

June 2021

Labor Market Analysis

Stagecraft



Prepared by the Central Valley/Mother Lode Center of Excellence

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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.

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Summary

Please note the COVID-19 statement on page 2 when considering this report's findings.

This study conducted by the Central Valley/Mother Lode Center of Excellence examines labor market demand, wages, skills, and postsecondary supply for stagecraft. Four occupations related to stagecraft were identified for Fresno City College:

- 27-4011, Audio and Video Technicians
- 27-1029, Designers, All Other
- 27-1027, Set and Exhibit Designers
- 27-4014, Sound Engineering Technicians

Key findings:

- **Occupational demand** — More than 830 workers were employed in jobs related to stagecraft in 2019 in the South Central Valley/Southern Mother Lode (SCV/SML) subregion. The largest occupation is audio and video technicians with 354 workers in 2019, a projected employment decline of 16% over the next five years, and 35 annual openings.
- **Wages** — Audio and video technicians earn the highest entry-level wages of \$17.25/hour in the subregion and \$16.49/hour in the region.
- **Employers** — Employers with the most job postings in the subregion are TravelCenters of America, Cosco Fire Protection, Kaiser Permanente.
- **Occupational titles** — The most common occupational title in job postings in the subregion is designers, all other. The most common job title is technician-mechanic.
- **Skills and certifications** — The top baseline skill is teamwork/collaboration, the top specialized skill is repair, and the top software skill is AutoCAD. The most in-demand certification is a driver's license.
- **Education** — A postsecondary nondegree award is typically required for audio and video technicians, and sound engineering technicians. The remaining two occupations typically require a bachelor's degree.
- **Supply** — Analysis of postsecondary completions in the region shows that on average four awards were conferred in the Central Valley/Mother Lode region each year.

Based on a comparison of occupational demand and supply, there is an undersupply of 89 trained workers in the subregion and 124 workers in the region. The Center of Excellence recommends that Fresno City College work with the Retail, Hospitality, Tourism and Entertainment Regional Director, the college's advisory board, and local industry in the expansion of programs to address the shortage of stagecraft workers in the region.

Introduction

The Central Valley/Mother Lode Center of Excellence was asked by Fresno City College to provide labor market information for stagecraft. 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. The average living wage for a single adult in the SCV/SML subregion is \$11.91/hour.¹ Analysis of the program and occupational data related to stagecraft resulted in the identification of applicable occupations. The Standard Occupational Classification (SOC) System codes and titles used in this report are:

- 27-4011, Audio and Video Technicians
- 27-1029, Designers, All Other
- 27-1027, Set and Exhibit Designers
- 27-4014, Sound Engineering Technicians

The occupational titles, job descriptions, sample job titles, and knowledge and skills from the Bureau of Labor Statistics and O*NET OnLine are shown below. O*NET data was not available for designers, all other.

Audio and Video Technicians

Job Description: Set up, maintain, and dismantle audio and video equipment, such as microphones, sound speakers, connecting wires and cables, sound and mixing boards, video cameras, video monitors and servers, and related electronic equipment for live or recorded events, such as concerts, meetings, conventions, presentations, podcasts, news conferences, and sporting events.

Knowledge: Computers and Electronics, Communications and Media, English Language, Telecommunications, Fine Arts

Skills: Monitoring, Critical Thinking, Operation Monitoring, Reading Comprehension, Complex Problem Solving

Set and Exhibit Designers

Job Description: Design special exhibits and sets for film, video, television, and theater productions. May study scripts, confer with directors, and conduct research to determine appropriate architectural styles.

Knowledge: Design, Fine Arts, English Language, Building and Construction, Communications and Media

Skills: Active Listening, Critical Thinking, Reading Comprehension, Coordination, Operations Analysis

Sound Engineering Technicians

Job Description: Assemble and operate equipment to record, synchronize, mix, edit, or reproduce sound, including music, voices, or sound effects, for theater, video, film, television, podcasts, sporting events, and other productions.

Knowledge: Computers and Electronics, Engineering and Technology, Communications and Media, Customer and Personal Service, English Language

Skills: Active Listening, Speaking, Reading Comprehension, Complex Problem Solving, Critical Thinking

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/>.

Occupational Demand

The South Central Valley/Southern Mother Lode subregion employed 831 workers in stagecraft occupations in 2019 (Exhibit 1). The largest occupation is audio and video technicians with 354 workers in 2019. This occupation is projected to decline by 16% over the next five years but has the greatest number of projected annual openings, 35.

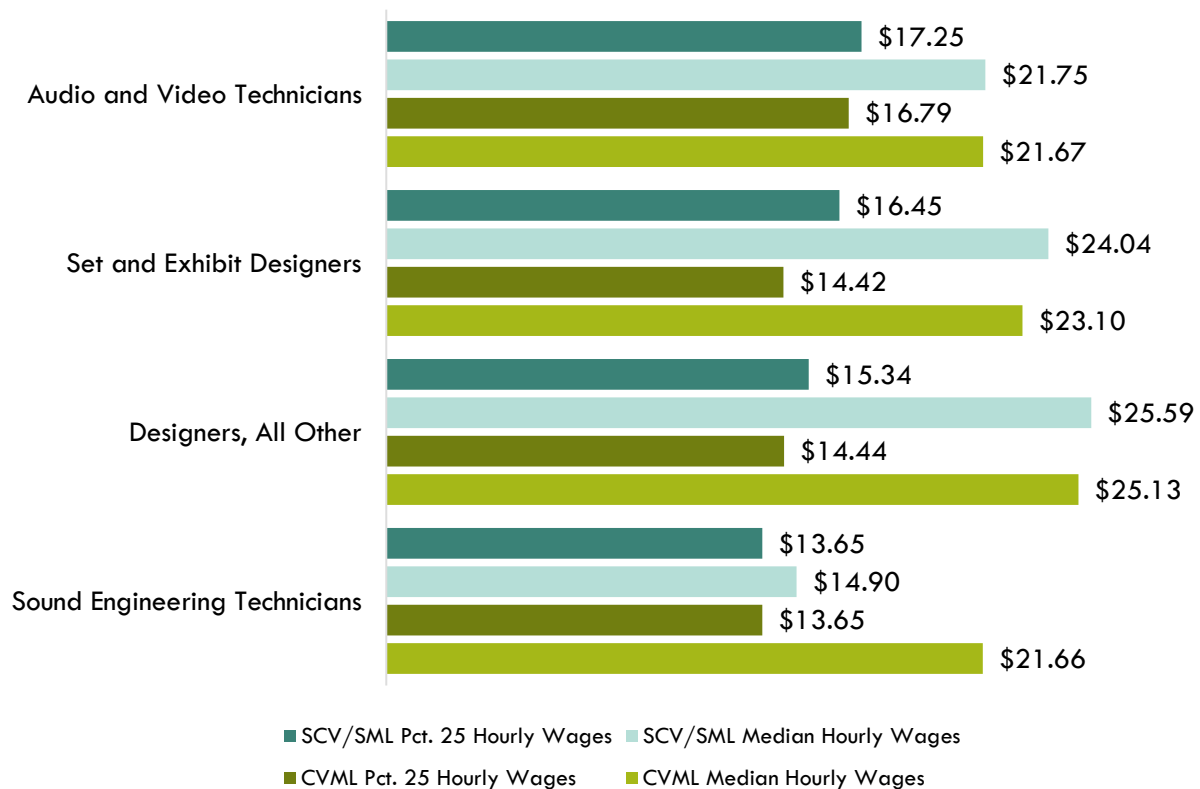
Exhibit 1. Stagecraft employment and occupational projections in the SCV/SML subregion

Occupation	2019 Jobs	2024 Jobs	5-Year Change	5-Year % Change	Annual Openings
Audio and Video Technicians	354	297	(57)	(16%)	35
Designers, All Other	198	219	21	11%	25
Set and Exhibit Designers	142	152	10	7%	16
Sound Engineering Technicians	137	129	(8)	(6%)	14
TOTAL	831	797	(34)	(4%)	90

Wages

Exhibit 2 compares the entry-level and experienced wages of the stagecraft occupations. Audio and video technicians earn the highest entry-level wages of \$17.25/hour in the subregion and \$16.49/hour in the region.

Exhibit 2. Entry-level and experienced wage comparison in the SCV/SML subregion and region



Job Postings

There were 35 job postings for the four occupations in the SCV/SML subregion from December 2020 to May 2021.² The employers with the most job postings are listed in Exhibit 3.

Exhibit 3. Top employers of stagecraft by number of job postings

Employer	Job Postings	% Job Postings
TravelCenters of America	7	21%
Cosco Fire Protection	2	6%
Kaiser Permanente	2	6%
Bitwise Industries, Inc	1	3%
Cazador Consulting Group	1	3%
Cazador Consulting Group Inc	1	3%
Dewberry Engineers Inc	1	3%
Follett	1	3%
Imago	1	3%
Legacy Construction	1	3%

Exhibit 4 shows how job postings for the targeted occupations in the SCV/SML subregion are distributed across four O*NET OnLine occupations. The occupational title designers, all other is listed in 16 job postings. Note how this occupational title dominates the job posting results. Common job titles include Technician-Mechanic in seven job postings, Designer in three job postings, and Audio Visual Technician in two job postings.

Exhibit 4. Top occupational titles in job postings for stagecraft

Occupational Title	Job Postings	% of Job Postings
Designers, All Other	16	46%
Sound Engineering Technicians	9	26%
Audio and Video Equipment Technicians	7	20%
Set and Exhibit Designers	3	9%

Salaries

Exhibit 5 shows the “Market Salaries” for stagecraft occupations that are calculated by Burning Glass which uses a machine learning model built off of millions of job postings every year, and accounts for adjustments based on locations, industry, skills, experience, education requirements, among other variables.

² Other than occupation 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.

Exhibit 5. Salaries for stagecraft occupations

Market Salary Percentile	Salary Amount
10th Percentile	\$32,000
25th Percentile	\$40,109
50th Percentile	\$54,747
75th Percentile	\$67,353
90th Percentile	\$82,416

Education

Of the 35 job postings, 21 listed an education level preferred for the positions being filled. Of those, 71% requested high school or vocational training, 19% requested an associate degree, and 14% requested a bachelor’s degree (Exhibit 6). A job posting can indicate more than one education level. Hence, the percentages shown in the chart below may total more than 100%.

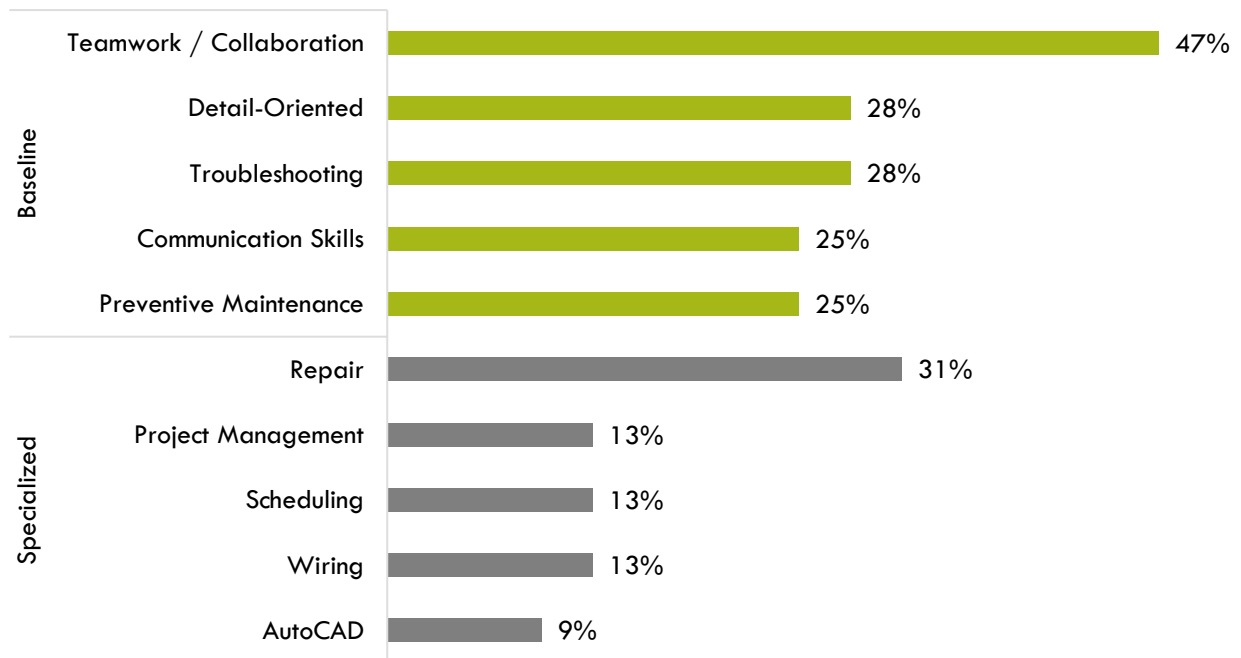
Exhibit 6. Education levels requested in job postings for stagecraft

Education Level	Job Postings	% of Job Postings
High school or vocational training	15	71%
Associate degree	4	19%
Bachelor's degree	3	14%

Baseline and Specialized Skills

Exhibit 7 depicts the top baseline and specialized skills for the targeted occupations. The three most important baseline skills are teamwork/collaboration, 47% of job postings, detail oriented, 28%, and troubleshooting, 28%. The top three specialized skills are repair, 31% of job postings, project management, 13%, and scheduling, 13%.

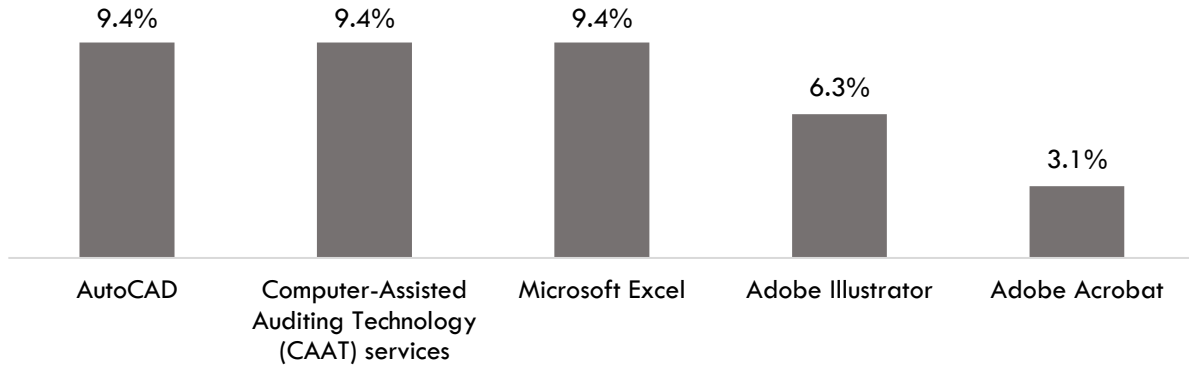
Exhibit 7. In-demand stagecraft baseline and specialized skills



Software Skills

Analysis also included the software skills most in demand by employers. AutoCAD and Computer-Assisted Auditing Technology services were the top two software skills identified in job postings (Exhibit 8).

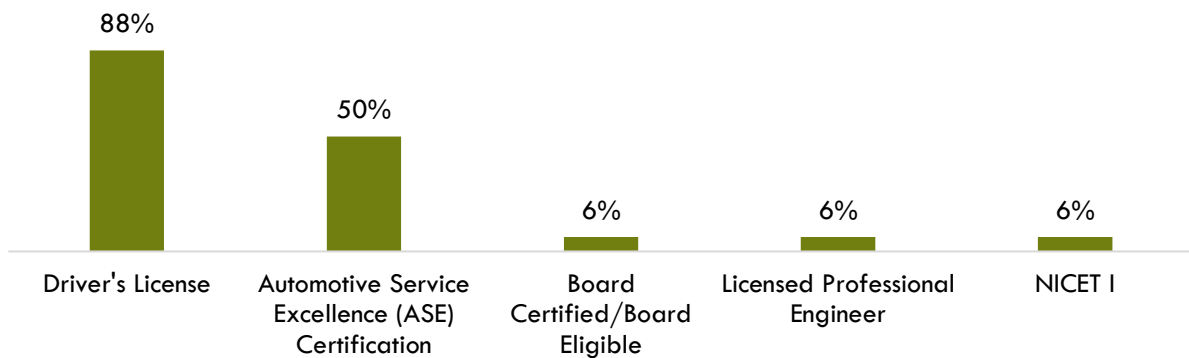
Exhibit 8. In-demand stagecraft software skills



Certifications

Of the 35 job postings, 16 contained certification data. Among those, 88% indicated a need for a driver's license. The next top certifications are Automotive Service Excellence Certification and Board Certified/Board Eligible (Exhibit 9). (Due to the low number of job postings with certifications listed, the chart below may not be representative of the full sample.)

Exhibit 9. Top stagecraft certifications requested in job postings



Education, Work Experience & Training

A postsecondary nondegree award is typically required for audio and video technicians, and sound engineering technicians (Exhibit 10). The remaining two occupations typically require a bachelor's degree.

Exhibit 10. Education, work experience, training, and Current Population Survey results for stagecraft occupations³

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Audio and Video Technicians	Postsecondary nondegree award	None	Short-term	36.9%
Designers, All Other	Bachelor's degree	None	None	29.1%
Set and Exhibit Designers	Bachelor's degree	None	None	29.1%
Sound Engineering Technicians	Postsecondary nondegree award	None	Short-term	36.9%

Supply

Analysis of program data from the California Community Colleges Chancellor's Office Data Mart included the TOP code and title: 100600 - Technical Theater. Analysis of the last three years of data shows that, on average, four awards were conferred in the Central Valley/Mother Lode region each year (Exhibit 11).

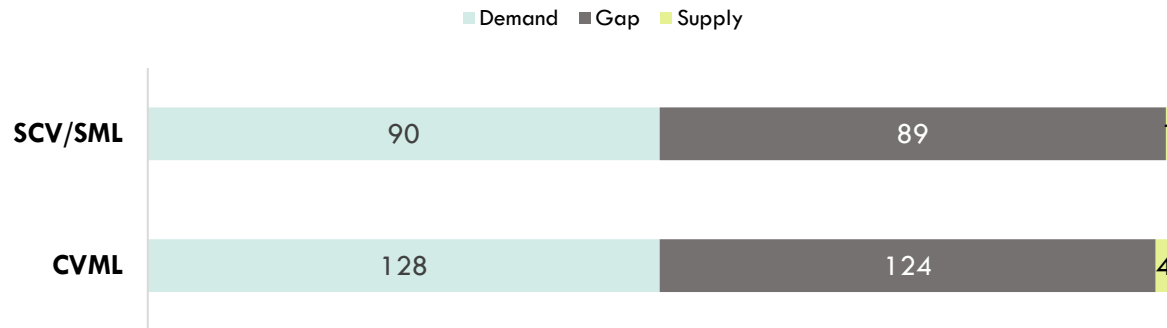
Exhibit 11. Postsecondary supply for stagecraft occupations in the region

Top Code - Title	College	Associate Degree	Certificate 18 < 30 Semester Units	Certificate 6 < 18 Semester Units	Subtotal
100600 - Technical Theater	Fresno City	1			1
	Modesto			1	1
	San Joaquin Delta	1	1		2
TOTAL		2	1	1	4

³ "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, <https://www.bls.gov/cps/>.

There is an undersupply of 89 stagecraft workers in the SCV/SML subregion and 124 workers in the region (Exhibit 12).

Exhibit 12. Stagecraft workforce annual demand and supply in the SCV/SML subregion and region



Student Outcomes

Exhibit 13 summarizes employment and wage outcomes from the California Community College Chancellor’s Cal-PASS Plus LaunchBoard for the TOP code related to stagecraft. Of note, there were 19 technical theatre students who transferred; 74% of students reported a median change in earnings; and 18% attained a living wage.

Exhibit 13. Regional metrics for the TOP code related to stagecraft

Metric	Technical Theatre 100600
Students Who Got a Degree or Certificate or Attained Apprenticeship Journey Status	*
Number of Students Who Transferred	19
Job Closely Related to Field of Study	*
Median Change in Earnings	74%
Attained a Living Wage	18%
* denotes data not available.	

Conclusion

The entry-level wages of the four occupations exceed the SCV/SML subregion’s average living wage. There were 35 job postings in the past six months for occupations related to stagecraft in the subregion. Analysis of skills and certification requirements in job postings indicates:

- The top baseline skill is teamwork/collaboration, and the top specialized skill is repair.
- The top software skill is AutoCAD.
- The top certification is a driver’s license.

There is an undersupply of trained workers, a shortage of 89 in the SCV/SML subregion and 124 in the region.

Recommendation

Based on these findings, it is recommended that Fresno City College work with the Retail, Hospitality, Tourism and Entertainment Regional Director, the college's advisory board, and local industry in the expansion of programs to address the shortage of stagecraft workers in the region.

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 .
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 .
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 occupations 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. (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.