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Interaction Design Occupations

Labor Market Analysis: San Diego County

April 2019

Summary

- Do not Proceed
- Proceed with Caution
- Proceed

**PROCEED WITH
NEW PROGRAM?**

✓ / ✗

**SUPPLY
GAP?**

✓ / ✗

**AT OR ABOVE
THE LIVING WAGE**

✓ High
☐ Medium
☐ Low

**NUMBER OF
INSTITUTIONS THAT
PROVIDE TRAINING**

✓ Bachelor's Degree+
☐ Associate Degree
☐ Some College or Certificate
☐ High School Diploma or Equivalent
☐ Less than a HS Diploma
☐ Apprenticeship

**EXPECTED LEVEL
OF EDUCATION**

According to available labor market information, there is a small supply gap for occupations that could be trained by an *Interaction Design* program, specifically Web Developers; Multimedia Artists and Animators; and Graphic Designers. For the purpose of this report, these occupations are referred to as "Interaction Design Occupations." *Interaction Design Occupations* in San Diego County have a labor market demand of 617 annual job openings. There are 14 educational institutions in San Diego County that supply 562 awards for these occupations, suggesting a small labor market supply gap. This analysis does not include individuals currently in the labor force looking for work in *Interaction Design 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:

- **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.
- **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.
- **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.

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

Projected Occupational Demand

Between 2018 and 2023, *Interaction Design Occupations* are projected to increase by 144 jobs or two percent (Exhibit 1). Employers in San Diego County will need to hire 617 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

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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.
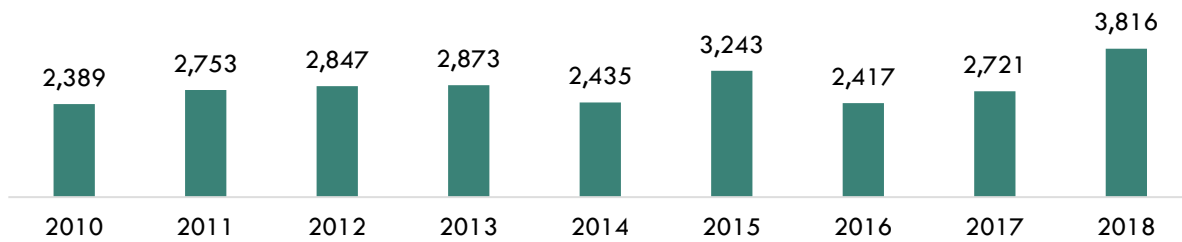
Exhibit 1: Number of Jobs for *Interaction Design Occupations* (2008-2023)[2]
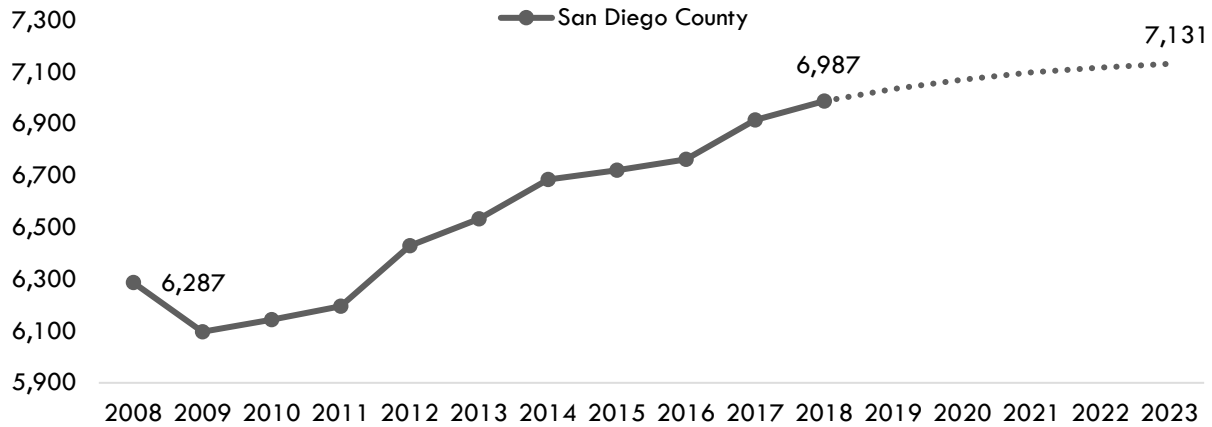
Online Job Postings

Between 2010 and 2018, there was an average of 2,833 online job postings per year for *Interaction Design Occupations* in San Diego County (Exhibit 2).

Exhibit 2: Number of Online Job Postings for *Interaction Design Occupations* in San Diego County (2010-2018)[3]

Earnings

The median hourly earnings of *Interaction Design Occupations* range from $20.59 to $25.49 (Exhibit 3a). On average, the median hourly earnings for *Interaction Design Occupations* is $22.92; this is more than the Self-Sufficiency Standard for a single adult in San Diego County, which is $15.99 per hour (Exhibit 3b).[4]

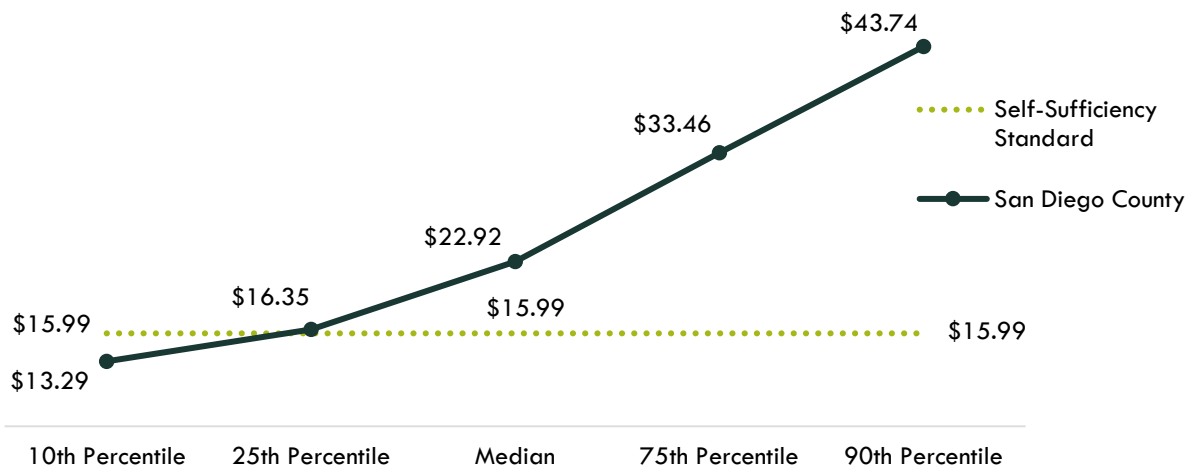[2] Emsi 2019.01; QCEW, Non-QCEW, Self-Employed.
[3] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2010-2018.
[4] The self-sufficiency wage in San Diego for one adult is $15.99 (insightcced.org/2018-self-sufficiency-standard).

Exhibit 3a: Hourly Earnings for *Interaction Design Occupations* in San Diego County

Occupational Title	Entry-Level Hourly Earnings (10th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (90th Percentile)
Graphic Designers	$14.45	$20.59	$33.45
Web Developers	$13.53	$22.67	$43.95
Multimedia Artists and Animators	$11.88	$25.49	$53.82

Exhibit 3b: Hourly Earnings[5] for *Interaction Design Occupations* in San Diego County[6]

- - - - Self-Sufficiency Standard

—●— San Diego County

$43.74

$33.46

$22.92

$16.35

$15.99

$15.99

$13.29

$15.99

| 10th Percentile | 25th Percentile | Median | 75th Percentile | 90th Percentile |

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.[7] There are 16 TOP codes and 23 CIP codes related to *Interaction Design Occupations* (Exhibit 4).

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[5] 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.
[6] Emsi 2019.01; QCEW, Non-QCEW, Self-Employed.
[7] 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).

Exhibit 4: Related TOP and CIP Codes for *Interaction Design Occupations*

Interaction Design Occupations
TOP 050910: Advertising
TOP 061220: Film Production
TOP 061400: Digital Media
TOP 061410: Multimedia
TOP 061420: Electronic Game Design
TOP 061430: Website Design and Development
TOP 061440: Animation
TOP 061460: Computer Graphics and Digital Imagery
TOP 070210: Computer Information Systems
TOP 070700: Computer Software Development
TOP 070710: Computer Software Development
TOP 070900: World Wide Web Administration
TOP 070910: E-Commerce (technology emphasis)
TOP 100900: Applied Design
TOP 101300: Commercial Art
TOP 103000: Graphic Art and Design
CIP 09.0702: Digital Communication and Media/Multimedia
CIP 09.0903: Advertising
CIP 10.0301: Graphic Communications, General
CIP 10.0303: Prepress/Desktop Publishing and Digital Imaging Design
CIP 10.0304: Animation, Interactive Technology, Video Graphics and Special Effects
CIP 11.0201: Computer Programming/Programmer, General
CIP 11.0202: Computer Programming, Specific Applications
CIP 11.0203: Computer Programming, Vendor/Product Certification
CIP 11.0299: Computer Programming, Other
CIP 11.0601: Data Entry/Microcomputer Applications, General

Interaction Design Occupations
CIP 11.0602: Word Processing
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 11.1004: Web/Multimedia Management and Webmaster
CIP 15.1204: Computer Software Technology/Technician
CIP 50.0102: Digital Arts
CIP 50.0401: Design and Visual Communications, General
CIP 50.0402: Commercial and Advertising Art
CIP 50.0409: Graphic Design
CIP 50.0411: Game and Interactive Media Design
CIP 50.0602: Cinematography and Film/Video Production
CIP 50.0699: Film/Video and Photographic Arts, Other

According to TOP data, nine community colleges supply the region with awards for these occupations: Cuyamaca College, Grossmont College, MiraCosta College, Palomar College, San Diego City College, San Diego Continuing Education, San Diego Mesa College, San Diego Miramar College, and Southwestern College. According to CIP data, five non-community colleges supply the region with awards, National University, Platt College-San Diego, The Art Institute of California-San Diego, California College San Diego, and Coleman University (Exhibit 5).

Exhibit 5: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Year 2013-14 through PY2016-17 Average)

TOP6 or CIP	TOP6 or CIP Title	3-Yr Annual Average CC Awards (PY14-15 to PY16-17)	Other Educational Institutions 3-Yr Annual Average Awards (PY13-14 to PY15-16)	3-Yr Total Average Supply (PY13-14 to PY16-17)
050910	Advertising	**7**	**0**	**7**
	• Palomar	7	0	

061220	Film Production	**18**	**0**	**18**
	• San Diego City	18	0	
061400	Digital Media	**37**	**0**	**37**
	• MiraCosta	15	0	
	• Palomar	14	0	
	• San Diego City	8	0	
061410	Multimedia	**40**	**0**	**40**
	• Grossmont	1	0	
	• MiraCosta	19	0	
	• Palomar	6	0	
	• San Diego Mesa	14	0	
061420	Electronic Game Design	**5**	**0**	**5**
	• Palomar	1	0	
	• Southwestern	4	0	
061430	Website Design and Development	**107**	**0**	**107**
	• Cuyamaca	8	0	
	• MiraCosta	2	0	
	• Palomar	1	0	
	• San Diego Cont Ed	69	0	
	• San Diego Mesa	20	0	
	• Southwestern	7	0	
061440	Animation	**12**	**0**	**12**
	• Palomar	12	0	
061460	Computer Graphics and Digital Imagery	**11**	**0**	**11**
	• Palomar	10	0	
	• San Diego Mesa	1	0	
070210	Computer Information Systems	**21**	**0**	**21**
	• Grossmont	2	0	
	• MiraCosta	10	0	
	• San Diego Cont Ed	6	0	

	• San Diego City	0	0		
	• San Diego Miramar	2	0		
	• Southwestern	1	0		
070700	Computer Software Development	**10**	**0**		**10**
	• Palomar	10	0		
070710	Computer Software Development	**35**	**0**		**35**
	• Grossmont	8	0		
	• MiraCosta	3	0		
	• Palomar	3	0		
	• San Diego City	18	0		
	• San Diego Mesa	1	0		
	• Southwestern	2	0		
070900	World Wide Web Administration	**41**	**0**		**41**
	• Grossmont	5	0		
	• Palomar	7	0		
	• San Diego Cont Ed	29	0		
070910	E-Commerce (technology emphasis)	**1**	**0**		**1**
	• MiraCosta	1	0		
101300	Commercial Art	**1**	**0**		**1**
	• Palomar	1	0		
103000	Graphic Art and Design	**56**	**0**		**56**
	• Cuyamaca	13	0		
	• Palomar	9	0		
	• San Diego Cont Ed	5	0		
	• San Diego City	19	0		
	• Southwestern	10	0		
09.0702	Digital Communication and Media/Multimedia	**0**	**11**		**11**
	• National University	0	1		
	• Platt College-San Diego	0	10		

09.0903	Advertising	0	1	1
	• The Art Institute of California-San Diego	0	1	
10.0303	Prepress/Desktop Publishing and Digital Imaging Design	0	1	1
	• Platt College-San Diego	0	1	
10.0304	Animation, Interactive Technology, Video Graphics and Special Effects	0	1	1
	• Platt College-San Diego	0	1	
11.0201	Computer Programming/Programmer, General	0	26	26
	• California College San Diego	0	8	
	• Coleman University	0	18	
11.0801	Web Page, Digital/Multimedia and Information Resources Design	0	9	9
	• The Art Institute of California-San Diego	0	3	
	• Coleman University	0	4	
	• Platt College-San Diego	0	2	
11.0899	Computer Software and Media Applications, Other	0	19	19
	• Coleman University	0	19	
	• Platt College-San Diego	0	0	
50.0402	Commercial and Advertising Art	0	2	2
	• The Art Institute of California-San Diego	0	2	
50.0409	Graphic Design	0	90	90
	• The Art Institute of California-San Diego	0	11	
	• Coleman University	0	79	
			Total	562

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply[8] suggests that there is a small supply gap for these occupations in San Diego County, with 617 annual openings and 562 awards. Comparatively, there are 2,359 annual openings in California and 4,852 awards[9] (Exhibit 6).

Exhibit 6: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

Community Colleges and Other Postsecondary Educational Institutions	Demand (Annual Openings)	Supply (Total Annual Average Supply)	Supply Gap or **Oversupply**
San Diego	617	562	**55**
California	8,494	4,852	**3,642**

Please note: This is a basic analysis of supply and demand of labor. 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. Additionally, the data does not include workers who are currently in the labor force who could fill these positions or workers who are not captured by publicly available data.

Student Outcomes

Based on the information available in the California Community Colleges LaunchBoard, students who took courses in the related TOP codes exhibited the following outcomes (Exhibit 7).

Exhibit 7: Strong Workforce Program Metrics for *TOP 103000: Graphic Art and Design* San Diego-Imperial Region *vs. California* (PY2015-16)

Metric	San Diego-Imperial	California
Number of course enrollments[10]	2,269	22,938
Completed 12+ CTE units in one year[11]	219	2,598
Completed 48+ CTE contact hours in one year[12]	27	60
Number of students who got a degree or certificate[13]	48	463

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[8] 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.
[9] Centers of Excellence Student Outcomes supply table. (coeccc.net/Supply-and-Demand.aspx).
[10] The number of enrollments in courses assigned to the TOP code in the selected year.
[11] The number of students who completed 12 or more credit CTE units.
[12] The number of students who completed 48 or more noncredit CTE instructional contact hours.
[13] The number of unduplicated students who earned a locally-issued certificate, Chancellor's Office approved certificate, associate degree, and/or California Community Colleges bachelor's degree in the selected TOP code.

Metric	San Diego-Imperial	California
Number of students who transferred[14]	140	1,138
Employed in the second fiscal quarter after exit[15]	60%	61%
Employed in the fourth fiscal quarter after exit[16]	62%	61%
Job closely related to field of study[17]	N/A	N/A
Median earnings in the second fiscal quarter after exit[18]	$5,159	$6,001
Median change in earnings[19]	53%	58%
Attained a living wage[20]	40%	39%

Top Employers and Work Locations

Between January 1, 2016 and December 31, 2018, the top five employers in San Diego County for these occupations were Qualcomm, ServiceNow, Hewlett-Packard, Thermo Fisher Scientific, and Sony Electronics Incorporated (Exhibit 8).

Exhibit 8: Top Employers in San Diego County for *Interaction Design Occupations*[21]

Top Employers	
• Qualcomm	• Via Technical
• ServiceNow	• Illumina Incorporated
• Hewlett-Packard	• Northrop Grumman
• Thermo Fisher Scientific, Inc.	• Accenture
• Sony Electronics Incorporated	• Activision

[14] Students who took non-introductory courses or completed a California Community Colleges Chancellor's Office award in the selected TOP code in selected year who subsequently enrolled for the first time in a four-year institution the following year.
[15] Among all exiters with a valid SSN, the percentage who were employed two quarters after exiting California Community Colleges.
[16] Among exiting students with a valid SSN, the percentage who were employed four quarters after exiting California Community Colleges.
[17] Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.
[18] Among exiting students, the median second-quarter earnings one year after the year in which they exited California Community Colleges.
[19] Among exiting students with a valid SSN, the percentage change in earnings one year before and one year after exiting California Community Colleges.
[20] Among completers and skills builders who exited, the proportion of students who attained a living wage.
[21] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.

Skills, Education, and Certifications

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

Exhibit 9a: National Educational Attainment for *Interaction Design Occupations*[22]

Occupational Title	Typical Entry-Level Education
Multimedia Artists and Animators	Bachelor's degree
Graphic Designers	Bachelor's degree
Web Developers	Associate degree

Based on online job postings between January 1, 2016 and December 31, 2018, the top listed educational requirement for *Interaction Design Occupations* is a bachelor's degree (Exhibit 9b).[23]

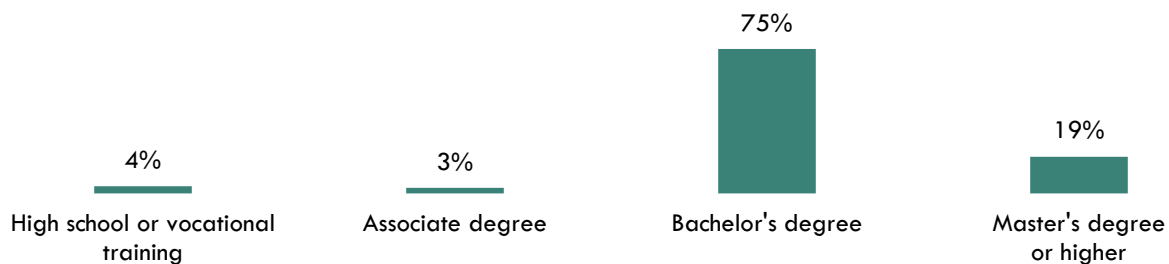**Exhibit 9b: Educational Requirements for *Interaction Design Occupations* in San Diego County[24]**

Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2016 and December 31, 2018.

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[22] Emsi, 2019.01; QCEW, Non-QCEW, Self-Employed.
[23] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.
[24] "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified October 18, 2018. bls.gov/emp/tables/educational-attainment.htm.

Exhibit 10: Top Skills for *Interaction Design Occupations* in San Diego County[25]

Specialized Skills	Soft Skills	Software Skills
• JavaScript • Web Development • Web Application Development • Graphic Design • Web Site Design	• Creativity • Communication Skills • Teamwork/Collaboration • Detail-Oriented • Problem Solving	• JavaScript • Adobe Photoshop • jQuery • HTML5 • AngularJS

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Important Disclaimers

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

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[25] Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2016-2018.