Digital Design and Programming Occupations

Labor Market Analysis: Imperial County

June 2021

Summary

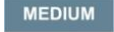| NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED EDUCATION FOR MAJORITY OF OCCUPATIONS ANALYZED
Proceed with Caution	✓ / ✗	✓ / ✗	☑ Bachelor's Degree
			☐ Associate Degree
			☐ Some College or Certificate
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	☐ HS Diploma or Equivalent
The COE defers to the region	MEDIUM	MEDIUM	☐ Less than a HS Diploma
			☐ Apprenticeship

This brief provides labor market information about *Digital Design and Programming Occupations* to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning. *Digital Design and Programming Occupations* include "Computer Programmers," "Graphic Designers," "Special Effects Artists and Animators," and "Web Developers and Digital Interface Designers." According to available labor market information, *Digital Design and Programming Occupations* in Imperial County have a labor market demand of eight annual job openings (while average demand for a single occupation in Imperial County is 14 annual job openings), and only one institution (Imperial Valley College) supplies 12 awards for these occupations, suggesting that there is an oversupply in the labor market. Entry-level wages and median wages for these occupations are above the living wage. This brief recommends proceeding with caution when developing a new program and defers to the region for a program modification because 1) an oversupply exists in the region and 2) entry-level and median earnings are above the living wage. Colleges should note, however, that the percentage of students who complete a related program and earn a living wage is lower than the percentage of students who complete Career Education programs statewide. 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 Imperial County for the following occupational codes in the Standard Occupational Classification (SOC)[1] system:

- **Computer Programmers** (SOC 15-1251): Create, modify, and test the code and scripts that allow computer applications to run. Work from specifications drawn up by software and web developers or other individuals. May develop and write computer programs to store, locate, and retrieve specific documents, data, and information.

- **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)[2]: 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 *Digital Design and Programming 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.
[2] Web Developers (SOC 15-1255) and Web and Digital Interface Designers (SOC 15-1254) were combined into Web and Digital Interface Designers (SOC-1257). bls.gov/oes/current/oes151257.htm.

Projected Occupational Demand

Between 2020 and 2025, *Digital Design and Programming Occupations* are projected to increase by four net jobs or five percent (Exhibit 1a). Employers in Imperial County will need to hire eight 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 *Digital Design and Programming Occupations* (2010-2025)[3]

Labor Market Demand

8 annual job openings (2020-2025)
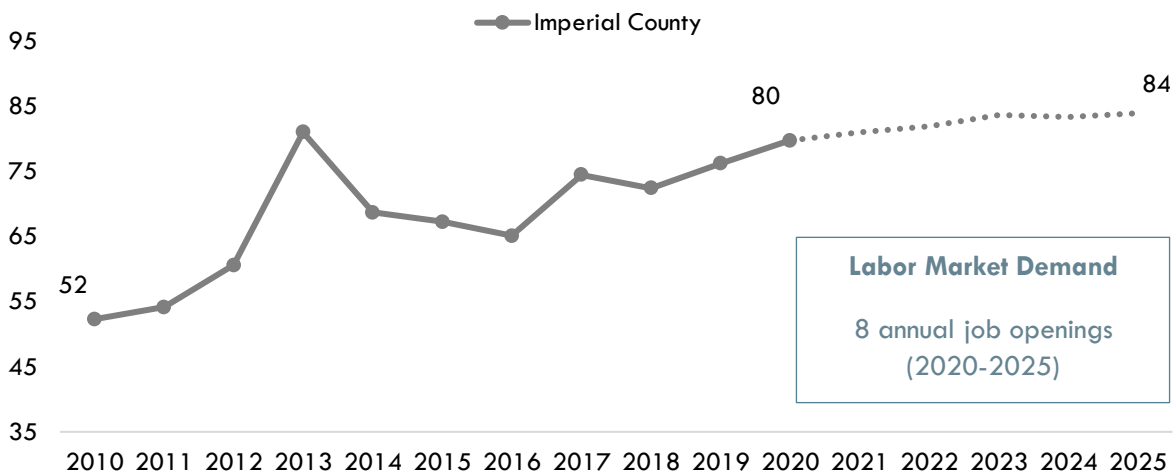
Exhibit 1b disaggregates the projected number of jobs change by occupation. "Graphic Designers" are projected to have the most labor market demand between 2020 and 2025, with five annual job openings.

Exhibit 1b: Number of Jobs for *Digital Design and Programming Occupations*
in Imperial County (2020-2025)[4]

Occupational Title	2020 Jobs	2025 Jobs	2020 - 2025 Net Jobs Change	2020-2025 % Net Jobs Change	Annual Job Openings (Demand)
Graphic Designers	46	48	2	4%	5
Computer Programmers	17	16	-1	-6%	1
Special Effects Artists and Animators	8	9	1	13%	1
Web Developers and Digital Interface Designers	9	11	2	22%	1
Total	80	84	4	5%	8

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[3] EMSI 2021.1; QCEW, Non-QCEW, Self-Employed.
[4] EMSI 2021.1; QCEW, Non-QCEW, Self-Employed.

Earnings

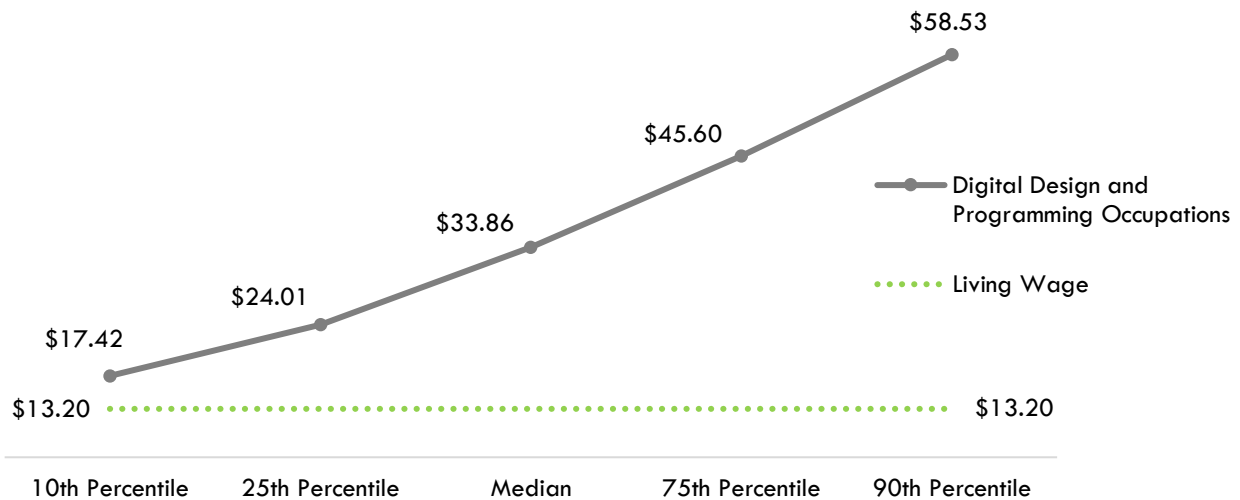Exhibit 2a disaggregates hourly earnings by occupation. The entry-level hourly earnings for *Digital Design and Programming Occupations* range from $16.87 to $31.16.

Exhibit 2a: Hourly Earnings for *Digital Design and Programming Occupations* in Imperial County[5]

Occupational Title	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75th Percentile)
Computer Programmers	$31.16	$42.70	$56.24
Graphic Designers	$16.87	$25.01	$34.97
Special Effects Artists and Animators	N/A	N/A	N/A
Web Developers and Digital Interface Designers	N/A	N/A	N/A

On average, the entry-level hourly earnings for *Digital Design and Programming Occupations* are $24.01; this is more than the living wage for a household of two adults and two school-age children in Imperial County, which is $13.20 per hour (Exhibit 2b).[6]

Exhibit 2b: Average Hourly Earnings[7] for *Digital Design and Programming Occupations* in Imperial County[8]

$58.53

$45.60

$33.86

$24.01

$17.42

——●—— Digital Design and Programming Occupations

•••••• Living Wage

$13.20 ••• $13.20

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

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[5] EMSI 2021.1; QCEW, Non-QCEW, Self-Employed.
[6] "California Family Needs Calculator (formerly the Self-Sufficiency Standard)," Insight: Center for Community Economic Development, last updated 2018. insightcced.org/2018-self-sufficiency-standard.
[7] 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.
[8] EMSI 2021.1; QCEW, Non-QCEW, Self-Employed.

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.[9] There are 10 TOP codes and nine CIP codes related to *Digital Design and Programming Occupations* (Exhibit 3).

Exhibit 3: Related TOP and CIP Codes for *Digital Design and Programming Occupations*

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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[9] 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).

According to TOP data, one community college supplies the region with awards for these occupations: Imperial Valley College. According to CIP data, no non-community-college institution supplies the region with awards (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)
0614.30	Website Design and Development	**12**	**0**	**12**
	• Imperial Valley	12	0	
			Total	**12**

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply[10] suggests that there is an oversupply for these occupations in Imperial County, with eight annual openings and 12 awards. Comparatively, there are 9,549 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
Imperial	8	12	4
California	9,549	5,245	4,304

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.
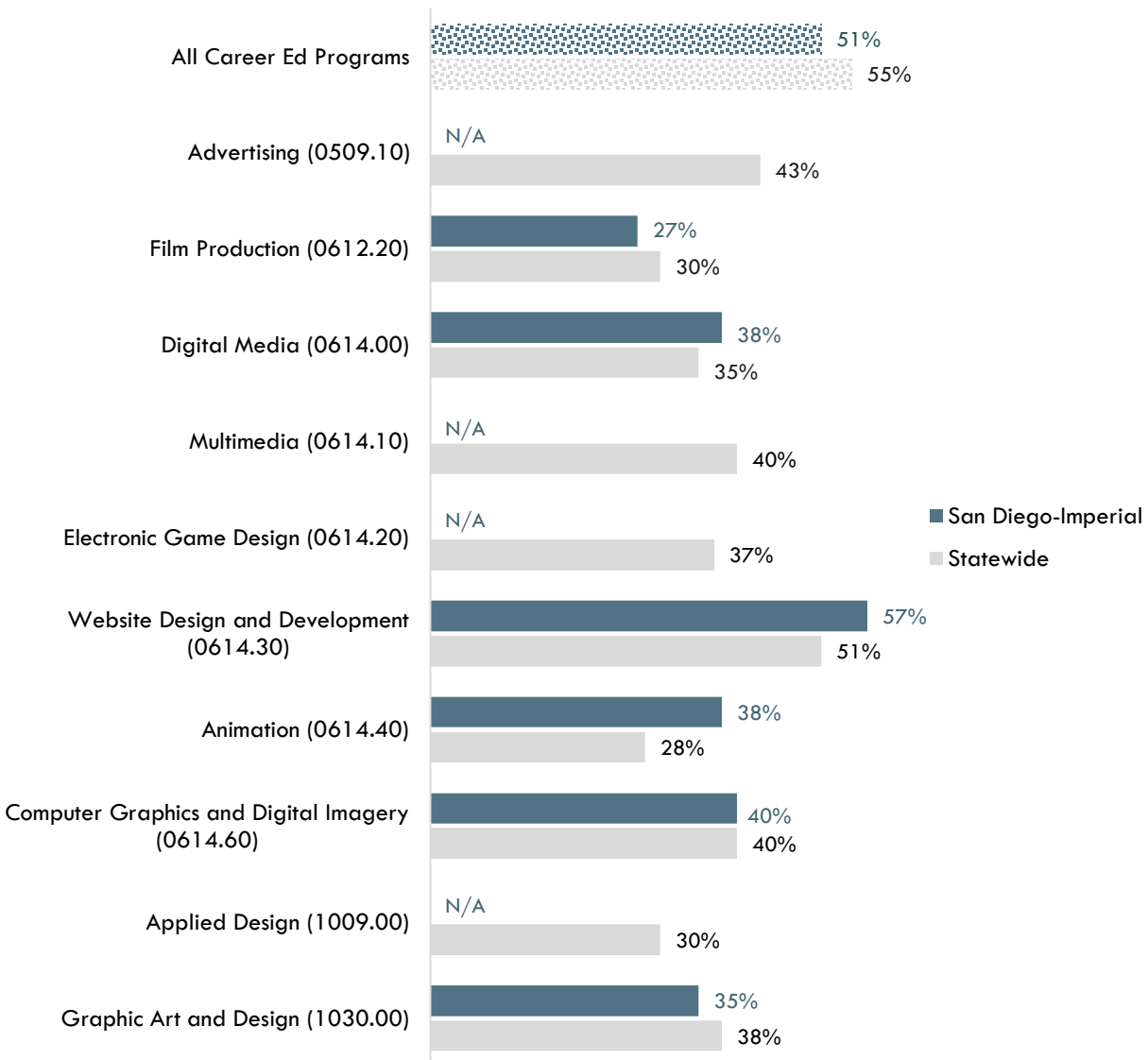
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[10] Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.
[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 *Digital Design and Programming 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]

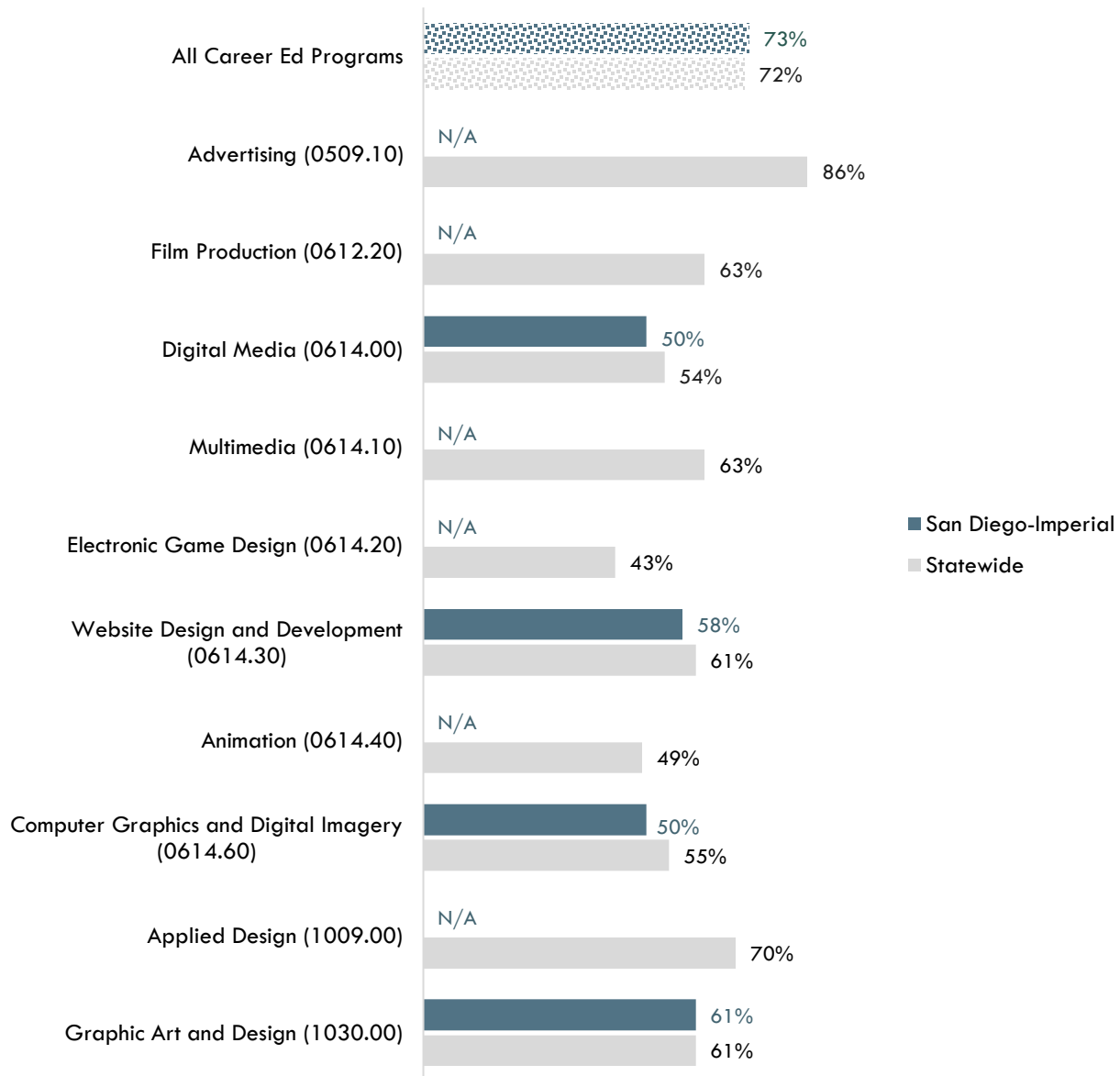**Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, PY2017-18[13]**

| 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 *Digital Design and Programming 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 seven online job postings per year for *Digital Design and Programming Occupations* in Imperial 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 *Digital Design and Programming Occupations* in Imperial County (2010-2020)[16]
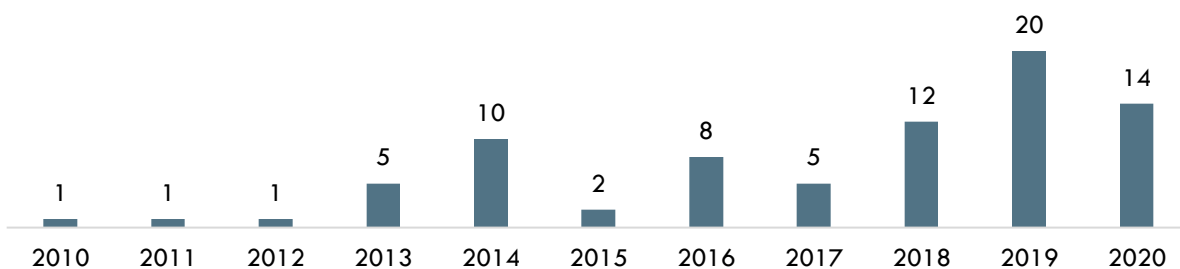
Top Employers

Between January 1, 2018 and December 31, 2020, the top five employers in Imperial County for *Digital Design and Programming Occupations* were Wireless Vision, Imperial Irrigation District, IBM, Bayer Corporation and Best Buy based on online job postings (Exhibit 8).

Exhibit 8: Top Employers for *Digital Design and Programming Occupations* in Imperial County[17]

Top Employers	
• Wireless Vision LLC	• Imperial County
• Imperial Irrigation District	• Imperial Valley College
• IBM	• Ironbelly Tech
• Bayer Corporation	• Kalo
• Best Buy	• KlouD InnoVisionZ

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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

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

Exhibit 9a: National Educational Attainment for *Digital Design and Programming Occupations*[18]

Occupational Title	Typical Entry-Level Education
Computer Programmers	Bachelor's degree
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 Imperial County, employers posted a bachelor's degree as the educational requirement for *Digital Design and Programming Occupations* (Exhibit 9b).[19]

Exhibit 9b: Educational Requirements for *Digital Design and Programming Occupations* in Imperial County[20]

89%

11%

High school or vocational training

Bachelor's degree

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[18] EMSI 2021.1; 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 September 4, 2019. 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 *Digital Design and Programming Occupations* in Imperial County[21]

Specialized Skills	Soft Skills	Software Skills
• Customer Service	• Problem Solving	• JavaScript
• Front-end Development	• Communication Skills	• SQL
• Web Development	• Research	• Java
• Bank Deposits	• Written Communication	• Systems Analysis
• Billing Inquiries	• Telephone Skills	• C++
• Cash Handling	• Writing	• Microsoft C#
• Customer Accounts	• Creativity	• Application Design
• Customer Billing	• Mentoring	• Hypertext Preprocessor
• Equipment Replacement	• Teamwork / Collaboration	• MySQL
• Merchandising	• Detail-Oriented	• Node.js
• Retail Industry Knowledge	• English	• Scrum
• Sales	• Multi-Tasking	• User Interface Design
• Store Management	• Organizational Skills	• Adobe Acrobat
• Systems Analysis	• Analytical Skills	• Adobe Illustrator
• Buying Experience	• Bilingual	• Adobe InDesign

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

Exhibit 11: Top Certification for *Digital Design and Programming Occupations* in Imperial County[22]

Top Certification in Online Job Postings
1. Security Clearance

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

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