

December 2019

Labor Market Analysis

Digital Media



Prepared by the Central Valley/Mother Lode Center of Excellence

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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 digital media for Fresno City College. Six occupations were identified:

- Web Developers (SOC 15-1134)
- Art Directors (SOC 27-1011)
- Multimedia Artists and Animators (SOC 27-1014)
- Graphic Designers (SOC 27-1024)
- Photographers (SOC 27-4021)
- Film and Video Editors (SOC 27-4032)

Key findings:

- **Occupational demand** — More than 2,400 workers were employed in jobs related to digital media in 2018 in the South Central Valley/Southern Mother Lode. The largest occupation is graphic designers with 905 workers in 2018, a projected growth rate of 5% over the next five years, and 94 annual openings.
- **Wages** — The entry-level wages for most of the occupations exceed the average self-sufficiency wage and living wage for a single adult in the subregion. The entry-level wages of photographers fall below the subregion's living wage. The occupation earning the highest median wages is film and video editors, \$49.39/hour in the subregion and \$45.42/hour in the region.
- **Employers** — Top employers in the region are Pilot Flying J, Anthem Blue Cross, and Lifetouch.
- **Job titles** — The most common occupational title in job postings is web developer. The most common job title is photographer.
- **Skills and certifications** — The top baseline skill is communication, the top specialized skill is JavaScript, and the top software skill is JavaScript. The most in-demand certification is a security clearance.
- **Education** — Four occupations typically require a bachelor's degree, but all are considered community college relevant with the exception of art directors. An associate degree is typically required for web developers, and a high school diploma is typically required for photographers.
- **Supply** — Analysis of postsecondary completions in the region shows that on average 63 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 177 trained workers in the subregion and 305 workers in the region. The Center of Excellence recommends that Fresno City College work with the ICT/DM regional director, the college's advisory board, and local industry in the expansion of programs to address the shortage of digital media 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 digital media. Review of the Taxonomy of Programs revealed the following programs are appropriate for this analysis:

- Commercial Art-101300
- Digital Media-061400
- Graphic Art and Design-103000
- Multimedia-061410

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 digital media resulted in the identification of six applicable occupations. The Standard Occupational Classification (SOC) System titles and codes used in this report are:

- Web Developers (SOC 15-1134)
- Art Directors (SOC 27-1011)
- Multimedia Artists and Animators (SOC 27-1014)
- Graphic Designers (SOC 27-1024)
- Photographers (SOC 27-4021)
- Film and Video Editors (SOC 27-4032)

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.

Exhibit 1. SOC titles, job descriptions, sample job titles, and knowledge and skills for digital media

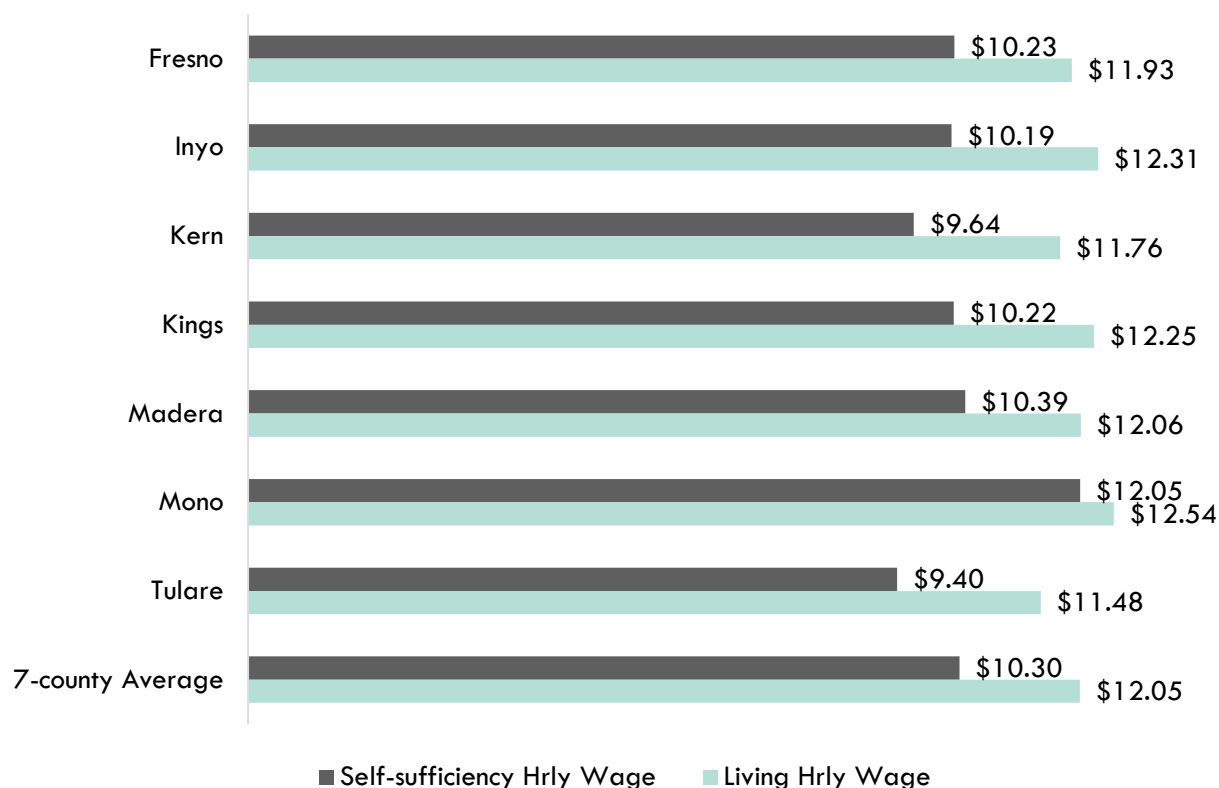
SOC Title & Code	Description	Sample Job Titles	Knowledge & Skills
Web Developers (SOC 15-1134)	Design, create, and modify Web sites. Analyze user needs to implement Web site content, graphics, performance, and capacity. May integrate Web sites with other computer applications. May convert written, graphic, audio, and video components to compatible Web formats by using software designed to facilitate the creation of Web and multimedia content.	Designer, Technology Applications Engineer, Web Architect, Web Design Specialist, Web Designer, Web Developer, Web Development Director, Web Development Instructor, Webmaster	Knowledge Computers and Electronics English Language Mathematics Communications and Media Skills Programming Critical Thinking Complex Problem Solving Operations Analysis Reading Comprehension
Art Directors (SOC 27-1011)	Formulate design concepts and presentation approaches for visual	Art Director; Art Supervisor; Creative Director; Creative	Knowledge Sales and Marketing English Language

SOC Title & Code	Description	Sample Job Titles	Knowledge & Skills
	communications media, such as print, broadcasting, and advertising. Direct workers engaged in art work or layout design.	Guru; Design Director; Designer; Director of Creative Services, Consumer Products; Group Art Supervisor; Production Manager; Senior Art Director	Communications and Media Computers and Electronics Customer and Personal Service Skills Active Listening Speaking Judgment and Decision Making Time Management Complex Problem Solving
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 Speaking Active Learning
Graphic Designers (SOC 27-1024)	Design or create graphics to meet specific commercial or promotional needs, such as packaging, displays, or logos. May use a variety of mediums to achieve artistic or decorative effects.	Artist, Creative Director, Creative Manager, Design Director, Designer, Graphic Artist, Graphic Designer, Online Producer, Production Artist, Publications Designer	Knowledge Design Communications and Media English Language Fine Arts Computers and Electronics Skills Active Listening Critical Thinking Speaking Reading Comprehension Active Learning

SOC Title & Code	Description	Sample Job Titles	Knowledge & Skills
Photographers (SOC 27-4021)	Photograph people, landscapes, merchandise, or other subjects, using digital or film cameras and equipment. May develop negatives or use computer software to produce finished images and prints. Includes scientific photographers, aerial photographers, and photojournalists.	Advertising Photographer, Commercial Photographer, Newspaper Photographer, Owner/Photographer, Photo Editor, Photographer, Photojournalist, Portrait Photographer, Sports Photographer, Studio Owner	Knowledge Customer and Personal Service Sales and Marketing Computers and Electronics Fine Arts English Language Skills Active Listening Speaking Service Orientation Social Perceptiveness Active Learning
Film and Video Editors (SOC 27-4032)	Edit moving images on film, video, or other media. May edit or synchronize soundtracks with images.	Assistant Film Editor, Editor, Film Editor, News Editor, News Video Editor, News Videotape Editor, Non-Linear Editor, Online Editor, Video Editor, Videographer	Knowledge Communications and Media Computers and Electronics Production and Processing English Language Customer and Personal Service Skills Active Listening Critical Thinking Reading Comprehension Speaking Time Management

The average self-sufficiency wage for a single adult in the South Central Valley/Southern Mother Lode (SCV/SML) subregion is \$10.30/hour, and the current average living wage for a single adult is \$12.05/hour. Self-sufficiency and living wage data by county and the overall seven-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 SCV/SML subregion



Occupational Demand

The South Central Valley/Southern Mother Lode subregion employed 2,405 workers in digital media occupations in 2018 (Exhibit 3). The largest occupation is graphic designers with 905 workers in 2018. This occupation is projected to grow by 5% over the next five years and has the greatest number of projected annual openings, 94.

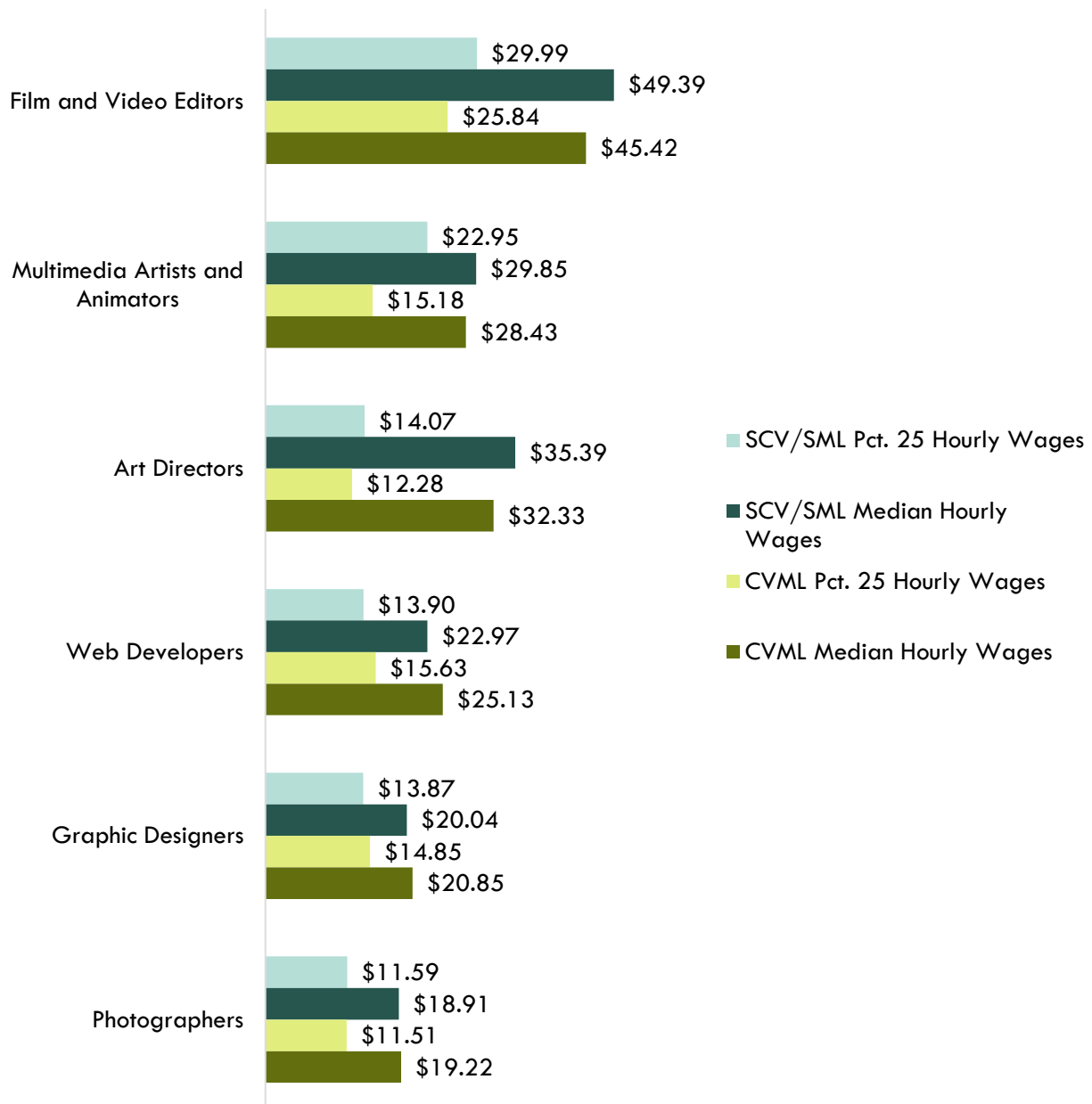
Exhibit 3. Digital media employment and occupational projections in the SCV/SML subregion

Occupation	2018 Jobs	2023 Jobs	5-year Change	5-year % Change	Annual Openings
Graphic Designers	905	948	43	5%	94
Photographers	546	543	(3)	(1%)	47
Web Developers	398	438	40	10%	37
Art Directors	266	277	11	4%	24
Multimedia Artists and Animators	188	186	(2)	(1%)	15
Film and Video Editors	102	110	8	8%	12
Total	2,405	2,501	96	4%	230

Wages

Exhibit 4 compares the entry-level and experienced wages of the digital media occupations. The entry-level wages for the six occupations exceed the subregion’s self-sufficiency wage for one adult. However, the entry-level wages of photographers fall below the subregion’s living wage. The occupation earning the highest median wages is film and video editors, \$49.39/hour in the subregion and \$45.42/hour in the region.

Exhibit 4. Entry-level and experienced wage comparison for digital media in the SCV/SML subregion and region



Job Postings

There were 1,127 job postings for the six occupations in the South Central Valley/Southern Mother Lode subregion from November 2018 through October 2019. The top employers advertising these job postings are listed in Exhibit 5.

Exhibit 5. Top employers of digital media by number of job postings

Employer	Job Postings
Pilot Flying J	31
Anthem Blue Cross	29
Lifetouch	27
Lululemon	23
Iconic Group	21
Mom365	20
Patheon	17
General Dynamics	10
Kalo	10
Nexstar Broadcasting Group	10

Job posting analysis also included the top industries hiring positions related to digital media (Exhibit 6).

Exhibit 6. Top industries for digital media by number of job postings

Industry	Job Postings
Employment Services	263
Other Professional, Scientific, and Technical Services	135
Radio and Television Broadcasting	35
Gasoline Stations	31
Insurance Carriers	31
Colleges, Universities, and Professional Schools	24
Pharmaceutical and Medicine Manufacturing	17
Specialized Design Services	16
Management, Scientific, and Technical Consulting Services	13
National Security and International Affairs	11

Job Titles

Exhibit 7 shows how job postings for the six targeted occupations in the SCV/SML subregion are distributed across six O*NET OnLine occupations. The occupational title web developer is listed in the most job postings, 627, followed by graphic designer, 239 job postings.

Exhibit 7. Top occupational titles in job postings for digital media

Occupational Title	Job Postings
Web Developers	627
Graphic Designers	239
Photographers	200
Multimedia Artists and Animators	28
Film and Video Editors	22
Art Directors	11

Analysis of the 1,127 advertised job titles for the targeted occupations reveals that photographer is the top title occurring in 142 job postings, followed by web developer, 124 job postings (Exhibit 8).

Exhibit 8. Top job titles by number of job postings for digital media

Job Title	Job Postings
Photographer	142
Web Developer	124
Graphic Designer	123
Front End Developer	97
User Experience (UX) Designer	34
Freelance Graphic Designer	32
Sandwich Artist	31
Software Development Engineer	21
PHP Developer	20
News Photographer	18

Salaries

Exhibit 9 shows the “Market Salaries” for digital media 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.

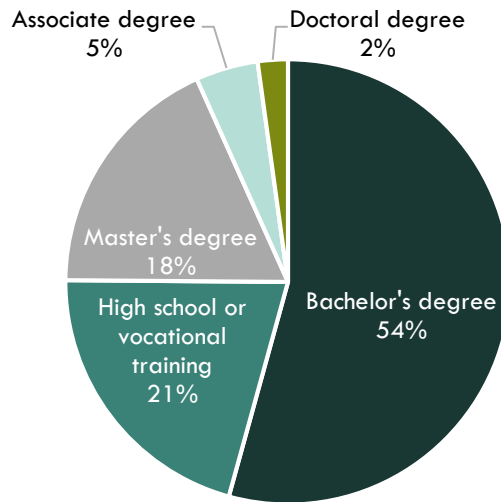
Exhibit 9. Salaries for digital media

Market Salary Percentile	Salary Amount
10th Percentile	32,118
25th Percentile	40,812
50th Percentile	62,121
75th Percentile	85,629
90th Percentile	104,511

Education

Of the 1,127 job postings, 460 listed an education level preferred for the positions being advertised. Of those, 54% requested a bachelor’s degree, 21% requested high school or vocational training, and 5% requested an associate degree (Exhibit 10).

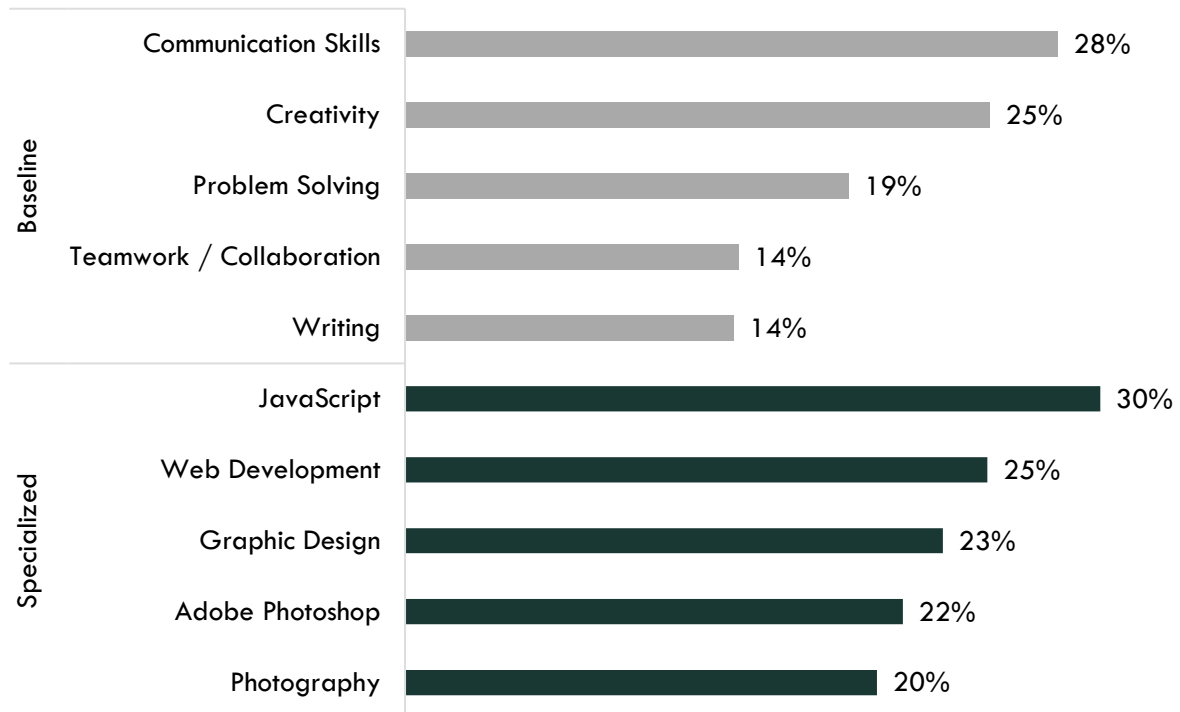
Exhibit 10. Education levels requested in job postings for digital media



Skills

Exhibit 11 depicts the top baseline and specialized skills for the six targeted occupations. The three most important baseline skills are communication, 28% of job postings, creativity, 25%, and problem solving, 19%. The top three specialized skills are JavaScript, 30% of job postings, web development, 25%, and graphic design, 23%.

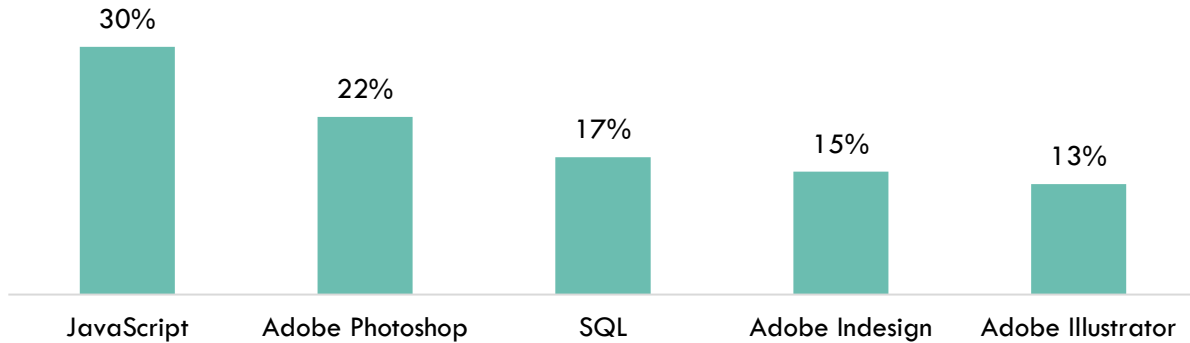
Exhibit 11. In-demand digital media baseline and specialized skills



Software Skills

Analysis also included the software skills most in demand by employers. JavaScript and Adobe Photoshop rank first and second (Exhibit 12).

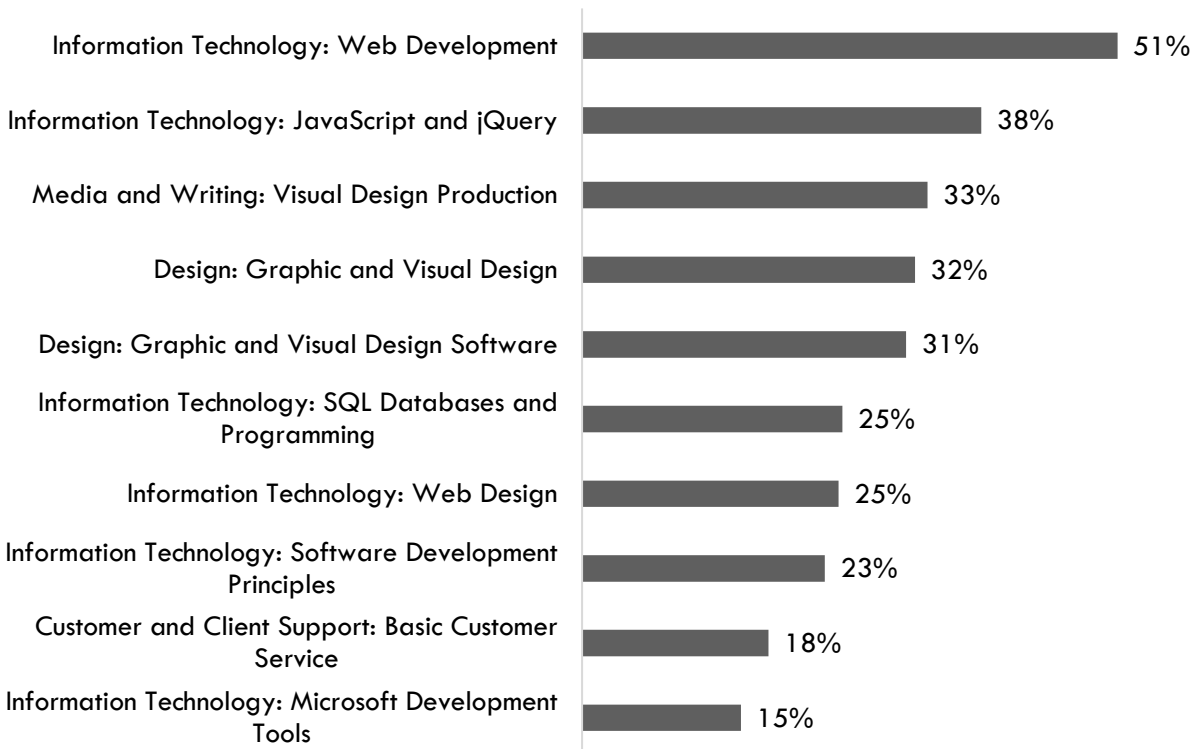
Exhibit 12. In-demand digital media software skills



Skill Cluster Projections

Of the 1,127 job postings, 832 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 information technology: web development (51%); information technology: JavaScript and jQuery (38%); and media and writing: visual design production (33%) (Exhibit 13).

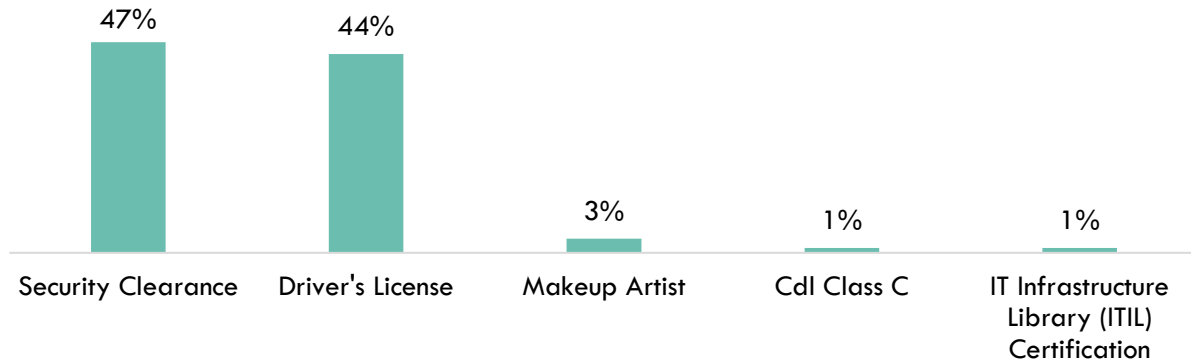
Exhibit 13. Skill cluster projections for digital media



Certifications

Of the 1,127 job postings, 190 contained certification data. Of those, 47% indicated a need for a security clearance. The next top certifications are driver's license and makeup artist (Exhibit 14). (Due to the low number of job postings with certifications listed, the chart below may not be representative of the full sample.)

Exhibit 14. Top digital media certifications requested in job postings



Education, Work Experience and Training

Four occupations typically require a bachelor's degree, but all are considered community college relevant with the exception of art directors (Exhibit 15). An associate degree is typically required for web developers, and a high school diploma is typically required for photographers.

Exhibit 15. Education, work experience, training and Current Population Survey results for digital media occupations¹

Occupation	Typical Entry-level Education	Work Experience Required	Typical On-The-Job Training	CPS
Web Developers	Associate degree	None	None	25.3%
Art Directors	Bachelor's degree	5 years or more	None	27.8%
Multimedia Artists and Animators	Bachelor's degree	None	None	27.8%
Graphic Designers	Bachelor's degree	None	None	29.0%
Photographers	High school diploma or equivalent	None	Long-term	33.8%
Film and Video Editors	Bachelor's degree	None	None	24.0%

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

Supply

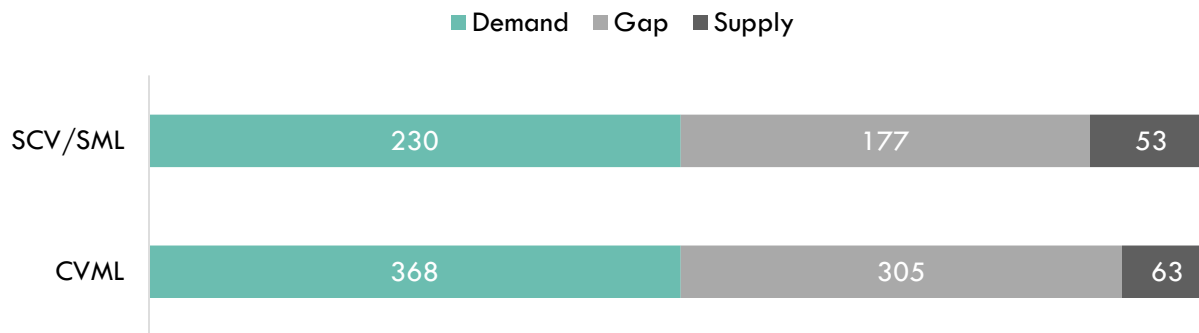
Analysis of program data from the California Community Colleges Chancellor’s Office Data Mart included the TOP codes: Commercial Art-101300, Digital Media-061400, Graphic Art and Design-103000, and Multimedia-061410. Analysis of the last three years of TOP code data shows that, on average, 63 awards were conferred in the Central Valley/Mother Lode region each year (Exhibit 16).

EXHIBIT 16. Postsecondary supply for digital media occupations in the region

TOP Title-Code	College	Certificates	Degrees	Subtotal
Commercial Art-101300	Porterville		2	2
	Sequoias	1		1
Digital Media-061400	Columbia	2	1	3
	Sequoias	1		1
Graphic Art and Design-103000	Bakersfield	13	11	24
	Fresno City	2	6	8
	San Joaquin Delta	3	7	10
	Sequoias	11	1	12
Multimedia-061410	Bakersfield	2		2
TOTAL		35	28	63

There is an undersupply of 177 digital media workers in the SCV/SML subregion and 305 workers in the region (Exhibit 17).

Exhibit 17. Digital media workforce annual demand and supply in the SCV/SML subregion and region



Student Outcomes

Exhibit 18 summarizes employment and wage outcomes from the California Community College Chancellor’s Cal-PASS Plus LaunchBoard for the TOP codes related to digital media. Across the region, 44 multimedia students received a degree or certificate, and 59 transferred; 14 digital media students transferred. Among digital media students, 31% achieved a median change in earnings and 52% attained a living wage. Among multimedia students, 52% achieved a median change in earnings and 38% attained a living wage.

Exhibit 18: Regional metrics for the TOP code related to digital media

Metric	Digital Media 061400	Multimedia 103000
Students Who Got a Degree or Certificate (academic year 2017-18)	*	44
Number of Students Who Transferred (academic year 2016-17)	14	59
Job Closely Related to Field of Study (academic year 2015-16)	54%	57%
Median Change in Earnings (academic year 2016-17)	31%	52%
Attained a Living Wage (academic year 2016-17)	52% (n=117)	38% (n=216)
* denotes data not available.		

Conclusion

The entry-level wages of the six occupations exceed the SCV/SML subregion's self-sufficiency and living wages for one adult. There were 1,127 job postings in the past 12 months for occupations related to digital media in the subregion. Analysis of skills and certification requirements in job postings indicates:

- The top baseline skill is communication, and the top specialized skill is JavaScript.
- The top software skill is JavaScript.
- The top certification is a security clearance.

There is an undersupply of trained workers, a shortage of 177 in the SCV/SML subregion and 305 in the region.

Recommendation

Based on these findings, it is recommended that Fresno City College work with the ICT/DM regional director, the college's advisory board and local industry in the expansion of programs to address the shortage of digital media 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 .
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: 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, 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.

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).