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Labor Market Analysis

Agriculture Production



Prepared by Central Valley/Mother Lode Center of Excellence



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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 Porterville College to determine whether there is demand in the local labor market that is not being met by the supply from postsecondary programs. This report summarizes labor market demand, wages, skills, and postsecondary supply for *Agriculture Production*, which includes:

- Agricultural and Food Science Technicians (SOC 19-4010)
- Miscellaneous Life, Physical, and Social Science Technicians (SOC 19-4090)
- Agricultural Inspectors (SOC 45-2010)

Key Findings

- **Occupational Demand** — Occupations related to *Agriculture Production* have a labor market demand of 287 annual job openings in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. Between 2021 and 2026, agricultural and food science technicians are projected to have the most demand with 130 annual job openings and are projected to grow by 3%.
- **Wages** — Average entry-level earnings of \$17.12/hour for *Agriculture Production* occupations are higher than the living wage in the SCV/SML subregion, which is \$11.91/hour for a single adult.¹ Miscellaneous life, physical, and social science technicians earn the highest entry-level wage, \$18.54/hour.
- **Employers and Occupational Titles** — Employers in the SCV/SML subregion include Randstad, Actalent, and Nutrien. The most common occupational title in job postings in the subregion is quality control analysts. The most common job title is quality assurance technicians.
- **Skills and Certifications** — The top baseline skill is quality assurance, the top specialized skill is auditing, and the top software skill is Microsoft Excel. The most in-demand certification is a Hazard Analysis And Critical Control Point (HACCP) Certification.
- **Education** — No typical entry-level education, work experience and on-the-job training data was available for occupations related to *Agriculture Production*.
- **Supply and Demand Analysis** — Based on 288 annual openings (i.e., demand) and 41 postsecondary degrees awarded (i.e., supply), an analysis of supply and demand suggests there is an undersupply of 247 workers in the SCV/SML subregion. In the CVML region, 62 awards were conferred suggesting an undersupply of 383 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 Porterville College work with the regional directors, the college's advisory board, and local industry in the expansion of programs to address the shortage of *Agriculture Production* workers.

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 Porterville College with labor market information for *Agriculture Production*. 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 *Agriculture Production* is included in the report. The Standard Occupational Classification (SOC) System codes and occupational titles used in this report from the Bureau of Labor Statistics and O*NET OnLine are shown below. There was no O*Net data available for Agricultural and Food Science Technicians (SOC 19-4010) and Miscellaneous Life, Physical, and Social Science Technicians (SOC 19-4090).

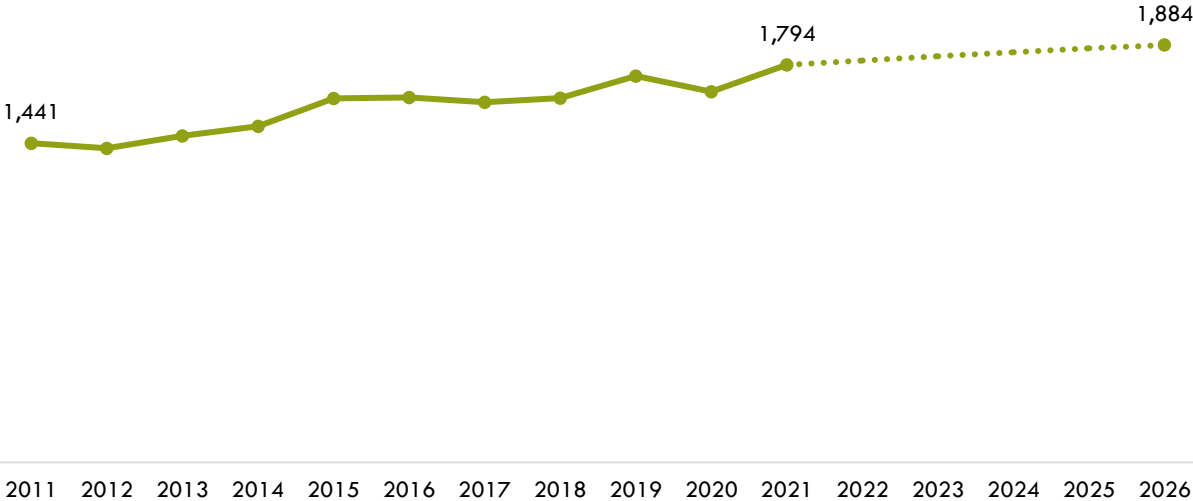
Agricultural Inspectors (SOC 45-2010)

- **Job Description:** Inspect agricultural commodities, processing equipment, and facilities, and fish and logging operations, to ensure compliance with regulations and laws governing health, quality, and safety.
- **Knowledge:** Customer and Personal Service, Administration and Management, Administrative, Law and Government, Mathematics
- **Skills:** Monitoring, Critical Thinking, Operations Monitoring, Reading Comprehension, Complex Problem Solving

Employment

Exhibit 1a shows trends for *Agriculture Production* in the SCV/SML subregion. Between 2011 to 2026, the number of jobs for occupations related to *Agriculture Production* is projected to increase by 89, growing by 5%.

Exhibit 1a. Historical employment and projected occupational demand for occupations related to *Agriculture Production* in the SCV/SML subregion, 2011-2026



Occupations related to *Agriculture Production* in the SCV/SML subregion employed 1,794 workers in 2021 (Exhibit 1b). Agricultural and food science technicians are projected to increase by 3% over the next five years and have projected annual openings of 130.

Exhibit 1b. Current employment and projected occupational demand for occupations related to *Agriculture Production* in the SCV/SML subregion, 2021-2026

Occupation	2021 Jobs	2026 Jobs	5-Year Change	5-Year % Change	Annual Openings
Agricultural and Food Science Technicians	846	876	29	3%	130
Miscellaneous Life, Physical, and Social Science Technicians	508	556	48	9%	75
Agricultural Inspectors	440	452	12	3%	82
TOTAL	1,794	1,884	89	5%	287

Wages

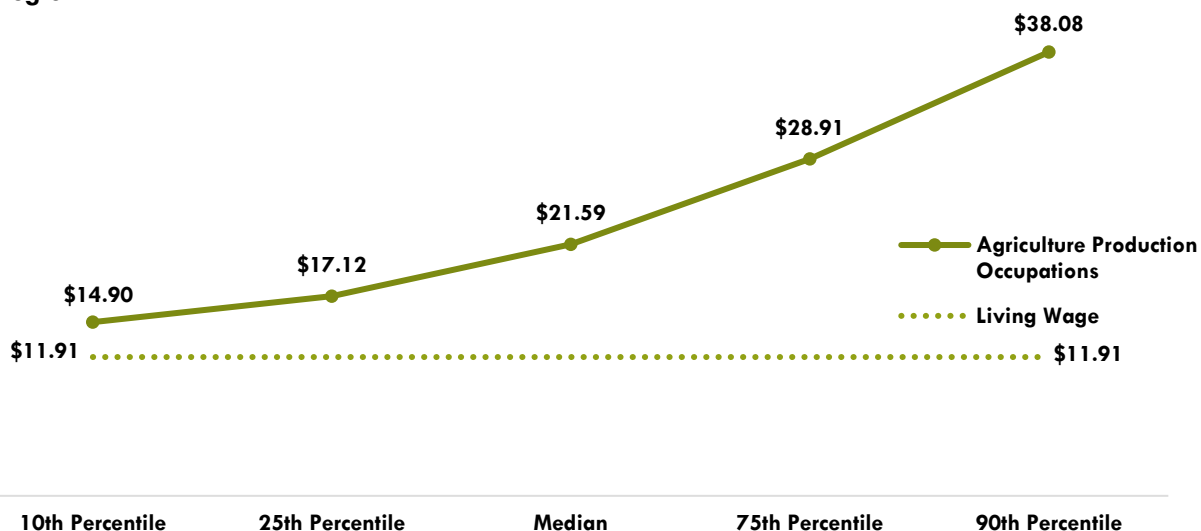
The average living wage for a single adult in the SCV/SML subregion is \$11.91/hour.² Exhibit 2a shows the entry-hourly wages for miscellaneous life, physical, and social science technicians, an occupation related to *Agriculture Production*, which has an entry-level wage of \$18.54/hour.³

Exhibit 2a. Hourly wages for occupations related to *Agriculture Production* in the SCV/SML subregion

Occupation	25 th Percentile Hourly Earnings	Median Hourly Earnings	75 th Percentile Hourly Earnings
Miscellaneous Life, Physical, and Social Science Technicians	\$18.54	\$24.45	\$34.75
Agricultural Inspectors	\$17.69	\$22.06	\$27.31
Agricultural and Food Science Technicians	\$15.14	\$18.26	\$24.67

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

Exhibit 2b. Average hourly wages for occupations related to *Agriculture Production* 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 Note: 10th and 25th percentiles are considered entry-level wages while 75th and 90th are considered experienced wages, which may be obtained through long-term employment or extra training, etc.

Job Postings

There were 249 unique job postings for occupations related to *Agriculture Production* in the SCV/SML subregion from December 2022 to May 2023.⁴

Top Employers

The top employers with the most job postings are listed in Exhibit 3. The top employers in online job postings were Randstad, Actalent, and Nutrien.

Exhibit 3. Top employers of *Agriculture Production* in job postings

Employer
Randstad
Actalent
Nutrien
Ventura Coastal
Self-Help Enterprises
Saputo Cheese USA
E&J Gallo Winery
Wilbur-Ellis
Pace Analytical Services
Gallo Glass Company

Top Occupational Titles

Exhibit 4 shows the O*NET OnLine occupational titles for *Agriculture Production* in the SCV/SML subregion. Common job titles in postings include: Quality Assurance Technicians, Quality Control Technicians, and Custom Applicators.

Exhibit 4. Top occupational titles in job postings for *Agriculture Production*

Occupational Title
Quality Control Analysts
Food Science Technicians
Agricultural Technicians
Agricultural Inspectors
Forensic Science Technicians
Life, Physical, and Social Science Technicians, All Other

⁴ Other than occupational 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 *Agriculture Production*. 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 Agriculture Production

Market Salary	Job Postings
\$36,000-\$39,999	52
\$60,000-\$165,000	25
\$32,000-\$35,999	22
\$40,000-\$43,999	19
\$52,000-\$55,999	19

Education

Of the 249 unique job postings, 221 listed a preferred or minimum educational requirement for the position being filled. Among those, 42% requested a high school diploma or GED, 32% requested a bachelor’s degree, and 19% requested an associate degree (Exhibit 6).

Exhibit 6. Education levels requested in job postings for Agriculture Production

Education Level	Job Postings	% of Job Postings
High school or GED	92	42%
Bachelor's degree	71	32%
Associate degree	43	19%
Master's degree	13	6%
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 most important baseline skill is quality assurance. The most important specialized skill is auditing. The most important software skill is Microsoft Excel.

Exhibit 7. In-demand baseline, specialized, and software skills for Agriculture Production in job postings

Baseline Skills	Specialized Skills	Software Skills
Quality Assurance	Auditing	Microsoft Excel
Quality Control	Food Safety and Sanitation	SAP Applications
Management	Hazard Analysis and Critical Control Points (HACCP)	Spreadsheets
Communications	Good Manufacturing Practices	Operational Databases
Safety Assurance	Laboratory Equipment	TrackWise

Certifications

Of the 249 job postings, there were 101 certifications listed. Among those, 8% indicated a need for a Hazard Analysis and Critical Control Point (HACCP) Certification. The next top certification is SQF (Safe Quality Food) Practitioner (Exhibit 8).

Exhibit 8. Top Agriculture Production certifications requested in job postings

Certifications	% of Job Postings
Hazard Analysis and Critical Control Point (HACCP) Certification	8%
SQF (Safe Quality Food) Practitioner	6%
Activity Director Certification	2%
Tanker and Hazmat Combo X Endorsement	1%
Pesticide Applicator License	1%

Education, Work Experience, & Training

No typical entry-level education, work experience and on-the-job training data was available for occupations related to *Agriculture Production* (Exhibit 9).

Exhibit 9. Education, work experience, training, and Current Population Survey results for occupations related to *Agriculture Production*⁵

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Agricultural and Food Science Technicians	N/A	None	N/A	40.5%
Miscellaneous Life, Physical, and Social Science Technicians	N/A	None	N/A	36.6%
Agricultural Inspectors	N/A	None	N/A	41.1%

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, 41 awards were conferred in the SCV/SML subregion (Exhibits 10 and 11).

Exhibit 10. TOP and CIP codes for Agriculture Production

TOP Titles	CIP Titles
010100 - Agriculture Technology and Sciences, General	01.0102 - Agribusiness/Agricultural Business Operations
011300 - Food Processing and Related Technologies	01.0401 - Agricultural and Food Products Processing
	01.1002 - Food Technology and Processing

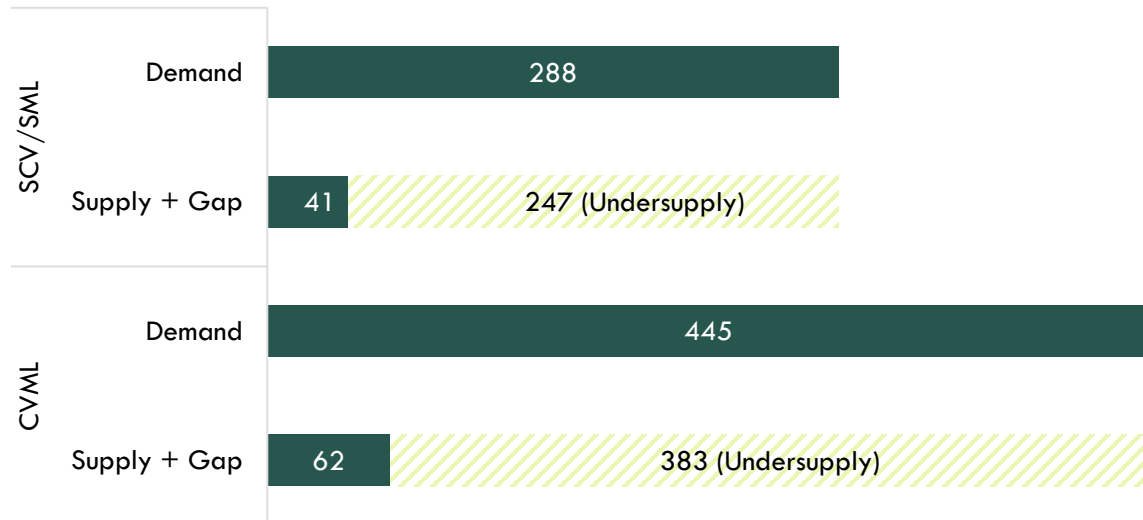
Exhibit 11. Postsecondary supply for Agriculture Production

TOP/ CIP Code- Title	College	2019-2020	2020-2021	2021-2022	3-Year Average
010100 - Agriculture Technology and Sciences, General	Merced	6	12	6	8
	Modesto Junior College	6	12	22	13
	Porterville	12	9	7	9
	Reedley College	1	1	1	1
	West Hills Coalinga	2	22	63	29
011300 - Food Processing and Related Technologies	Bakersfield	-	1	2	1
	Clovis	-	-	-	-
	Sequoias	-	1	1	1
SCV/SML TOTAL		15	34	74	41
CVML TOTAL		27	58	102	62

*SCV/SML awards

There is an undersupply of 247 *Agriculture Production* workers in the SCV/SML subregion and an undersupply of 383 workers in the region (Exhibit 12).

Exhibit 12. *Agriculture Production* workforce demand (annual job openings), postsecondary awards (supply), and additional students needed to fill gap in the SCV/SML subregion and region



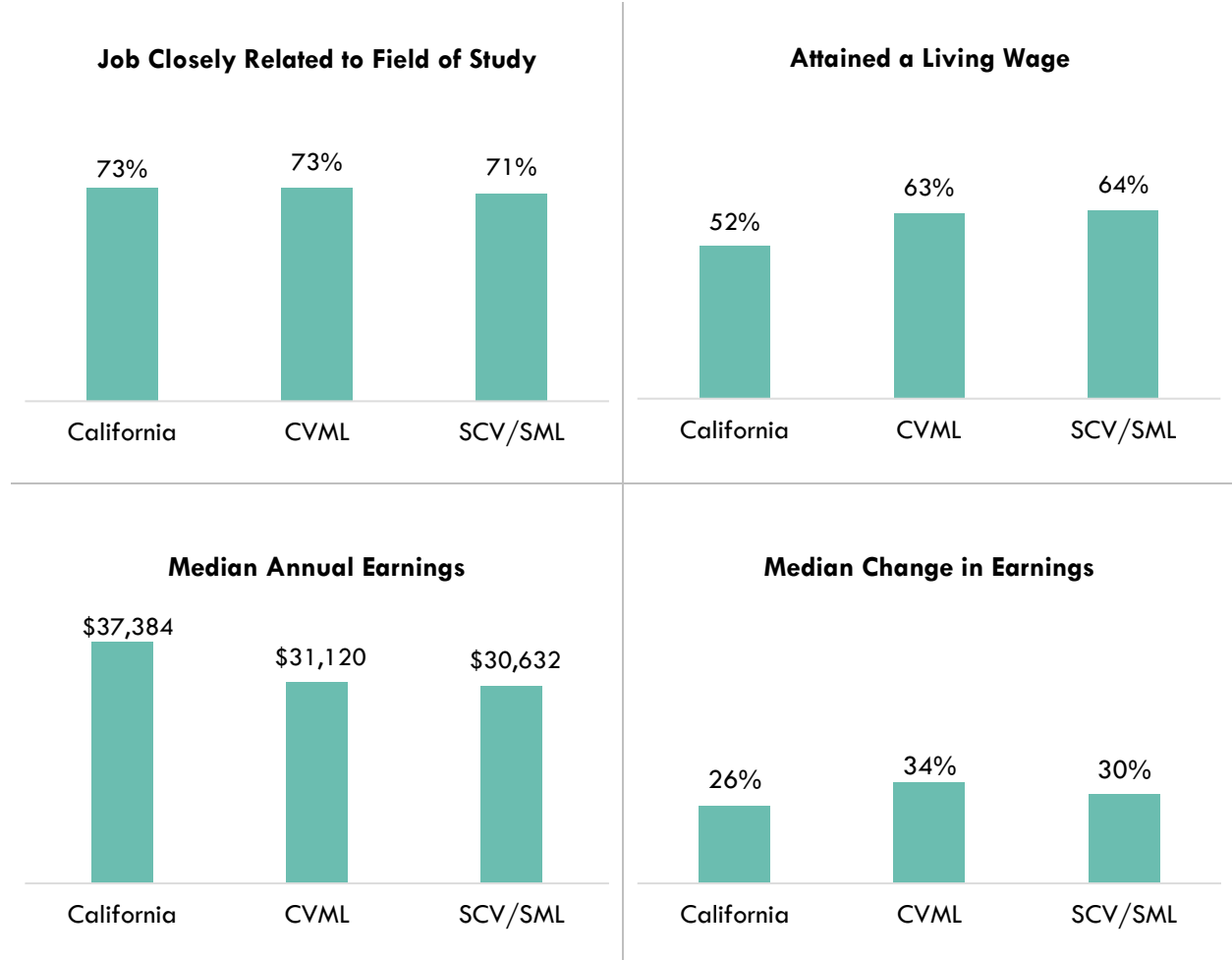
Student Outcomes

Exhibits 13a-13b summarize outcomes from California Community College Chancellor’s LaunchBoard for TOP codes related to *Agriculture Production*. Notably, 71% of students obtained a job closely related to their field of study and 64% of students attained a living wage in the subregion.

Exhibit 11a. LaunchBoard Metrics for TOP 010100 - Agriculture Technology and Sciences, General in the subregion

Metric	
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	5,758
Number of Students Who Transferred	4,576

Exhibit 11b. LaunchBoard Metrics for TOP 010100 - Agriculture Technology and Sciences, General in California, CVML region, and SCV/SML subregion



Recommendation

This report suggests there is a shortage of 247 workers in the SCV/SML subregion and a shortage of 383 workers in the CVML region for *Agriculture Production*. Based on these findings, it is recommended that Porterville College work with the regional directors, the college’s advisory board, and local industry in the expansion of programs to address the shortage of *Agriculture Production* workers in the region.

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 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	Burning Glass: burning-glass.com/ .
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 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.