Examiner (CFE)	4	2%
Business License	4	2%

Exhibit 8 shows the top 10 skills across three categories for the studied occupations: specialized, human-centered, and technical skills.

Exhibit 8. Most in-demand specialized skills

Top 10 Specialized Skills	Top 10 Human-Centered Skills	Top 10 Technical Skills
Repair	Physical Abilities	Microsoft Office
Auto Repair	Teamwork / Collaboration	Microsoft Excel
Customer Service	Troubleshooting	Computer-Assisted Auditing Technology (CAAT) services
Hand Tools	Communication Skills	Microsoft Word
Battery Testing and Installation	Organizational Skills	Cisco Unified Contact Center Enterprise (UCCE)
Motor Vehicle Operation	Detail-Oriented	Google Drive
Automotive Services Industry Knowledge	Computer Literacy	Microsoft Windows
Tire Mounting	Preventive Maintenance	Agile Development

Top 10 Specialized Skills	Top 10 Human-Centered Skills	Top 10 Technical Skills
Vehicle Maintenance	Building Effective Relationships	Apple iWork
Tire Pressure Monitoring System (TPMS)	Mentoring	Atlassian JIRA

Exhibit 9 shows employers' minimum level of education for job postings for the selected occupations. Seventy-six percent (n= 293) of job postings did not include a preferred education level.

Exhibit 9. Employer-preferred minimum education levels

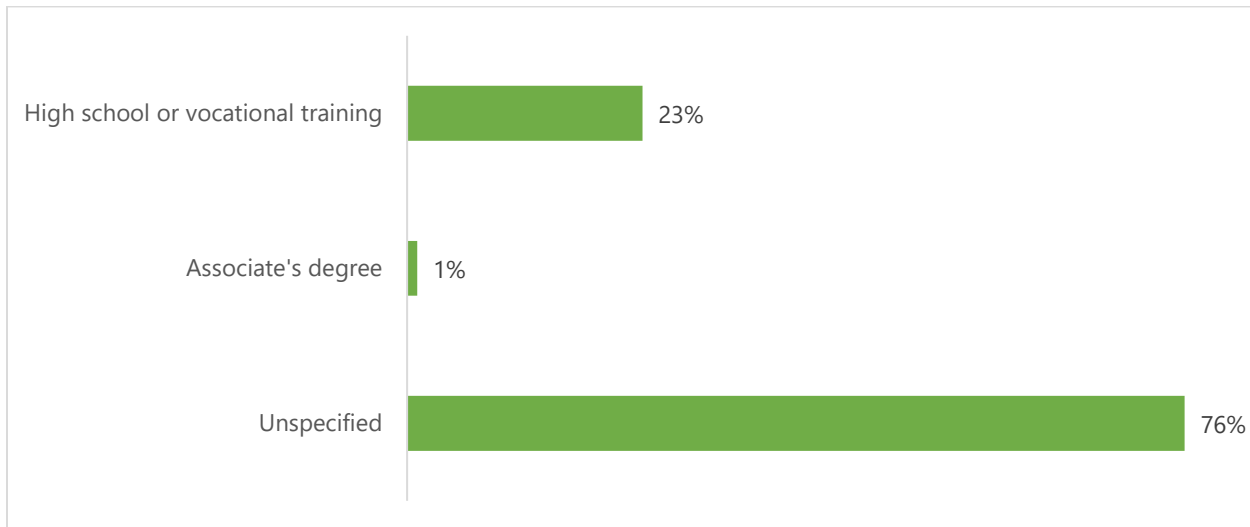
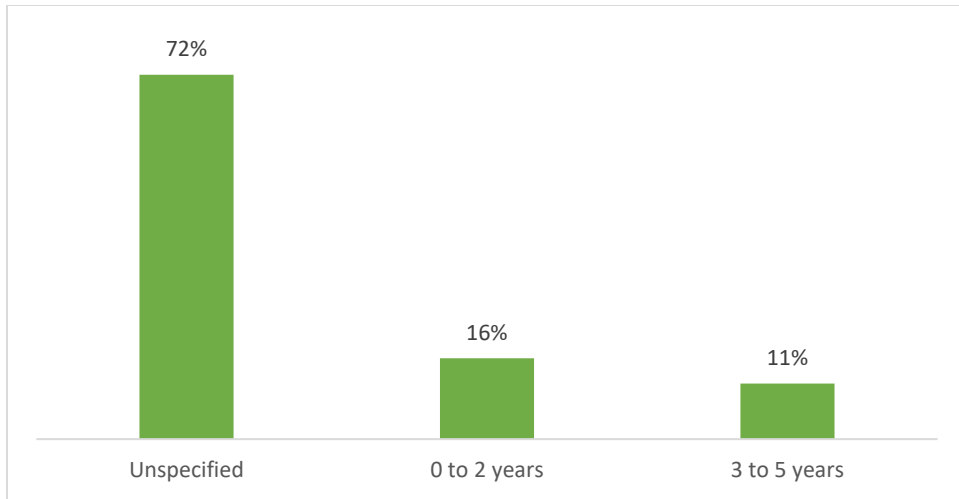


Exhibit 10 shows the experience levels required by employers for job postings for the selected occupations. Seventy-two percent (n = 277) of job postings did not include a preferred experience level.

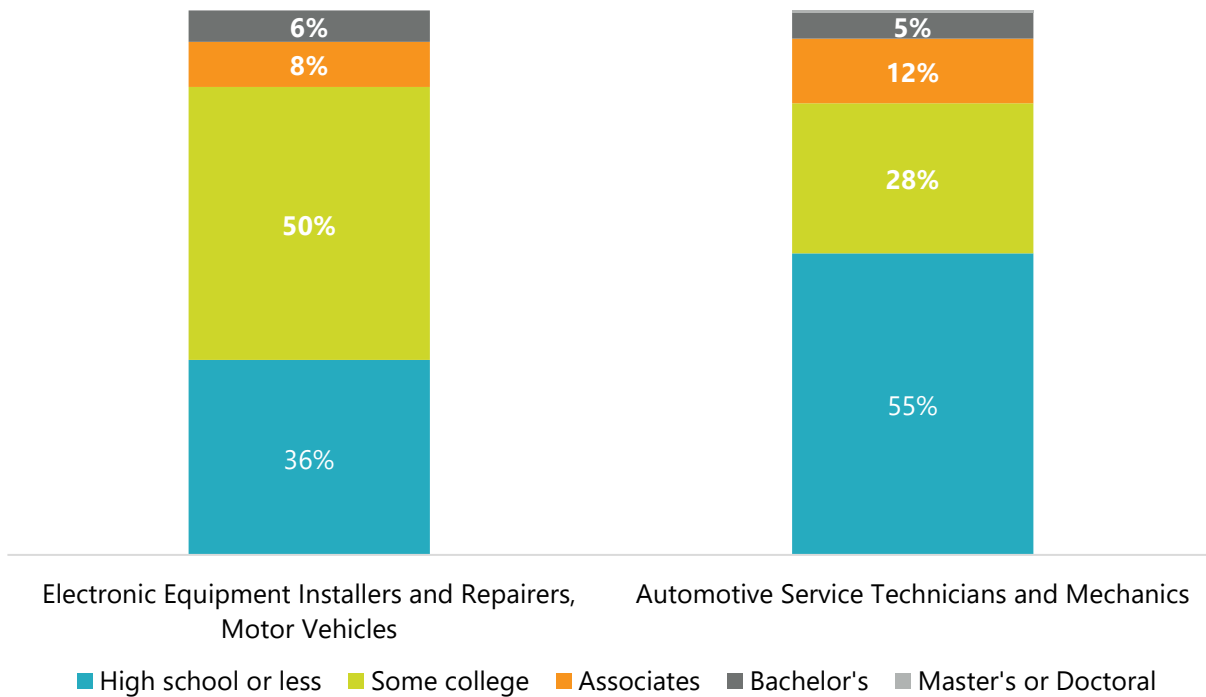
Exhibit 10. Employer-preferred experience levels



EDUCATION AND TRAINING

The U.S. Census Bureau collects data on education achieved by workers employed in occupations. Exhibit 11 shows the state-level educational attainment of the current workforce in the selected occupations.

Exhibit 11. California worker educational attainment for selected occupations, 2019



The Bureau of Labor Statistics (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 the BLS publishes projections data. Exhibit 12 shows the selected occupations' entry-level job requirements.

Exhibit 12. Typical education, work experience, and on-the-job training requirements

Occupation	Typical Entry-level Education	Work Experience Required	On-the-job Training Required
Electronic Equipment Installers and Repairers, Motor Vehicles	High school diploma or equivalent	None	Moderate-term
Automotive Service Technicians and Mechanics	Postsecondary nondegree award	None	Short-term

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 13 shows the TOP and CIP codes for educational programs related to the selected occupations.

Exhibit 13. TOP and CIP codes for training programs related to the selected occupations

TOP Programs and Codes	Aligned CIP Programs and Codes
Automotive Technology (0948.00)	Automobile/Automotive Mechanics Technology/Technician (47.0604)*
Alternative Fuels and Advanced Transportation Technology (0948.40)*	Alternative Fuel Vehicle Technology/Technician (47.0614)*

* There were no programs offered in these TOP or CIP codes within the study region.

Community College Supply

Exhibits 14 displays the average number of certificates and degrees from selected Far North community college programs over the last three academic years.

Exhibit 14. Annual average community college awards by program, 2018-19 through 2020-21

Program - TOP Code	College	Annual Awards 2018-19	Annual Awards 2019-20	Annual Awards 2020-21	3-Yr Annual Awards Average
Automotive Technology (0948.00)	Butte	40	11	15	22
	Lassen	5	8	3	5
	Mendocino	7	15	5	9
	Redwoods	12	6	3	7
	Shasta	11	11	3	8
	Total	75	51	29	52

Other Postsecondary Supply

No other post-secondary training providers conferred awards in related CIP codes in the Far North over the last three academic years.

FINDINGS

- This report focuses on two occupations in the advanced automotive vehicle technology occupational pathway: electronic equipment installers and repairers, motor vehicles, and automotive service technicians and mechanics.
- The Far North subregion held 2,025 advanced automotive vehicle technology jobs in 2021. The number of these jobs is projected to stay about the same over the next five years, losing 5 jobs by 2026.
- Jobs for the advanced automotive vehicle technology pathway are projected to grow at about the same rate in the Far North subregion than in California.
- Over the next five years, advanced automotive vehicle technology jobs are projected to have 231 annual openings across the Far North.
- Wage data shows that workers employed in these occupations earn \$2 to \$24 above the single adult living wage of \$12.74 per hour. Experienced automotive service technicians and mechanics make slightly more than the small family living wage for the region.
- According to real-time labor market information, there were 385 online job postings for these occupations between September 1, 2021, and August 31, 2022. Nearly all postings (98%) were for automotive service technicians and mechanics.
- Between 40% and 58% of incumbent workers in the studied occupations have educational attainment levels consistent with community college offerings (some college or associate degrees). Another 5% to 6% of workers in these occupations hold a bachelor's degree.
- Five Far North community colleges offer degrees and certificates in programs related to the advanced automotive vehicle technology occupational pathway. Together, these programs conferred an average of 52 awards (certificates and associate degrees) in related programs over the last three academic years (2018-19 through 2020-21).
- There were no local non-community college postsecondary training providers offering training related to the studied occupations. Please note that non-community college awards data often lags by one year.

RECOMMENDATIONS

- Based on a three-year average of annual awards in the Far North and projected yearly openings, the supply gap analysis shows that the region seems to have room for additional advanced automotive vehicle training.
 - Far North community colleges issued an average of 52 awards over the last three years.
 - No other postsecondary training providers issued awards related to this pathway over the last three years.
 - There are 231 projected annual openings for advanced automotive vehicle technology pathway jobs.
- The Far North Center of Excellence recommends moving forward with the program.

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

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.

Lightcast (Formerly EMSI/Burning Glass) 2022.3; 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).*

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/>.

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/>.

Public Use Microdata Sample (PUMS). U.S. Census Bureau American Community Survey (ACS). <https://www.census.gov/programs-surveys/acs/microdata.html>

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 OF KEY TERMS

Key Terms	Definition
Occupation	Occupation refers to professions, or careers, in the workforce. Occupations differ from jobs in that jobs show the number of positions held in a given occupation.
Jobs	<p>A job is 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>
Job Change	Job change is the net increase or decrease of jobs over a given timeframe.
Job Openings	<p>Job openings are the projected number of positions available for workers entering an occupation.</p> <p>Openings include growth and replacement jobs. Growth jobs are the positive change in the total number of workers employed. Replacement jobs are the estimates of new workers needed to replace workers permanently leaving the occupation.</p>
Wages	Wages, or compensation, show workers' percentile and average earnings in a given occupation. The 25th-percentile and 75th-percentile hourly wages are used as a proxy for entry-level and experienced-level wages.
Living Wage	The living wage is the level of income a single adult with no children must earn to meet basic needs. The living wage is calculated using basic levels of allowances for food, housing, transportation, healthcare, taxes, and other miscellaneous basic needs.
Educational Attainment	Educational attainment is the level of education achieved by workers in a given occupation. The data includes workers aged 25 years and older.
Typical Entry-level Education	The education level generally required for employment in an occupation. It may differ from the actual educational levels attained by workers in any given occupation.
Work Experience Required	The level of prior experience a worker needs to enter a job in a given occupation.
On-the-job Training Required	The level of on-the-job training a worker needs to obtain competency in a given occupation.
Awards	Awards are the number of certificates and degrees conferred for a specific course of study in a given year. Awards counts "papers" and, as a result, may be greater than the actual number of students who complete a program.

COVID-19 Statement: This report includes employment projection data by EMSI. EMSI'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.

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.

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