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FOR LABOR MARKET RESEARCH

Interaction Design Occupations

Labor Market Analysis: San Diego County

July 2021

Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED EDUCATION FOR MAJORITY OF OCCUPATIONS ANALYZED
● **Proceed with Caution**	☑ ☒	☑ ☒	☑ Bachelor's Degree+ ☐ Associate Degree ☐ Some College or Certificate ☐ HS Diploma or Equivalent ☐ Less than a HS Diploma ☐ Apprenticeship
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	
☑ ☒	HIGH	HIGH	

This brief provides labor market information about *Interaction Design Occupations* to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning. *Interaction Design Occupations* include "Graphic Designers," "Special Effects Artists and Animators," and "Web Developers and Digital Interface Designers." According to available labor market information, *Interaction Design Occupations* in San Diego County has a labor market demand of 483 annual job openings (while average demand for a single occupation in San Diego County is 242 annual job openings), and twenty institutions supply 412 awards for these occupations, suggesting that there is a supply gap in the labor market. Entry-level wages are above the living wage for most occupations except "Special Effects Artists and Animators," and median wages for all occupations are above the living wage. This brief recommends proceeding with caution when developing a new program but supports a program modification because 1) a supply gap exists in the region and 2) entry-level earnings for most occupations are above the living wage. Colleges should also note that **employers typically require a bachelor's degree as the minimum educational requirement for these occupations.**

Introduction

This report provides labor market information in San Diego County for the following occupational codes in the Standard Occupational Classification (SOC)[1] system:

- **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.

- **Special Effects Artists and Animators** (SOC 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.

- **Web Developers and Digital Interface Designers** (SOC 15-1257): 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. 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.

For the purpose of this report, these occupations are referred to as *Interaction Design Occupations*.

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[1] The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. bls.gov/soc.

Projected Occupational Demand

Between 2020 and 2025, *Interaction Design Occupations* are projected to increase by 91 net jobs or two percent (Exhibit 1a). Employers in San Diego County will need to hire 483 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

Exhibit 1a: Number of Jobs for *Interaction Design Occupations* (2010-2025)[2]
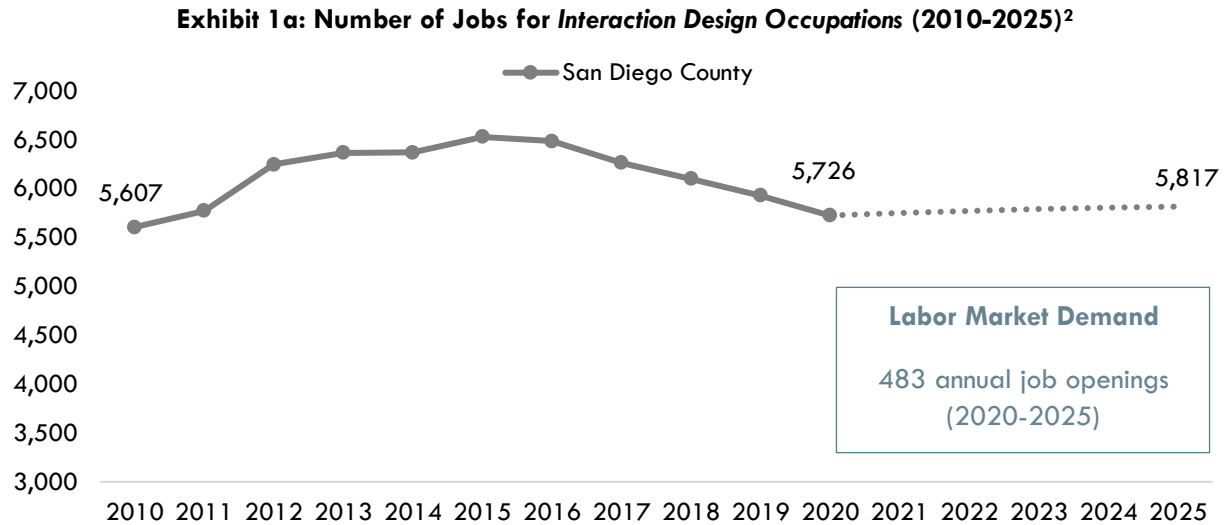
Exhibit 1b disaggregates the projected number of jobs change by occupation. "Graphic Designers" are projected to have the most labor market demand between 2020 and 2025, with 247 annual job openings.

Exhibit 1b: Number of Jobs for *Interaction Design Occupations* in San Diego County (2020-2025)[3]

Occupational Title	2020 Jobs	2025 Jobs	2020 - 2025 Net Jobs Change	2020-2025 % Net Jobs Change	Annual Job Openings (Demand)
Graphic Designers	2,894	2,851	-43	-2%	247
Web Developers and Digital Interface Designers	2,261	2,398	137	6%	181
Special Effects Artists and Animators	571	568	-3	-1%	55
Total	5,726	5,817	91	2%	483

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[2] EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.
[3] EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.

Earnings

Exhibit 2a disaggregates hourly earnings by occupation. The entry-level hourly earnings for *Interaction Design Occupations* range from $10.43 to $22.39.

Exhibit 2a: Hourly Earnings for *Interaction Design Occupations* in San Diego County[4]

Occupational Title	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Web Developers and Digital Interface Designers	$22.39	$33.79	$45.99
Graphic Designers	$18.35	$26.58	$35.21
Special Effects Artists and Animators	$10.43	$25.52	$42.81

On average, the entry-level hourly earnings for *Interaction Design Occupations* are $17.06; this is less than the living wage for a single adult in San Diego County, which is $18.43 per hour (Exhibit 2b).[5]

Exhibit 2b: Average Hourly Earnings[6] for *Interaction Design Occupations* in San Diego County[7]
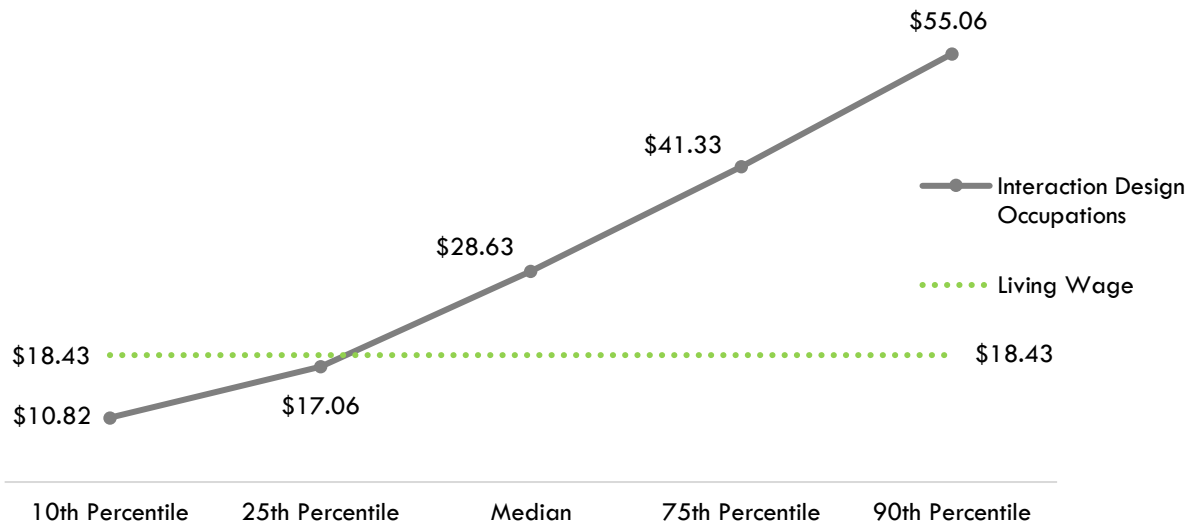
Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.[8] There are 10 TOP codes and nine CIP codes related to *Interaction Design Occupations* (Exhibit 3).

Exhibit 3: Related TOP and CIP Codes for *Interaction Design Occupations*[9]

TOP or CIP Code	TOP or CIP Program Title
TOP 0509.10	Advertising
TOP 0612.20	Film Production
TOP 0614.00	Digital Media
TOP 0614.10	Multimedia
TOP 0614.20	Electronic Game Design
TOP 0614.30	Website Design and Development
TOP 0614.40	Animation
TOP 0614.60	Computer Graphics and Digital Imagery
TOP 1009.00	Applied Design
TOP 1030.00	Graphic Art and Design
CIP 09.0702	Digital Communication and Media/Multimedia
CIP 10.0303	Prepress/Desktop Publishing and Digital Imaging Design
CIP 10.0304	Animation, Interactive Technology, Video Graphics and Special Effects
CIP 11.0801	Web Page, Digital/Multimedia and Information Resources Design
CIP 11.0803	Computer Graphics
CIP 11.0899	Computer Software and Media Applications, Other
CIP 50.0102	Digital Arts
CIP 50.0401	Design and Visual Communications, General
CIP 50.0411	Game and Interactive Media Design

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[8] TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data).
[9] There is no one-to-one match between TOP/CIP code and SOC code for *Interaction Designer Occupations*. As a result, this brief uses a conservative estimate of program supply and only calculates awards from the TOP codes in the Exhibit.

According to TOP data, eight community colleges supply the region with awards for these occupations: Cuyamaca College, Palomar College, MiraCosta College, San Diego City College, San Diego Mesa College, San Diego Miramar College, San Diego College of Continuing Education, and Southwestern College. According to CIP data, 12 non-community-college institutions supply the region with awards: Advanced Training Associates, Ashford University, California College-San Diego, California Institute of Arts & Technology, Escondido Adult School, National University, Newschool of Architecture and Design, Platt College-San Diego, Point Loma Nazarene University, Poway Adult School, Vista Adult School, and University of California-San Diego (Exhibit 4).

Exhibit 4: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Year 2016-17 through PY2019-20 Average)

TOP or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY17-18 to PY19-20)	Other Educational Institutions 3-Yr Annual Average Awards (PY16-17 to PY18-19)	3-Yr Total Average Supply (PY16-17 to PY19-20)
0509.10	Advertising	**12**	**0**	**12**
	• Palomar	12	0	
0612.20	Film Production	**24**	**0**	**24**
	• San Diego City	18	0	
	• Southwestern	6	0	
0614.00	Digital Media	**26**	**0**	**26**
	• MiraCosta	10	0	
	• Palomar	12	0	
	• San Diego Cont Ed	4	0	
0614.10	Multimedia	**31**	**0**	**31**
	• MiraCosta	11	0	
	• Palomar	4	0	
	• San Diego City	0	0	
	• San Diego Mesa	16	0	
0614.20	Electronic Game Design	**6**	**0**	**6**
	• San Diego Mesa	0	0	
	• Southwestern	6	0	

TOP or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY17-18 to PY19-20)	Other Educational Institutions 3-Yr Annual Average Awards (PY16-17 to PY18-19)	3-Yr Total Average Supply (PY16-17 to PY19-20)
0614.30	Website Design and Development	**120**	**0**	**120**
	• Cuyamaca	5	0	
	• MiraCosta	9	0	
	• Palomar	1	0	
	• San Diego Cont Ed	76	0	
	• San Diego Mesa	15	0	
	• Southwestern	14	0	
0614.40	Animation	**12**	**0**	**12**
	• Palomar	9	0	
	• San Diego Mesa	1	0	
	• Southwestern	2	0	
0614.60	Computer Graphics and Digital Imagery	**24**	**0**	**24**
	• MiraCosta	21	0	
	• Palomar	2	0	
	• San Diego Mesa	0	0	
	• San Diego Miramar	1	0	
1009.00	Applied Design	**2**	**0**	**2**
	• MiraCosta	2	0	
1030.00	Graphic Art and Design	**63**	**0**	**63**
	• Cuyamaca	13	0	
	• Palomar	8	0	
	• San Diego City	33	0	
	• Southwestern	9	0	

TOP or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY17-18 to PY19-20)	Other Educational Institutions 3-Yr Annual Average Awards (PY16-17 to PY18-19)	3-Yr Total Average Supply (PY16-17 to PY19-20)
09.0702	Digital Communication and Media/Multimedia	**0**	**5**	**5**
	• National University	0	4	
	• Platt College-San Diego	0	1	
10.0303	Prepress/Desktop Publishing and Digital Imaging Design	**0**	**0**	**0**
	• Platt College-San Diego	0	0	
10.0304	Animation, Interactive Technology, Video Graphics and Special Effects	**0**	**3**	**3**
	• Newschool of Architecture and Design	0	2	
	• Platt College-San Diego	0	1	
11.0801	Web Page, Digital/Multimedia and Information Resources Design	**0**	**2**	**2**
	• Ashford University	0	0	
	• California College San Diego	0	0	
	• California Institute of Arts & Technology	0	2	
	• Platt College-San Diego	0	0	
11.0899	Computer Software and Media Applications, Other	**0**	**70**	**70**
	• Advanced Training Associates	0	3	
	• Escondido Adult School	0	29	
	• Platt College-San Diego	0	0	
	• Poway Adult School	0	26	
	• Vista Adult School	0	12	
50.0102	Digital Arts	**0**	**1**	**1**
	• Point Loma Nazarene University	0	1	

TOP or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY17-18 to PY19-20)	Other Educational Institutions 3-Yr Annual Average Awards (PY16-17 to PY18-19)	3-Yr Total Average Supply (PY16-17 to PY19-20)
50.0401	Design and Visual Communications, General	**0**	**11**	**11**
	• University of California-San Diego	0	11	
50.0411	Game and Interactive Media Design	**0**	**0**	**0**
	• National University	0	0	
			Total	**412**

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply[10] suggests that there is a supply gap for these occupations in San Diego County, with 483 annual openings and 412 awards. Comparatively, there are 7,524 annual openings in California and 5,245 awards, suggesting that there is a supply gap across the state[11] (Exhibit 5).

Exhibit 5: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

	Demand (Annual Openings)	Supply (Total Annual Average Supply)	Supply Gap or Oversupply
San Diego	483	412	**71**
California	7,524	5,245	**2,279**

Please note: This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.
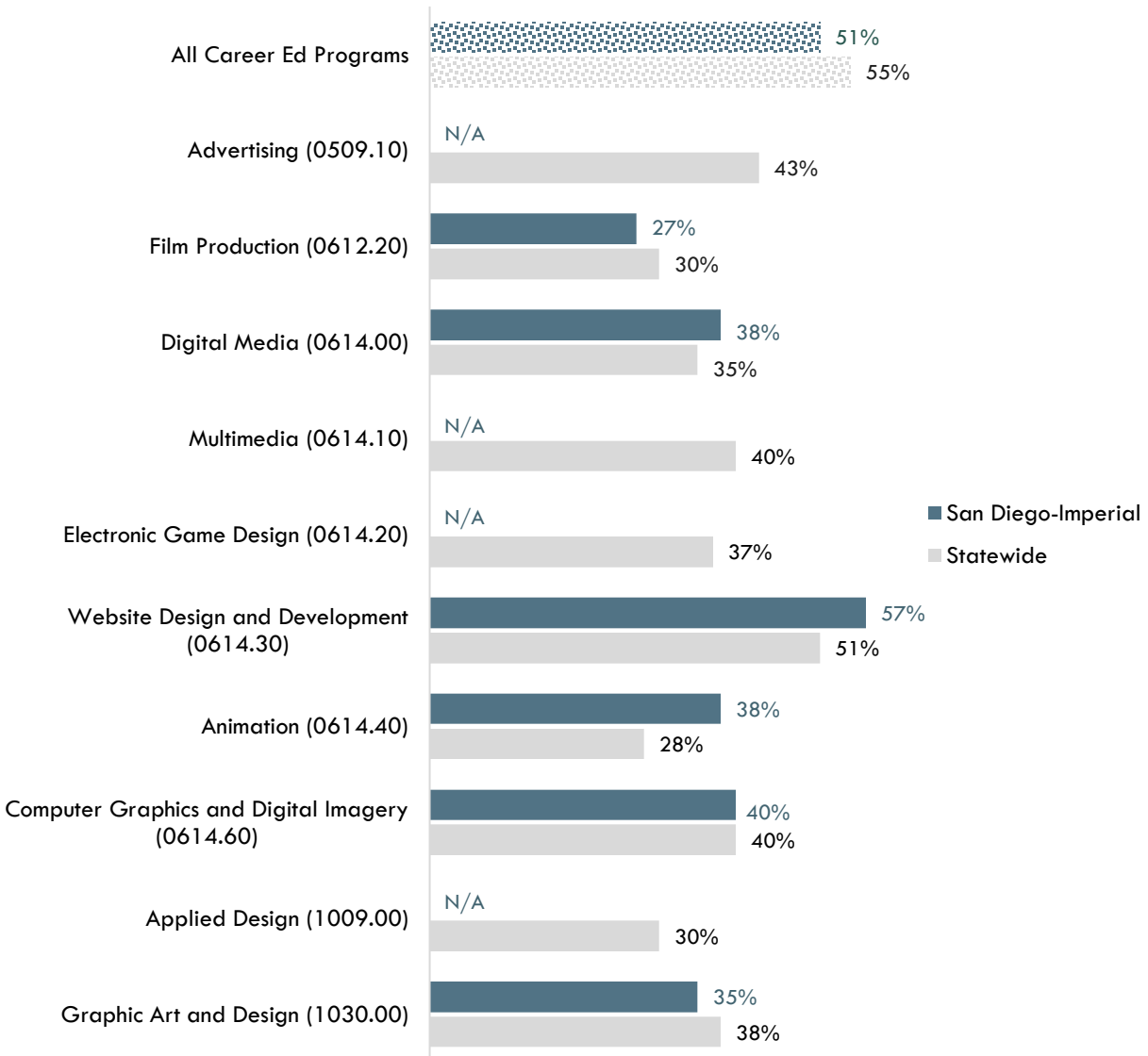
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[10] Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.
[11] "Supply and Demand," Centers of Excellence Student Outcomes, coeccc.net/Supply-and-Demand.aspx.

Student Outcomes and Regional Comparisons

According to the California Community Colleges LaunchBoard, 27 to 57 percent of students in the San Diego-Imperial region earned a living wage after completing a program related to *Interaction Design Occupations*, compared to 28 to 51 percent statewide and 55 percent of students in Career Education programs in general across the state (Exhibit 6a).[12]

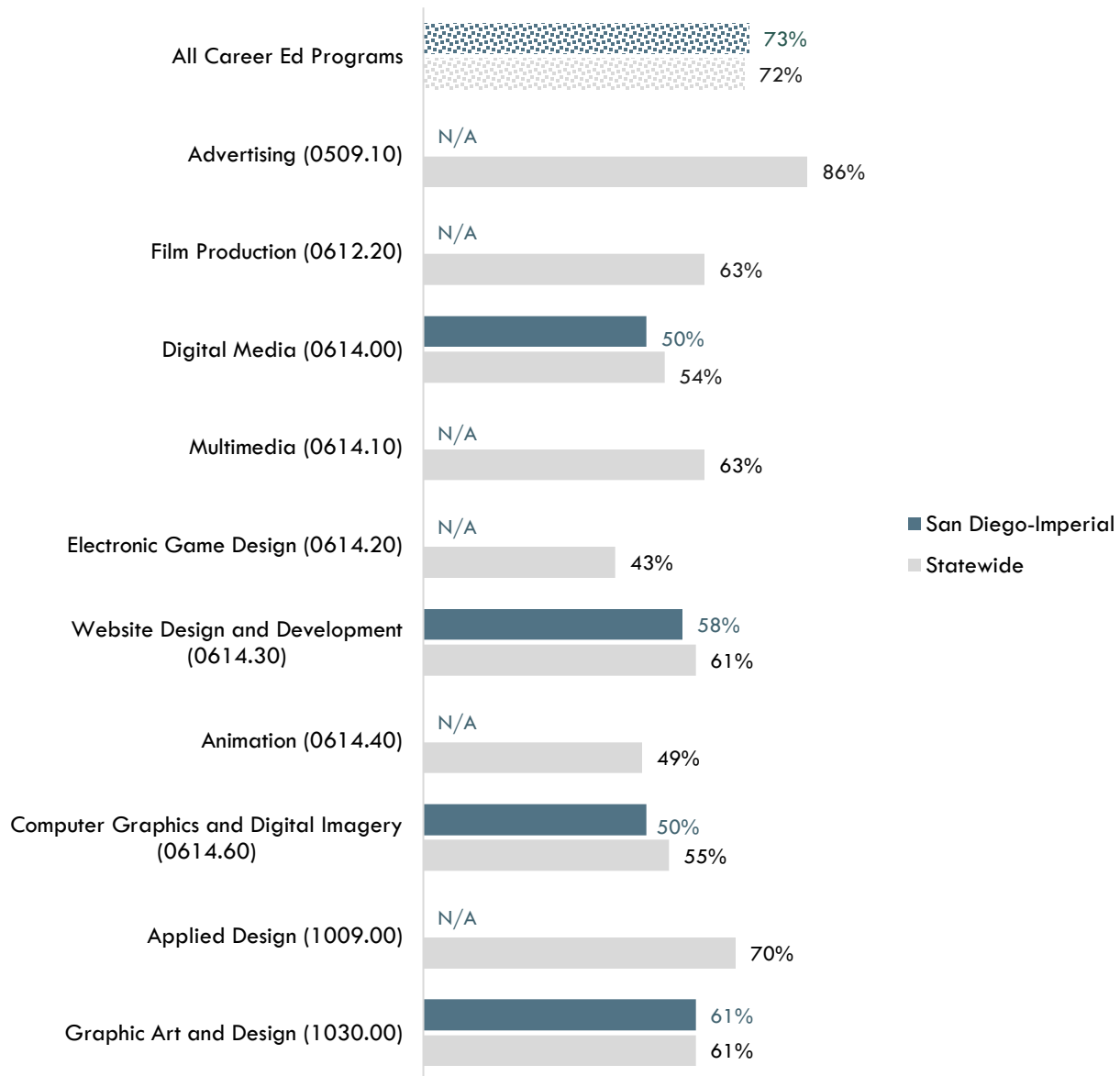**Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, PY2017-18[13]**

| Program	San Diego-Imperial	Statewide
All Career Ed Programs	51%	55%
Advertising (0509.10)	N/A	43%
Film Production (0612.20)	27%	30%
Digital Media (0614.00)	38%	35%
Multimedia (0614.10)	N/A	40%
Electronic Game Design (0614.20)	N/A	37%
Website Design and Development (0614.30)	57%	51%
Animation (0614.40)	38%	28%
Computer Graphics and Digital Imagery (0614.60)	40%	40%
Applied Design (1009.00)	N/A	30%
Graphic Art and Design (1030.00)	35%	38%

"N/A" indicates insufficient data

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[12] "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.
[13] Among completers and skills builders who exited, the proportion of students who attained a living wage.

According to the California Community Colleges LaunchBoard, 50 to 61 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a program related to *Interaction Design Occupations*, compared to 43 to 86 percent statewide and 72 percent of students in Career Education programs in general across the state (Exhibit 6b).[14]

Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program, PY2016-17[15]

All Career Ed Programs — 73% / 72%
Advertising (0509.10) — N/A / 86%
Film Production (0612.20) — N/A / 63%
Digital Media (0614.00) — 50% / 54%
Multimedia (0614.10) — N/A / 63%
Electronic Game Design (0614.20) — N/A / 43%
Website Design and Development (0614.30) — 58% / 61%
Animation (0614.40) — N/A / 49%
Computer Graphics and Digital Imagery (0614.60) — 50% / 55%
Applied Design (1009.00) — N/A / 70%
Graphic Art and Design (1030.00) — 61% / 61%

■ San Diego-Imperial
□ Statewide

"N/A" indicates insufficient data

Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2010 and 2020, there was an average of 3,335 online job postings per year for *Interaction Design Occupations* in San Diego County (Exhibit 7). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 1b). Employers may post a position multiple times for various reasons, such as increasing the pool of applicants, for example.

**Exhibit 7: Number of Online Job Postings for *Interaction Design Occupations*
in San Diego County (2010-2020)[16]**
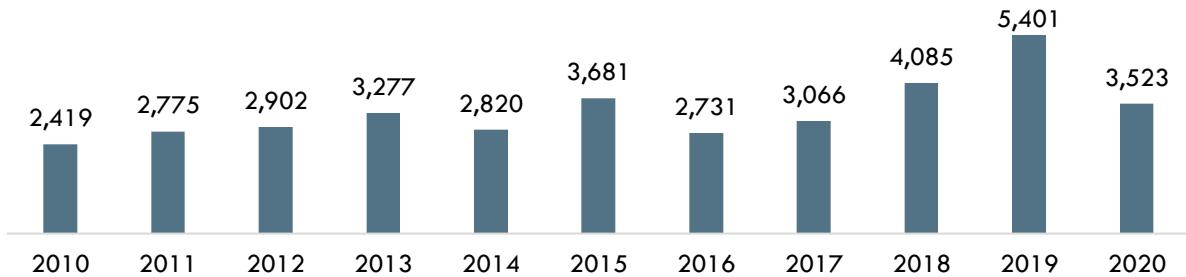
Top Employers

Between January 1, 2018 and December 31, 2020, the top five employers in San Diego County for *Interaction Design Occupations* were Qualcomm, ServiceNow, VIA Technical, Thermo Fisher Scientific, and University of California San Diego based on online job postings (Exhibit 8).

Exhibit 8: Top Employers for *Interaction Design Occupations* in San Diego County[17]

Top Employers	
• Qualcomm	• Sony Electronics
• ServiceNow	• Intuit
• VIA Technical	• Synergy Direct LLC
• Thermo Fisher Scientific, Inc.	• Hewlett-Packard
• University of California San Diego	• Sayva Solutions

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[16] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2010-2020.
[17] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

Education, Skills, and Certifications

*Interaction Design Occupations* have a national educational attainment ranging from an associate degree to a bachelor's degree (Exhibit 9a).

Exhibit 9a: National Educational Attainment for *Interaction Design Occupations*[18]

Occupational Title	Typical Entry-Level Education
Graphic Designers	Bachelor's degree
Special Effects Artists and Animators	Bachelor's degree
Web Developers and Digital Interface Designers	Associate degree

Based on online job postings between January 1, 2018 and December 31, 2020 in San Diego County, employers posted a bachelor's degree as the educational requirement for *Interaction Design Occupations* (Exhibit 9b).[19]

Exhibit 9b: Educational Requirements for *Interaction Design Occupations* in San Diego County[20]

6% — HS diploma or equivalent
2% — Associate degree
89% — Bachelor's degree
3% — Master's degree or higher

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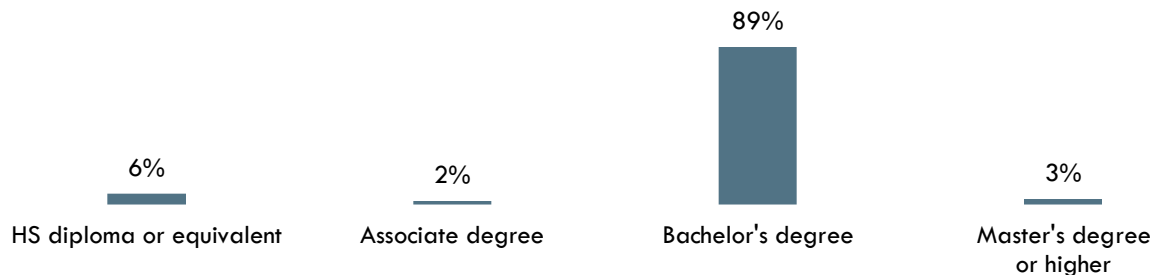
[18] EMSI 2021.2; QCEW, Non-QCEW, Self-Employed.
[19] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.
[20] "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified April 9, 2021. bls.gov/emp/tables/educational-attainment.htm.

Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2018 and December 31, 2020.

Exhibit 10: Top Skills for *Interaction Design Occupations* in San Diego County[21]

Specialized Skills	Soft Skills	Software Skills
• Web Development • Graphic Design • Web Site Design • Web Application Development • Front-end Development • Software Development • User Interface Design • UX Wireframes • Hypertext Preprocessor • Software Engineering • Visual Design • React Javascript • Bootstrapping • Agile Development • Prototyping	• Creativity • Communication Skills • Teamwork / Collaboration • Problem Solving • Detail-Oriented • Research • Writing • Organizational Skills • Meeting Deadlines • Planning • Troubleshooting • Written Communication • Time Management • Multi-Tasking • Editing	• JavaScript • Adobe Photoshop • Adobe InDesign • Adobe Illustrator • Adobe Acrobat • Adobe Creative Suite • HTML5 • Git • jQuery • AngularJS • SQL • Java • CSS • MySQL • Node.js

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[21] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

Exhibit 11 lists the top certification that appeared in online job postings between January 1, 2018 and December 31, 2020.

Exhibit 11: Top Certification for *Interaction Design Occupations* in San Diego County[22]

Top Certification in Online Job Postings
1. Security Clearance
2. Project Management Certification
3. CompTIA Security+
4. Adobe InDesign (Certified)
5. Business Analysis Certificate
6. Certified Business Analysis Professional (CBAP)
7. Six Sigma Certification
8. IT Infrastructure Library (ITIL) Certification
9. Certification of Capability in Business Analysis (CCBA)
10. Certified Novell Administrator
11. HAZWOPER Certification
12. Agile Certification
13. Certified Scrum Trainer (CST)
14. Certified Scrum Master (CSM)
15. Graphic Design Certification

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[22] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2018-2020.

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