

Labor Market Analysis: 0612.20 - Film Production

Virtual Production – Associate in Science for Transfer (A.S.-T) degree, Associate of Science (A.S.) degree; Certificate requiring 6 to < 18 semester units
Los Angeles Center of Excellence, April 2024

Program Endorsement:	Endorsed: All Criteria Met <input checked="" type="checkbox"/>	Endorsed: Some Criteria Met <input type="checkbox"/>	Not Endorsed <input type="checkbox"/>
Program Endorsement Criteria			
Supply Gap:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Living Wage: (Entry-Level, 25th)	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	
Emerging Occupation(s)			
	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>	

SUMMARY

This report analyzes whether local labor market demand is being met by community college programs aligned with the identified middle-skill occupations¹ or whether a shortage of workers exists. Labor market demand is measured by annual job openings while education supply is measured by the number of awards (degrees and certificates) conferred on average each year. Although the occupations in this report typically require a bachelor's degree, they are considered middle-skill because approximately one-third of workers in the field have completed an associate degree, some college, or less education.

Based on the available data, there appears to be a supply gap for the three identified middle-skill occupations in the region. Furthermore, entry-level wages exceed the self-sufficiency standard wage in Los Angeles County, and more than one-third of current workers in the field have completed an associate degree, some college, or less education.

Recommendation: Due to all program endorsement criteria being met, the Los Angeles Center of Excellence for Labor Market Research (LA COE) endorses this proposed program.

Key Findings:

Supply Gap

- 3,635 annual job openings are projected in the region through 2027. This number is greater than the three-year average of 3,118 awards conferred by educational institutions in the region.

¹ Middle-skill occupations typically require some postsecondary education, but less than a bachelor's degree. The COE classifies middle-skill jobs as the following:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

- 247 job postings in the last 12 months listed “virtual production” as a keyword. Top job titles included JavaScript developers, software engineers, film production interns, artists, and capture managers.

Living Wage

- All three occupations have entry-level hourly wages **above** Los Angeles County’s self-sufficiency standard hourly wage (\$18.10/hour).²

Educational Attainment

- A bachelor’s degree is the typical entry-level education for all three occupations in this report according to the Bureau of Labor Statistics (BLS).
- 36%-41% of workers in the field have completed an associate degree, some college, or less education, according to national educational attainment data.

Community college supply

- 22 community colleges issued awards related to media arts in the greater LA/OC region.
- 980 awards (degrees and certificates) were conferred on average each year between 2019 and 2022.
- 6 community colleges in California offer virtual production programs; however, none are located in the Los Angeles/Orange County region.

Other postsecondary supply

- 21 educational institutions in the LA/OC region offer programs related to media arts.
- 2,138 awards were conferred on average each year by other postsecondary institutions throughout the greater LA/OC region.

TARGET OCCUPATIONS

LA COE prepared this report to provide regional labor market demand and postsecondary supply data related to three middle-skill occupations and one emerging occupation. [For full occupation descriptions, please see Appendix.](#)

- **Special Effects Artists and Animators (27-1014)**³
- **Camera Operators, Television, Video, and Film (27-4031)**⁴
- **Film and Video Editors (27-4032)**⁵
- **Video Game Designers (15-1255.01)**⁶

OCCUPATIONAL DEMAND

Exhibit 1 shows the five-year occupational demand projections for these middle-skill media arts occupations. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to increase by 2% through 2027. There will be more than 3,600

² Self-Sufficiency Standard wage data was pulled from The Self-Sufficiency Standard Tool for California. For more information, visit: <http://selfsufficiencystandard.org/california>.

³ [Special Effects Artists and Animators \(bls.gov\)](#)

⁴ [Film and Video Editors and Camera Operators \(bls.gov\)](#)

⁵ [Ibid.](#)

⁶ [Video Game Designers \(onetonline.org\)](#)

job openings per year through 2027 due to job growth and replacements. The majority of jobs in 2022 for these middle-skill media arts occupations (94%) were located in Los Angeles County.

Exhibit 1: Current employment and occupational demand, Los Angeles and Orange counties⁷

Geography	2022 Jobs	2027 Jobs	2022-2027 Change	2022-2027 % Change	Annual Openings
Los Angeles	32,636	33,397	760	2%	3,437
Orange	1,994	2,061	67	3%	197
Total	34,631	35,458	827	2%	3,635

Detailed Occupation Data

Exhibit 2 displays the current employment and projected occupational demand for each of the target occupations in Los Angeles County. The percentage of workers aged 55+ is included in order visualize upcoming replacement demand for these occupations.

Exhibit 2: Current employment, projected occupational demand, percentage of workers aged 55+, Los Angeles County⁸

Occupation	2022 Jobs	2027 Jobs	5-Yr Change	5-Yr % Change	Annual Openings	% Aged 55 and older*
Special Effects Artists and Animators	15,136	15,507	370	2%	1,702	26%
Camera Operators, Television, Video, and Film	5,900	5,988	88	1%	567	20%
Film and Video Editors	11,600	11,902	302	3%	1,168	22%
Total	32,636	33,397	760	2%	3,437	-

*The average percentage of workers aged 55 and older across all occupations in the greater LA/OC region is 27%. These occupations have a smaller share of older workers, which typically indicates fewer replacements needs to offset the amount of impending retirements.

WAGES

The labor market endorsement in this report considers the entry-level hourly wages for these middle-skill media arts occupations in Los Angeles County as they relate to the county’s self-sufficiency standard wage. Orange County wages are included below in order to provide a complete analysis of the greater Los Angeles/Orange County region.

Los Angeles County

All three occupations have entry-level wages above the self-sufficiency standard wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between

⁷ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

⁸ Ibid.

\$21.33 and \$36.65 (Exhibit 3). Experienced workers can expect to earn wages between \$39.19 and \$77.10.

Exhibit 3: Earnings for occupations in Los Angeles County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Special Effects Artists and Animators	\$36.65	\$58.67	\$77.10	\$122,000
Camera Operators, Television, Video, and Film	\$21.33	\$35.78	\$39.19	\$74,400
Film and Video Editors	\$23.72	\$33.65	\$57.41	\$70,000

*Rounded to the nearest \$100

Orange County

The majority, 83%, of annual openings for these middle-skill media arts occupations have entry-level hourly wages above the self-sufficiency standard wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages are in a range between \$18.17 and \$28.15.

Two occupations have entry-level hourly wages above the self-sufficiency standard wage:

- **Special effects artists and animators** - \$28.15
- **Film and video editors** - \$20.65

Experienced workers can expect to earn wages between \$38.76 and \$68.79 per hour, which are higher than the self-sufficiency standard (Exhibit 4).

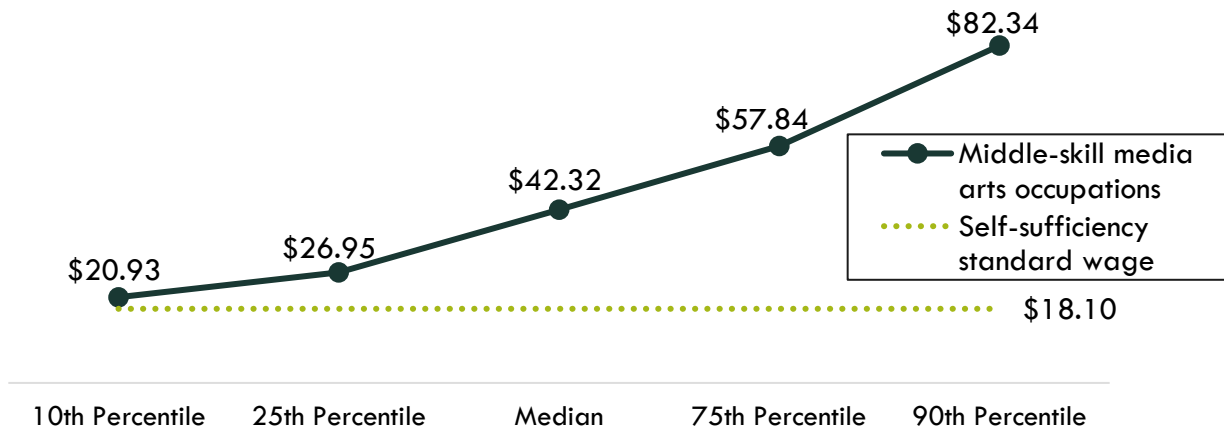
Exhibit 4: Earnings for Occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Special Effects Artists and Animators	\$28.15	\$48.02	\$68.79	\$99,900
Camera Operators, Television, Video, and Film	\$18.17	\$31.72	\$38.76	\$66,000
Film and Video Editors	\$20.65	\$30.44	\$53.02	\$63,300

*Rounded to the nearest \$100

On average, the entry-level hourly earnings for the occupations in this report are \$26.95; this is above the living wage for one single adult in Los Angeles County (\$18.10). Exhibit 5 shows the average hourly wage for the occupations in this report, for entry-level to experienced workers.

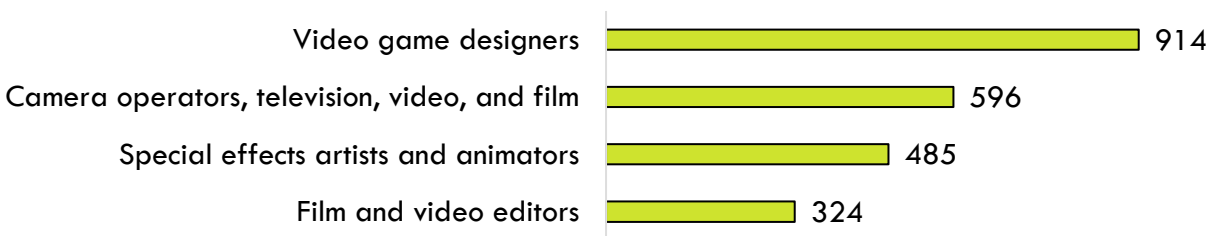
Exhibit 5: Average hourly earnings for middle-skill media arts occupations, Los Angeles and Orange counties



JOB POSTINGS

There were 2,319 online job postings related to middle-skill media arts occupations listed in the past 12 months in Los Angeles and Orange counties. Exhibit 6 displays the number of job postings by occupation. The majority of job postings (39%) were for video game designers, followed by camera operators, television, video, and film (26%) and special effects artists and animators (21%).

Exhibit 6: Job postings by occupation (last 12 months), Los Angeles and Orange counties



Job postings were also analyzed for the most common job titles, skills, and employers associated with the target occupations in this report (Exhibit 7).

Exhibit 7: Most commonly requested job titles, skills and employers in job postings, Los Angeles and Orange counties

Top Job Titles	Top Skills	Top Employers
<ul style="list-style-type: none"> • Videographers • Video editors • Content creators • Gameplay engineers • Animators 	<ul style="list-style-type: none"> • Animators • Marketing • Social media • Adobe Photoshop • Adobe After Effects 	<ul style="list-style-type: none"> • Activision Blizzard • Electronic Arts • Tencent • Tiktok • Amazon

In the greater Los Angeles/Orange County region, 24% of the middle-skill media arts job postings listed a minimum educational requirement. The number and percentage of job postings by educational level appear in exhibit 8.

Exhibit 8: Education levels requested in job postings for occupations related to middle-skill media arts occupations, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
High school or vocational training	69	12%
Associate degree	23	4%
Bachelor's degree	467	84%

Virtual Production Job Postings

There were 247 job postings in the past 12 months that specifically listed “virtual production” as a keyword in the Los Angeles/Orange County region. Exhibit 9 shows the most common job titles, skills, and employers associated with the keyword “virtual production.”

Exhibit 9: Most commonly requested job titles, skills and employers in job postings, Los Angeles and Orange counties

Top Job Titles	Top Skills	Top Employers
<ul style="list-style-type: none"> • JavaScript developers • Software engineers • Film production interns • Artists • Capture managers • Production coordinators • VFX Coordinators 	<ul style="list-style-type: none"> • Virtual production • Visual effects • Workflow management • Motion capture • Python (programming language) • Unreal Engine • C++ • Autodesk Maya 	<ul style="list-style-type: none"> • Zoic Studios • Scanline VFX • Sony Pictures Entertainment • NEP Group/Lux Machina • Disney • Tencent

EDUCATIONAL ATTAINMENT

The Bureau of Labor Statistics (BLS) lists a bachelor’s degree as the typical entry-level education for all three occupations in this report (Exhibit 10). However, the national-level educational attainment data indicates between 36% and 41% of workers in the field have completed an associate degree, some college, or less education. The BLS lists the following typical entry-level education levels for the occupations in this report:

Exhibit 10: Entry-level education preferred by employers nationally, Bureau of Labor Statistics

Occupation	Education Level
Special Effects Artists and Animators	Bachelor's degree
Camera Operators, Television, Video, and Film	Bachelor's degree
Film and Video Editors	Bachelor's degree

EDUCATIONAL SUPPLY

Community College Supply

Exhibit 10 shows the annual and three-year average number of awards conferred by community colleges in programs that have historically trained for the occupations of interest. The colleges with the most completions in the region are Saddleback, Santa Monica, and LA City.

Exhibit 10: Regional community college awards (certificates and degrees), 2019-2022

TOP Code	Program	College	2019-20 Awards	2020-21 Awards	2021-22 Awards	3-Year Average
0604.00	Radio and Television	LA Valley	17	12	9	13
		Long Beach	2	2	7	4
		Santa Monica	29	16	8	18
		LA Subtotal	48	30	24	34
		Fullerton	-	2	1	1
		Saddleback	136	98	144	126
		OC Subtotal	136	100	145	127
Supply Subtotal/Average			184	130	169	161
0604.20	Television (including combined TV/film/video)	Cerritos	-	5	13	6
		El Camino	22	27	32	27
		Glendale	14	17	25	19
		LA City	34	45	35	38
		LA Pierce	26	29	31	29
		LA Valley	31	42	48	40
		Long Beach	35	42	49	42
		Mt San Antonio	54	34	50	46
		Pasadena	45	65	51	54
		LA Subtotal	X	X	X	X
		Cypress	15	16	20	17
		Fullerton	48	52	55	52
		Orange Coast	40	22	46	36
		Saddleback	2	-	15	6
		Santa Ana	17	6	13	12
OC Subtotal	122	96	149	122		

TOP Code	Program	College	2019-20 Awards	2020-21 Awards	2021-22 Awards	3-Year Average
Supply Subtotal/Average			383	402	483	423
0612.20	Film Production	Cerritos	8	11	22	14
		LA City	62	45	116	74
		LA Valley	31	35	54	40
		Santa Monica	59	41	45	48
		West LA	7	28	10	15
		LA Subtotal	167	160	247	191
		Orange Coast	48	26	32	35
		Saddleback	3	-	-	1
		OC Subtotal	51	26	32	36
Supply Subtotal/Average			218	186	279	228
0614.20	Electronic Game Design	Pasadena	1	1	5	2
		LA Subtotal	1	1	5	2
		Golden West	2	-	-	1
		OC Subtotal	2	-	-	1
Supply Subtotal/Average			3	1	5	3
0614.40	Animation	Cerritos	13	4	7	8
		East LA	12	12	17	14
		El Camino	5	4	4	4
		Glendale	6	2	6	5
		LA City	-	1	2	1
		LA Mission	11	5	11	9
		Mt San Antonio	58	43	26	42
		Pasadena	1	6	12	6
		Rio Hondo	9	9	10	9
		Santa Monica	19	69	103	64
		LA Subtotal	134	155	198	162
		Coastline	-	1	1	1
		Cypress	1	-	-	0
		Fullerton	1	-	-	0
		Irvine	1	3	2	2
		Orange Coast	1	-	-	0
		OC Subtotal	4	4	3	4
Supply Subtotal/Average			138	159	201	166
Supply Total/Average			926	878	1,137	980

While there are six community colleges in California that currently offer virtual production-focused programs, none of these programs are located in the Los Angeles/Orange County region. Exhibit 11 displays the current virtual production programs offered at California community colleges. All six programs are located in the Bay region and approved less than two years ago.

Exhibit 11: Virtual production community college programs

TOP Code/ Program	Program	College	Region	Award Type	Approved Date
0612.20/ Film Production	Virtual Production	Laney	Bay	Certificate	August 2022
0614.10/ Multimedia	Virtual Production Fundamentals	Ohlone	Bay	Certificate	May 2023
0614.60/ Computer Graphics and Digital Imagery	Advanced Virtual Production	Berkeley City	Bay	Certificate	February 2024
0699.00/ Other Media and Communications	Virtual Production Fundamentals	Berkeley City	Bay	Certificate	August 2023
		Diablo Valley	Bay	Certificate	June 2023
		Mission	Bay	Certificate	June 2023
		Santa Rosa	Bay	Certificate	June 2023

Other Postsecondary Supply

For a comprehensive regional supply analysis, it is important to consider the supply from other institutions in the region that provide training programs for middle-skill media arts occupations. Exhibit 11 shows the number of awards conferred by these institutions in relevant programs. Due to different data collection periods, the most recent data is from 2019 to 2021. Between 2019 and 2021, other postsecondary educational institutions in the region conferred an average of 2,138 bachelor’s and sub-baccalaureate awards. Sub-baccalaureate awards include associate degrees, postsecondary awards, and other academic awards that typically take fewer than four years to complete. The majority of awards (88%) in Exhibit 11 are bachelor’s degrees (1,873 awards).

Exhibit 11: Other regional postsecondary supply awards, 2019-2021

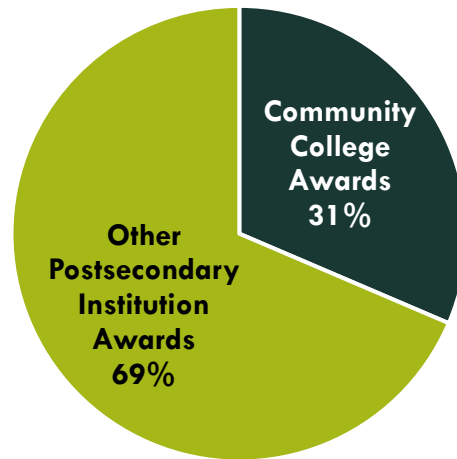
CIP Code	Program	Postsecondary Institution	2019-20 Awards	2020-21 Awards	2-Year Average
09.0701	Radio and Television	CSU-Fullerton	189	185	187
		CSU-Los Angeles	154	147	151
		CSU-Northridge	396	427	412
		Loyola Marymount Univ.	-	1	1
		Pepperdine University	20	11	16
		University of La Verne	7	11	9

CIP Code	Program	Postsecondary Institution	2019-20 Awards	2020-21 Awards	2-Year Average
10.0202	Radio and Television Broadcasting Technology/Technician	Hollywood Cultural College	20	12	16
10.0304	Animation, Interactive Technology, Video Graphics, and Special Effects	ABC Adult School	-	1	1
		Art Center College of Design	36	41	39
		California Institute of the Arts	39	37	38
		Chapman University	20	22	21
		Columbia College Hollywood	-	11	6
		Gnomon	66	-	33
		Laguna College of Art and Design	33	25	29
		Los Angeles Film School	47	35	41
		Loyola Marymount Univ.	21	26	24
		New York Film Academy	24	10	17
50.0411	Game and Interactive Media Design	Laguna College of Art and Design	34	44	39
		New York Film Academy	7	6	7
		USC	28	24	26
		Woodbury University	6	7	7
50.0602	Cinematography and Film/Video Production	Art Center College of Design	18	24	21
		Biola University	56	56	56
		CA Institute of the Arts	14	11	13
		Chapman University	146	101	124
		Columbia College Hollywood	-	105	53
		Fashion Institute of Design & Merchandising-LA	12	10	11
		Los Angeles Film School	245	255	250
		Loyola Marymount University	79	64	72
		Mount Saint Mary's University	14	14	14
		New York Film Academy	215	181	198
		USC	114	96	105
Woodbury University	15	17	16		

CIP Code	Program	Postsecondary Institution	2019-20 Awards	2020-21 Awards	2-Year Average
50.0699	Film/Video and Photographic Arts, Other	California Institute of the Arts	-	2	1
		Los Angeles Film School	49	97	73
		Woodbury University	10	25	18
Supply Total/Average			2,134	2,141	2,138

Exhibit 12 shows the proportion of community college awards conferred in the greater Los Angeles/Orange County region compared to the number of other postsecondary awards for the programs in this report. The majority of awards conferred in these programs are awarded by other postsecondary institutions in the greater Los Angeles/Orange County region.

Exhibit 12: Percentage of community college awards compared to other postsecondary institution awards in the Los Angeles/Orange County region



APPENDIX: OCCUPATION DESCRIPTIONS

LA COE prepared this report to provide regional labor market supply and demand data related to these target and emerging occupations:

- **Special Effects Artists and Animators (27-1014)** Create special effects or animations using film, video, computers, or other electronic tools and media for use in products, such as computer games, movies, music videos, and commercials.⁹
- **Camera Operators, Television, Video, and Film (27-4031)** Operate television, video, or film camera to record images or scenes for television, video, or film productions.¹⁰
- **Film and Video Editors (27-4032)** Edit moving images on film, video, or other media. May work with a producer or director to organize images for final production. May edit or synchronize soundtracks with images.¹¹
- **Video Game Designers (15-1255.01)** Design core features of video games. Specify innovative game and role-play mechanics, story lines, and character biographies. Create and maintain design documentation. Guide and collaborate with production staff to produce games as designed.¹²

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DATA SOURCES

- O*NET Online
- Lightcast (formerly Emsi)
- Bureau of Labor Statistics (BLS)
- California Employment Development Department, Labor Market Information Division, OES
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- Self-Sufficiency Standard at the Center for Women's Welfare, University of Washington
- Chancellor's Office Curriculum Inventory (COCI 2.0)

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⁹ [Special Effects Artists and Animators \(bls.gov\)](https://www.bls.gov)

¹⁰ [Film and Video Editors and Camera Operators \(bls.gov\)](https://www.bls.gov)

¹¹ [Ibid.](#)

¹² [Video Game Designers \(onetonline.org\)](https://www.onetonline.org)