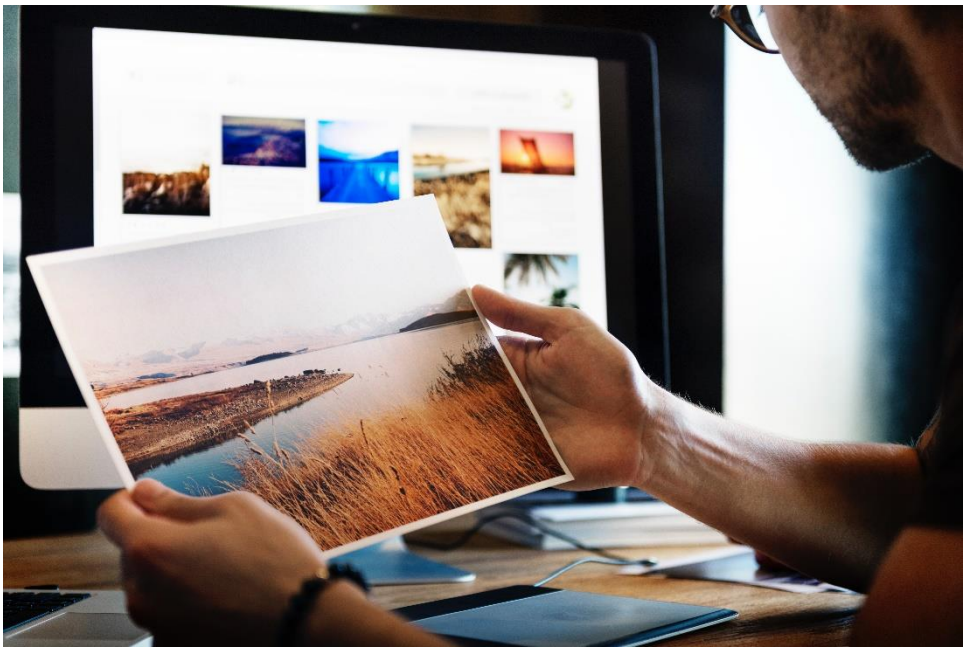
AUGUST 2019

LABOR MARKET ANALYSIS

Technical Arts



Prepared by the Central Valley/Mother Lode Center of Excellence

TABLE OF CONTENTS

SUMMARY

This study conducted by the Central Valley/Mother Lode Center of Excellence examines labor market demand, wages, skills and postsecondary supply for occupations related to technical arts for Modesto Junior College. Five occupations were identified:

- Multimedia Artists and Animators (SOC 27-1014)
- Producers and Directors (SOC 27-2012)
- Audio and Video Equipment Technicians (SOC 27-4011)
- Sound Engineering Technicians (SOC 27-4014)
- Camera Operators, Television, Video, and Motion Picture (SOC 27-4031)

KEY FINDINGS:

- **Occupational demand —** More than 76,500 workers were employed in jobs related to technical arts in 2018 in California. The largest occupation is producers and directors with 33,000 workers in 2018, a projected growth rate of 2% over the next five years, and 3,164 annual openings.

- **Wages —** The entry-level wages for all of the five occupations exceed the average self-sufficiency wage and living wage for a single adult in the region. Producers and directors earn the highest wages.

- **Employers —** Top employers in the region are Psav Presentation Services, Psav, and Activision.

- **Job titles —** The most common occupational title in job postings is producers and directors. The most common job title is producers.

- **Skills and certifications —** The top baseline skill is creativity, the top specialized skill is Adobe Photoshop, and the top software skill is Adobe Photoshop. The most in-demand certification is a driver's license.

- **Education —** Audio and video equipment technicians, and sound engineering technicians typically have a postsecondary nondegree award. A bachelor's degree is typically required for the other occupations.

- **Supply —** Analysis of postsecondary completions in the region shows that on average 28 awards (15 degrees and 13 certificates) 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 165 trained workers in the region and 3,477 workers in the state. The Center of Excellence recommends that Modesto Junior College work with the region's retail, hospitality, tourism and entertainment regional director, the college's advisory board and local industry in the expansion or development of programs to address the shortage of technical arts workers in the region.

INTRODUCTION

The Central Valley/Mother Lode Center of Excellence was asked by Modesto Junior College to provide labor market information for technical arts. Review of the Taxonomy of Programs revealed the following program codes are appropriate for this analysis:

- Commercial Music-1005
- Digital Media-0614
- Film Studies-0612
- Graphic Art and Design-1030
- Radio and Television-0604
- Technical Theater-1006

The geographical focus for this report is statewide demand for technical arts occupations. Analysis of the program and occupational data related to technical arts resulted in the identification of five applicable occupations. The Standard Occupational Classification (SOC) System titles and codes are:

- Multimedia Artists and Animators (SOC 27-1014)
- Producers and Directors (SOC 27-2012)
- Audio and Video Equipment Technicians (SOC 27-4011)
- Sound Engineering Technicians (SOC 27-4014)
- Camera Operators, Television, Video, and Motion Picture (SOC 27-4031)

Please note: Appendix B contains a separate skills analysis for sound engineering technicans. The SOC codes, occupational titles, job descriptions, sample job titles, and knowledge and skills from the Bureau of Labor Statistics and O*NET OnLine are shown in Exhibit 1. O*NET information was not available for Producers and Directors (SOC 27-2012).

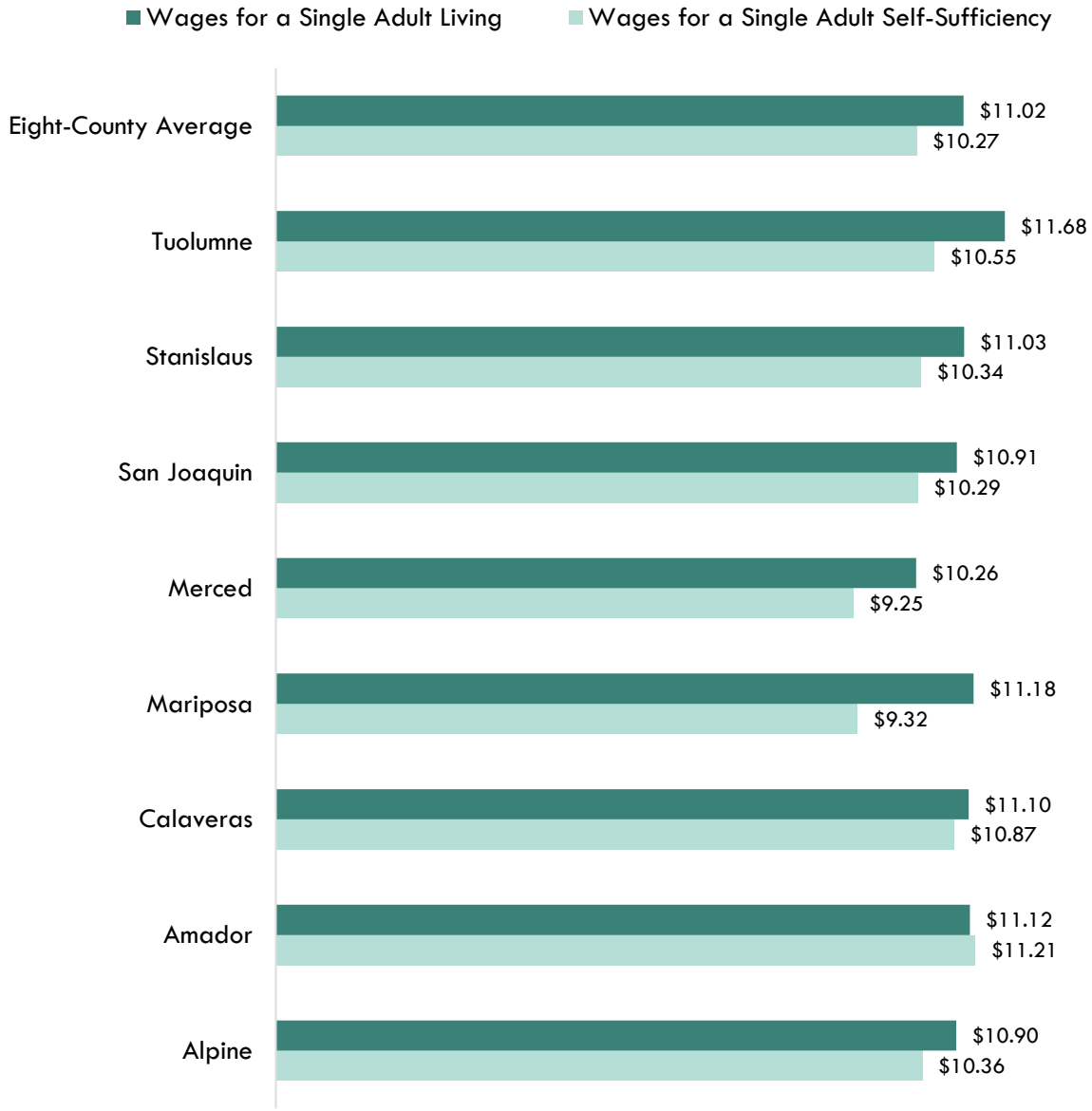
EXHIBIT 1. SOC titles, job descriptions, sample job titles, and knowledge and skills for technical arts

SOC TITLE & CODE	DESCRIPTION	SAMPLE JOB TITLES	KNOWLEDGE & SKILLS
Multimedia Artists and Animators (SOC 27-1014)	Create special effects, animation, or other visual images using film, video, computers, or other electronic tools and media for use in products or creations, such as computer games, movies, music videos, and commercials.	3D Animator (Three-Dimensional Animator), 3D Artist (Three-Dimensional Artist), Animator, Artist, Designer, Digital Artist, Graphic Artist, Illustrator, Motion Graphics Artist, Multimedia Producer	**Knowledge**
			Computers and Electronics
			English Language
			Design
			Communications and Media
			Customer and Personal Service
			Skills
			Active Listening
			Critical Thinking
			Reading Comprehension
			Active Learning
			Speaking
Audio and Video Equipment	Set up, or set up and operate audio and video equipment including	Audio Technician, Audio Visual Specialist (AV Specialist), Audio	**Knowledge**
			Computers and Electronics

SOC TITLE & CODE	DESCRIPTION	SAMPLE JOB TITLES	KNOWLEDGE & SKILLS
Technicians (SOC 27-4011)	microphones, sound speakers, video screens, projectors, video monitors, recording equipment, connecting wires and cables, sound and mixing boards, and related electronic equipment for concerts, sports events, meetings and conventions, presentations, and news conferences. May also set up and operate associated spotlights and other custom lighting systems.	Visual Technician (AV Technician), Master Control Operator (MCO), Media Specialist, Media Technician, Multimedia Educational Specialist, Operations Technician, Stagehand, Video Technician	Communications and Media English Language Telecommunications Fine Arts **Skills** Critical Thinking Monitoring Operation Monitoring Reading Comprehension Complex Problem Solving
Sound Engineering Technicians (SOC 27-4014)	Operate machines and equipment to record, synchronize, mix, or reproduce music, voices, or sound effects in sporting arenas, theater productions, recording studios, or movie and video productions.	Audio Engineer, Audio Operator, Broadcast Engineer, Broadcast Technician, Master Control Operator, Mixer, Recording Engineer, Sound Engineer, Sound Technician, Studio Engineer	**Knowledge** Computers and Electronics Communications and Media Customer and Personal Service Engineering and Technology Fine Arts **Skills** Active Listening Speaking Critical Thinking Reading Comprehension Monitoring
Camera Operators, Television, Video, and Motion Picture (SOC 27-4031)	Operate television, video, or motion picture camera to record images or scenes for various purposes, such as TV broadcasts, advertising, video production, or motion pictures.	Camera Operator, Cameraman, Master Control Operator (MCO), News Videographer, Production Assistant, Production Technician, Studio Camera Operator, Television News Photographer, Truck Operator, Videographer	**Knowledge** English Language Computers and Electronics Communication & Media Telecommunications **Skills** Active Listening Coordination Judgment and Decision Making Speaking Reading Comprehension

The 2014 average self-sufficiency wage for a single adult in the North Central Valley/Northern Mother Lode (NCV/NML) subregion is $10.27/hour, and the current average living wage for a single adult is $11.02/hour. Self-sufficiency and living wage data by county and the overall eight-county average are shown in Exhibit 2. In the wages sections of this report, Pct. 25 hourly denotes entry-level wages, and median represents experienced wages.

EXHIBIT 2. Self-sufficiency and living wages in the NCV/NML subregion



OCCUPATIONAL DEMAND

In 2018, more than 76,500 workers were employed in technical arts occupations statewide (Exhibit 3). The largest occupation is procuders and directors with more than 33,029 workers in 2018. This occupation is projected to grow by 2% over the next five years and will have 3,164 annual openings. Several occupations are projected to contract over the next five years, resulting in zero growth for all jobs in this cluster. However, 7,234 annual openings, in total, are still projected.

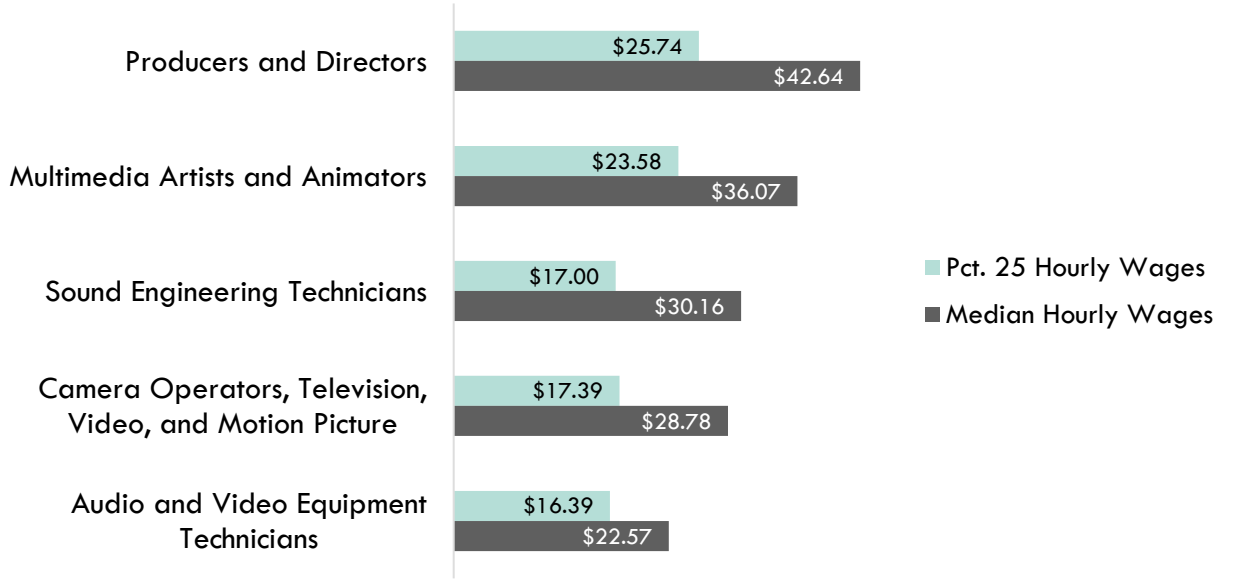
EXHIBIT 3. Technical arts employment and occupational projections in California

OCCUPATION	2018 JOBS	2023 JOBS	5-YEAR CHANGE	5-YEAR % CHANGE	ANNUAL OPENINGS
Producers and Directors	33,029	33,690	661	2%	3,164
Audio and Video Equipment Technicians	17,669	18,111	442	3%	1,754
Multimedia Artists and Animators	13,657	13,442	(215)	(2%)	1,139
Camera Operators, Television, Video, and Motion Picture	6,383	6,335	(48)	(1%)	639
Sound Engineering Technicians	5,816	5,606	(210)	(4%)	538
TOTAL	**76,554**	**77,185**	**630**	**(0%)**	**7,234**

WAGES

Exhibit 4 compares the entry-level and experienced wages of the technical arts occupations. The entry-level wages for all five occupations exceed the region's living wage and self-sufficiency wage for one adult. The occupation earning the highest median wages is producers and directors, with an entry-level wage of $25.74/hour and a median wage of $42.64/hour.

EXHIBIT 4. Entry-level and experienced wage comparison for technical arts in California



JOB POSTINGS

There were roughly 12,508 job postings statewide for the five occupations from August 2018 through July 2019. The top employers advertising these job postings are listed in Exhibit 5.

EXHIBIT 5. Top employers of technical arts by number of job postings

EMPLOYER	JOB POSTINGS
Psav Presentation Services	204
Psav	198
Activision	162
Disney	155
Apple Inc.	141
NBC	129
Sony Electronics Incorporated	106
Tribune Company	97
Mediazoo	95
Blizzard Entertainment	88

Exhibit 6 shows how job postings for the five targeted technical arts occupations are distributed across several O*NET OnLine occupations. The majority of job postings, more than 4,800 in total, use the occupational title producers and directors, followed by multimedia artists and animators, nearly 2,800 job postings.

EXHIBIT 6. Top occupational titles in job postings for technical arts

OCCUPATIONAL TITLE	JOB POSTINGS
Producers and Directors	4,858
Multimedia Artists and Animators	2,777
Audio and Video Equipment Technicians	2,404
Camera Operators, Television, Video, and Motion Picture	1,383
Sound Engineering Technicians	1,086

JOB TITLES

Analysis of the 12,508 advertised job titles for the targeted occupations reveals the top title is producers, occurring in 4,420 job postings, followed by multimedia artists and animators, 2,777 job postings (Exhibit 7).

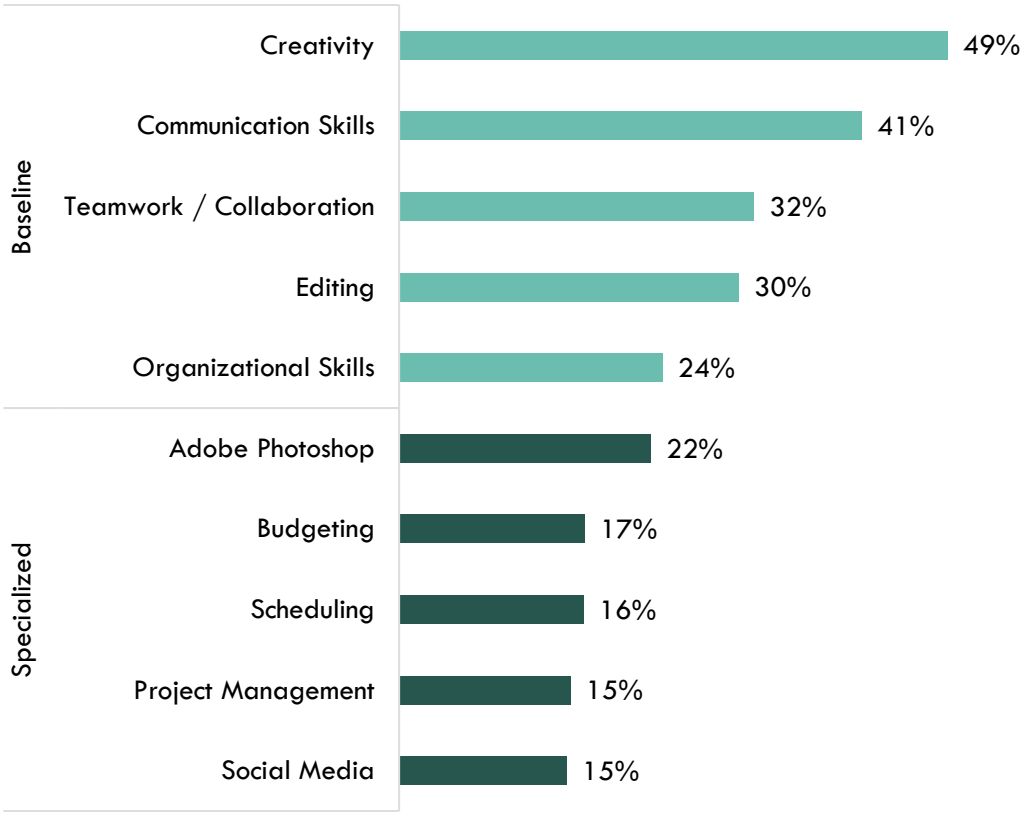
EXHIBIT 7. Top job titles by number of job postings for technical arts

JOB TITLE	JOB POSTINGS
Producers	4,420
Multimedia Artists and Animators	2,777
Audio and Video Equipment Technicians	2,404
Camera Operators, Television, Video, and Motion Picture	1,383
Sound Engineering Technicians	1,086
Directors- Stage, Motion Pictures, Television, and Radio	277
Program Directors	86
Talent Directors	66
Technical Directors/Managers	9

SKILLS

Exhibit 8 depicts the top baseline and specialized skills for the five targeted occupations. Of the 12,508 job postings, 9,346 contained skills data. Of these job postings, the three most important baseline skills are creativity, 49% of job postings, communication skills, 41%, and teamwork/collaboration, 32%. The top three specialized skills are Adobe Photoshop, 22% of job postings, budgeting, 17%, and scheduling, 16%.

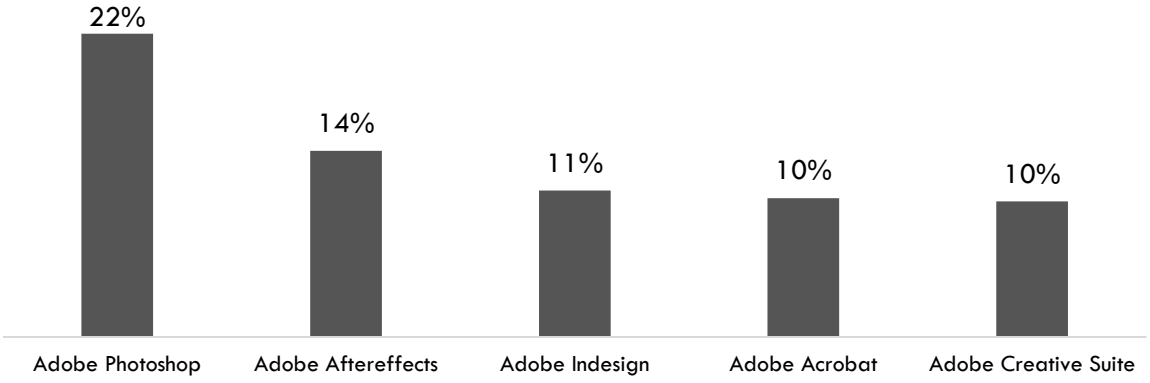
EXHIBIT 8. In-demand technical arts baseline and specialized skills



SOFTWARE SKILLS

Analysis also included the software skills most in demand by employers. Adobe Photoshop and Adobe After Effects rank first and second (Exhibit 9).

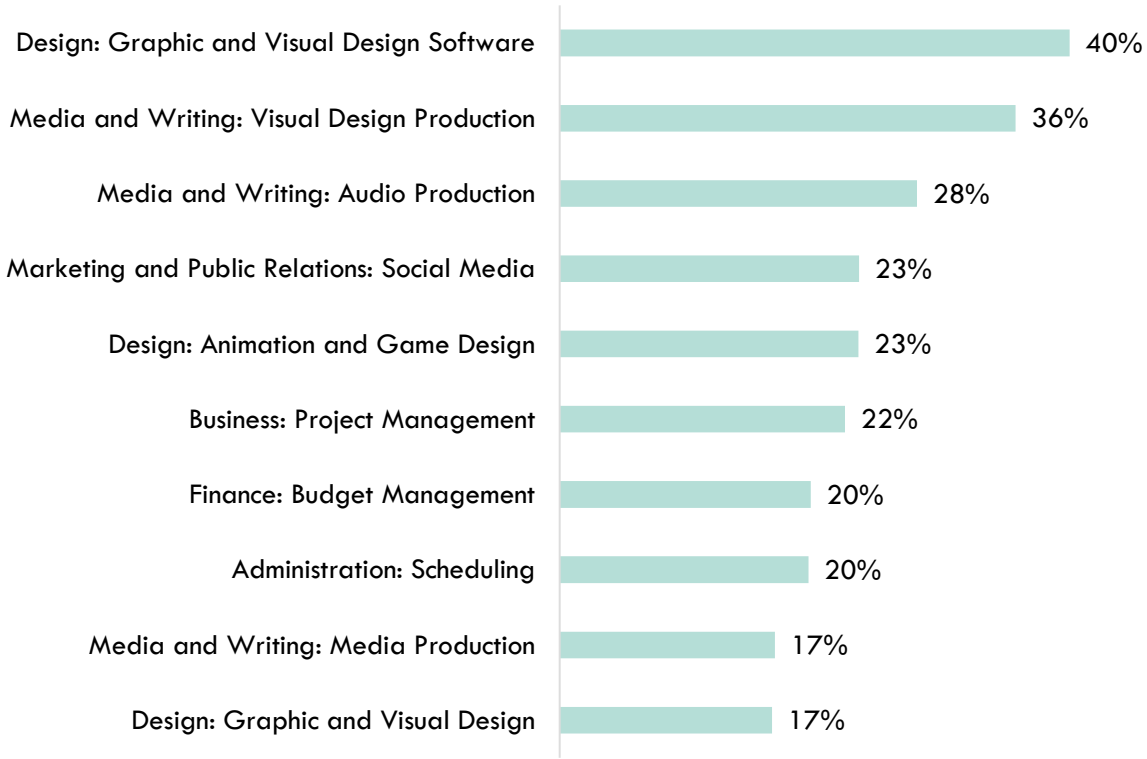
EXHIBIT 9. In-demand technical arts software skills



SKILL CLUSTER PROJECTIONS

Just over 9,300 postings contained skill projections. An evaluation of the skill clusters that will have the greatest gains in level of importance shows that the top areas are design: graphic and visual design software (40%); media and writing: visual design production (36%); and media and writing: audio production (Exhibit 10).

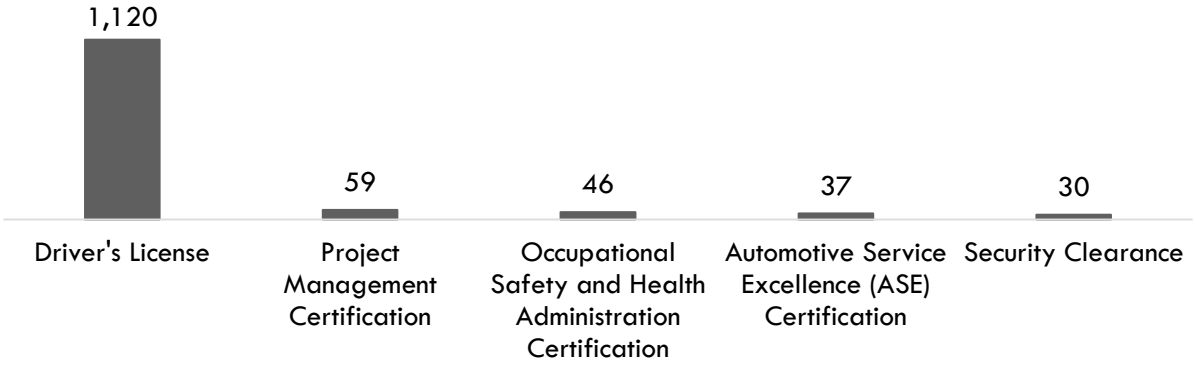
EXHIBIT 10. Skill cluster projections for technical arts



CERTIFICATIONS

Only 1,430 out of 12,508 postings contained certification data. Of those postings, 1,120 indicated a need for a driver's license. The next two top certifications are project management and Occupational Safety and Health Administration (OSHA) (Exhibit 11). (Note: 89% of records have been excluded because they do not include a certification. As a result, the chart below may not be representative of the full sample.)

EXHIBIT 11. Top technical arts certifications requested in job postings



EDUCATION, WORK EXPERIENCE AND TRAINING

Audio and video equipment technicians, and sound engineering technicians typically have a postsecondary nondegree award (Exhibit 12). A bachelor's degree is typically required for multimedia artists and animators, and camera operators (television, video, and motion picture), but about a third of workers in these occupations have less than a bachelor's degree, making these middle-skill occupations and applicable to community college education. About 80% of producers and directors have at least a bachelor's degree.

EXHIBIT 12. Education, work experience, training and Current Population Survey results for Arts occupations[1]

OCCUPATION	TYPICAL ENTRY-LEVEL EDUCATION	WORK EXPERIENCE REQUIRED	TYPICAL ON-THE-JOB TRAINING	CPS
Multimedia Artists and Animators	Bachelor's degree	None	None	27.1%
Producers and Directors	Bachelor's degree	Less than 5 years	None	18.4%
Audio and Video Equipment Technicians	Postsecondary nondegree award	None	Short-term	46.1%
Sound Engineering Technicians	Postsecondary nondegree award	None	Short-term	46.1%

[1] "Labor Force Statistics from the Current Population Survey," Bureau of Labor Statistics, https://www.bls.gov/cps/.

OCCUPATION	TYPICAL ENTRY-LEVEL EDUCATION	WORK EXPERIENCE REQUIRED	TYPICAL ON-THE-JOB TRAINING	CPS
Camera Operators, Television, Video, and Motion Picture	Bachelor's degree	None	None	27.9%

SUPPLY

Analysis of California Community Colleges Chancellor's Office Curriculum Inventory (COCI) program data included six TOP codes related to technical arts. Analysis of the last three years of TOP code data shows that, on average, 28 awards (15 degrees and 13 certificates) were conferred in the Central Valley/Mother Lode region each year (Exhibit 13). In total, 3,757 awards related to technical arts are conferred on average each year across the state (Exhibit 14).

EXHIBIT 13. Postsecondary supply for technical arts occupations in the region

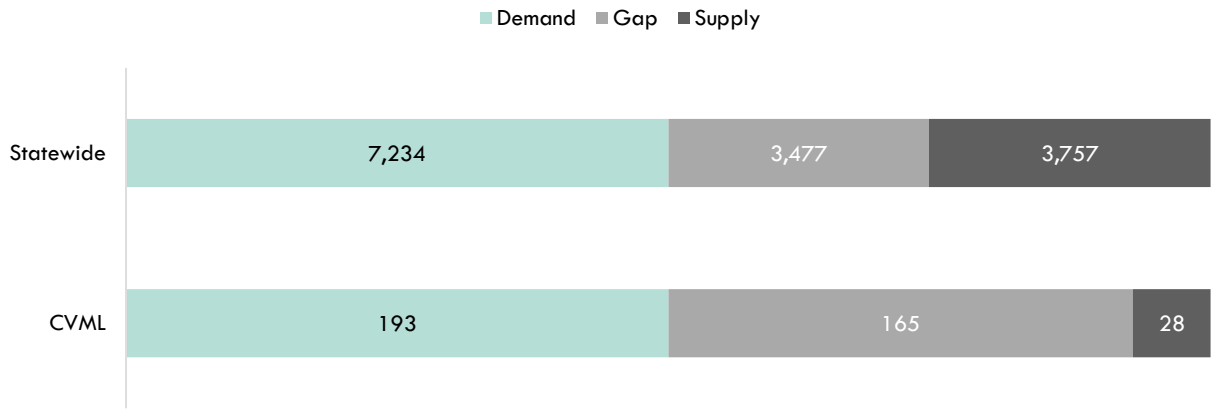
COLLEGES	TOP CODE - TITLE	DEGREES	CERTIFICATES	SUBTOTAL
Bakersfield	100500 - Commercial Music	-	2	2
Columbia	061400 - Digital Media	1	2	3
Fresno City	100500 - Commercial Music	3	1	4
	100600 - Technical Theater	1	-	1
Modesto Junior	100500 - Commercial Music	-	2	2
	100600 - Technical Theater	-	1	1
San Joaquin Delta	060400 - Radio and Television	8	-	8
	100600 - Technical Theater	1	1	3
Sequoias	061400 - Digital Media	-	1	1
	100500 - Commercial Music	-	2	2
TOTAL		**15**	**13**	**28**

EXHIBIT 14. Postsecondary supply for technical arts occupations in the state

TOP TITLE-CODE	3-YR AVERAGE
Commercial Music-1005	586
Digital Media-0614	1,274
Film Studies-0612	393
Graphic Art and Design-1030	615
Radio and Television-0604	728
Technical Theater-1006	162
TOTAL	**3,757**

An undersupply of technical arts workers appears to exist in the region and state. In the region, there is a shortage of 165 trained workers. In the state, the shortage is 3,477 trained workers (Exhibit 15).

EXHIBIT 15. Technical arts workforce annual demand and supply in the NCV/NML subregion and region



STUDENT OUTCOMES

Exhibit 16 summarizes employment and wage outcomes from the California Community College Chancellor's Cal-PASS Plus LaunchBoard for the TOP codes related to technical arts. Across the region, course completions were highest in graphic design and art, as were transfers. The percent of students employed in the second fiscal quarter after exit was highest for radio and television, 83%. The percent of students reporting a median change in earnings was highest for graphic design and art, $102%.

Exhibit 16: Regional metrics for the TOP code related to technical arts

METRIC	RADIO & TELEVISION-060400	FILM STUDIES-061200	DIGITAL MEDIA-061400	COMMERCIAL MUSIC-100500	TECHNICAL THEATRE-100600	GRAPHIC DESIGN & ART-103000
Students Who Got a Degree or Certificate	*	*	28	*	*	36
Number of Students Who Transferred	*	162	94	*	27	168
Employed in the Second Fiscal Quarter after Exit	83% (n=18)	*	51% (n=110)	67% (n=18)	*	58% (n=140)
Median Change in Earnings	*	*	44% (n=42)	*	*	102% (n=39)
Attained a Living Wage	*	*	37% (n=63)	*	*	30% (n=87)
Job Closely Related to Field of Study	*	*	*	*	*	*

* denotes data not available.

CONCLUSION

The entry-level wages of the five technical arts occupations exceed the NCV/NML subregion's self-sufficiency and living wages for one adult. There were 12,508 job postings in the past 12 months for occupations related to technical arts in California. Analysis of skills and certification requirements in job postings indicates:

- The top baseline skill is creativity, and the top specialized skill is Adobe Photoshop.
- The top software skill is Adobe Photoshop.
- The top certification is a Driver's License.

There is an undersupply of trained workers, a shortage of 165 in the region and 3,477 in the state.

RECOMMENDATION

Based on these findings, it is recommended that Modesto Junior College work with the region's retail, hospitality, tourism and entertainment director, the college's advisory board and local industry in the expansion or development of programs to address the shortage of technical arts workers.

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).

APPENDIX B: SKILLS ANALYSIS FOR SOUND ENGINEERING TECHNICIANS

EXHIBIT A1. In-demand baseline and specialized skills for sound engineering technicians (857 out of 1,027 job postings)

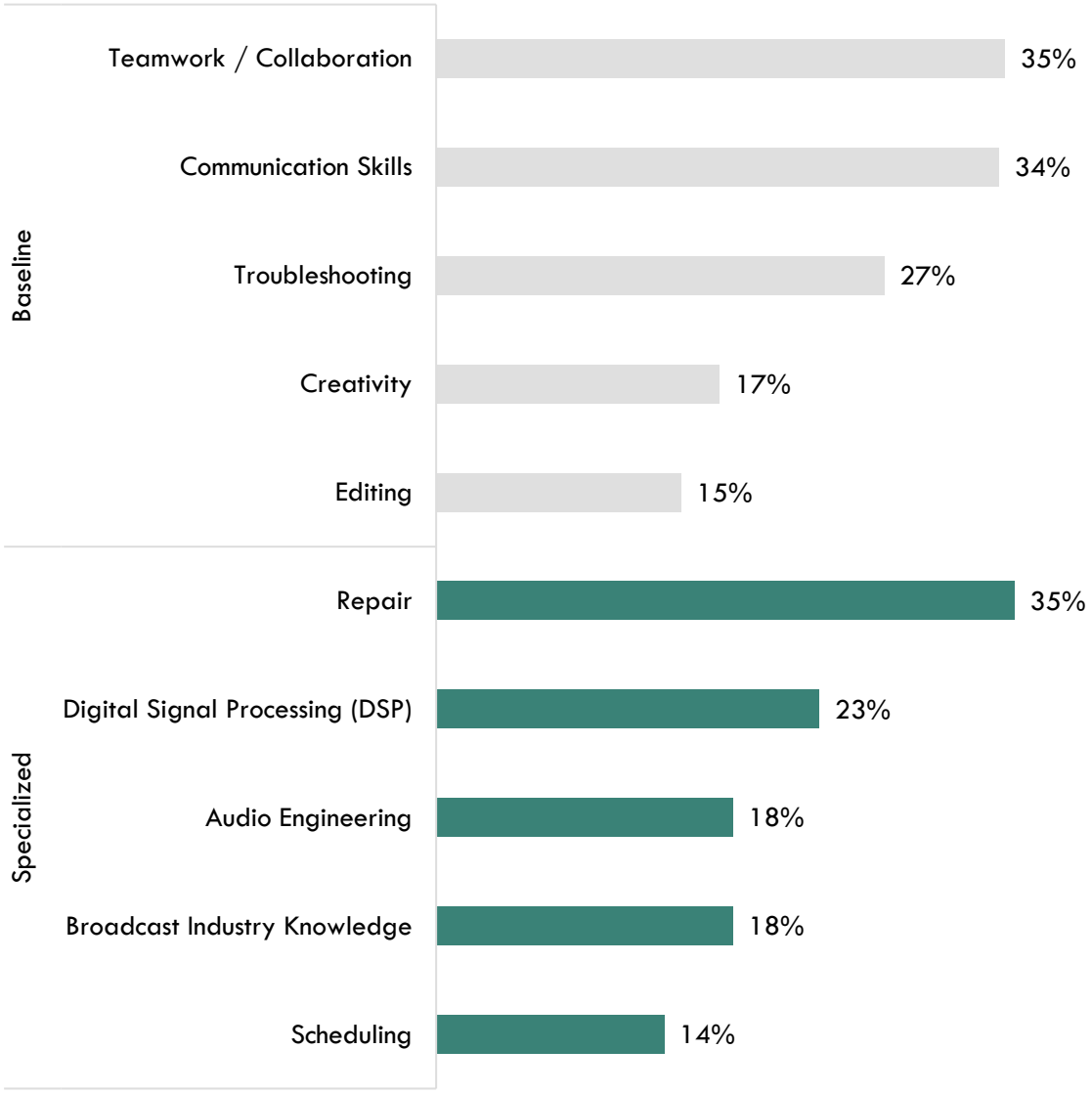


EXHIBIT A2. In-demand software skills for sound engineering technicians (857 out of 1,027 job postings)

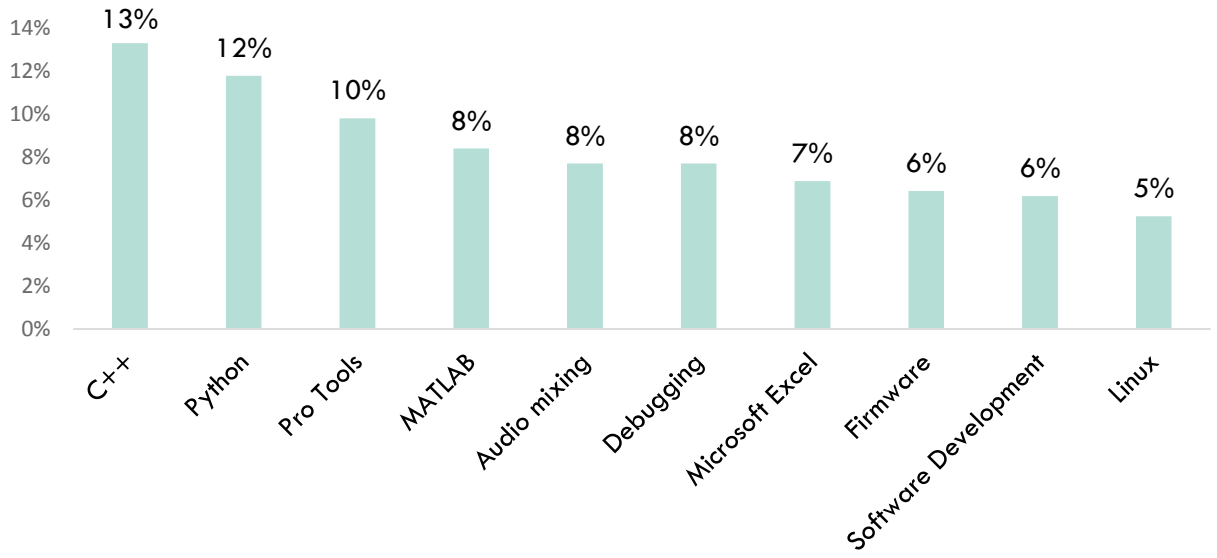


EXHIBIT A3: Skill cluster projections for sound engineering techncians, using job postings from August 2018 to July 2019 (683 out of 1,027 job postings)