

**Labor Market Analysis: 0614.02 – Electronic Game Design
Game Design Foundation – Associate of Science (A.S.) degree;
Certificate requiring 30 to <60 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.

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 both Los Angeles and Orange counties, and approximately one-third of current workers in the field have completed an associate degree or less education as their highest level of educational attainment.

Recommendation: Due to all three 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

- 2,707 annual job openings are projected in the region through 2027. This number is substantially greater than the three-year average of 810 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.

Living Wage

- All three occupations have entry-level 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 according to the Bureau of Labor Statistics (BLS).
- 28%-43% of workers in the field have completed an associate degree or less educational attainment, according to national educational attainment data.

Community college supply

- 24 community colleges issued awards related to game design in the greater LA/OC region.
- 365 awards (degrees and certificates) were conferred on average each year between 2020 and 2023.

Other postsecondary supply

- 18 other postsecondary institutions in the LA/OC region offer programs related to game design.
- 445 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 and postsecondary supply data related to three middle-skill occupations and one emerging occupation. 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 some college or an associate degree. [For full occupation descriptions, please see Appendix.](#)

- **Web Developers (15-1254)**³
- **Web and Digital Interface Designers (15-1255)**⁴
 - **Video Game Designers (15-1255.01)**⁵
- **Special Effects Artists and Animators (27-1014)**⁶

OCCUPATIONAL DEMAND

Exhibit 1 shows the five-year occupational demand projections for these occupations related to game design. In the greater Los Angeles/Orange County region, the number of jobs related to these occupations is projected to increase by 4% through 2027. There will be more than 2,700

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 [Web Developers and Digital Designers \(bls.gov\)](#)

⁴ [Ibid.](#)

⁵ [Video Game Designers \(onetonline.org\)](#)

⁶ [Special Effects Artists and Animators \(bls.gov\)](#)

job openings per year through 2027 due to job growth and replacements. The majority of jobs in 2022 for these journalism occupations (85%) 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	23,157	24,037	880	4%	2,361
Orange	4,068	4,252	183	5%	346
Total	27,226	28,289	1,063	4%	2,707

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+ and automation rate is included in order visualize upcoming replacement demand for these occupations. The occupations in this report have a lower-than-average risk of automation, as well as a smaller share of older workers in the field. Across all jobs in California, 81% of workers are employed full-time. There is a smaller percentage of web developers working full-time compared to the average across all jobs, signaling that this occupation may lend itself to part-time or gig-based employment.

Exhibit 2: Current employment, projected occupational demand, percentage of workers aged 55+, automation index, and percentage of full-time workers, Los Angeles County⁸

Occupation	2022 Jobs	2027 Jobs	5-Yr % Change	Annual Openings	% Aged 55 and older*	Auto-mation Index**	% Full Time Workers ***
Web Developers	2,722	2,907	7%	209	9%	88.4	76%
Web and Digital Interface Designers	5,299	5,623	6%	449	8%	88.4	89%
Special Effects Artists and Animators	15,136	15,507	2%	1,702	26%	72.2	Data unavail.
	23,157	24,037	4%	2,361	-	-	-

*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.

**The automation index captures an occupation’s risk of being affected by automation with a base of 100. An automation index greater than 100 indicates a higher-than average risk of automation; less than 100 indicates a

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.

lower-than-average risk. This score is calculated using four metrics: % of time spent on high-risk work, % of time spent on low-risk work, number of high-risk jobs in compatible occupations, and overall industry automation risk.

***In California, 81% of workers are employed full-time.

WAGES

The labor market endorsement in this report considers the entry-level hourly wages for these occupations related to game design 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 \$26.98 and \$36.65. (Exhibit 3). Experienced workers can expect to earn wages between \$57.54 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*
Web Developers	\$26.98	\$42.17	\$57.54	\$87,700
Web and Digital Interface Designers	\$27.23	\$36.12	\$58.71	\$75,100
Special Effects Artists and Animators	\$36.65	\$58.67	\$77.10	\$122,000

*Rounded to the nearest \$100

Orange County

All three occupations have entry-level 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 \$25.29 and \$28.15 (Exhibit 4). Experienced workers can expect to earn wages between \$55.05 and \$68.79.

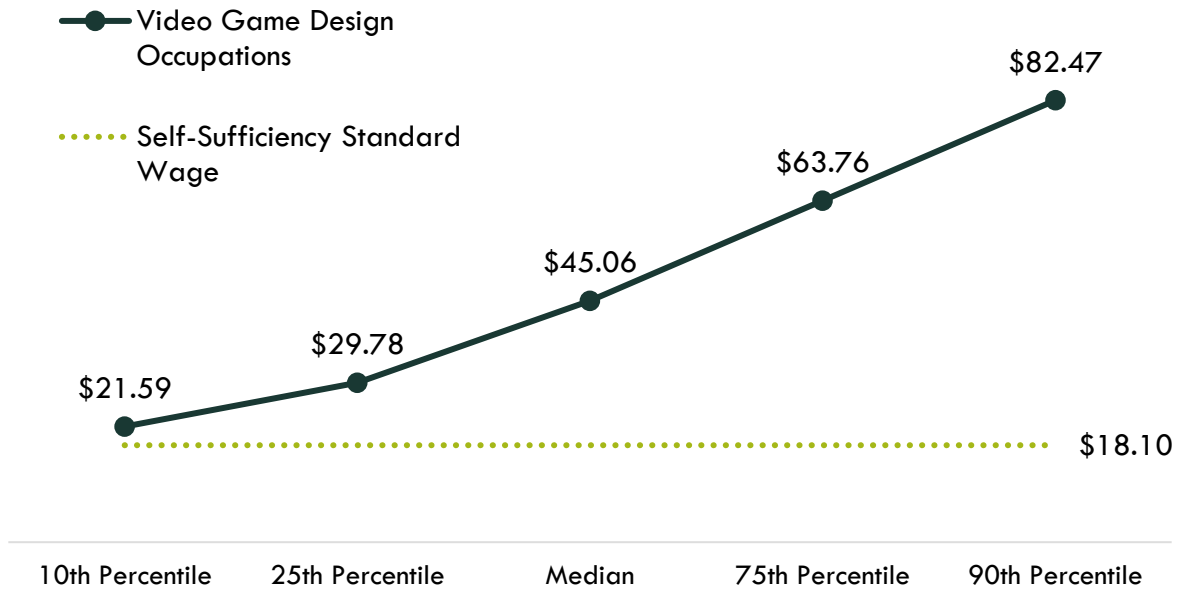
Exhibit 4: Earnings for occupations in Orange County

Occupation	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)	Median Annual Earnings*
Web Developers	\$25.29	\$40.01	\$55.05	\$83,200
Web and Digital Interface Designers	\$25.65	\$34.27	\$55.76	\$71,300
Special Effects Artists and Animators	\$28.15	\$48.02	\$68.79	\$99,900

*Rounded to the nearest \$100

Across the greater Los Angeles and Orange County region, the average entry-level hourly earnings for the occupations in this report are \$29.78; 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.

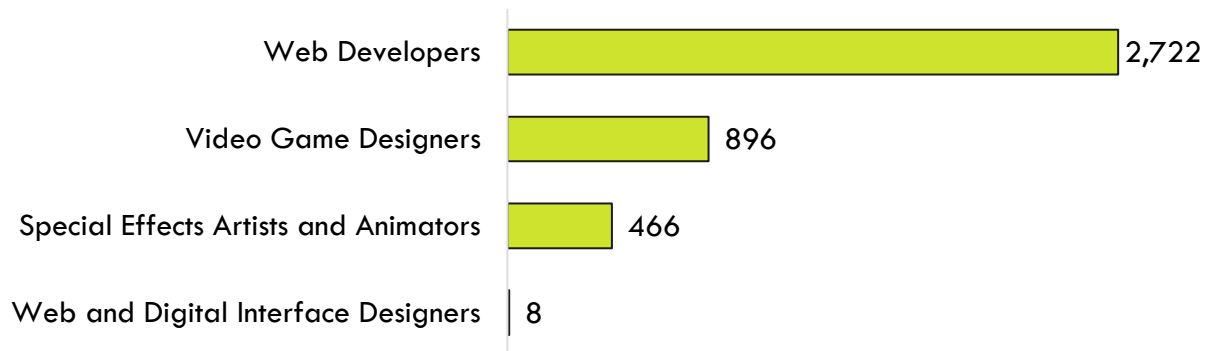
Exhibit 5: Average hourly earnings for occupations related to game design, Los Angeles and Orange counties



JOB POSTINGS

There were 4,092 online job postings related to game design 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 (67%) were for web developers, followed by video game designers (22%) and special effects artists and animators (11%).

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



Job postings were 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"> • Content creators • Web developers • UI/UX developers • Front end developers • Front end software engineers 	<ul style="list-style-type: none"> • JavaScript • Cascading Style Sheets (CSS) • User experience (UX) • Front end software engineering • HyperText Markup Language (HTML) 	<ul style="list-style-type: none"> • Boeing • Canteen Vending • Motion Recruitment* • Amazon • TikTok

*Staffing company

In the greater Los Angeles/Orange County region, 42% of these game design-related 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 video game design occupations, Los Angeles and Orange counties

Education Level	Job Postings	% of Job Postings
Bachelor's degree	1,590	92%
Associate degree	44	3%
High school diploma or vocational training	96	6%

EDUCATIONAL ATTAINMENT

The Bureau of Labor Statistics (BLS) lists a bachelor's degree as the typical entry-level education for these video game design occupations (Exhibit 9). However, the national-level data indicates between 28% and 43% of workers in the field have completed an associate degree or less education as their highest level of educational attainment. The Bureau of Labor Statistics (BLS) lists the following typical entry-level education levels for the occupations in this report:

Exhibit 9: Entry-level education preferred by employers nationally, Bureau of Labor Statistics

Occupation	Education Level
Web Developers	Bachelor's degree
Web and Digital Interface Designers	Bachelor's degree
Special Effects Artists and Animators	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 Santa Monica, Mt. San Antonio, and Santa Ana.

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

TOP Code	Program	College	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
0614.00	Digital Media	LA Mission	5	5	1	4
		LA Trade-Tech	18	12	14	15
		Mt. San Antonio	-	-	2	1
		Pasadena	3	15	9	9
		Rio Hondo	1	1	-	1
		Santa Monica	-	19	6	8
		LA Subtotal	27	52	32	37
		Coastline	3	3	28	11
		Cypress	2	7	4	4
		Golden West	7	-	-	2
		Irvine	6	3	1	3
		Saddleback	1	1	2	1
		Santa Ana	6	34	71	37
		OC Subtotal	25	48	106	60
Supply Subtotal/Average			52	100	138	97
0614.10	Multimedia	Glendale	-	4	-	1
		LA Mission	23	28	16	22
		Long Beach	-	-	1	0
		Santa Monica	9	-	-	3
		LA Subtotal	32	32	17	27
		Cypress	1	3	2	2
		Orange Coast	4	8	7	6
		Santiago Canyon	4	-	1	2
		OC Subtotal	9	11	10	10
Supply Subtotal/Average			41	43	27	37
0614.20	Electronic Game Design	Long Beach	-	-	2	1
		Pasadena	1	5	4	3
		LA Subtotal	1	1	5	2
		Irvine	-	-	24	8
		OC Subtotal	-	-	24	8
Supply Subtotal/Average			1	5	30	12

TOP Code	Program	College	2020-21 Awards	2021-22 Awards	2022-23 Awards	3-Year Average
0614.30	Website Design and Development	Citrus	-	1	-	0
		LA Pierce	4	5	-	3
		Long Beach	-	-	6	2
		Mt San Antonio	6	1	-	2
		Pasadena	1	7	3	4
		Santa Monica	3	2	5	3
		West LA	-	3	4	2
		LA Subtotal	14	19	18	17
		Coastline	1	-	4	2
		Fullerton	1	2	-	1
		Irvine	5	4	1	3
		Orange Coast	7	13	8	9
		Saddleback	7	4	6	6
		Santa Ana	1	-	-	0
		Santiago Canyon	6	5	2	4
		OC Subtotal	28	28	21	26
Supply Subtotal/Average			42	47	39	43
0614.40	Animation	Cerritos	4	7	13	8
		East LA	12	17	6	12
		El Camino	4	4	2	3
		Glendale	2	6	5	4
		LA City	1	2	2	2
		LA Mission	5	11	12	9
		Long Beach	-	-	1	0
		Mt San Antonio	43	26	40	36
		Pasadena	6	12	21	13
		Rio Hondo	9	10	17	12
		Santa Monica	69	103	37	70
		LA Subtotal	155	198	156	170
		Coastline	1	1	2	1
		Irvine	3	2	3	3
		Orange Coast	-	-	8	3
		OC Subtotal	4	3	13	7
Supply Subtotal/Average			159	201	169	176
Supply Total/Average			295	396	403	365

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 game design 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 2022. Between 2019 and 2022, other postsecondary college institutions in the region conferred an average of 445 bachelor's and sub-baccalaureate awards. Bachelor's awards are included since all the occupations in this report typically require a bachelor's degree. Sub-baccalaureate awards include associate degrees, postsecondary awards, and other academic awards that typically take fewer than four years to complete. Of the awards listed in Exhibit 11, 89% (448 awards) were bachelor's degrees and 11% (48 awards) were sub-baccalaureate awards.

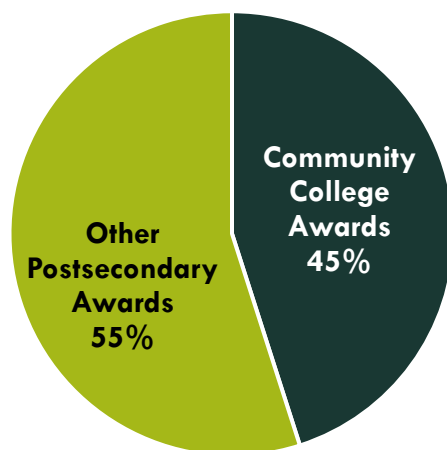
Exhibit 11: Other regional postsecondary awards, 2019-2022

CIP Code	Program	Postsecondary Institution	2019-20 Awards	2020-21 Awards	2021-22 Awards	3-Year Average
09.0702	Digital Communication and Media/Multimedia	Azusa Pacific University	-	-	3	1
		CSU-Dominguez Hills	41	57	33	44
		Columbia College Hollywood	-	28	5	11
		Fremont University	1	-	-	0
		Marymount CA Univ.	10	9	9	9
10.0304	Animation, Interactive Technology, Video Graphics, and Special Effects	ABC Adult School	-	1	1	1
		Art Center College of Design	36	41	62	46
		Azusa Pacific University	-	-	14	5
		CA Institute of the Arts	39	37	54	43
		Columbia College Hollywood	-	11	2	4
		Gnomon	66	-	-	22
		Los Angeles Film School	47	35	67	50
		Loyola Marymount Univ.	21	26	13	20
		NY Film Academy	24	10	15	16
		Woodbury University	-	-	-	-
11.0801	Web Page, Digital/Multimedia and Information Resources Design	LA Pacific College	-	4	6	3
50.0102	Digital Arts	Columbia College Hollywood	-	15	15	10

CIP Code	Program	Postsecondary Institution	2019-20 Awards	2020-21 Awards	2021-22 Awards	3-Year Average
		Gnomon	-	31	29	20
		LA Academy of Figurative Art	4	-	5	3
		LA Pacific College	4	2	-	2
		Marymount CA Univ.	3	2	2	2
		Otis College of Art and Design	48	52	90	63
		USC	15	35	33	28
		Woodbury University	2	-	-	1
50.0411	Game and Interactive Media Design	Biola University	-	-	4	1
		NY Film Academy	7	6	2	5
		USC	27	24	26	26
		Woodbury University	6	7	10	8
Supply Total/Average			401	433	500	445

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 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 occupations:

- **Web Developers (15-1254)** Develop and implement websites, web applications, application databases, and interactive web interfaces. Evaluate code to ensure that it is properly structured, meets industry standards, and is compatible with browsers and devices. Optimize website performance, scalability, and server-side code and processes. May develop website infrastructure and integrate websites with other computer applications.⁹
- **Web and Digital Interface Designers (15-1255)** Design digital user interfaces or websites. Develop and test layouts, interfaces, functionality, and navigation menus to ensure compatibility and usability across browsers or devices. May use web framework applications as well as client-side code and processes. May evaluate web design following web and accessibility standards, and may analyze web use metrics and optimize websites for marketability and search engine ranking. May design and test interfaces that facilitate the human-computer interaction and maximize the usability of digital devices, websites, and software with a focus on aesthetics and design. May create graphics used in websites and manage website content and links.¹⁰
 - **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.¹¹
- **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.¹²

⁹ [Web Developers and Digital Designers \(bls.gov\)](#)

¹⁰ [Ibid.](#)

¹¹ [Video Game Designers \(onetonline.org\)](#)

¹² [Special Effects Artists and Animators \(bls.gov\)](#)

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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)
- Employment Development Department-Labor Market Information Division (EDD-LMID)

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