2018

Labor Market Analysis: Enology

Prepared by the
Central Valley/Mother Lode
Center of Excellence

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Introduction

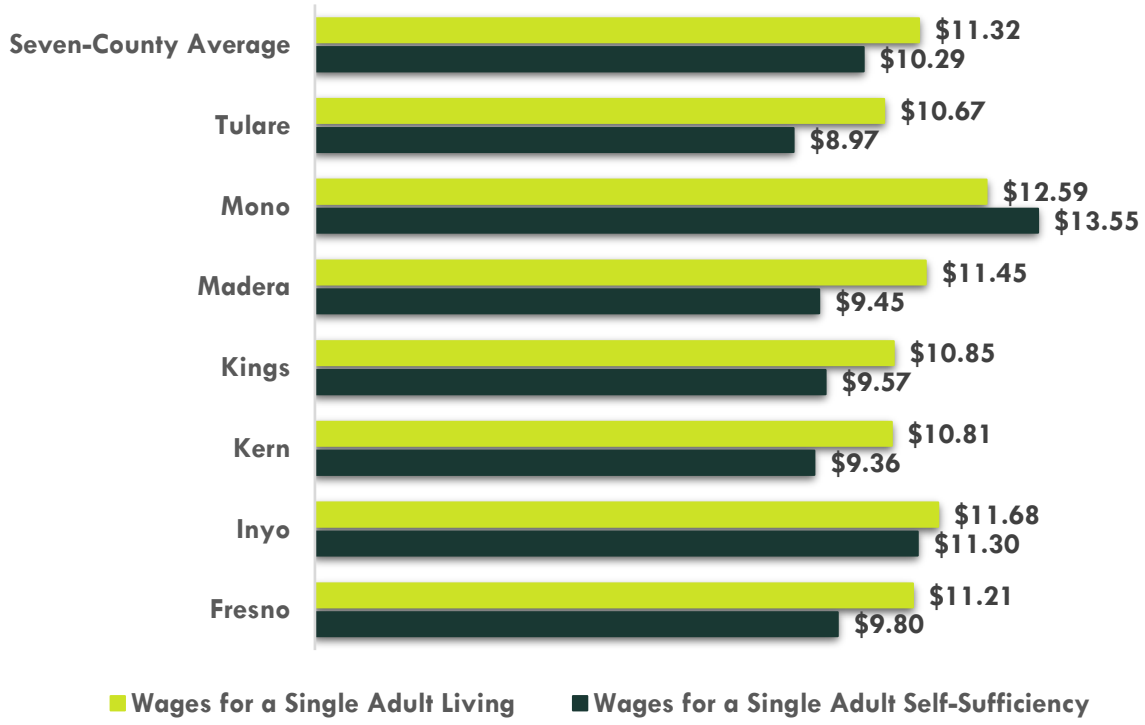
The Central Valley/Mother Lode Center of Excellence was asked by Reedley College to provide labor market information for an enology program. Analysis of Taxonomy of Programs (TOP) code data provided 010400-Viticulture, Enology and Wine Business as the appropriate program for review. Since Reedley College is in Fresno County, it was determined that this analysis would focus on the South Central Valley/Southern Mother Lode (SCV/SML) subregion, but demand, supply and wage data for the entire region is also included for broader applicability and use.

Analysis of the program and occupational data related to viticulture, enology and wine business resulted in the identification of four applicable occupations. The four occupational titles and Standard Occupational Classification (SOC) System codes included in this analysis are:

- Farmers, ranchers and other agricultural managers (SOC 11-9013),
- Food Scientists and technologists (19-1012),
- Agricultural and food science technicians (19-4011) and
- First-line supervisors of farming, fishing and forestry workers (45-1011).

The 2014 average self-sufficiency wage for a single adult in the South Central Valley/Southern Mother Lode subregion is $10.29/hour, and the current average living wage for a single adult is $11.32/hour. Self-sufficiency and living wage data by county and the overall seven-county average are shown in Exhibit 1. In the wages sections of this report, Pct. 10 hourly denotes entry-level wages, and median represents experienced wages.

Exhibit 1. Self-sufficiency and living wages in the SCV/SML subregion



Occupational Demand

The largest enology-related occupation in the subregion is farmers, ranchers and other agricultural managers with 11,556 jobs in 2016 (Exhibit 2). Although this occupation is expected to contract by 6% over the next five years losing 732 jobs, it has the greatest number of annual openings, 836 replacement workers.

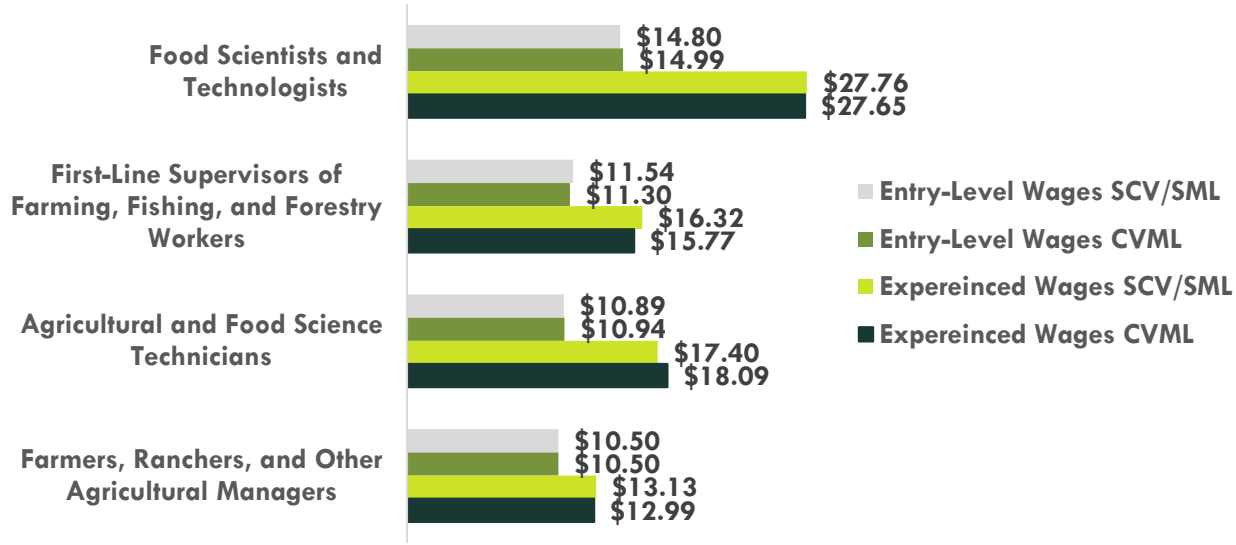
The next largest occupation is first-line supervisors of farming, fishing and forestry workers with 3,812 jobs in 2016. Even though this occupation is not expected to experience any growth over the five-year period, it is projected to have the second largest number of annual openings, 521 replacement workers.

Exhibit 2. Enology-related occupational projections in the SCV/SML subregion

Occupation	2016 Jobs	5-Year Change	5-Year % Change	Annual Openings
Farmers, Ranchers and Other Agricultural Managers	11,556	(732)	(6%)	836
First-Line Supervisors of Farming, Fishing, and Forestry Workers	3,812	14	0%	521
Agricultural and Food Science Technicians	542	20	4%	59
Food Scientists and Technologists	284	8	3%	31
TOTAL	**16,194**	**(690)**	**(4%)**	**1,447**

Exhibit 3 compares the entry-level and experienced wages of the four enology occupations. The entry-level wages for the four occupations exceed the average self-sufficiency wage for a single adult in the seven-county subregion, $10.29/hour. The entry-level wages for two occupations—farmers, ranchers and other agriculture managers, and agriculture and food science technicians—fall short of the subregion's average living wage for a single adult, $11.32/hour.

Exhibit 3. Entry-level and experienced wage comparison in the region and subregion



Job Postings

There were only 100 job postings for the four targeted enology occupations in the South Central Valley/Southern Mother Lode seven-county subregion for January through December 2017.

Farm and ranch managers, a sub-occupation of farmers, ranchers and other agricultural managers, has the greatest number of postings, 36. This is followed by another sub-occupation, first-line supervisors of agricultural crop and horticultural workers, 22 postings. See Exhibit 4.

Exhibit 4. Enology-related occupational titles by number of job postings

Occupation	Job Postings
Farm and Ranch Managers (11-9013.02)	36
First-Line Supervisors of Agricultural Crop and Horticultural Workers (45-1011.07)	22
Food Scientists and Technologists (19-1012.00)	14
Agricultural Technicians (19-4011.01)	12
Food Science Technicians (19-4011.02)	9
Nursery and Greenhouse Managers (11-9013.01)	4
Aquacultural Managers (11-9013.03)	1
First-Line Supervisors of Animal Husbandry and Animal Care Workers (45-1011.08)	1
First-Line Supervisors of Aquacultural Workers (45-1011.06)	1

Job Titles

Analysis of the 100 advertised job titles for the four targeted occupations reveals that the majority of the postings are for farm managers, 13 (Exhibit 5). The job title laboratory management/supervisor has seven job postings and seasonal supervisor has six job postings.

Exhibit 5. Number of job postings for enology-related job titles

Job Title	Job Postings
Farm Manager	13
Laboratory Management/Supervisor	7
Seasonal Supervisor	6
Food Technologist	5
Senior Agricultural Technician	5
Assistant Manager	4
Harvest Supervisor	3
Ranch Safety	3
Research and Development Food Scientist	3
Assistant Farm Manger	2

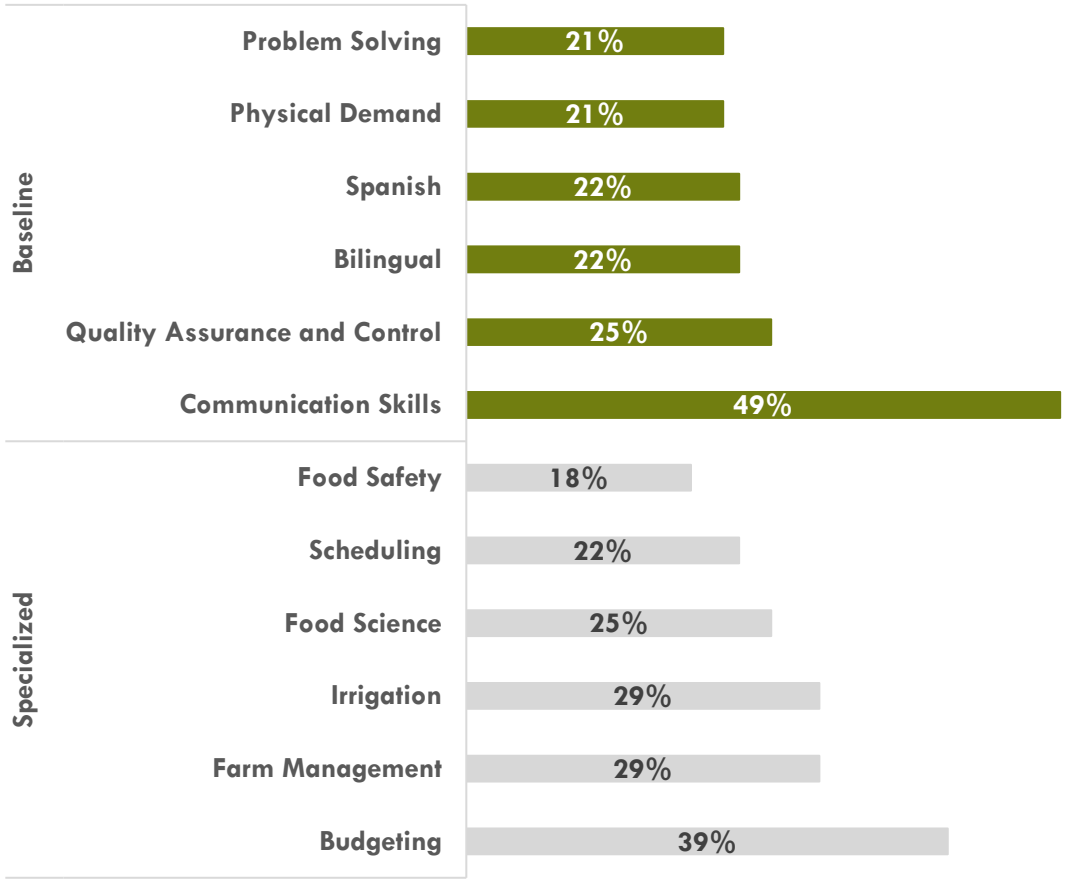
Skills

Exhibit 6 depicts the top six baseline and specialized skills for occupations related to enology. Of the 100 job postings, 76 contain skills data.

By far the most important baseline skill is communication skills for the four targeted enology occupations with half of the 76 employers who provided skills data specifying this requirement. Other top skills are quality assurance and control, 25% of the job postings, and bilingual skills, 22% of the job postings.

The top three specialized skills are budgeting, farm management and irrigation.

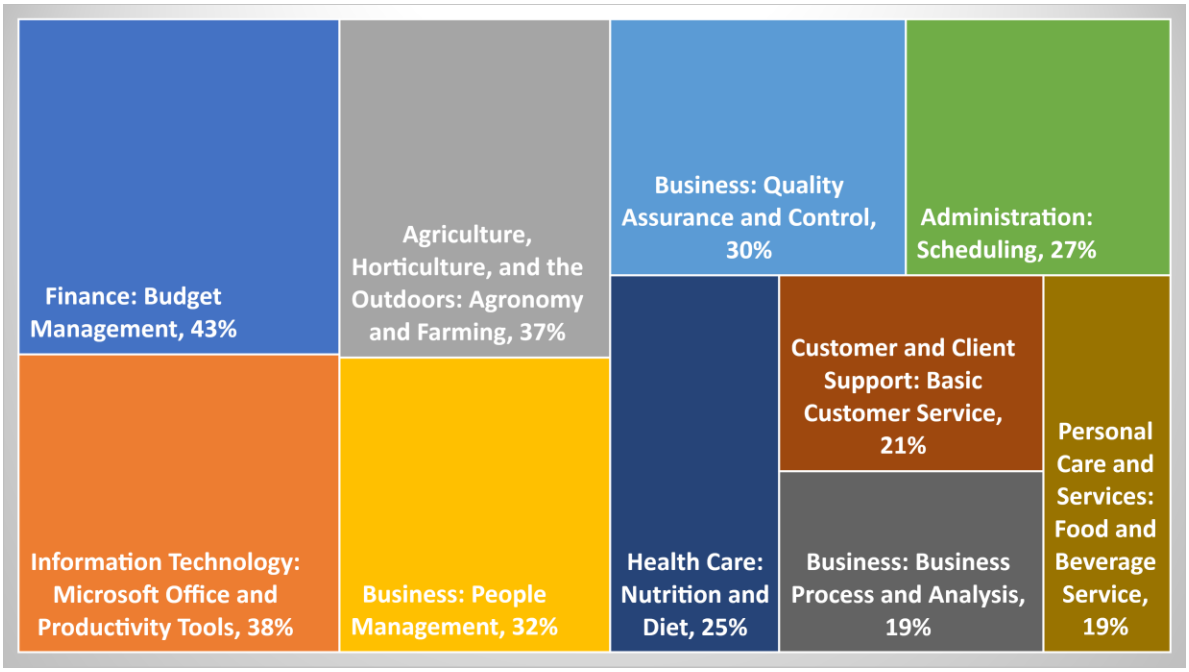
Exhibit 6. Enology Occupation Baseline and Specialized Skills



Skill Cluster Projections

Of the 100 enology job postings, 37 contain skill cluster projections data. Analysis of this information reveals that the skill cluster that will have the greatest gains in level of importance is Finance: Budget Management at 43%. Other clusters with the largest gains include Information Technology: Microsoft Office and Productivity Tools, 38%, followed by Agriculture, Horticulture and the Outdoors: Agronomy and Farming, 37% (Exhibit 7).

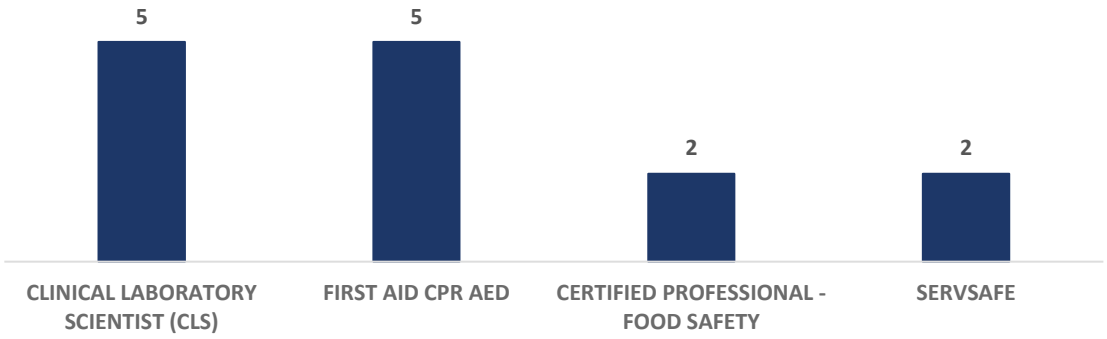
Exhibit 7. Skill cluster projections for enology occupations



Certifications

Only nine of the 100 enology job postings contain certification data. Five job postings require a clincal laboratory scientist (CLS) certification, and five require a first aid CPR/AED certification (Exhibit 8).

Exhibit 8. Enology-related certifications



Education, Work Experience and Training

Food scientists and technologists have a typical entry-level education of a bachelor's degree; this occupation does not meet the criteria for being relevant to community colleges with only 18.9% of workers currently employed having completed some college to an associate degree as their highest level of education (Exhibit 9).

Agriculture and food science technicians have a typical education level of an associate degree. Farmers, ranchers and other agricultural managers, and first-line supervisors of farming, fishing and forestry workers have a typical education level of high school diploma or equivalent. However, both occupations qualify as community college relevant because of the following requirements:

- supervisorial and management skills and abilities,
- specialized industry knowledge,
- extensive work experience and
- performance of duties that are taught in local enology and other agriculture programs.

Exhibit 9. Education, work experience, training and CPS results for enology occupations

Occupation	Typical Entry-Level Education	Work Experience Required	Typical On-The-Job Training	CPS
Farmers, Ranchers and Other Agricultural Managers	High school diploma or equivalent	5 years or more	None	28.9%
Food Scientists and Technologists	Bachelor's degree	None	None	18.9%
Agricultural and Food Science Technicians	Associate degree	None	Moderate-term	36.3%
First-Line Supervisors of Farming, Fishing and Forestry Workers	High school diploma or equivalent	Less than 5 years	None	22.8%

Supply

Analysis of statewide community college data shows there are currently no viticulture, enology and wine business-010400 programs in California.

Two agriculture programs in the region were identified as contributors to the supply of students for the four targeted occupations: plant science – 010300 and agriculture technology and sciences, general – 010100 Exhibit 10).

Analysis of the last three years of program awards data, from 2014 through 2017, at the subregional and regional levels provides the following three-year average completion results:

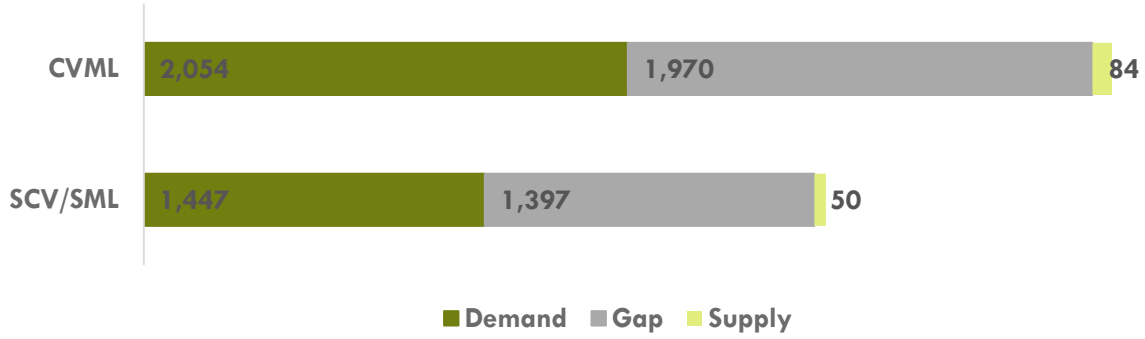
- There were 50 average annual awards (28 certificates and 22 degrees) conferred in the South Central Valley/Southern Mother Lode subregion.
- There were 84 average annual awards (29 certificates and 55 degrees) conferred in the Central Valley/Mother Lode Region.

Exhibit 10. Community college supply in the region

TOP Tile - Code	College	3-Year Average	
		Certificates	Degrees
Agriculture Technology and Sciences, General-010100	Merced		5
	Modesto		9
	Porterville		6
	Reedley College	2	2
	Sequoias		0
	West Hills Coalinga	7	2
	SUBTOTAL	**9**	**25**
Plant Science-010300	Bakersfield	1	7
	Merced	1	3
	Modesto		15
	Reedley College	15	1
	San Joaquin Delta	1	
	Sequoias	3	3
	SUBTOTAL	**20**	**29**
	TOTAL	***29***	***55***

Exhibit 11 provides a visual depiction for enology occupational demand and relevant program completions. A sizeable gap in supply exists for the region and subregion. In the region, as a whole, there is a shortage of 1,970 workers. In the subregion, the shortage is 1,397 workers.

Exhibit 11. Enology workforce demand and supply in the subregion and region



Conclusions

The entry-level wages for the four occupations exceed the average self-sufficiency wage for a single adult in the seven-county subregion, but the entry-level wages for two occupations fall short of the subregion's average living wage.

There were 100 job postings in 2017 for the four enology occupations in the South Central Valley/Southern Mother Lode subregion.

Analysis of skills and certificate requirements indicate:

- The top baseline skill requirement is communications skills and the top specialized skill is budgeting.
- Only nine postings listed certification requirements.

Currently there are no active viticulture, enology and wine business programs in the Central Valley/Mother Lode region. Although there are two agriculture programs that are contributing to supply, there remains a substantial undersupply of trained workers, a shortage of 1,397 in the subregion.

Agriculture programs offered through local community colleges are uniquely positioned to provide education and training to aspiring enology workers.

Recommendation

It is recommended that Reedley College work with the sector and deputy sector navigators, it's agriculture advisory board and local industry to develope a viticulture, enology and wine business program. Convening will be instrumental in insuring that employers' expectations and requirements are met regarding knowledge, skills, abilities and certifications.

Appendix A: 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. (EMSI). 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). Occupational wage estimates also affected by county-level EMSI earnings by industry: economicmodeling.com.
Living Wage	A living wage calculator that estimates the cost of living in a specific community or region: livingwage.mit.edu.
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: www.bls.gov/emp/ep_education_tech.htm.
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, http://www.burning-glass.com/
Additional Education Requirements/ Employer Preferences	The O*NET Job Zone database includes over 900 occupations as well as information on skills, abilities, knowledge, work activities and interests associated with specific occupations: www.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. (EMSI) formula that includes historical employment and economic indicators along with national, state and local trends.

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.

Wages Family Compositions: The living wage calculator estimates the living wage needed to support families. For single adult families, the adult is assumed to be employed full time. For two adult families where both adults are in the labor force, both adults are assumed to be employed full time. For two adult families where one adult is not in the labor force, one of the adults is assumed to be employed full time while the other non-wage-earning adult provides full-time child care for the family's children. Full-time work is assumed to be year-round, 40 hours per week for 52 weeks, per adult. Families with one child are assumed to have a 'young child' (4 years old). Families with two children are assumed to have a 'young child' and a 'child' (9 years old). Families with three children are assumed to have a 'young child,' a 'child,' and a 'teenager' (15 years old).