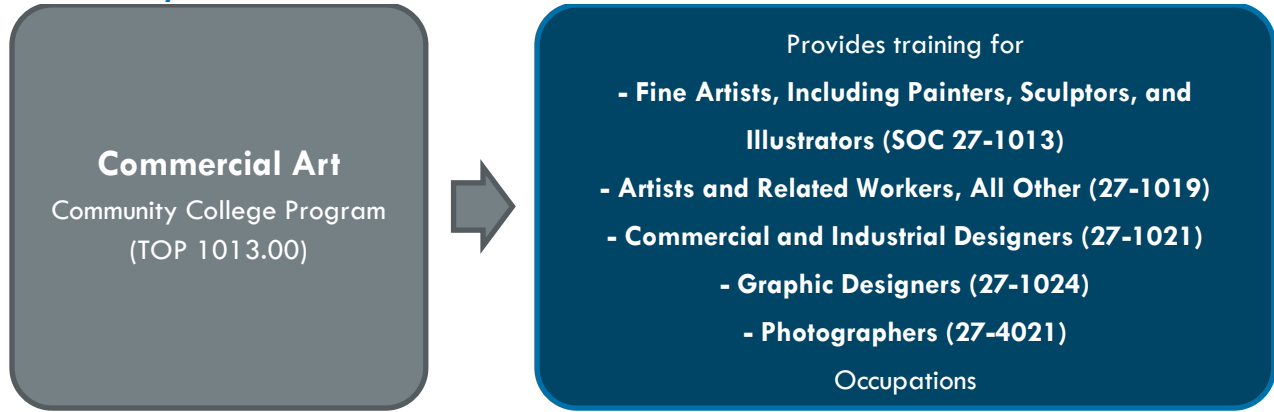


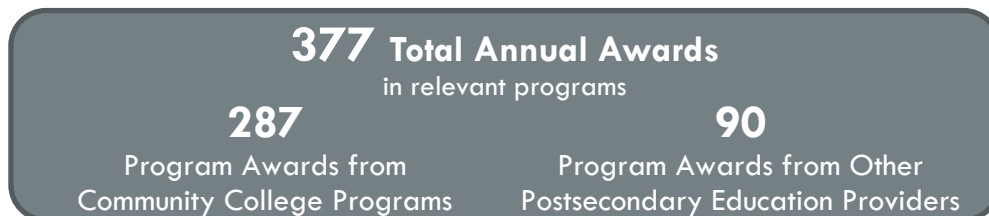
Artists and Related Workers

Inland Empire/Desert Region (Riverside and San Bernardino counties)

Summary



Over the next five years (2022-2027), employment for the artists and related workers occupational group is projected to:



The Inland Empire/Desert Centers of Excellence

 **Recommends**

commercial art program

to meet the need for more workers in the region

Introduction

California Community College commercial art programs (TOP 1013.00) prepare students for employment through the instruction of the design and execution of layouts and illustrations for advertising displays and instructional manuals, including the preparation of copy, lettering, poster, package and product design, fashion illustration, silk screening, air brushing, inks, color dynamics, and computer pre-print applications (Taxonomy of Programs, 2023). The knowledge, skills, and abilities trained by commercial art programs lead to employment in the following five occupations, further referred to as the artists and related workers occupational group:

- Fine Artists, Including Painters, Sculptors, and Illustrators (27-1013)
- Artists and Related Workers, All Other (27-1019)
- Commercial and Industrial Designers (27-1021)
- Graphic Designers (27-1024)
- Photographers (27-4021)

Job Demand

In 2022, there were 5,431 jobs in the artists and related workers occupational group in the Inland Empire/Desert Region. Regional employment for this occupational group is projected to increase by 11% through 2027; 647 job openings are projected annually. Exhibit 1 displays the job counts, five-year projected job growth, and job openings in the region.

Exhibit 1. Five-year projections for the artists and related workers occupational group, Inland Empire/Desert Region, 2022-2027

Occupation	2022 Jobs	2027 Jobs	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)
Fine Artists, Including Painters, Sculptors, and Illustrators	875	1,019	16%	637	127
Artists and Related Workers, All Other	188	200	6%	114	23
Commercial and Industrial Designers	323	345	7%	167	33
Graphic Designers	2,416	2,584	7%	1,293	259
Photographers	1,629	1,881	15%	1,022	204
Total	5,431	6,028	11%	3,233	647

Source: Lightcast 2023.3

An online job ad search for the artists and related workers occupational group was conducted to reveal the employers seeking these workers, including the median posting duration, earnings information, and in-demand skills. Exhibit 2 displays the number of job ads posted for the artists and related workers occupational group over the last 12 months and the median posting duration. Over the previous 12 months, there were 659 job ads for the artists and related workers occupational group in the region.

Exhibit 2. Job ads and posting duration, Inland Empire/Desert Region, October 2022 through September 2023

Occupation	Job Ads	Median Posting Duration (Days)
Graphic Designers	277	27
Photographers	242	27
Commercial and Industrial Designers	92	25
Fine Artists, Including Painters, Sculptors, and Illustrators	48	22

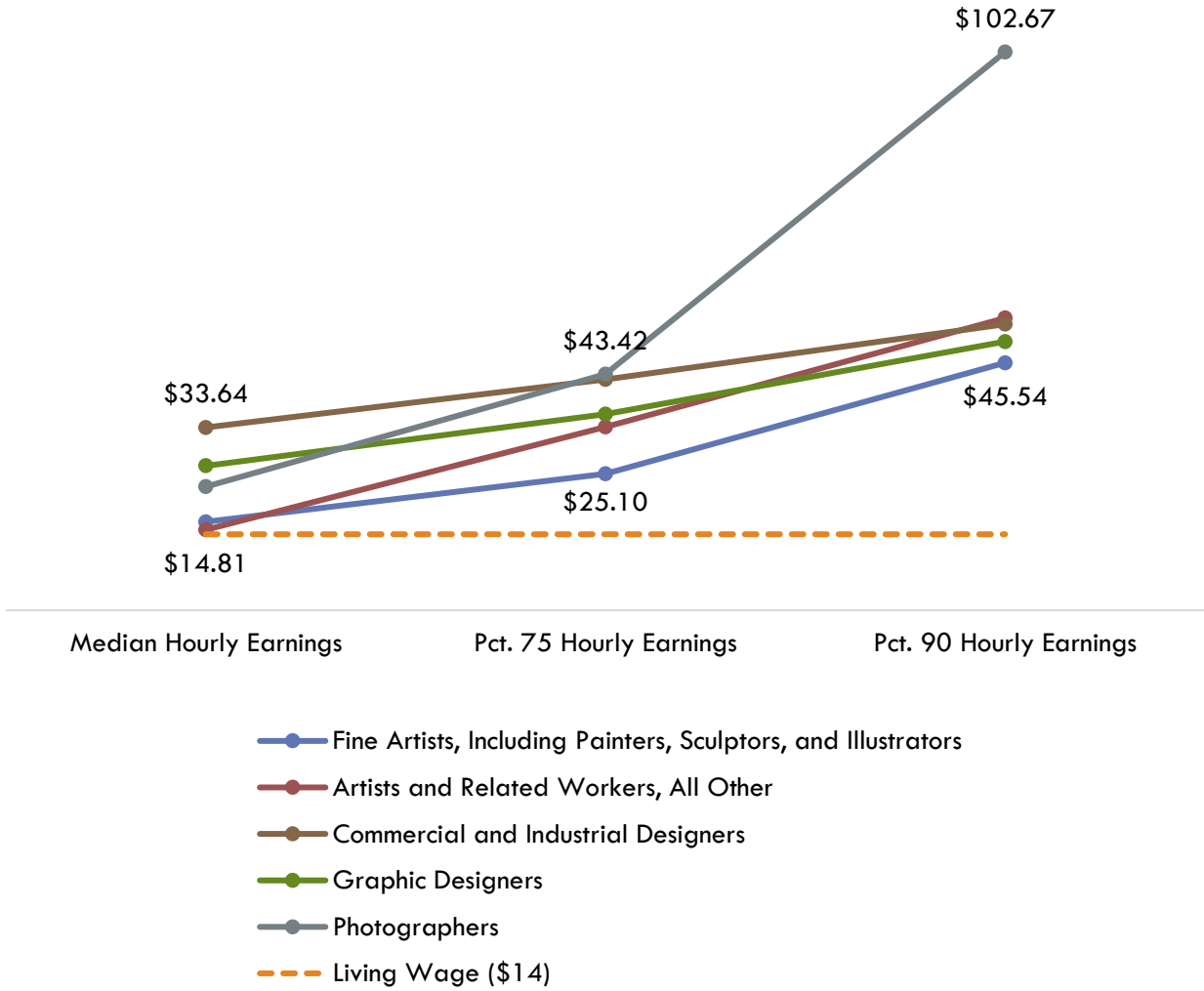
Source: Lightcast 2023.3

Earnings

The living wage for one adult in the Inland Empire (Riverside and San Bernadino) is \$14 per hour or \$29,120 annually. Exhibit 3 displays the hourly earnings for the artists and related workers occupational group. All five occupations have median and experienced (75th and 90th percentile) hourly wages above the living wage.

NOTE: When analyzing wage data in this report, it is important to consider the nature of the work one performs (commercial, artistic, or other), job type (full-time vs part-time vs hobby) and the complexity of compensation. For some occupations, such as fine artists, including painters, sculptors, and illustrators, there may not be data on what workers actually make per hour – only on their annual earnings. To calculate hourly earnings, the annual earnings are divided by 2,080 working hours. This can cause an issue when occupations typically do not log that many working hours annually, or when the nature of the work operates on an irregular schedule. For example: Many fine artists in the region may work only part time. If the source data only publishes annual earnings, and these part-time annual wages are divided by 2,080 hours, the published hourly earnings number will be lower than what a fine artist actually makes per hour.

Exhibit 3. Hourly earnings by percentile for the artists and related workers occupational group, Inland Empire/Desert Region, 2022

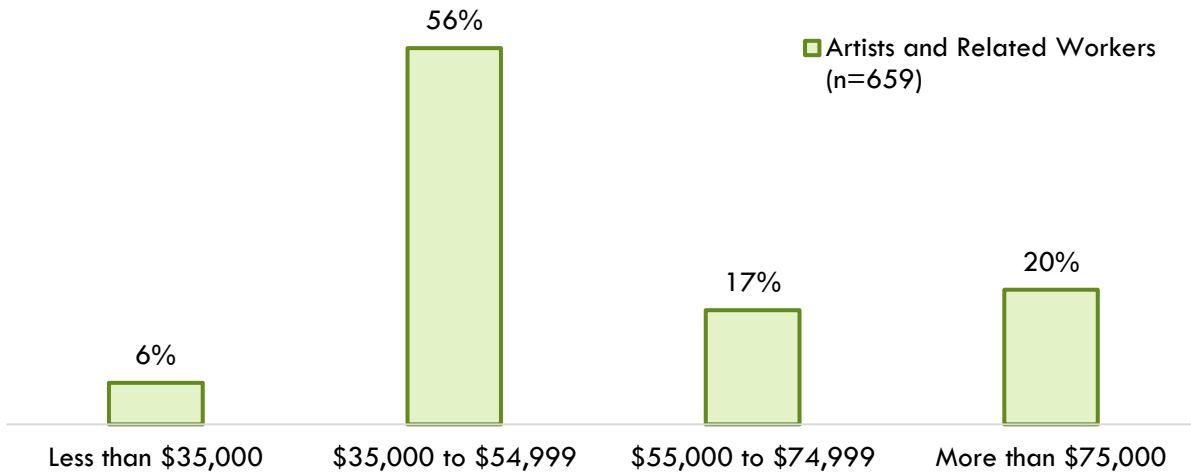


Source: Lightcast 2023.3

Advertised Salary from Online Job Ads

Exhibit 4 displays the regional online advertised salaries for the artists and related workers occupational group over the last 12 months. Online job ad salary information reveals that the majority of employers advertise an annual salary between \$35,000 and \$55,000.

Exhibit 4. Online advertised salaries for the artists and related workers occupational group, Inland Empire/Desert Region, October 2022 through September 2023



Source: Lightcast 2023.3

Online Job Advertisements: Job Titles, Employers, Skills, Education, & Work Experience

Exhibit 5 displays the job titles most frequently used in artists and related workers job ads over the last 12 months. Displaying advertised job titles may provide insight into the types of positions sought by employers posting job ads.

Exhibit 5. Job titles most frequently used in artists and related workers job ads, Inland Empire/Desert Region, October 2022 through September 2023

Job Titles	Unique Job Ads
Graphic Designers	131
Photographers	128
Artists / Illustrators	39
Industrial Designers	27
UI / UX Designer / Developer	19

Source: Lightcast 2023.3

Exhibit 6 displays the employers posting the most job ads for the artists and related workers occupational group during the last 12 months. Showing employer names provides insight into where students may find employment after completing a program. Esri posted the most job ads for the artists and related workers occupational group over the last 12 months.

Exhibit 6. Employers posting the most job ads for the artists and related workers occupational group, Inland Empire/Desert Region, October 2022 through September 2023

Top Employer	Unique Job Ads
Esri	69
Walmart	19
Cherished Memories Photography	16
Ulta Beauty	13
Shutterfly	11
Titanium Solar	9
GradImages	8
Zillow	8

Source: Lightcast 2023.3

Exhibit 7 lists a sample of specialized and employability skills employers seek when seeking workers to fill artists and related workers positions. Specialized skills are occupation-specific skills that employers request for industry or job competency. Common skills are foundational skills that transcend industries and occupations; this category is often referred to as "soft skills." The skills requested in job ads may be utilized to guide curriculum development.

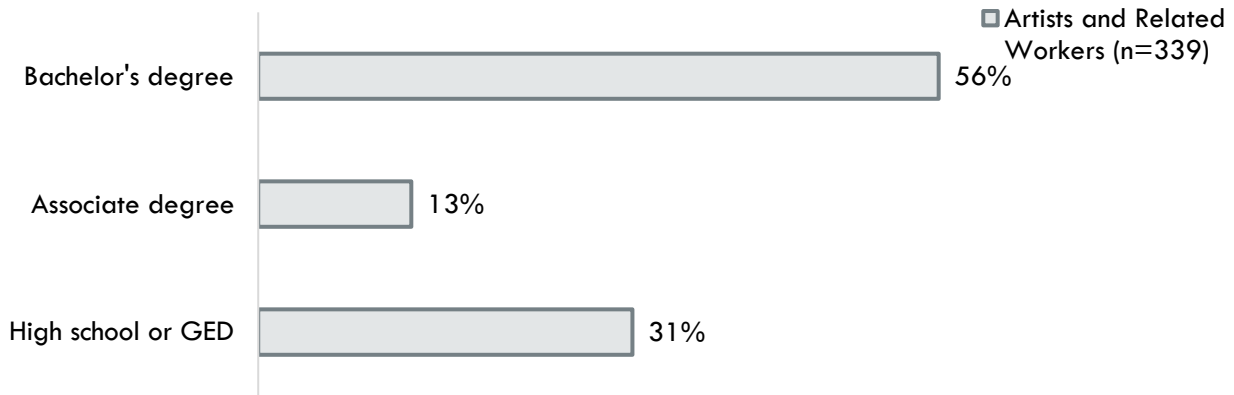
Exhibit 7. Sample of in-demand skills from employer job ads, Inland Empire/Desert Region, October 2022 through September 2023

Specialized skills	Common skills
<ul style="list-style-type: none"> • Graphic Design • Photography • Marketing • Product Design/Development • Project Management • Adobe (Photoshop, Illustrator, InDesign) • Workflow Management • Logo Design 	<ul style="list-style-type: none"> • Communications • Customer Service • Creativity • Sales • Editing • Research • Problem Solving • Pitching/Presentations

Source: Lightcast 2023.3

Exhibit 8 displays the minimum advertised education requirements for the artists and related workers occupational group. According to the Bureau of Labor Statistics, between 20% and 34% of incumbent workers in these occupations hold a community college-level of educational attainment; "some college, no degree," and an "associate degree." The majority of employer job ads (56%) sought a candidate holding a Bachelor's degree or equivalent as a minimum education level requirement.

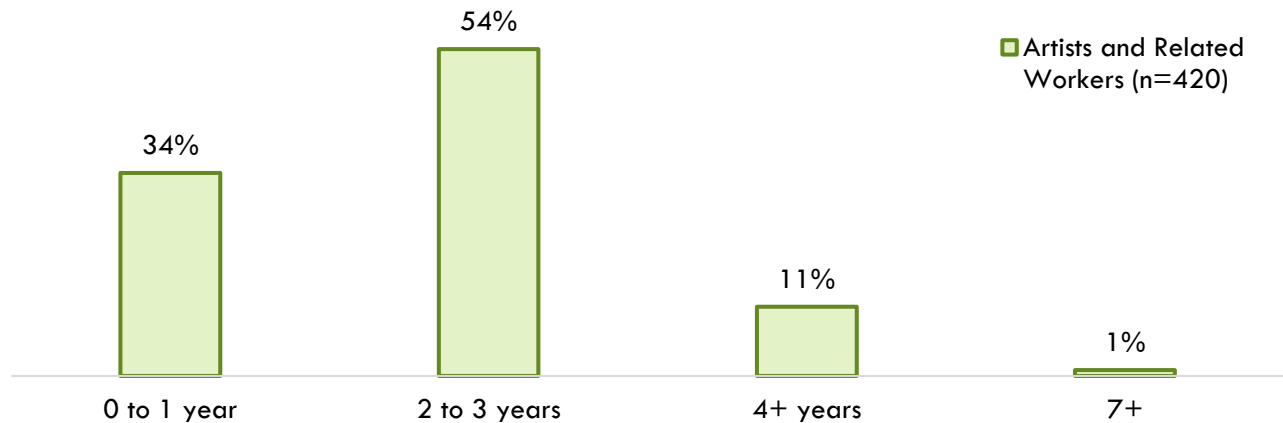
Exhibit 8. Minimum advertised education requirements, Inland Empire/Desert Region, October 2022 through September 2023



Source: Lightcast 2023.3

Exhibit 9 displays the work experience typically required from employer job ads for the artists and related workers occupational group. More than half of employers (54%) listing minimum experience requirements sought candidates with two to three years of previous work experience.

Exhibit 9. Real-time work experience requirements, Inland Empire/Desert Region, October 2022 through September 2023



Source: Lightcast 2023.3

Student Completions and Programs Outcomes

Exhibit 10 displays student completions for the programs that have historically trained for the occupations analyzed in this report. Supply data is provided for the last three academic years, 2019-2022. Eleven (11) regional community colleges issued an annual average of 287 awards in relevant programs. Program completion and student outcome methodologies are found in the appendix.

Exhibit 10. Annual average community college awards for artists and related workers programs, Inland Empire/Desert Region, Academic Years 2019-2022

TOP Code	Program	College	2019-20 Awards	2020-21 Awards	2021-22 Awards	3-Year Award Average
0506.40	Small Business and Entrepreneurship	Barstow	-	-	1	0
		Chaffey	8	6	10	8
		Mt. San Jacinto	2	2	1	2
		Norco	1	1	-	1
		Palo Verde	10	6	14	10
		Riverside	10	25	49	28
		San Bernardino	-	1	5	2
Supply Subtotal/Average			31	41	80	51
0614.00	Digital Media	Crafton Hills	-	-	2	1
		Mt. San Jacinto	34	17	14	22
		Norco	-	9	35	15
		Palo Verde	11	-	20	10
		Riverside	37	17	43	32
		Victor Valey	-	-	5	2
Supply Subtotal/Average			82	43	119	81
0614.30	Website Design and Development	Chaffey	1	3	6	3
Supply Subtotal/Average			1	3	6	3
0614.60	Computer Graphics and Digital Imagery	Chaffey	7	10	8	8
		Crafton Hills	3	1	-	1
		Desert	16	11	12	13
		Moreno Valley	-	1	-	0
Supply Subtotal/Average			26	23	20	23
1009.00	Applied Design	Mt. San Jacinto	12	-	-	4
Supply Subtotal/Average			12	-	-	4
1012.00	Applied Photography	Barstow	4	4	2	3
		Chaffey	19	10	18	16
		Desert	-	1	1	1
		Mt. San Jacinto	-	12	4	5
		Riverside	28	16	18	21
Supply Subtotal/Average			51	43	43	46

1013.00	Commercial Art	Chaffey	-	-	1	0
Supply Subtotal/Average			-	-	1	0
1030.00	Graphic Art and Design	Desert	-	-	4	1
		Mt. San Jacinto	-	20	22	14
		Riverside	35	50	42	42
		San Bernardino	29	9	24	21
Supply Subtotal/Average			64	79	92	78
Supply Total/Average			267	232	361	287

Source: MIS Data Mart

California program outcome data may provide useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibit 11.

Exhibit 11. 1013.00 – Commercial art strong workforce program outcomes, Inland Empire/Desert Region, most recent academic year

Strong Workforce Program Metrics: 1013.00 – Commercial Art	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2021-22)	120	2,734
Completed 9+ career education units in one year (2021-22)	17%	32%
Students who attained a noncredit workforce milestone in a year (2021-22)	N/A	46%
Students who earned a degree, certificate, or attained apprenticeship (2021-22)	N/A	57
Job closely related to the field of study (2019-20)	N/A	62%
Median annual earnings (all exiters) (2020-21)	\$34,834	\$32,540
Median change in earnings (all exiters) (2020-21)	42%	33%
Attained a living wage (completers and skills-builders) (2020-21)	N/A	38%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 12 displays awards for other postsecondary education providers reported in relevant programs. Completion data is compiled from the Integrated Postsecondary Education Data System (IPEDS) for the most recent two years. Five (5) other regional postsecondary education providers issued 90 annual average awards over the last two academic years.

Exhibit 12. Other educational providers artists and related workers training programs, two-year annual average credentials, Inland Empire/Desert Region, Academic Years 2019-2021

CIP Code	Program	Institution	2019-20 Awards	2020-21 Awards	2-Year Award Average
11.0801	Web Page, Digital/Multimedia and Information Resources Design	DeVry University – California	5	3	4
Supply Subtotal/Average			5	3	4
50.0401	Design and Visual Communications, General	Platt College - Ontario	2	4	3
		University of Redlands	18	25	22
Supply Subtotal/Average			20	29	25
50.0409	Graphic Design	California Baptist University	33	52	43
		La Sierra University	1	2	2
		Platt College - Ontario	15	13	14
Supply Subtotal/Average			49	67	58
50.0410	Illustration	California Baptist University	2	4	3
Supply Subtotal/Average			2	4	3
Supply Total/Average			76	103	90

Source: IPEDS

Summary of Findings & Recommendation

Over the next five years, the artists and related workers occupational group is projected to have 647 annual job openings and increase employment by 11% in the Inland Empire/Desert Region. All five occupations have median and experienced (75th and 90th percentile) hourly wages above the living wage.

Over the last three academic years, 11 regional community colleges issued 287 annual average awards in related programs. Five non-community college postsecondary education institutions issued 90 annual average awards in four programs training for artists and related workers. Combined, all regional postsecondary education institutions issued 377 awards annually, on average.

The Centers of Excellence finds that there is a regional need for training programs to meet the regional demand for more workers. Colleges considering this program should partner with applicable employers to document their demand for artists and related workers and the skills/certifications required for students to earn a living wage after exiting the program. Since it is common to find many self-employed workers within the occupations studied in this report, colleges may benefit from incorporating an entrepreneurialism component in their programs. It should also be made clear to students that general employment is low in certain areas, and employers/clients often pay per project – not a fixed hourly rate – making overall income unpredictable.

Contact

Juan Madrigal
Centers of Excellence, Inland Empire/Desert Region
juan@coeccc.net
October 2023

References

California Community Colleges Chancellor's Office. (2023). *Chancellor's Office Curriculum Inventory (COCI), version 3.0*. Retrieved from <https://coci2.ccctechcenter.org/programs>

California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. (2023). *Data Mart*. Retrieved from <https://datamart.cccco.edu/datamart.aspx>

California Community Colleges Chancellor's Office, Curriculum and Instructional Unit, Academic Affairs Division. (2023). *Taxonomy of Programs, 7th Edition*. Retrieved from <https://www.cccco.edu/-/media/CCCCO-Website/docs/curriculum/final-top-code-manual-2023edit-4-a11y.pdf?la=en&hash=28074BFE9915B49A7688B8BDEF0DB7E55FEB3A2C>

Lightcast. (2023). *Datarun 2023.3*. Retrieved from <https://www.economicmodeling.com/>

National Center for O*NET Development. (2023). *O*NET OnLine*. Retrieved from <https://www.onetonline.org/>

U.S. Department of Education. Institute of Education Sciences, National Center for Education Statistics. Integrated Postsecondary Education System (IPEDS). (2023). Retrieved from <https://nces.ed.gov/ipeds/use-the-data>

Appendix: Methodology

Exhibit 10 displays the average annual California Community College (CCC) awards conferred during the three academic years between 2019 and 2022 from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variations that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from California's Employment Development Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2023a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS) administered by Santa Rosa Junior College (LaunchBoard, 2023a).

Table 1. 2022 to 2027 job growth, wages, entry-level education, training, and work experience required for the artists and related workers occupational group in the Inland Empire/Desert Region (Riverside and San Bernardino Counties combined)

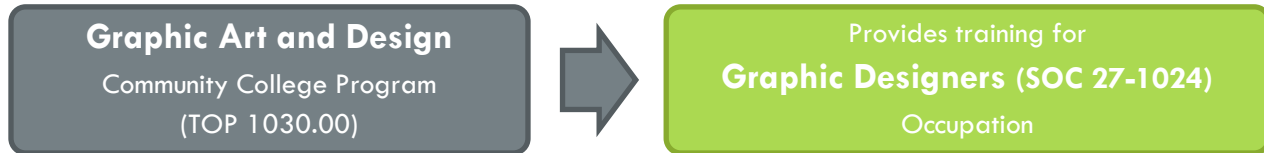
Occupation (SOC)	2022 Jobs	5-Year Change	5-Year % Change	Annual Openings (New + Replacement Jobs)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Entry-Level Education & On-The-Job-Training	Work Experience Required
Fine Artists, Including Painters, Sculptors, and Illustrators (27-1013)	875	144	16%	127	\$16.29	\$47,139	Bachelor's degree & Long-term	None
Artists and Related Workers, All Other (27-1019)	188	12	6%	23	\$14.81	\$51,411	No formal educational credential & Long-term	None
Commercial and Industrial Designers (27-1021)	323	21	7%	33	\$33.64	\$73,919	Bachelor's degree & None	None
Graphic Designers (27-1024)	2,416	168	7%	259	\$26.58	\$65,713	Bachelor's degree & None	None
Photographers (27-4021)	1,629	252	15%	204	\$22.75	\$88,260	High school diploma or equivalent & Moderate-term	None
Total	5,431	596	11%	647	-	-	-	-

Source: Lightcast 2023.3

Graphic Design

Inland Empire/Desert Region (Riverside and San Bernardino counties)

Summary



Over the next five years (2022-2027), employment for graphic designers is projected to



Regional community colleges and other postsecondary educational institutions issued:




The Inland Empire/Desert Centers of Excellence

Recommends

graphic art and design program expansion
to meet the need for more workers in the region

Introduction

California Community College graphic art and design programs prepare students for employment through instruction related to the application of artistic techniques to the effective communication of information and ideas, for commercial or technical purposes. These programs include design principles, color theory, typography, concept sketching, imaging, and communication skills (Taxonomy of Programs, 2012). The knowledge, skills, and abilities trained by graphic art and design programs lead to employment as graphic designers.

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.

Sample job titles: Artist, Designer, Graphic Artist, Graphic Designer, Online Producer, Production Artist, Publications Designer

Entry-Level Educational Requirement: Bachelor's degree

Training Requirement: None

Work Experience: None

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 26%

Job Counts and Projections

In 2022, there were 1,749 graphic designer jobs in the region. Regional employment for this occupation is projected to increase by 8% through 2027; 190 job openings are projected annually. Exhibit 1 displays the job counts, five-year projected job growth, job openings, and the share of incumbent workers aged 55 years and greater in the region.

Exhibit 1. Five-year projections for graphic designers, Inland Empire/Desert Region, 2022-2027

Occupation	2022 Jobs	2027 Jobs	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Graphic Designers	1,749	1,881	8%	948	190	18%

Source: Lightcast 2023.2

An online job ad search for graphic designers was conducted to reveal the employers seeking these workers, including the median posting duration, earnings information, and in-demand skills. The job ad search was limited to local employers posting full-time jobs and seeking workers with two years or less of work experience to reflect the opportunities students may seek when exiting a graphic design program.

Over the previous 12 months (June 2022 to May 2023), there were 79 unique job ads for graphic designers in the region. On average, regional employers kept online job ads for graphic designers open for 27 days. The average regional online job is open 29 days, indicating that employers fill graphic designer positions slightly faster than all other jobs.

Exhibit 2. Unique job ads and posting duration, Inland Empire/Desert Region, June 2022 through May 2023

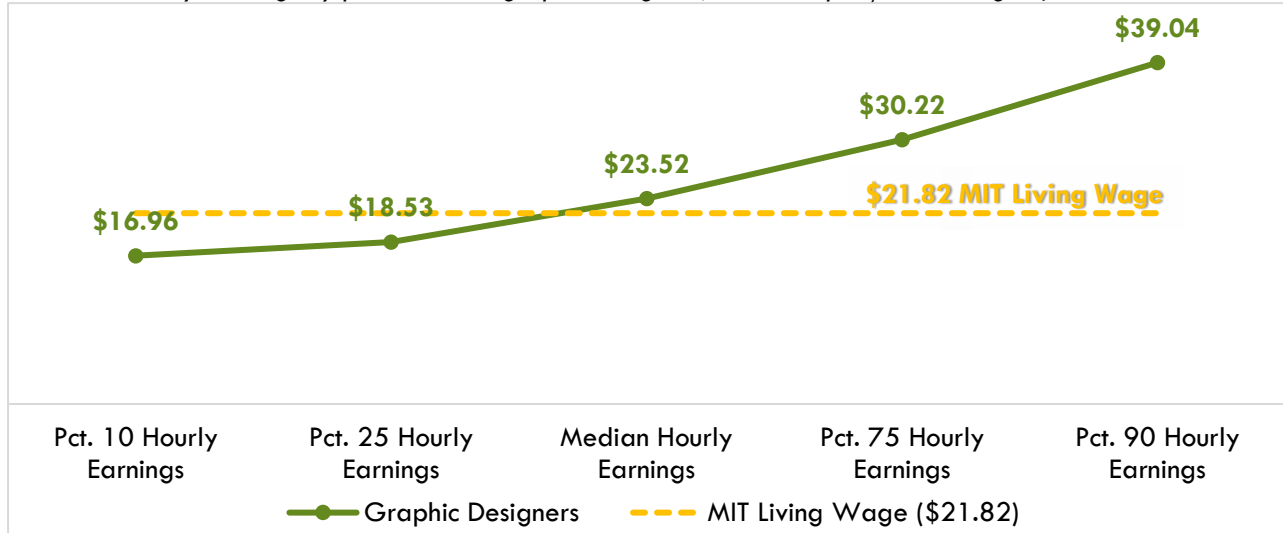
Occupation	Unique Job Ads	Median Posting Duration (Days)
Graphic Designers	79	27

Source: Lightcast 2023.2

Earnings and Benefits

Community colleges should ensure their training programs lead to employment opportunities that provide a living wage. The MIT living wage calculator estimates that an individual must earn \$21.82 per hour or \$45,386 annually to be self-sufficient in California (Glasmeier, 2023). Exhibit 3 displays the hourly earnings for graphic designers. The median hourly earnings for graphic designers are above the living wage estimate, indicating that at least half of workers in this occupation earn a living wage.

Exhibit 3. Hourly earnings by percentile for graphic designers, Inland Empire/Desert Region, 2022

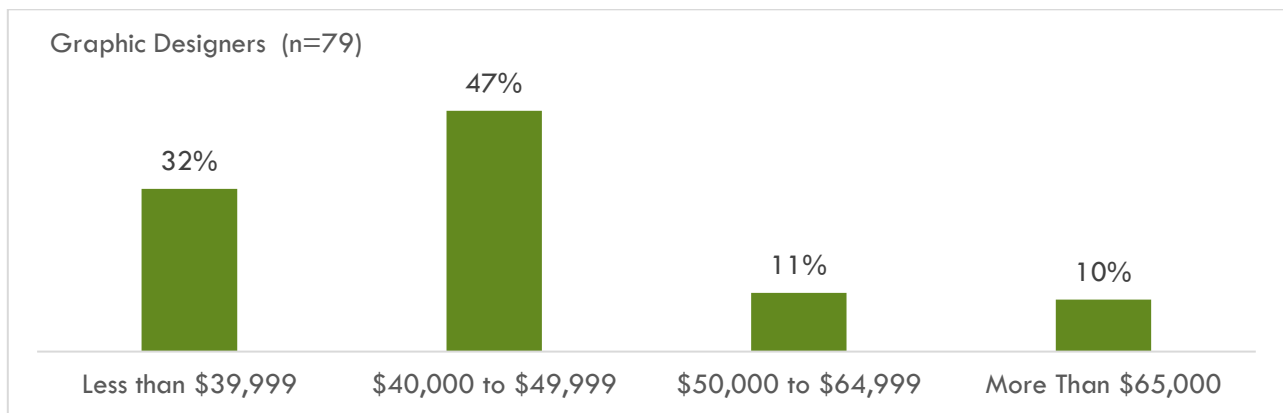


Source: Lightcast 2023.2

Advertised Salary from Online Job Ads

Exhibit 4 displays the regional online advertised salaries for graphic designers over the last 12 months. Online job ad salary information reveals employers are willing to pay graphic designers a median annual salary of \$44,000 or \$21.17 per hour, just below the region's \$21.82 hourly living wage standard.

Exhibit 4. Online advertised salaries for graphic designers, Inland Empire/Desert Region, June 2022 through May 2023



Source: Lightcast 2023.2

Job Titles, Employers, Skills, Education, and Work Experience

Exhibit 5 displays the job titles most frequently used in graphic designer job ads over the last 12 months.

Displaying advertised job titles may provide insight into the types of positions sought by employers posting job ads. The most frequently requested job title in the region was graphic designer.

Exhibit 5. Job titles most frequently used in graphic designer job ads, Inland Empire/Desert Region, June 2022 through May 2023

Job Titles	Unique Job Ads
Graphic Designers	48
Production Graphic Designers	4
Designers/Sales Associates	3
Graphic Artists	3
All other job titles	15
Total	73

Source: Lightcast 2023.2

Exhibit 6 displays the employers posting the most job ads for graphic designers during the last 12 months.

Showing employer names provides insight into where students may find employment after completing a program. In total, 48 unique employers posted 68 job ads for graphic designers. Thinkcar, Gatorwraps, and Meva posted the most unique job ads.

Exhibit 6. Employers posting the most job ads for graphic designers, Inland Empire/Desert Region, June 2022 through May 2023

Top Employer	Unique Job Ads
Thinkcar	4
Gatorwraps	4
Meva	4
Unilever	3
All other employers	50
Total	68

Source: Lightcast 2023.2

Exhibit 7 lists a sample of specialized and employability skills employers seek when seeking workers to fill graphic designer positions. Specialized skills are occupation-specific skills that employers request for industry or job competency. Common skills are foundational skills that transcend industries and occupations; this category is often referred to as "soft skills." The skills requested in job ads may be utilized to guide curriculum development.

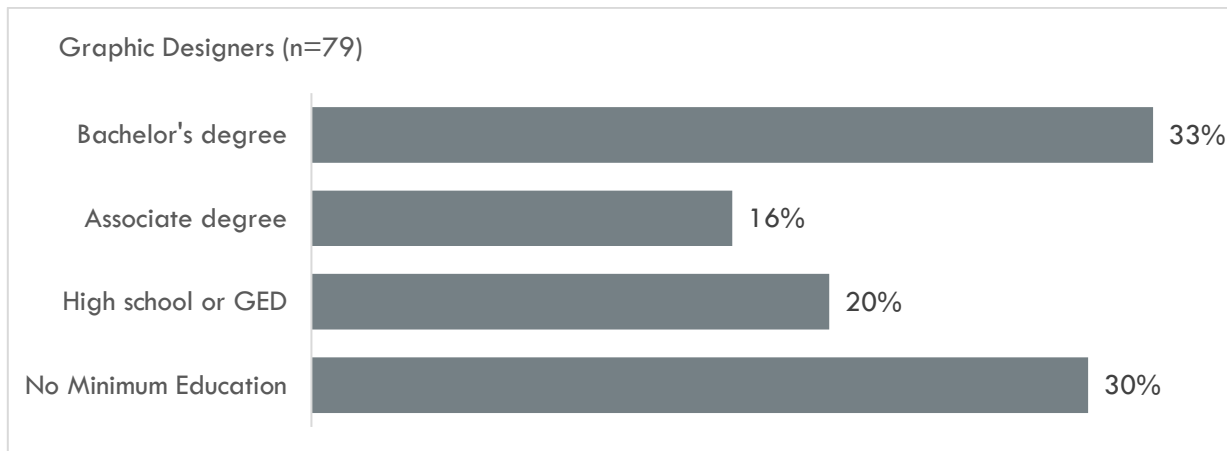
Exhibit 7. Sample of in-demand skills from employer job ads, Inland Empire/Desert Region, June 2022 through May 2023

Specialized skills	Common skills	Software and Programming skills
<ul style="list-style-type: none"> • Logo Design • Marketing • Illustration • Typography • Social Media 	<ul style="list-style-type: none"> • Communication Skills • Detail-Oriented • Packing and Labeling • Ability to Meet Deadlines • Management • Sales • Self-Motivation • Problem Solving 	<ul style="list-style-type: none"> • Adobe Illustrator • Adobe Photoshop • Adobe InDesign • Adobe Creative Suite • Design Software • Microsoft PowerPoint

Source: Lightcast 2023.2

Exhibit 8 displays the minimum advertised education requirements for graphic designers. According to the Bureau of Labor Statistics, 26% of incumbent workers in this field hold a community college-level of educational attainment; "some college, no degree," and an "associate degree." Approximately 16% of employers sought candidates with an associate degree, and 33% sought candidates with a bachelor's degree. Please note that 30% of employers did not indicate a minimum education requirement.

Exhibit 8. Minimum advertised education requirements, Inland Empire/Desert Region, June 2022 through May 2023



Source: Lightcast 2023.2

Student Completions and Programs Outcomes

Six community colleges in the region currently offer programs related to graphic design using two program codes. Computer graphics and digital imagery programs (TOP 0614.60) provide similar training to graphic art and design programs (1030.00) and may prepare students for employment as graphic designers.

Regional community college programs related to graphic design have issued 101 awards annually over the last three academic years, 2019-2022. Exhibit 9 displays each regional program related to graphic design and the award types students earn upon program completion.

Exhibit 9: Graphic design-related programs, Inland Empire/Desert Region, 2022-23 academic year

College	TOP Program (TOP Code)	Local Program Title	Award
College of the Desert	Computer Graphics and Digital Imagery (0614.60)	Digital Design & Production	Associate Degree/Certificate
		Illustrator Skills	Noncredit
		Photoshop Skills	Noncredit
	Graphic Art and Design (1030.00)	Digital Design Studies	Associate degree
		Graphic Design and Marketing	Associate degree
		Interaction Design	Associate degree
Crafton Hills College	Computer Graphics and Digital Imagery (0614.60)	Graphic and Media Design	Certificate
Moreno Valley College	Computer Graphics and Digital Imagery (0614.60)	Basic Graphic Design	Certificate
Mt. San Jacinto College	Graphic Art and Design (1030.00)	Visual Design	Associate degree
Riverside City College	Graphic Art and Design (1030.00)	Basic Graphic Communication	Certificate
		Basic Graphic Design	Certificate
		Motion Graphics and 3D Animation	Certificate
San Bernardino Valley College	Graphic Art and Design (1030.00)	Graphic Design	Associate Degree/Certificate
		Web and Multimedia Design	Certificate

Source: COCI, 2022-23 Community College Catalogs

Exhibit 10 displays student completions for graphic art and design (TOP 1030.00) programs over the last three academic years, 2019-2022. Regional community colleges have issued 78 awards annually in graphic art and design programs over the previous three academic years. Program completion and student outcome methodologies can be found in the appendix.

Exhibit 10: Annual average community college awards for graphic art and design programs, Inland Empire/Desert Region, Academic Years 2019-2022

TOP 1030.00 – Graphic Art and Design (Local Program Title)	Academic Year 2019-20	Academic Year 2020-21	Academic Year 2021-22	Total CC Annual Average Awards, Academic Years 2019-22
College of the Desert (Digital Design Studies/Graphic Design and Marketing/Interaction Design)				1
Associate Degree	0	0	4	1
Mt. San Jacinto College (Visual Design)				14
Associate Degree	0	20	22	14
Riverside City College (Basic Graphic Communication/Basic Graphic Design/Motion Graphics and 3D Animation)				42
Certificate 16 < 30-semester units	0	36	38	25
Certificate 6 < 18-semester units	35	14	4	18
San Bernardino Valley College (Graphic Design/Web and Multimedia Design)				21
Associate Degree	18	8	16	14
Certificate 16 < 30-semester units	11	1	8	7
Total	64	79	92	78

Source: MIS Data Mart, COCI

Exhibit 11 displays student completions for computer graphics and digital imagery (TOP 0614.60) programs over the last three academic years, 2019-2022. Four regional community colleges have issued 23 awards annually over the previous three academic years.

Exhibit 11: Annual average community college awards for computer graphics and digital imagery programs, Inland Empire/Desert Region, Academic Years 2019-2022

TOP 0614.60 – Computer Graphics and Digital Imagery (Local Program Title)	Academic Year 2019-20	Academic Year 2020-21	Academic Year 2021-22	Total CC Annual Average Awards, Academic Years 2019-22
Chaffey College				8
Associate Degree	7	6	4	6
Certificate 30 < 60-semester units	0	4	4	3
Crafton Hills College (Graphic and Media Design)				1
Certificate 16 < 30-semester units	3	1	0	1
College of the Desert (Digital Design & Production/Illustrator Skills/Photoshop Skills)				13
Associate Degree	13	7	8	9
Certificate 16 < 30-semester units	3	4	4	4

TOP 0614.60 – Computer Graphics and Digital Imagery (Local Program Title)	Academic Year 2019-20	Academic Year 2020-21	Academic Year 2021-22	Total CC Annual Average Awards, Academic Years 2019-22
Moreno Valley College (Basic Graphic Design)				0
Certificate 16 < 30-semester units	0	1	0	0
Total	26	23	20	23

Source: MIS Data Mart, COCI

California program outcome data may provide useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibits 12 and 13.

Exhibit 12: 1030.00 – Graphic art and design strong workforce program outcomes, Inland Empire/Desert Region, Academic Year 2019-2020 (Unless Noted)

Strong Workforce Program Metrics: 1030.00 – Graphic Art and Design Academic Year 2019-20, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2020-21)	699	14,023
Completed 9+ career education units in one year (2020-21)	23%	29%
Students who attained a noncredit workforce milestone in a year (2020-21)	-	56%
Students who earned a degree, certificate, or attained apprenticeship (2020-21)	54	525
Transferred to a four-year institution (transfers)	41	1,043
Job closely related to the field of study (2018-19)	-	58%
Median annual earnings (all exiters)	\$21,184	\$27,376
Median change in earnings (all exiters)	9%	27%
Attained a living wage (completers and skills-builders)	38%	33%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 13: 0614.60 – Computer graphics and digital imagery strong workforce program outcomes, Inland Empire/Desert Region, Academic Year 2019-2020 (Unless Noted)

Strong Workforce Program Metrics: 0614.60 – Computer Graphics and Digital Imagery Academic Year 2019-20, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2020-21)	682	7,764
Completed 9+ career education units in one year (2020-21)	28%	32%
Students who attained a noncredit workforce milestone in a year (2020-21)	-	81%
Students who earned a degree, certificate, or attained apprenticeship (2020-21)	16	292

Strong Workforce Program Metrics: 0614.60 – Computer Graphics and Digital Imagery Academic Year 2019-20, unless noted otherwise	Inland Empire/Desert Region	California
Transferred to a four-year institution (transfers)	33	481
Job closely related to the field of study (2018-19)	-	56%
Median annual earnings (all exiters)	\$23,402	\$27,932
Median change in earnings (all exiters)	16%	29%
Attained a living wage (completers and skills-builders)	39%	34%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 14 displays awards for other postsecondary education providers reported in graphic design (CIP 50.0409) programs. Completion data is compiled from the Integrated Postsecondary Education Data System (IPEDS) for the most recent three years. Three other regional postsecondary education providers issued 57 awards annually over the last three academic years.

Exhibit 14. Other educational providers graphic design training programs, three-year annual average credentials, Inland Empire/Desert Region, Academic Years 2018-2021

50.0409 – Graphic Design	Academic Year 2018-19	Academic Year 2019-20	Academic Year 2020-21	Other Educational Providers Annual Average Credentials, 2018-2021
California Baptist University				43
Bachelor's degree	45	33	52	43
La Sierra University				2
Bachelor's degree	2	1	2	2
Platt College-Ontario				12
Certificates 1 < 2 years	1	0	0	0
Associate degree	7	15	13	12
Total	55	49	67	57

Source: IPEDS

Summary of Findings

The knowledge, skills, and abilities trained by graphic art and design (TOP 1030.00) programs prepare students for employment as graphic designers. Graphic designers are projected to have 190 annual job openings and increase employment by 8% in the Inland Empire/Desert Region over the next five years. The median hourly earnings for graphic designers are above the living wage estimate, indicating that at least the top 50% of workers earn a living wage.

Six regional community colleges offering programs related to graphic design issued an annual average of 101 awards over the last three academic years, 2019-2022. Three other regional postsecondary education providers issued 57 awards annually in graphic design programs over the last three academic years.

The Centers of Excellence recommends expanding graphic art and design training programs. Colleges considering this program should partner with applicable employers to document their demand for graphic designers and the skills students need to earn a living wage after exiting the program.

Contact

Michael Goss
Paul Vaccher
Centers of Excellence, Inland Empire/Desert Region
michael.goss@chaffey.edu
June 2023

References

California Community Colleges Chancellor's Office. (2023). *Chancellor's Office Curriculum Inventory (COCI), version 3.0*. Retrieved from <https://coci2.ccctechcenter.org/programs>

California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. (2023). *Data Mart*. Retrieved from <https://datamart.cccco.edu/datamart.aspx>

California Community Colleges Chancellor's Office, Curriculum and Instructional Unit, Academic Affairs Division. (2012). *Taxonomy of Programs, 6th Edition, Corrected Version*. Retrieved from <https://www.cccco.edu/-/media/CCCCO-Website/About-Us/Divisions/Digital-Innovation-and-Infrastructure/Research/Files/TOPmanual6200909corrected12513.ashx?la=en&hash=94C709CA83C0380828415579395A5F536736C7C1>

Carnevale, A. P., Jayasundera, T., & Replikov, D. (n.d.). Understanding Online Job Ads Data. Retrieved from <https://cew.georgetown.edu/wp-content/uploads/2014/11/OCLM.Tech.Web.pdf>

Glasmeier, A. K. (2022). Massachusetts Institute of Technology. Living Wage Calculator. *Living Wage Calculation for California*. Retrieved from <https://livingwage.mit.edu/states/06>

Lightcast. (2023). *Datarun 2023.2*. Retrieved from <https://www.economicmodeling.com/>

National Center for O*NET Development. (2023). O*NET OnLine. Retrieved from <https://www.onetonline.org/>

U.S. Department of Education. Institute of Education Sciences, National Center for Education Statistics (NCES). (2023). The Classification of Instructional Programs. *Detail for CIP Code 50.0409*. Retrieved from <https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cipid=87596>

Appendix: Methodology

Exhibits 11 and 12 display the average annual California Community College (CCC) awards conferred during the three academic years between 2019 and 2022 from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variations that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from California's Employment Development Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2023a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS) administered by Santa Rosa Junior College (LaunchBoard, 2023a).

Job ad data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014). Online job ads often do not reveal employers' hiring intentions; it is unknown if employers plan to hire one or multiple workers from a single online job ad or collect resumes for future hiring needs. A closed job ad may not be the result of a hired worker.

Table 1. 2022 to 2027 job growth, wages, entry-level education, training, and work experience required for graphic designers in the Inland Empire/Desert Region (Riverside and San Bernardino Counties combined)

Occupation (SOC)	2022 Jobs	5-Year Change	5-Year % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage (10 th to 90 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Entry-Level Education & On-The-Job-Training	Work Experience Required
Graphic Designers (27-1024)	1,749	132	8%	190	\$16.96 to \$39.04	\$23.52	\$56,800	Bachelor's degree & None	None

Source: Lightcast 2023.2

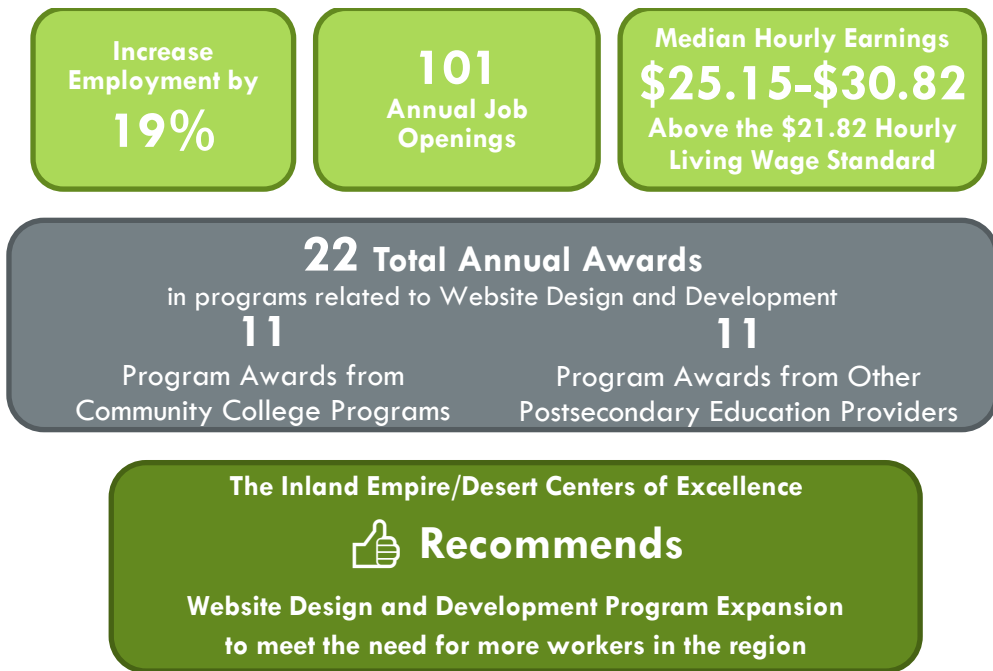
Website Design and Development

Inland Empire/Desert Region (Riverside and San Bernardino counties)

Summary



Over the next five years (2021-2026), employment for the website design and development occupational group is projected to



Introduction

California Community College website design and development programs (TOP 0614.30) prepare students for employment through the instruction of the principles of design, user interface/navigation, graphics applications and other authoring tools to design, edit and publish web pages, documents, images, graphics, sound, and multimedia products for the Internet (Taxonomy of Programs, 2012). The knowledge, skills, and abilities trained by website design and development programs lead to employment in the following occupations, further referred to as the website design and development occupational group:

- Web Developers (SOC 15-1254)
- Web and Digital Interface Designers (15-1255)

Job Counts and Projections

In 2021, there were 820 website design and development jobs in the Inland Empire/Desert Region.

Employment for this occupational group is projected to increase by 19% through 2026, with 101 job openings expected annually. Exhibit 1 displays the job counts, projected job growth, job openings, and the share of incumbent workers aged 55 years and older in the region.

Exhibit 1: Five-year projections, Inland Empire/Desert Region, 2021-2026

Occupation	2021 Jobs	2026 Jobs	5-Yr % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)	% of workers age 55+
Web Developers	476	568	19%	283	57	9%
Web and Digital Interface Designers	344	412	20%	223	45	8%
Total	820	980	19%	506	101	8%

Source: Lightcast 2023.1

An online job advertisement (ad) search for the website design and development occupational group was conducted to reveal the employers seeking these workers, including the median posting duration, earnings information, education and experience requirements, and in-demand skills. Over the previous 12 months, there were 358 job ads posted for the website design and development occupational group in the region.

Exhibit 2 shows the number of job ads posted during the last 12 months and the regional median posting duration. On average, employers in the region had job ads for the website design and development occupational group open for 22 days. The average regional online job is open for 28 days, indicating that it may be easier for employers to fill website design and development jobs than other jobs. The majority of job ads were for web developers.

Exhibit 2: Job ads and median posting duration, Inland Empire/Desert Region, April 2022 – March 2023

Occupation	Job Ads	Median Posting Duration (Days)
Web Developers	349	22
Web and Digital Interface Designers	9	24
Total	358	22

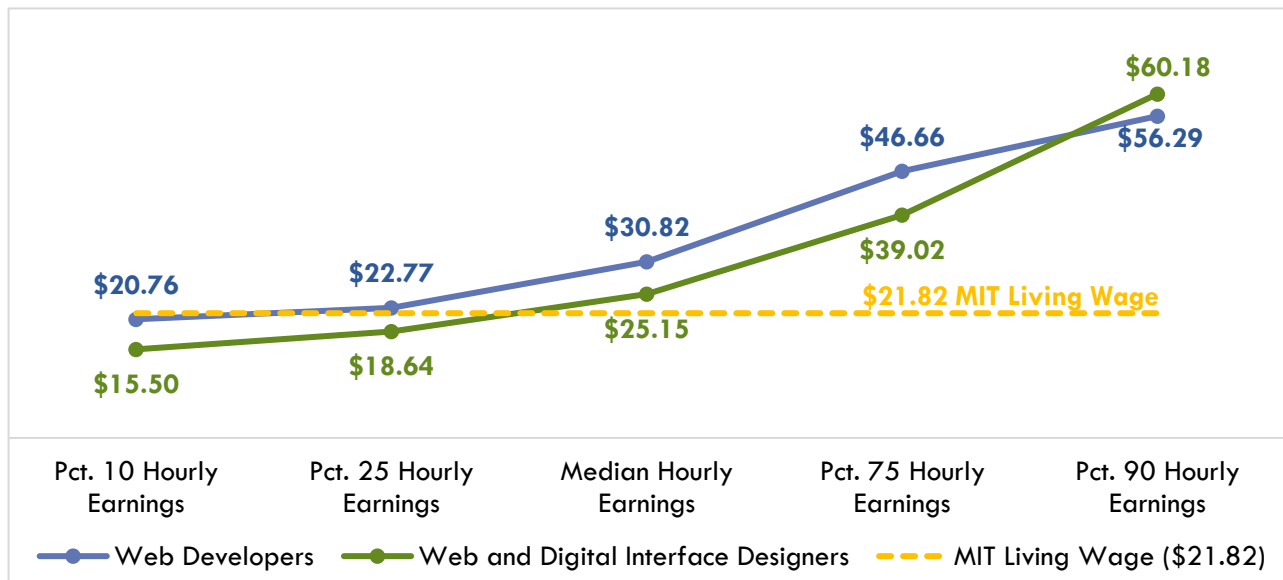
Source: Lightcast 2023.1

Earnings

Community colleges should ensure their training programs lead to employment opportunities that provide a living wage. The MIT living wage calculator estimates that an individual must earn \$21.82 per hour or \$45,386 annually in California to be self-sufficient (Glasmeier, 2023).

Exhibit 3 displays the hourly earnings for the website design and development occupational group. The median hourly earnings for the website design and development occupational group are between \$25.15 and \$30.82, above the region's hourly living wage standard (\$21.82 per hour).

Exhibit 3: Hourly earnings by percentile, Inland Empire/Desert Region, 2021

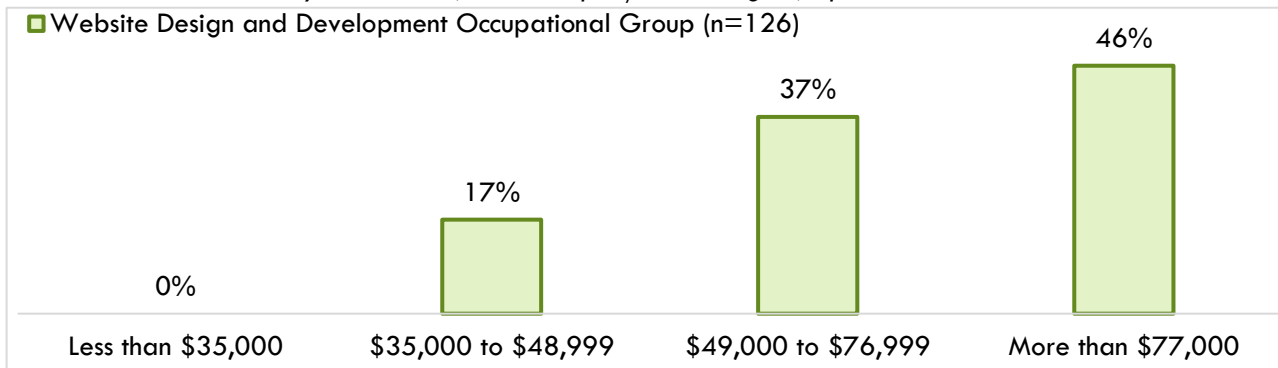


Source: Lightcast 2023.1

Advertised Salary from Online Job Ads

Exhibit 4 displays online job ad salary data for the website design and development occupational group over the last 12 months. Online job ad salary information reveals employers willing to pay the website design and development occupational group an average annual salary of \$72,446 or \$34.83 hourly, above the region's \$45,386 annual (\$21.82 hourly) MIT living wage standard. Consider the salary information with caution since only 35% (126 out of 358) of online job ads for these occupations provided salary information.

Exhibit 4: Advertised salary information, Inland Empire/Desert Region, April 2022 – March 2023



Source: Lightcast 2023.1

Job Titles, Employers, Skills, Education, and Work Experience

Exhibit 5 displays the job titles most frequently requested by employers seeking website design and development workers in the region over the last 12 months. The most commonly requested job title for this occupational group was web developer.

Exhibit 5: Most frequently used job titles in employer job ads, Inland Empire/Desert Region, April 2022 – March 2023

Job Titles	Job Ads
Web Developers	61
Back End Engineers	31
Front End Engineers	29
Front End Developers	16
Web Application Developers	14
UI/UX Designers	14
All other job titles	193
Total	358

Source: Lightcast 2023.1

Exhibit 6 displays the employers that posted the most job ads for the website design and development occupational group in the region over the last 12 months. Showing employer names provides insight into where students may find employment after completing a program. Esri, a geographic information systems company in Redlands, posted the most job ads for the website design and development occupational group over the previous 12 months.

Exhibit 6: Employers posting the most job ads for the website design and development occupational group over the last 12 months, Inland Empire/Desert Region, April 2022 – March 2023

Top Employers	Job Ads
Esri	41
ProSites	13
General Dynamics	6
University of California, Riverside	6
The Outdoor Plus	5
Garbage Dream Agency	5
All other employers	282
Total	358

Source: Lightcast 2023.1

Exhibit 7 lists a sample of specialized, employability, and software and programming skills employers seek when looking for workers to fill website design and development positions. Specialized skills are occupation-specific skills that employers request for industry or job competency. Employability skills are foundational skills that transcend industries and occupations; this category is often referred to as "soft skills." The skills requested in job ads may be utilized to guide curriculum development.

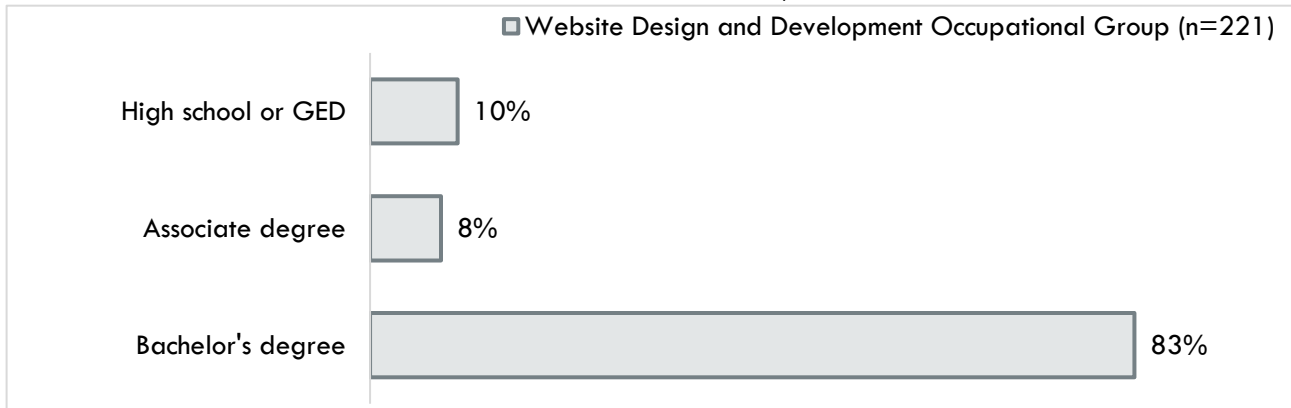
Exhibit 7: Sample of in-demand skills from employer job ads, Inland Empire/Desert Region, April 2022 – March 2023

Specialized skills (n=358)	Employability skills	Software and Programming skills
<ul style="list-style-type: none"> • Cascading Style Sheets (CSS) • Computer Science • User Experience (UX) • Front End Engineering • Search Engine Optimization • Marketing 	<ul style="list-style-type: none"> • Communication Skills • Writing • Problem-Solving • Management Skills • Detail-Oriented • Customer Service 	<ul style="list-style-type: none"> • Cascading Style Sheets (CSS) • JavaScript • HTML • React • API • SQL

Source: Lightcast 2023.1

Exhibit 8 displays the minimum advertised education requirements for the website design and development occupational group. Most employer job ads (83%) for the website design and development occupational group sought candidates with a bachelor's degree.

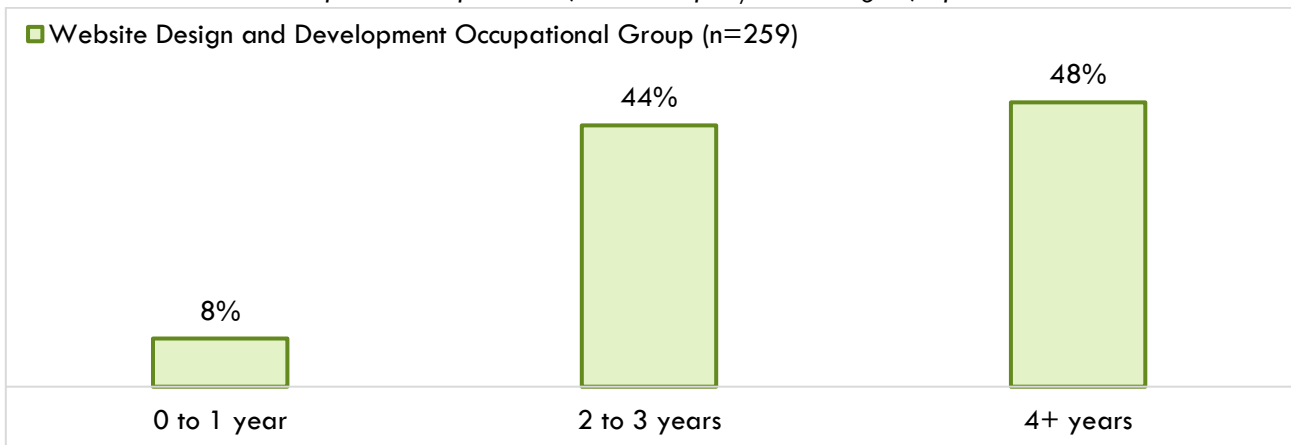
Exhibit 8: Minimum advertised education requirements, Inland Empire/Desert Region, April 2022 – March 2023



Source: Lightcast 2023.1

Exhibit 9 displays the real-time work experience requirements from employer job ads for the website design and development occupational group. Experience requirements found within job ads for website design and development workers indicate that employers value previous work experience, with approximately 92% of employers seeking candidates with more than one year of work experience.

Exhibit 9: Real-time work experience requirements, Inland Empire/Desert Region, April 2022 – March 2023



Source: Lightcast 2023.1

Student Completions and Programs Outcomes

Seven community colleges in the region currently offer programs related to website design and development using five program codes. Combined, regional community college programs related to website design and development have issued 11 awards annually over the last three academic years, 2019-2022. Exhibit 10 displays each regional program related to website design and development and award types students earn upon program completion.

Exhibit 10: Website design and development-related programs, Inland Empire/Desert Region, 2022-23 academic year

College	TOP Program (TOP Code)	Local Program Title	Award
Chaffey	Website Design and Development (0614.30)	Website Design*	Associate degree Certificate
		World Wide Web Administration (0709.00)	Web Page Developer Certificate
Crafton Hills	Website Design and Development (0614.30)	Multimedia: Web Development and Interface Design	Associate degree
		User Interface Design	Certificate
		Web Development	Certificate
College of the Desert	Digital Media (0614.00)	Web Design	Certificate
Moreno Valley	World Wide Web Administration (0709.00)	Web Master: Website Designer	Certificate
		Web Master: Web Developer	Certificate
Riverside City	World Wide Web Administration (0709.00)	Web Master: Website Designer	Certificate
		Web Master: Web Developer	Certificate
San Bernardino Valley	Graphic Art and Design (1030.00)	Web and Multimedia Design	Certificate
Victor Valley	Computer Information Systems (0702.00)	Web Authoring	Certificate

Source: COCI, 2022-23 Community College Catalogs

*Chaffey College has not offered its website design and development program since the 2020-21 academic year but has conferred awards as recently as the 2021-22 academic year.

Exhibit 11 displays student completions for website design and development (TOP 0614.30) programs over the last three academic years, 2019-2022. Regional community colleges have issued three awards annually in website design and development programs over the previous three academic years. According to the Chancellor's Office Curriculum Inventory (COCI), Chaffey College's program is no longer active (COCI, 2022). Program completion and student outcome methodologies can be found in the appendix.

Exhibit 11: Annual average community college awards for website design and development programs, Inland Empire/Desert Region, Academic Years 2019-2022

TOP 0614.30 – Website Design and Development (Local Program Title)	Academic Year 2019-20	Academic Year 2020-21	Academic Year 2021-22	Total CC Annual Average Awards, Academic Years 2019-22
Chaffey (Website Design and Development)				3
Associate Degree	1	1	2	1
Certificate 30 < 60 semester units	0	2	4	2
Crafton Hills (Multimedia: Web Development and Interface Design/User Interface Design/Web Development)				0

TOP 0614.30 – Website Design and Development (Local Program Title)	Academic Year 2019-20	Academic Year 2020-21	Academic Year 2021-22	Total CC Annual Average Awards, Academic Years 2019-22
Associate Degree	0	0	0	0
Certificate 30 < 60 semester units	0	0	0	0
Total	1	3	6	3

Source: MIS Data Mart, COCI

Exhibit 12 displays student completions for world wide web administration (TOP 0709.00) programs related to website design and development over the last three academic years, 2019-2022. Regional community colleges have issued seven awards annually for world wide web administration programs related to website design and development over the previous three academic years.

Exhibit 12: Annual average community college awards for world wide web administration programs related to website design and development, Inland Empire/Desert Region, Academic Years 2019-2022

TOP 0709.00 – World Wide Web Administration (Local Program Title)	Academic Year 2019-20	Academic Year 2020-21	Academic Year 2021-22	Total CC Annual Average Awards, Academic Years 2019-22
Chaffey (Web Page Developer)				0
Certificate 6 < 18 semester units	0	0	1	0
Moreno Valley (Web Master: Website Designer/Web Developer)				1
Certificate 16 < 30 semester units	0	1	1	1
Certificate 6 < 18 semester units	0	1	0	0
Riverside City (Web Master: Website Designer/Web Developer)				6
Certificate 16 < 30 semester units	0	6	11	6
Grand Total	1	8	13	7

Source: MIS Data Mart, COCI

California program outcome data may provide useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibits 13 and 14.

Exhibit 13: 0614.30 – Website design and development strong workforce program outcomes, Inland Empire/Desert Region, Academic Year 2019-2020 (Unless Noted)

Strong Workforce Program Metrics: 0614.30 – Website Design and Development Academic Year 2019-20, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2020-21)	174	3,890

Strong Workforce Program Metrics: 0614.30 – Website Design and Development Academic Year 2019-20, unless noted otherwise	Inland Empire/Desert Region	California
Completed 9+ career education units in one year (2020-21)	57%	37%
Perkins Economically disadvantaged students	80%	71%
Students who attained a noncredit workforce milestone in a year (2020-21)	-	91%
Students who earned a degree, certificate, or attained apprenticeship (2020-21)	-	364
Transferred to a four-year institution (transfers)	-	215
Job closely related to the field of study (2018-19)	-	66%
Median annual earnings (all exiters)	\$30,136	\$38,980
Median change in earnings (all exiters)	1%	11%
Attained a living wage (completers and skills-builders)	55%	52%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 14: 0709.00 – World wide web administration strong workforce program outcomes, Inland Empire/Desert Region, Academic Year 2019-2020 (Unless Noted)

Strong Workforce Program Metrics: 0709.00 – World Wide Web Administration Academic Year 2019-20, unless noted otherwise	Inland Empire/Desert Region	California
Unduplicated count of enrolled students (2020-21)	381	1,823
Completed 9+ career education units in one year (2020-21)	43%	41%
Perkins Economically disadvantaged students	89%	78%
Students who earned a degree, certificate, or attained apprenticeship (2020-21)	-	43
Transferred to a four-year institution (transfers)	12	96
Job closely related to the field of study (2018-19)	-	64%
Median annual earnings (all exiters)	\$32,322	\$43,116
Median change in earnings (all exiters)	0%	15%
Attained a living wage (completers and skills-builders)	56%	57%

Sources: LaunchBoard Community College Pipeline and Strong Workforce Program Metrics

Exhibit 15 displays awards for other postsecondary education providers reported in web page, digital/multimedia and information resources design programs (CIP 11.0801). Completion data is compiled from the Integrated Postsecondary Education Data System (IPEDS) for the most recent three years. Two other regional postsecondary education providers issued 11 awards annually over the last three academic years.

Exhibit 15. Other educational providers web page, digital/multimedia and information resources design programs, three-year annual average credentials, Inland Empire/Desert Region, Academic Years 2017-2020

11.0801 – Web Page, Digital/Multimedia and Information Resources Design	Academic Year 2017-18	Academic Year 2018-19	Academic Year 2019-20	Other Educational Providers Annual Average Credentials, 2017-2020
DeVry University-California				10
Associate degree	2	0	0	1
Bachelor's degree	16	7	5	9
University of Phoenix-California				1
Bachelor's degree	1	2	0	1
Total	19	9	5	11

Source: IPEDS

Summary of Findings

Employment for the website design and development occupational group is expected to increase by 19% through 2026, with 101 job openings projected annually. The median hourly earnings for the website design and development occupational group are between \$25.15 and \$30.82, above the region's hourly living wage standard (\$21.82 per hour). Over the previous 12 months, there were 358 job ads posted for the website design and development occupational group in the region. Most employers (83%) sought workers with a bachelor's degree.

Seven community colleges in the region currently offer programs related to website design and development using five program codes. Combined, regional community colleges have issued 11 awards annually over the last three academic years in programs related to website design and development. Other postsecondary educational institutions in the region have issued 11 awards annually in web page, digital/multimedia and information resources design programs (CIP 11.0801).

The Centers of Excellence recommends expanding occupational training for website design and development occupations. Colleges considering this program should partner with applicable employers to document their demand for website design and development workers exiting a community college website design and development program.

Contact

Michael Goss
 Paul Vaccher
 Centers of Excellence, Inland Empire/Desert Region
michael.goss@chaffey.edu
 April 2023

References

California Community Colleges Chancellor's Office. LaunchBoard. (2023). *California Community Colleges LaunchBoard*. Retrieved from <https://www.calpassplus.org/Launchboard/Home.aspx>

California Community Colleges Chancellor's Office. LaunchBoard. (2023a). *Strong Workforce Program Metrics Data Element Dictionary*. Pg. 3. Retrieved from <https://www.calpassplus.org/MediaLibrary/calpassplus/launchboard/Documents/SWP-DED.PDF>

California Community Colleges Chancellor's Office. (2023). *Chancellor's Office Curriculum Inventory (COCI), version 3.0*. Retrieved from <https://coci2.ccctechcenter.org/programs>

California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. (2023). *Data Mart*. Retrieved from <https://datamart.cccco.edu/datamart.aspx>

California Community Colleges Chancellor's Office, Curriculum and Instructional Unit, Academic Affairs Division. (2012). *Taxonomy of Programs, 6th Edition, Corrected Version*. Retrieved from <https://www.cccco.edu/-/media/CCCCO-Website/About-Us/Divisions/Digital-Innovation-and-Infrastructure/Research/Files/TOPmanual6200909corrected12513.ashx?la=en&hash=94C709CA83C0380828415579395A5F536736C7C1>

Carnevale, A. P., Jayasundera, T., & Repnikov, D. (n.d.). Understanding Online Job Ads Data. Retrieved from https://cew.georgetown.edu/wp-content/uploads/2014/11/OCLM.Tech_Web.pdf

Glasmeier, A. K. (2023). Massachusetts Institute of Technology. Living Wage Calculator. *Living Wage Calculation for California*. Retrieved from <https://livingwage.mit.edu/states/06>

Lightcast. (2023). *Datarun 2023.1*. Retrieved from <https://www.economicmodeling.com/>

National Center for O*NET Development. (2023). *O*NET OnLine*. Retrieved from <https://www.onetonline.org/>

U.S. Department of Education. Institute of Education Sciences, National Center for Education Statistics. Integrated Postsecondary Education System (IPEDS). (2023). Retrieved from <https://nces.ed.gov/ipeds/use-the-data>

Appendix: Occupation definitions, sample job titles, five-year projections, and earnings for website design and development occupations

Occupation Definitions (SOC code), Education and Training Requirements, Community College Education Attainment

Web Developers (SOC 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.

Sample job titles: Technology Applications Engineer, Web Architect, Website design and development Specialist, Website Designer, Web Developer, Webmaster

Entry-Level Educational Requirement: Bachelor's degree

Work Experience Required: None

Training Requirement: None

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 25%

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 website design and development 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.

Sample job titles: Technology Applications Engineer, Web Architect, Website design and development Specialist, Website Designer, Web Developer, Webmaster

Entry-Level Educational Requirement: Bachelor's degree

Work Experience Required: None

Training Requirement: None

Incumbent workers with a Community College Award or Some Postsecondary Coursework: 24%

Appendix: Methodology

Exhibits 11 and 12 display the average annual California Community College (CCC) awards conferred during the three academic years between 2019 and 2022 from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total of associate degrees and certificates issued during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variations that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from California's Employment Development Department's Unemployment Insurance database records. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2023a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS), administered by Santa Rosa Junior College (LaunchBoard, 2023a).

Job ad data is limited to the information provided by employers and the ability of artificial intelligence search engines to identify this information. Additionally, preliminary calculations by Georgetown Center on Education and the Workforce found that "just 30 to 40 percent of openings for candidates with some college or an associate degree, and only 40 to 60 percent of openings for high school diploma holders appear online" (Carnevale et al., 2014). Online job ads often do not reveal employers' hiring intentions; it is unknown if employers plan to hire one or multiple workers from a single online job ad or collecting resumes for future hiring needs. A closed job ad may not be the result of a hired worker.

Table 1. 2021 to 2026 job growth, wages, entry-level education, training, and work experience required for the website design and development occupational group in the Inland Empire/Desert Region (Riverside and San Bernardino counties combined)

Occupation (SOC)	2021 Jobs	5-Year Change	5-Year % Change	Annual Openings (New + Replacement Jobs)	Entry-Experienced Hourly Wage (10 th to 90 th percentile)	Median Hourly Wage (50 th percentile)	Average Annual Earnings	Entry-Level Education & On-The-Job-Training	Work Experience Required
Web Developers (15-1254)	476	91	19%	57	\$20.76 to \$56.29	\$30.82	\$73,500	Bachelor's degree & None	None
Web and Digital Interface Designers (15-1255)	344	68	20%	45	\$15.50 to \$60.18	\$25.15	\$67,300	Bachelor's degree & None	None
Total	820	159	19%	101	-	-	-	-	-

Source: Lightcast 2023.1

Labor Market Analysis for: 0614.00 Digital Media

Inland Empire/Desert Center of Excellence, November 2024

Prepared by: Chris Cruzcosa, ccruzcosa@iegocollaborative.org



Summary

Program LMI Endorsement	All LMI Criteria Met	Some LMI Criteria Met (Proceed with Caution)	LMI Criteria NOT Met
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Program LMI Endorsement Criteria		
Supply Gap	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<i>Comments: There is projected to be 500 annual job openings throughout the Inland Empire/Desert region, which is more than the 94 annual average awards conferred by educational institutions over the last 3 years. Supply data includes both community college awards (94) and non-community college awards (0).</i>	
Living Wage	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	<i>Comments: The minority (15%) of annual job openings for these four occupations have entry-level hourly wages above the IE/D living wage of 20.42.¹</i>	
Education	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<i>Comments: Most job postings for target occupations require an associate degree or high school diploma or equivalent (52%). See Exhibits 8 and 9 for more details.</i>	

The Inland Empire/ Desert (IE/D) Center of Excellence for Labor Market Research (IE/D COE) reviewed the following occupations to prepare this report:

- Below Middle-Skill (typically require training/education at or less than a HS diploma)
 - Photographers (27-4021)
- Middle-Skill (typically require training/education above a HS diploma but less than a bachelor's degree)
 - Prepress Technicians and Workers (51-5111)
- Above Middle-Skill (typically require a bachelor's degree)
 - Special Effects Artists and Animators (27-1014)
 - Graphic Designers (27-1024)
 - Web and Digital Interface Designers (15-1255)

Summary of findings

Demand

- The number of jobs related to the assessed occupations is projected to increase 5% through 2028, with 500 annual job openings (new and replacement jobs).
- Hourly entry-level wages for one of the five occupations are above living wage at the 25th percentile hourly wage, while four of the five were below the living wage. The entry level wages for all occupations range from \$9.14 to \$23.87 in IE/D.
- There were 830 online job postings from 310 employers over the past 12 months with the highest postings for graphic designers and photographers.
- Most job postings for target occupations require a bachelor's degree (48%), followed by high school diploma or equivalent (43%), associate degree (9%), and above a bachelor's degree (1%).

Supply

- On average, there were 94 annual awards conferred by educational institutions over the last 3 years in related fields: 94 from community colleges and 0 from other institutions (e.g., 4-year universities, private schools).
- IE/D community college students that exited these programs in the 2021-22 academic year earned a median annual wage of \$30,476 (\$14.65 per hour).
- 64% of students that exited their program in 2021-22 reported that they are working in a job closely related to their field of study.
- Community college programs play an important role diversifying the talent pipeline in these occupations. Most IE/D professionals in digital arts occupations are White (51%), "early career" or "mid-career" age categories (71%), and equally male (50%) and female (50%). Most community college students in related programs are Hispanic/Latino (54%), "pre-college/career" age category (63%), and male (51%).

¹ The [UW self-sufficiency standard](#) is currently used by the CO and other COEs, the self-sufficiency standard was last updated by UW in 2024. To provide an alternative perspective, the COE will provide an alternative living wage calculation from MIT in the analysis below as an additional reference point. MIT estimates, the living wage for an adult with no kids living in 2024 is \$26.30 in Riverside County and \$25.17 in San Bernadino County.

Introduction

California Community College Digital Media (TOP 0614.00) programs prepare students for employment in a broad range of programs that combine computer and other electronic technologies with skills and techniques from various fine arts and communications disciplines (Taxonomy of Programs, 2023). The knowledge, skills, and abilities trained by Digital Media programs lead to employment in occupations related to digital arts.

Job Demand

In 2023, there were 5,193 jobs in occupations related to digital arts in the IE/D region. Regional employment for this occupation group is projected to increase by 5% through 2028 with 500 job openings projected annually. Exhibit 1 displays the job count, five-year projected job growth, and job openings in the region.

Exhibit 1. Five-year projections for occupations related to digital arts, IE/D Region, 2023-2028

Occupation	SOC	2023 Jobs	2028 Jobs	2023 - 2028 % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)
Web and Digital Interface Designers	15-1255	771	860	12%	374	75
Special Effects Artists and Animators	27-1014	294	326	11%	175	35
Graphic Designers	27-1024	2,420	2,514	4%	1,088	218
Photographers	27-4021	1,565	1,621	4%	777	155
Prepress Technicians and Workers	51-5111	143	132	-7%	86	17
Total		5,193	5,453	5%	2,499	500

SOURCE: LIGHTCAST 2024.2

Job Postings

The following analysis for occupations related to digital arts using online job posting data.

Important note: The data produced in this section were generated by leveraging online job posting data sourced from Lightcast, which is the labor market analytics software tool COEs use to produce these briefs. The job posting data is collected from scraping online job boards such as LinkedIn, Indeed, Glassdoor and many others. The process Lightcast uses to assemble this data does have some limitations due to methods that recruitment professionals sometimes use (e.g., posting one job to fill multiple positions). For example, the number of jobs posted is not necessarily the same as the number of job vacancies.² While not perfect, Lightcast leverages machine learning and other AI technologies to enrich, deduplicate and aggregate this information to make it a meaningful dataset.

Exhibit 2 displays the number of job ads posted for occupations related to digital arts over the last 12 months and the median posting duration. Over the previous 12 months, there were 830 unique job postings for occupations related to digital arts in the region from 310 employers.

Exhibit 2. Job ads and posting duration, IE/D Region, Oct 2023 – Sep 2024

Job Title	Job Ads	Median Posting Duration
Photographers	361	27 days
Graphic Designers	251	24 days
Web and Digital Interface Designers	156	20 days
Special Effects Artists and Animators	42	31 days
Prepress Technicians and Workers	20	19 days
Total	830	

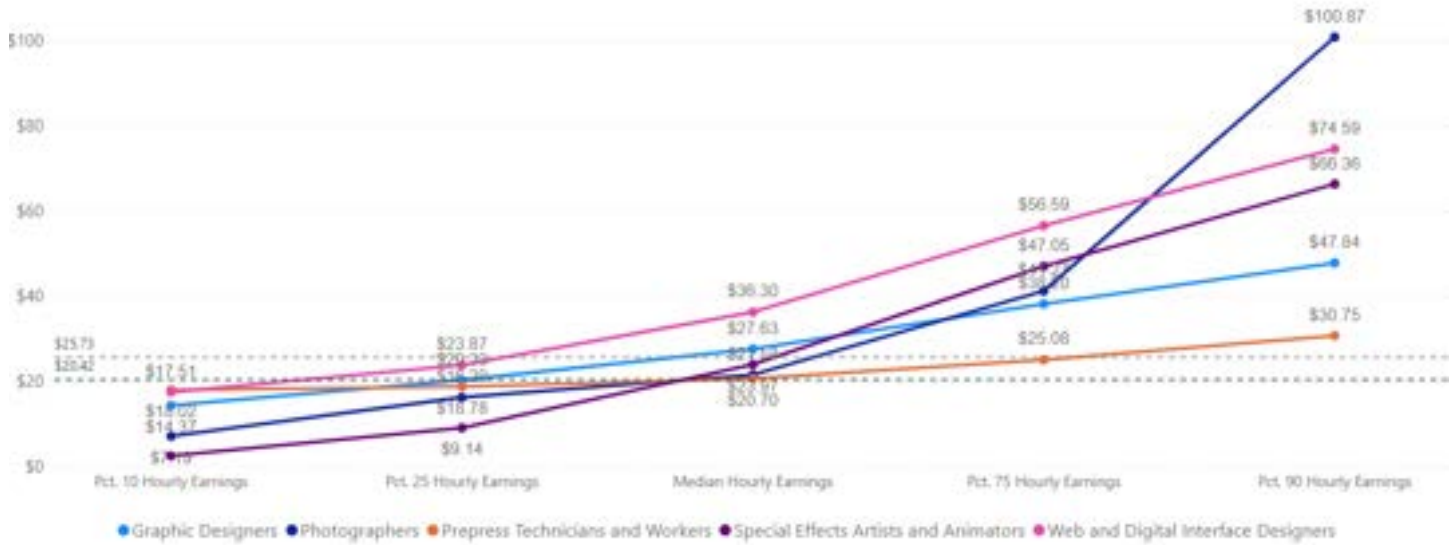
SOURCE: LIGHTCAST 2024.2

² "Job Posting Analytics (JPA) Methodology," Lightcast Knowledge Base, <https://kb.lightcast.io/en/articles/6957446-job-posting-analytics-jpa-methodology>

Earnings

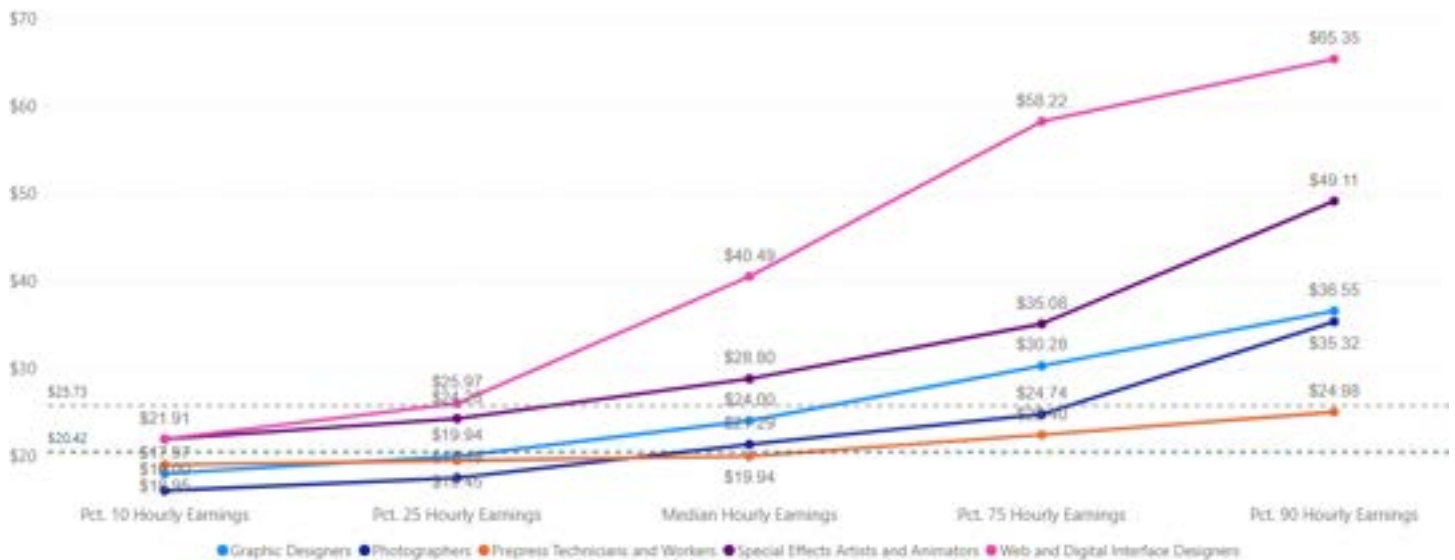
Exhibit 3a displays the hourly earnings for occupations related to digital arts and Exhibit 3b displays the hourly earnings for job postings of the same occupations and compares both to the UW Self-Sufficiency Standard for the IE/D³ and the MIT IE/D living wage of \$25.73.⁴ The living wage criteria is determined using the data in exhibit 3a but Exhibit 3b is also shown to provide regional context using job posting data.

Exhibit 3a. Projected hourly earnings by percentile, IE/D Region, 2023



SOURCE: LIGHTCAST 2024.2

Exhibit 3b. Hourly earnings of job postings by percentile, IE/D Region, 2023



SOURCE: LIGHTCAST 2024.2

The projected entry-level earnings (that is, the earnings of the lowest paid 25% of employees in the IE/D) for 4 of the 5 occupations were below the UW Self-Sufficiency Standard for the IE/D (see Exhibit 3a). All occupations were below the MIT living wage for an adult with no children (\$25.73) in projected entry-level earnings (see Exhibit 3a).

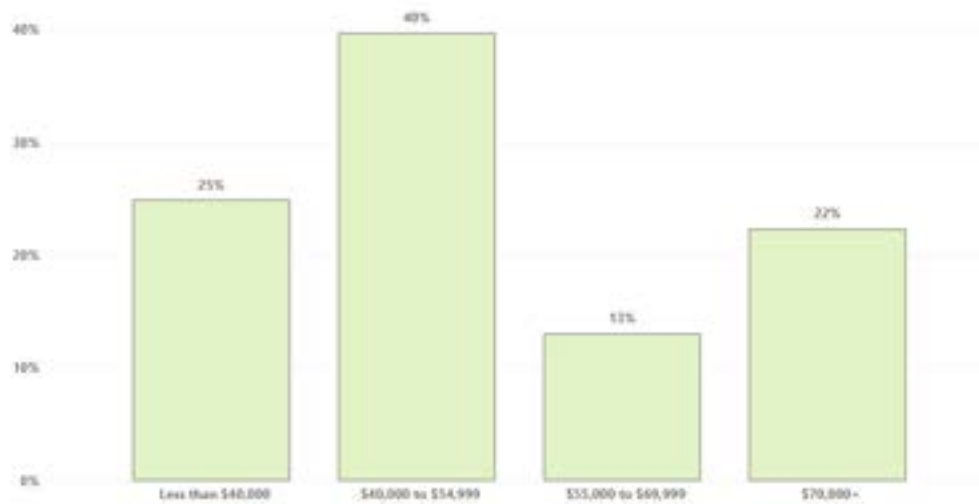
³ The UW self-sufficiency standard is currently used by the CO and other COEs, the self-sufficiency standard was last updated by UW in 2024. To provide an alternative perspective, the COE will provide an alternative living wage calculation from MIT in the analysis below as an additional reference point. MIT estimates, the living wage for an adult with no kids living in 2024 is \$26.30 in Riverside County and \$25.17 in San Bernadino County.

⁴ *ibid.*

Advertised Salary from Online Job Ads

Exhibit 4 displays the regional online advertised salaries for the occupations related to digital arts over the last 12 months. Online job ad salary information data suggests most (65%) employers advertise an annual salary either less than \$40,000 (\$19.23 per hour) or equal to \$40,000 to \$54,999 (\$19.23 to \$26.44 per hour).

Exhibit 4. Online advertised salaries for occupations related to digital arts, IE/D Region, Oct 2023 – Sep 2024



SOURCE: LIGHTCAST 2024.2

Online Job Advertisements: top job titles, skills, education & work experience.

Exhibit 5 displays the job titles most frequently used in job postings for the occupations related to digital arts over the last 12 months. Assessing the top advertised job titles may provide insight into the types of positions sought by employers.






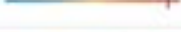



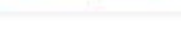
Exhibit 5. Job titles most frequently used in job ads, IE/D Region, Oct 2023 – Sep 2024

Job Title	Unique Postings
Graphic Designers	125
Photographers	79
Videographers/Photographers	24
Vehicle Photographers	21
Photographers/Sales Associates	19
Portrait Photographers	18
Automotive Photographers	17
Retail Sales Associates/Photographers	14
Graphic Artists	13
Newborn Photographers	12

SOURCE: LIGHTCAST 2024.2

Exhibit 6 displays the employers posting the most job ads for this occupational group during the last 12 months. Showing employer names can provide insight into where students may find employment after completing a program and may inform job development and other employer engagement targets for faculty and staff involved in related programs. “Esri” and “Shutterfly” had the highest unique job posts for this occupational group in the last 12 months. Posting intensity is the ratio of total job posts to unique job posts which are deduplicated. A higher posting intensity can represent the level of effort and activity the organization is putting into hiring for that position. The following report comes directly from Lightcast’s Job Posting Analytics dashboard.

Exhibit 6. Employers posting the most job ads, IE/D Region, Oct 2023 – Sep 2024

Company	Total/Unique (Oct 2023 - Sep 2024)	Posting Intensity	Median Posting Duration
Esri	101 / 41	2 : 1 	37 days
Shutterfly	48 / 29	2 : 1 	23 days
Ment America	45 / 28	2 : 1 	19 days
Cherished Memories Photography	54 / 18	3 : 1 	38 days
Cherry Hill Programs	22 / 15	1 : 1 	22 days
Summit Portraits	141 / 14	10 : 1 	22 days
Inland Empire Health Plan	42 / 13	3 : 1 	20 days
Np Mechanical, Inc., Rice Services	23 / 10	2 : 1 	2 days
Pro Motion Pix	25 / 10	3 : 1 	36 days
Image Plus	22 / 9	2 : 1 	42 days

SOURCE: LIGHTCAST 2024.2

Exhibit 7 displays the top common, specialized and computer skills that were included in the job postings over the last 12 months. Today's demand is an important indicator of which skills employers are looking for in the current market. Analyzing skills from a historical perspective as well as projecting the future needs of employers may provide insight into how the job posting skills demand compares to the market as a whole. Rapidly growing skills are those that are increasing in demand at a faster rate than the market as a whole.⁵

Exhibit 7. Top 10 in-demand skills from employer job ads, IE/D Region, Oct 2023 – Sep 2024

Common skills	Total Postings	Skill Growth Relative to Market
Communication	290	Lagging
Customer Service	185	Stable
Detail Oriented	175	Stable
Sales	162	Stable
Editing	113	Rapidly Growing
Management	82	Stable
Operations	75	Stable
Time Management	70	Growing
Ability To Meet Deadlines	69	Growing
Organizational Skills	69	Growing

Specialized skills	Total Postings	Skill Growth Relative to Market
Photography	261	Rapidly Growing
Adobe Photoshop	191	Growing
Graphic Design	184	Growing
Adobe Illustrator	170	Growing
Marketing	150	Rapidly Growing
Adobe Creative Suite	126	Growing
Adobe InDesign	113	Growing
Project Management	70	Rapidly Growing
User Experience (UX) Design	66	Growing
Typography	59	Stable

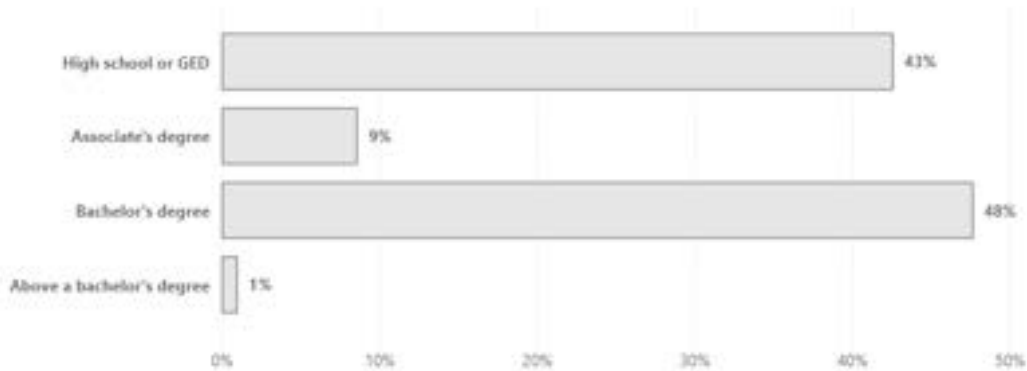
Computer Skills	Total Postings	Skill Growth Relative to Market
Adobe Photoshop	191	Growing
Adobe Illustrator	170	Growing
Adobe Creative Suite	126	Growing
Adobe InDesign	113	Growing
Microsoft Office	52	Growing
HyperText Markup Language (HTML)	50	Growing
Cascading Style Sheets (CSS)	45	Rapidly Growing
Microsoft Excel	45	Growing
Microsoft PowerPoint	45	Rapidly Growing
Adobe After Effects	42	Lagging

SOURCE: LIGHTCAST 2024.2

⁵ "What are Lightcast Skill Projects", Lightcast Knowledge base, <https://kb.lightcast.io/en/articles/8496296-what-are-lightcast-skill-projections>

Exhibit 8 includes the minimum educational requirements from job postings for this occupational group with bachelor's degree (48%), significantly greater than associate degree (9%), or High school diploma or equivalent (43%), or above a bachelor's degree (1%).

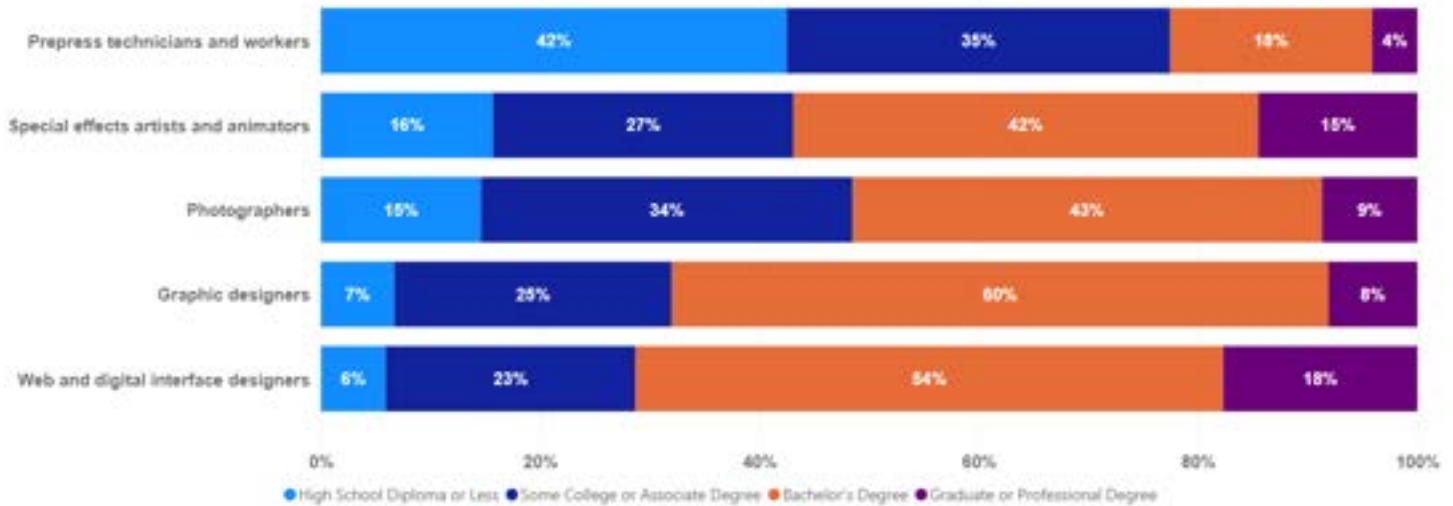
Exhibit 8 Minimum educational requirements in job postings for this occupational group, IE/D Region, Oct 2023 – Sep 2024



SOURCE: LIGHTCAST 2024.2

For the middle-skill occupations and below middle-skill occupations, the Bureau of Labor Statistics (BLS) education attainment data in Exhibit 9 for current professionals in the occupations of interest indicates that between 34% and 35% of workers have completed some college or an associate degree as their highest level of education. For the above middle-skill occupations, between 42% and 60% have completed a bachelor's degree.

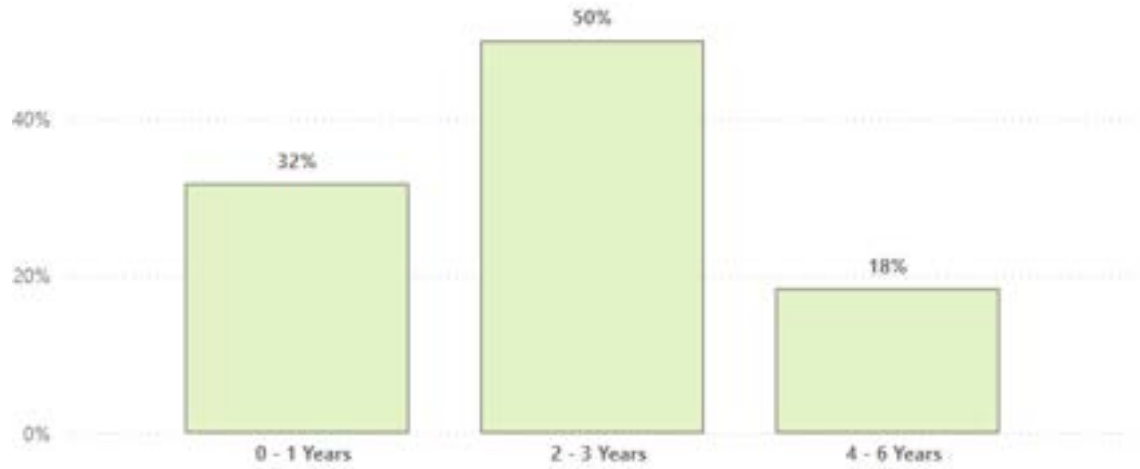
Exhibit 9 National-level Education Attainment for Occupations



SOURCE: BLS 2021

Exhibit 10 displays the work experience typically required from employer job ads for this occupational group. The majority (50%) of employers listing minimum experience requirements sought candidates with 2-3 years of previous work experience.

**Exhibit 10 Work experience requirements,
IE/D Region, Oct 2023 – Sep 2024**



SOURCE: LIGHTCAST 2024.2

Student Completions and Program Outcomes

Exhibit 11 displays student completions for the Digital Media (TOP 0614.00) programs over the last three academic years (2020-2023). In the previous three academic years, six regional community colleges issued an average of 94 awards in relevant programs.

Exhibit 11 Annual average community college awards for Digital Media (TOP 0614.00), IE/D, 2020-2023

Top Code	Program	College	2020-2021 Awards	2021-2022 Awards	2022-2023 Awards	3-Year Award Average
0614.00	Digital Media	Riverside	17	43	44	35
0614.00	Digital Media	Norco College	9	35	26	23
0614.00	Digital Media	Mt. San Jacinto	17	14	26	19
0614.00	Digital Media	Palo Verde	0	20	10	10
0614.00	Digital Media	Victor Valley	0	5	9	5
0614.00	Digital Media	Crafton Hills	0	2	4	2
Total			43	119	119	94

SOURCE: MIS DATA MART

Non-Community College Supply

Award completion data was not found in the IE/D for related non-community college programs: Digital Communication and Media/Multimedia (CIP 09.0702), Prepress/Desktop Publishing and Digital Imaging Design (CIP 10.0303), Digital Arts (CIP 50.0102).

In the previous three academic years, three regional non-community college institutions issued an average of 0 awards in relevant programs.

Strong Workforce Program Outcomes

California SWP program outcome data may provide useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibit 13.

Exhibit 13 Digital Media strong workforce program outcomes, IE/D & California, most recent academic year

Program metric title	Inland Empire/Desert	Statewide
Attained a living wage (completers and skills-builders)	52%	39%
Completed 9+ career education units in one year	34%	31%
Job closely related to the field of study	64%	55%
Median annual earnings (all exiters)	\$30,476	\$31,988
Students who attained a noncredit workforce milestone in a year	40%	80%
Students who earned a degree, certificate, or attained apprenticeship	49	379
Unduplicated count of enrolled students	985	8,663

SOURCE: LAUNCHBOARD

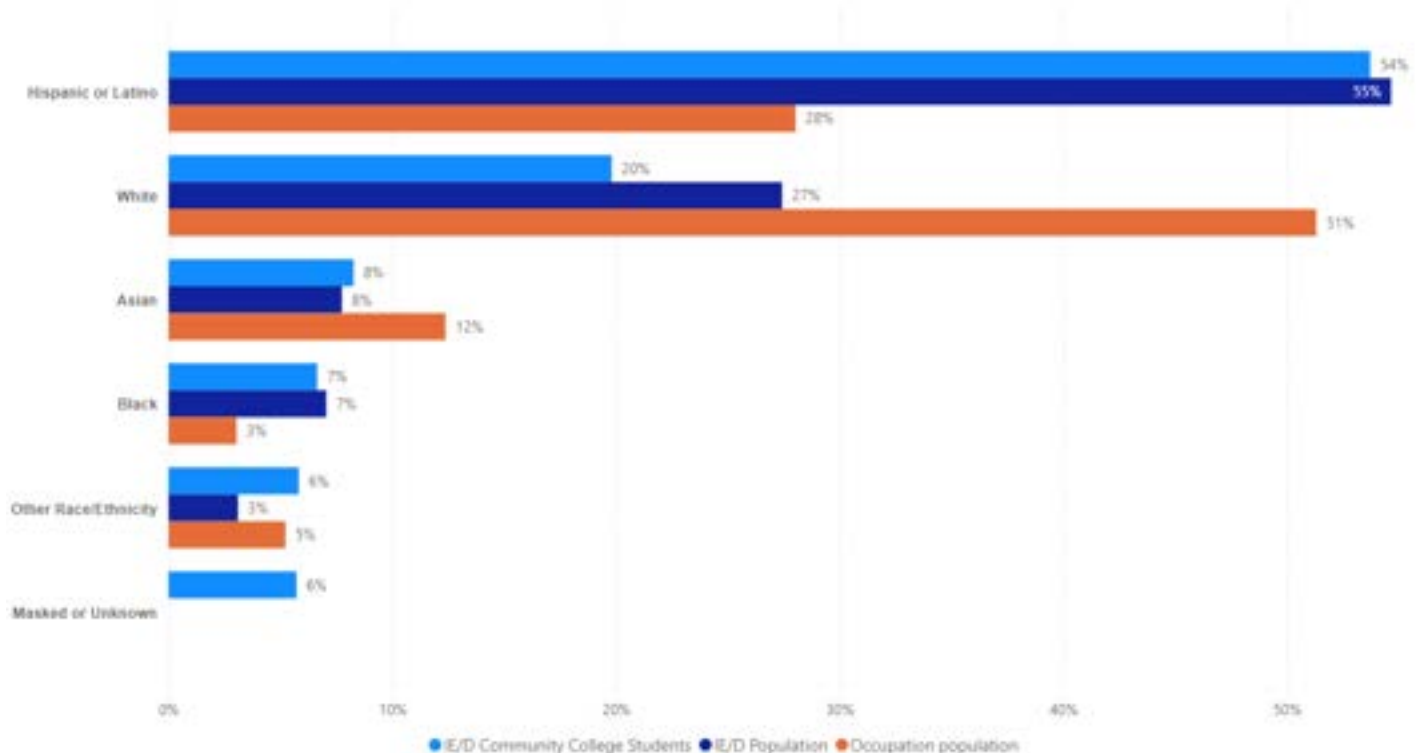
Building an Inclusive Economy

This section examines demographic data for IE/D community college students in Digital Media programs compared to the IE/D population. We also include demographics for related occupation data for the four occupations related to digital arts. This analysis can be used to:

- Understand the community college system’s current or potential role supporting a diverse talent pipeline into the occupations of interest.
- Inform students (and the faculty and staff working with them) the extent to which individuals from similar demographic groups are over or underrepresented in the professions related to their field of study.
- Inform employers of the diverse talent pipeline coming from the community college system for the occupations analyzed.

Notably, 54% of students enrolled in Digital Media programs are Hispanic/Latino, which is significantly higher than Hispanic/Latino workers in occupations related to digital arts in the IE/D region (28%). Additionally, 51% of the IE/D population that are employed in occupations related to digital arts are White, which is significantly higher than both IE/D community college students (20%) and IE/D population (27%). Though only 3% of the workers employed in occupations related to digital arts are Black, 7% of students in Digital Media programs and 7% of the IE/D population are Black.

Exhibit 14 Program and County Demographics by Ethnicity



SOURCE: LIGHTCAST 2024.2 AND LAUNCHBOARD

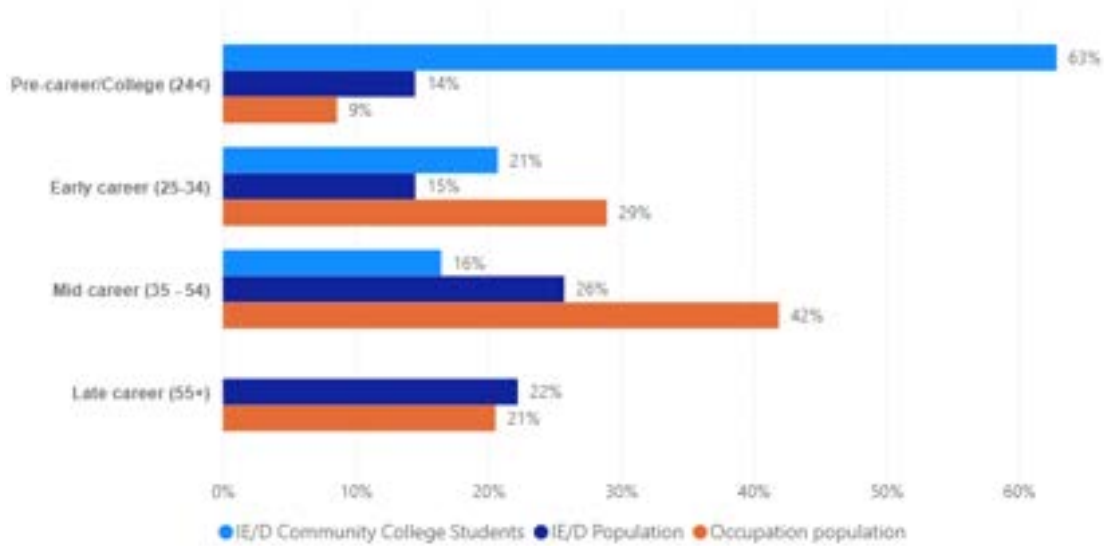
Most IE/D professionals in digital arts occupations are White (51%), “early career” or “mid-career” age categories (71%), and equally male (50%) and female (50%). Most community college students in related programs are Hispanic/Latino (54%), “pre-college/career” age category (63%), and male (51%). Major takeaways:

- Community colleges are an important talent source for employers committed to greater racial/ethnic diversity, especially Hispanic/Latino and Black professionals, in comparison to this field.
- College programs may want to consider strategies to engage more women into these programs.

Exhibit 15 compares the age of IE/D community college students enrolled in Digital Media programs compared to the IE/D population.

The majority of students enrolled in Digital Media programs are in the “pre-college/career” category (63%) as compared to IE/D population (14%) and workforce (9%) in these four occupations related to digital arts. These programs are an important entry point for young digital arts professionals.

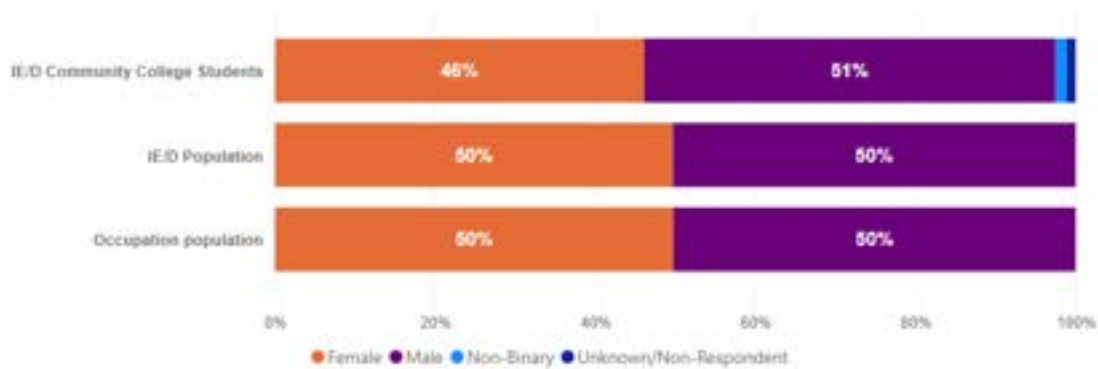
Exhibit 15 Program and County Demographics by Age



SOURCE: LIGHTCAST 2024.2 AND LAUNCHBOARD

Exhibit 16 compares the gender of IE/D Region community college students enrolled in Digital Media programs compared to the IE/D population. We also include demographics for related occupation data for the four occupations related to digital arts to identify potential diversity and equity issues addressable by community college programs.

Exhibit 16 Program and County Demographics by Gender



SOURCE: LIGHTCAST 2024.2 AND LAUNCHBOARD

Appendix: Methodology

Exhibit 13 displays the average annual California Community College (CCC) awards conferred during the three academic years between 2020 and 2023 from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variations that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from California's Employment Development Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2023a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS) administered by Santa Rosa Junior College (LaunchBoard, 2023a).

Appendix: References

Type of Data	Source
Occupational Projections, Wages, and Job Postings	Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment. https://lightcast.io/
Living Wage (UW)	Center for Women's Welfare, University of Washington. (2024). The self-sufficiency standard for California 2024. http://www.selfsufficiencystandard.org/ . This calculation measures the income necessary for an individual of family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. The living wage for one adult in San Bernardino County is \$20.07 per hour (\$42,392 annually). The living wage for one adult in Riverside County is \$20.76 per hour (\$43,854 annually). The average living wage to represent Inland Empire/Desert is \$20.42 per hour (\$43,123 annually).
Living Wage (MIT)	The living wage is derived from MIT's Living Wage Calculator, which measures the income necessary for an individual of family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. For more information, see: https://livingwage.mit.edu/pages/methodology The living wage for one adult in San Bernardino County is \$25.17 per hour (\$52,353.60 annually). The living wage for one adult in Riverside County is \$26.30 per hour (\$54,704 annually). The average living wage to represent Inland Empire/Desert is \$25.74 per hour (53,539.20 annually)
Typical Education and Training Requirements, and Educational Attainment	The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, see https://www.bls.gov/emp/documentation/education/tech.htm
Educational Supply	The CCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions). For more information, see https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions

Student Metrics and Demographics	LaunchBoard, a statewide data system supported by the California Community Colleges Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: https://www.calpassplus.org/LaunchBoard/Home.aspx
----------------------------------	---

Labor Market Analysis for: 0936.00 Printing and Lithography

Inland Empire/Desert Center of Excellence, Dec 2024

Prepared by: Chris Cruzcosa, ccruzcosa@iegocollaborative.org



Summary

Program LMI Endorsement	All LMI Criteria Met	Some LMI Criteria Met (Proceed with Caution)	LMI Criteria NOT Met
	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Program LMI Endorsement Criteria		
Supply Gap	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<i>Comments: There is projected to be 488 annual job openings throughout the Inland Empire/Desert region, which is more than the 0 annual average awards conferred by educational institutions over the last 3 years. Supply data includes both community college awards (0) and non-community college awards (0).</i>	
Living Wage	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	<i>Comments: None (0%) of the annual job openings for these six occupations have entry-level hourly wages above the IE/D living wage of \$20.42.¹</i>	
Education	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<i>Comments: Most job postings for target occupations require a high school diploma or equivalent or associate degree (66%). See Exhibits 8 and 9 for more details.</i>	

The Inland Empire/ Desert (IE/D) Center of Excellence for Labor Market Research (IE/D COE) reviewed the following occupations to prepare this report:

- Below Middle-Skill (typically require training/education at or below a HS diploma)
 - Printing Press Operators (51-5112)
 - Data Entry Keyers (43-9021)
 - Textile, Apparel, and Furnishings Workers, All Other (51-6099)
- Middle-Skill (typically require training/education above a HS diploma but less than a bachelor's degree)
 - Desktop Publishers (43-9031)
 - Prepress Technicians and Workers (51-5111)
- Above Middle-Skill (typically require training/education at or above a bachelor's degree)
 - Graphic Designers (27-1024)

Summary of findings

Demand

- The number of jobs related to the middle-skill occupations is projected to decrease through 2028, with 488 annual job openings (new and replacement jobs).
- Hourly entry-level wages for all occupations are below living wage at the 25th percentile hourly wage ranging from \$17.09 to \$20.33 in IE/D.
- There were 576 online job postings from 180 employers over the past 12 months with the highest postings for data entry clerks and data entry specialists.
- Most job postings for target occupations require a high school diploma or equivalent (46%), followed by a bachelor's degree (33%), associate degree (20%), and above a bachelor's degree (1%).

Supply

- On average, there were 0 annual awards conferred by educational institutions over the last 3 years in related fields: 0 from community colleges and 0 from other institutions (e.g., 4-year universities, private schools).
- IE/D community college students that exited these programs in the 2021-22 academic year earned a median annual wage of \$17,836 (\$8.58 per hour).
- In California, 43% of students that exited their program in 2021-22 reported that they are working in a job closely related to their field of study. However, there was insufficient data to determine this data point for IE/D students in the most recent academic year available.

¹ The [UW self-sufficiency standard](#) is currently used by the CO and other COEs, the self-sufficiency standard was last updated by UW in 2024. To provide an alternative perspective, the COE will provide an alternative living wage calculation from MIT in the analysis below as an additional reference point. MIT estimates, the living wage for an adult with no kids living in 2024 is \$26.30 in Riverside County and \$25.17 in San Bernadino County.

- Community college programs play an important role diversifying the talent pipeline in these occupations. Most IE/D professionals in printing occupations are Hispanic/Latino or White (80%), “mid-career” or “late career” age category (67%), and female (53%). Most community college students in related programs are Hispanic/Latino (74%), “pre-career/college” age category (100%), and male (58%).

Introduction

California Community College Printing and Lithography (TOP 0936.00) programs prepare students for employment in the printing or reproduction of materials, including forms, newspapers, publications, and brochures; computerized pre-print applications, press operations, camera and stripping, and bindery and finish work are included (Taxonomy of Programs, 2023). The knowledge, skills, and abilities trained by Printing and Lithography programs lead to employment in occupations related to printing.

Job Demand

In 2023, there were 4,821 jobs in occupations related to printing in the IE/D region. Regional employment for this occupation group is projected to decrease by -1% through 2028 with 488 job openings projected annually. Exhibit 1 displays the job count, five-year projected job growth, and job openings in the region.

Exhibit 1. Five-year projections for occupations related to printing, IE/D Region, 2023-2028

Occupation	SOC	2023 Jobs	2028 Jobs	2023 - 2028 % Change	5-Yr Openings (New + Replacement Jobs)	Annual Openings (New + Replacement Jobs)
Graphic Designers	27-1024	2,410	2,502	4%	1,085	217
Data Entry Keyers	43-9021	1,073	1,063	-1%	639	128
Desktop Publishers	43-9031	39	39	-1%	22	4
Prepress Technicians and Workers	51-5111	143	133	-7%	86	17
Printing Press Operators	51-5112	1,029	996	-3%	537	107
Textile, Apparel, and Furnishings Workers, All Other	51-6099	127	127	0%	74	15
Total		4,821	4,860	-1%	2,442	488

SOURCE: LIGHTCAST 2024.3

Job Postings

The following analysis for occupations related to printing using online job posting data.

Important note: The data produced in this section were generated by leveraging online job posting data sourced from Lightcast, which is the labor market analytics software tool COEs use to produce these briefs. The job posting data is collected from scraping online job boards such as LinkedIn, Indeed, Glassdoor and many others. The process Lightcast uses to assemble this data does have some limitations due to methods that recruitment professionals sometimes use (e.g., posting one job to fill multiple positions). For example, the number of jobs posted is not necessarily the same as the number of job vacancies.² While not perfect, Lightcast leverages machine learning and other AI technologies to enrich, deduplicate and aggregate this information to make it a meaningful dataset.

Exhibit 2 displays the number of job ads posted for occupations related to printing over the last 12 months and the median posting duration. Over the previous 12 months, there were 576 unique job postings for occupations related to printing in the region from 291 employers.

Exhibit 2. Job ads and posting duration, IE/D Region, Dec 2023 – Nov 2024

Job Title	Job Ads	Median Posting Duration
Graphic Designers	246	26 days
Data Entry Keyers	238	20 days
Printing Press Operators	70	29 days
Prepress Technicians and Workers	21	25 days
Desktop Publishers	1	
Total	576	

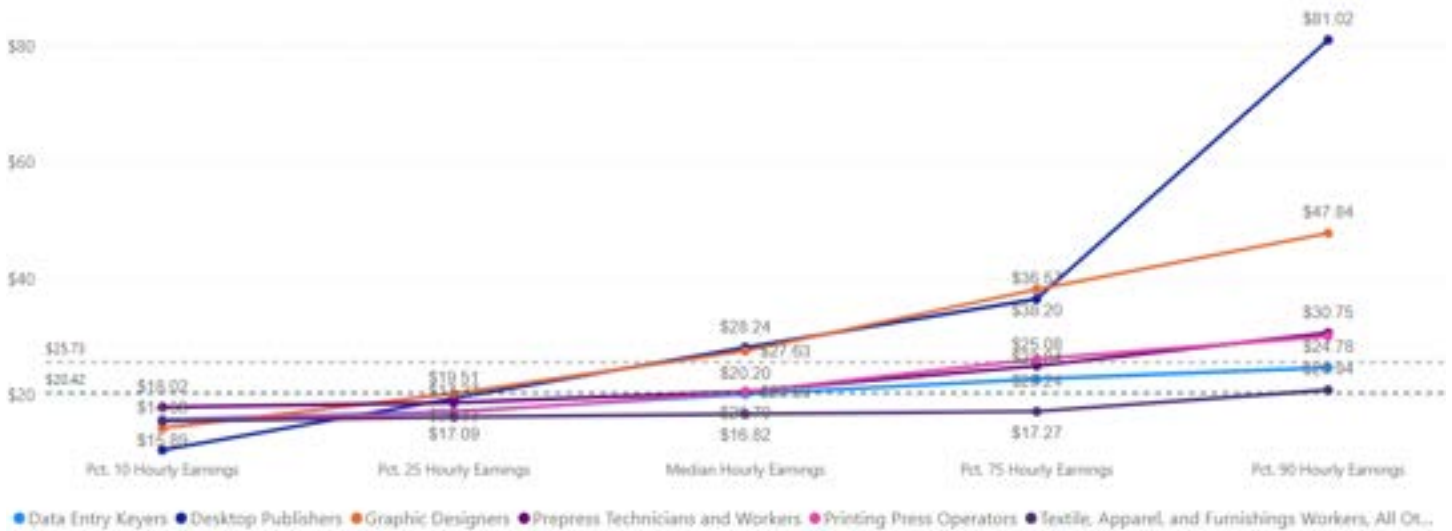
SOURCE: LIGHTCAST 2024.3

² "Job Posting Analytics (JPA) Methodology," Lightcast Knowledge Base, <https://kb.lightcast.io/en/articles/6957446-job-posting-analytics-jpa-methodology>

Earnings

Exhibit 3a displays the hourly earnings for occupations related to printing and Exhibit 3b displays the hourly earnings for job postings of the same occupations and compares both to the UW Self-Sufficiency Standard for the IE/D³ and the MIT IE/D living wage of \$25.73.⁴ The living wage criteria is determined by using the data in Exhibit 3a but Exhibit 3b is also shown to provide regional context using job posting data.

Exhibit 3a. Projected hourly earnings by percentile, IE/D Region, 2023



SOURCE: LIGHTCAST 2024.3

Exhibit 3b. Hourly earnings of job postings by percentile, IE/D Region, Dec 2023 – Nov 2024



SOURCE: LIGHTCAST 2024.3

The projected entry-level earnings (that is, the earnings of the lowest paid 25% of employees in the IE/D) were below the UW Self-Sufficiency Standard for the IE/D (see Exhibit 3a). The occupations listed were also below the MIT living wage for an adult with no children (\$25.73) in projected entry-level earnings (see Exhibit 3a).

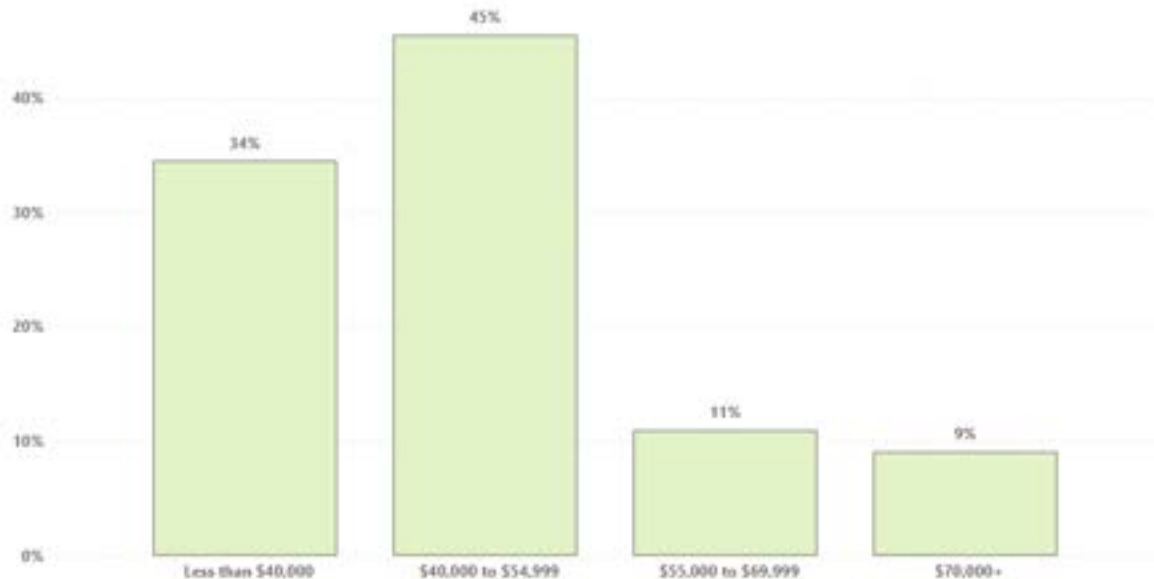
³ The UW self-sufficiency standard is currently used by the CCCO and other COEs, the self-sufficiency standard was last updated by UW in 2024. To provide an alternative perspective, the COE will provide an alternative living wage calculation from MIT in the analysis below as an additional reference point. MIT estimates, the living wage for an adult with no kids living in 2024 is \$26.30 in Riverside County and \$25.17 in San Bernadino County.

⁴ *ibid.*

Advertised Salary from Online Job Ads

Exhibit 4 displays the regional online advertised salaries for the occupations related to printing over the last 12 months. Online job ad salary information data suggests most employers (79%) advertise an annual salary either less than \$40,000 (\$19.23 per hour) or equal to \$40,000 to \$54,999 (\$19.23 to \$26.44 per hour).

Exhibit 4. Online advertised salaries occupations related to printing, IE/D Region, Dec 2023 – Nov 2024



SOURCE: LIGHTCAST 2024.3

Online Job Advertisements: top job titles, skills, education & work experience.

Exhibit 5 displays the job titles most frequently used in job postings for the occupations related to printing over the last 12 months. Assessing the top advertised job titles may provide insight into the types of positions sought by employers.

Exhibit 5. Job titles most frequently used in job ads, IE/D Region, Dec 2023 – Nov 2024

Job Title	Unique Postings
Data Entry Clerks	71
Data Entry Specialists	22
Flexographic Press Operators	10
Screen Printers	10
Screen Print Operators	9
Data Entry Operators	7
Environmental Professionals	6
Order Entry Specialists	6
Printing Press Operators	6
Camera Operators	5

SOURCE: LIGHTCAST 2024.3

Exhibit 6 displays the employers posting the most job ads for this occupational group during the last 12 months. Showing employer names can provide insight into where students may find employment after completing a program and may inform job development and other employer engagement targets for faculty and staff involved in related programs. “Circle – Data Annotation” and “Columbia Packaging Group” had the highest unique job posts for this occupational group in the last 12 months. Posting intensity is the ratio of total job posts to unique job posts which are deduplicated. A higher posting

intensity can represent the level of effort and activity the organization is putting into hiring for that position. The following report comes directly from Lightcast's Job Posting Analytics dashboard.

Exhibit 6. Employers posting the most job ads, IE/D Region, Dec 2023 – Nov 2024

Company	Total/Unique (Oct 2023 - Sep 2024)	Posting Intensity	Median Posting Duration
Circle - Data Annotation	18 / 10	2 : 1 	28 days
Columbia Packaging Group	30 / 7	4 : 1 	35 days
Qai Laboratories	49 / 5	10 : 1 	4 days
Oak View Group	14 / 4	4 : 1 	n/a
Heartland Label Printers, Llc	8 / 4	2 : 1 	12 days
Valley Business Services Group	8 / 4	2 : 1 	28 days
Simply Biotech	6 / 4	2 : 1 	11 days
Garment Decor	8 / 4	2 : 1 	13 days
Meva	15 / 4	4 : 1 	40 days
Armada Staffing	7 / 4	2 : 1 	11 days

SOURCE: LIGHTCAST 2024.3

Exhibit 7 displays the top common, specialized and computer skills that were included in the job postings over the last 12 months. Today's demand is an important indicator of which skills employers are looking for in the current market. Analyzing skills from a historical perspective as well as projecting the future needs of employers may provide insight into how the job posting skills demand compares to the market as a whole. Rapidly growing skills are those that are increasing in demand at a faster rate than the market as a whole.⁵

Exhibit 7. Top 10 in-demand skills from employer job ads, IE/D Region, Dec 2023 – Nov 2024

Common skills	Total Postings	Skill Growth Relative to Market
Communication	204	Lagging
Detail Oriented	201	Stable
Microsoft Excel	106	Growing
Customer Service	101	Stable
Multitasking	92	Growing
Organizational Skills	90	Growing
Microsoft Office	78	Growing
Management	76	Stable
Sales	75	Stable
Operations	74	Stable

Specialized skills	Total Postings	Skill Growth Relative to Market
Data Entry	225	Lagging
Graphic Design	164	Growing
Adobe Illustrator	162	Growing
Adobe Photoshop	156	Growing
Marketing	115	Rapidly Growing
Adobe InDesign	102	Growing
Adobe Creative Suite	99	Growing
Typography	58	Stable
Brand Management	43	Lagging
Branding	41	Growing

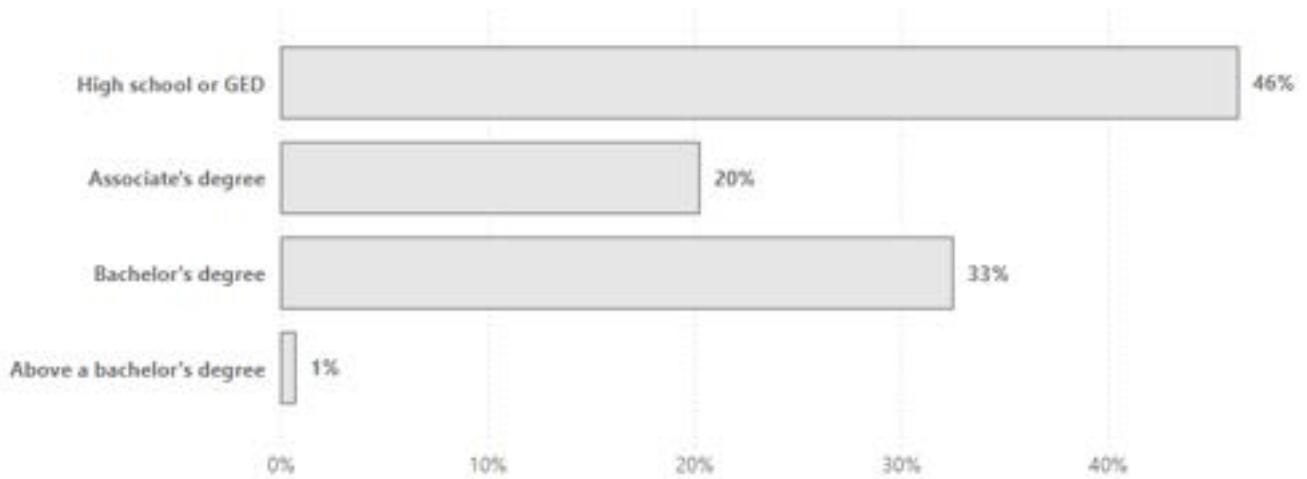
Computer Skills	Total Postings	Skill Growth Relative to Market
Adobe Illustrator	162	Growing
Adobe Photoshop	156	Growing
Microsoft Excel	106	Growing
Adobe InDesign	102	Growing
Adobe Creative Suite	99	Growing
Microsoft Office	78	Growing
Microsoft Outlook	57	Rapidly Growing
Spreadsheets	54	Rapidly Growing
Microsoft PowerPoint	47	Rapidly Growing
Microsoft Word	47	Stable

SOURCE: LIGHTCAST 2024.3

⁵ "What are Lightcast Skill Projects", Lightcast Knowledge base, <https://kb.lightcast.io/en/articles/8496296-what-are-lightcast-skill-projections>

Exhibit 8 includes the minimum educational requirements from job postings for this occupational group with high school diploma or equivalent (46%), significantly greater/lesser than bachelor's degree (33%), or associate degree (20%), or above a bachelor's degree (1%).

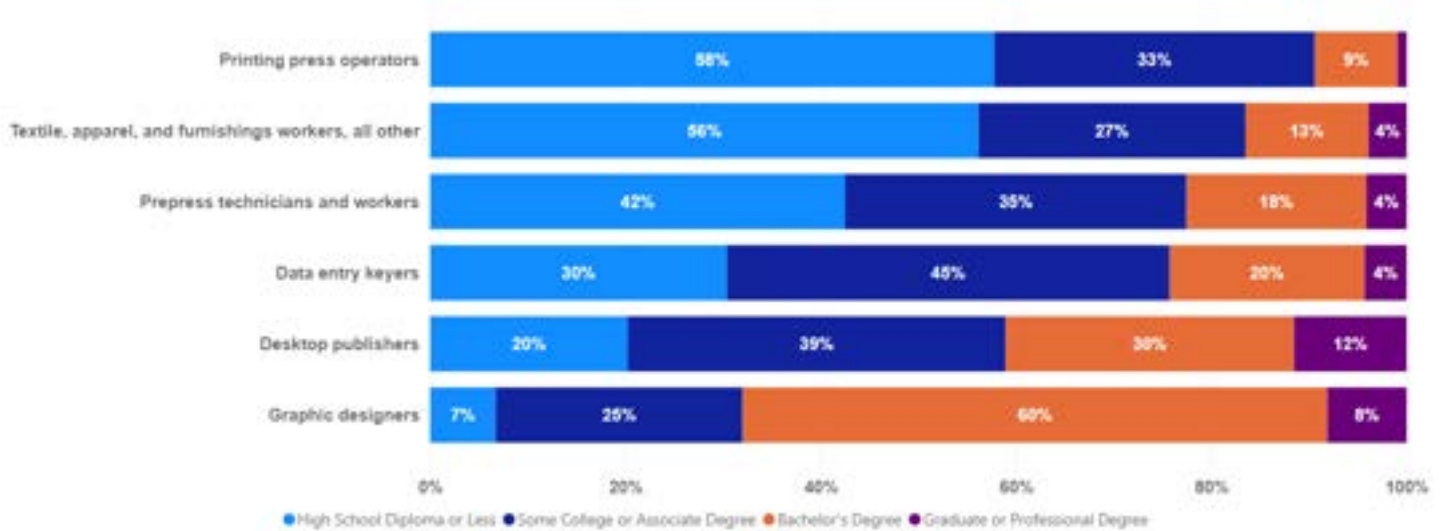
Exhibit 8 Minimum educational requirements in job postings for this occupational group, IE/D Region, Dec 2023 – Nov 2024



SOURCE: LIGHTCAST 2024.3

For the middle-skill or below middle-skill occupations, the Bureau of Labor Statistics (BLS) education attainment data in Exhibit 9 for current professionals in the occupations of interest indicates that between 25% and 45% of workers have completed some college or an associate degree as their highest level of education.

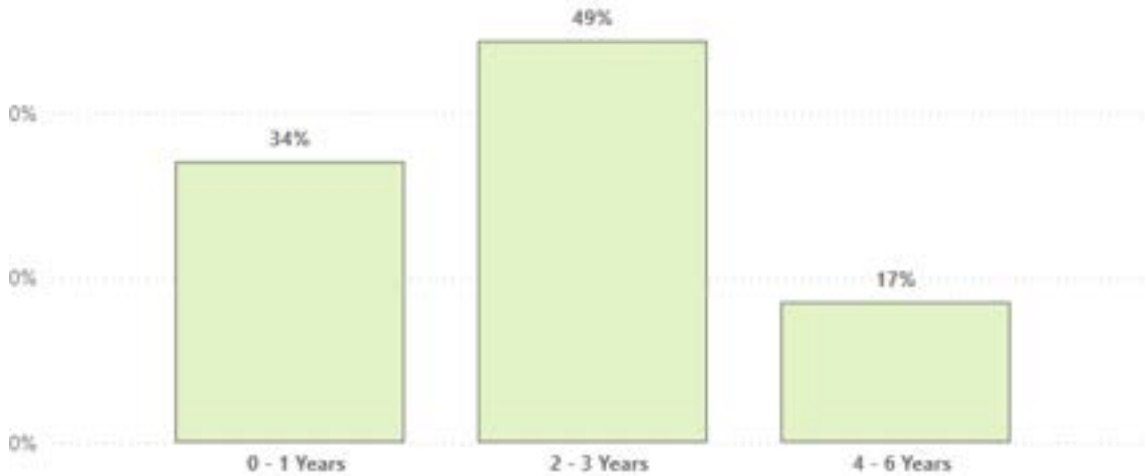
Exhibit 9 National-level Education Attainment for Occupations



SOURCE: BLS 2021

Exhibit 10 displays the work experience typically required from employer job ads for this occupational group. The majority (83%) of employers listing minimum experience requirements sought candidates with 0-1 or 2-3 years of previous work experience.

**Exhibit 10 Work experience requirements,
IE/D Region, Dec 2023 – Nov 2024**



SOURCE: LIGHTCAST 2024.3

Student Completions and Program Outcomes

No student completions for the Printing and Lithography (TOP 0936.00) programs were found over the last three academic years (2020-2023). Based on the lack of data, it appears that in the previous three academic years, 0 regional community colleges issued an average of 0 awards in relevant programs.

Non-Community College Supply

Award completion data was not found in the IE/D for other related non-community college programs: Graphic and Printing Equipment Operator, General Production (CIP 10.0305), Platemaker/Imager (CIP 10.0306), Printing Press Operator (CIP 10.0307), Computer Typography and Composition Equipment Operator (CIP 10.0308).

Based on the lack of data, it appears that in the previous three academic years 0 regional non-community college institutions issued an average of 0 awards in relevant programs.

Strong Workforce Program Outcomes

California SWP program outcome data may provide useful insight into the likelihood of success for the proposed program. Community college student outcome information based on the selected TOP code and region is provided in Exhibit 11.

Exhibit 11 Printing and Lithography strong workforce program outcomes, IE/D & California, most recent academic year

Program metric title	Inland Empire/Desert	Statewide
Attained a living wage (completers and skills-builders)		70%
Completed 9+ career education units in one year	56%	42%
Job closely related to the field of study		43%
Median annual earnings (all exiters)	\$17,836	\$80,372
Students who earned a degree, certificate, or attained apprenticeship	0	17
Unduplicated count of enrolled students	55	115

SOURCE: LAUNCHBOARD

Building an Inclusive Economy

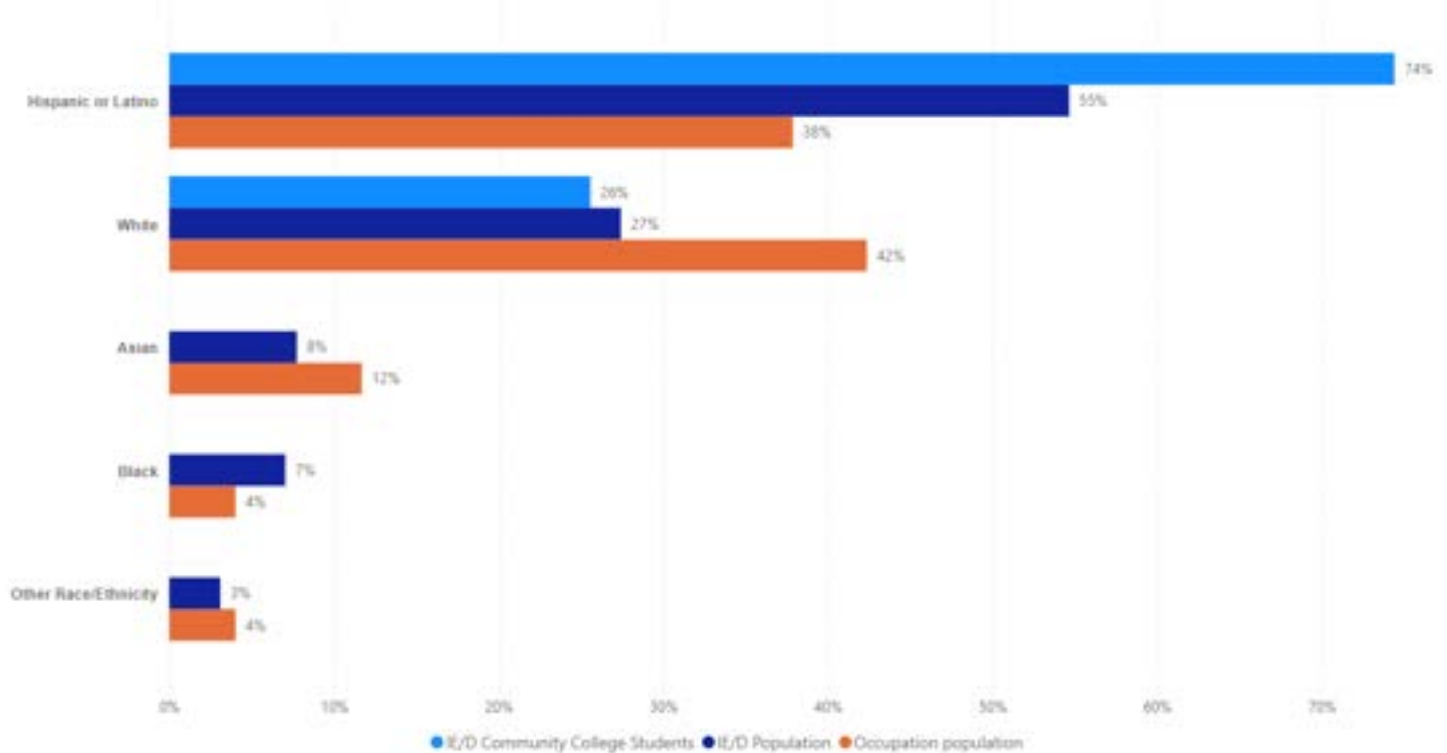
This section examines demographic data for IE/D community college students in Printing and Lithography programs compared to the IE/D population. We also include demographics for related occupation data for the four occupations related to printing. This analysis can be used to:

- Understand the community college system’s current or potential role supporting a diverse talent pipeline into the occupations of interest.
- Inform students (and the faculty and staff working with them) the extent to which individuals from similar demographic groups are over or underrepresented in the professions related to their field of study.
- Inform employers of the diverse talent pipeline coming from the community college system for the occupations analyzed.

Exhibit 12 compares the race/ethnicity of IE/D community college students enrolled in Printing and Lithography programs compared to the IE/D population.

Notably, 74% of students enrolled in Printing and Lithography programs are Hispanic/Latino, which is significantly higher than Hispanic/Latino workers in occupations related to printing in the IE/D region (38%). Additionally, 42% of the IE/D population that are employed in occupations related to printing are White, which is higher than both IE/D community college students (26%) and IE/D population (27%). Though 4% of the workers employed in occupations related to printing are Black, it appears (<1%) students in Printing and Lithography programs are Black.

Exhibit 12 Program and County Demographics by Race/Ethnicity



SOURCE: LIGHTCAST 2024.3 AND LAUNCHBOARD

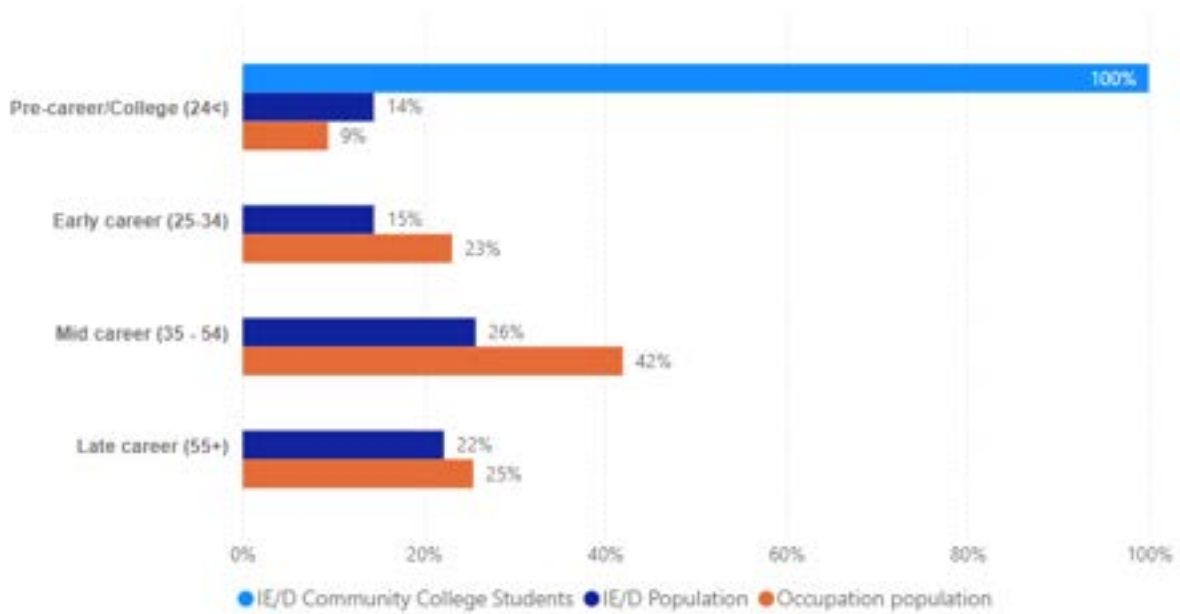
Most IE/D professionals in printing occupations are Hispanic/Latino or White (80%), “mid-career” or “late career” age category (67%), and female (53%). Most community college students in related programs are Hispanic/Latino (74%), “pre-career/college” age category (100%), and male (58%). Major takeaways:

- Community colleges are an important talent source for employers committed to greater racial/ethnic diversity, especially Hispanic/Latino professionals.
- College programs may want to consider strategies to engage more women into these programs.

Exhibit 13 compares the age of IE/D community college students enrolled in Printing and Lithography programs compared to the IE/D population.

The vast majority of students enrolled in Printing and Lithography programs are in the “pre-career/college” category (100%) as compared to IE/D population (14%) and workforce (9%) in these four occupations related to printing. These programs are an important entry point for young printing professionals.

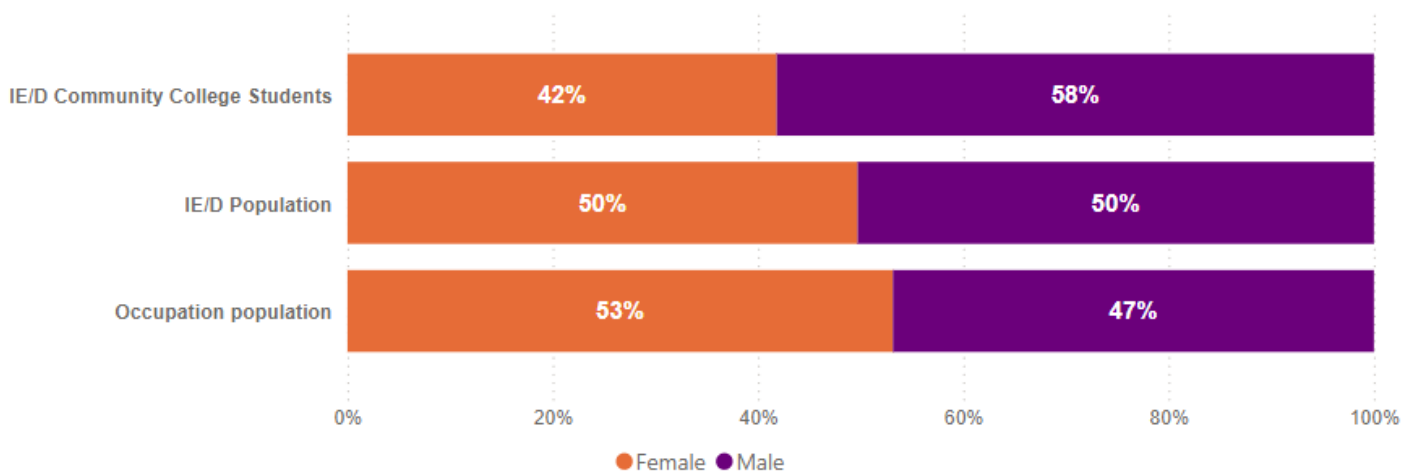
Exhibit 13 Program and County Demographics by Age



SOURCE: LIGHTCAST 2024.3 AND LAUNCHBOARD

Exhibit 14 compares the gender of IE/D Region community college students enrolled in Printing and Lithography programs compared to the IE/D population. We also include demographics for related occupation data for the four occupations related to printing to identify potential diversity and equity issues addressable by community college programs.

Exhibit 14 Program and County Demographics by Gender



SOURCE: LIGHTCAST 2024.3 AND LAUNCHBOARD

Appendix: Methodology

Exhibit 11 displays the average annual California Community College (CCC) awards conferred during the three academic years between 2020 and 2023 from the California Community Colleges Chancellor's Office Management Information Systems (MIS) Data Mart. Awards are the combined total during the timeframe, divided by three in this case to calculate an annual average. This is done to minimize the effect of atypical variations that might be present in a single year.

Community college student outcome information is from LaunchBoard and based on the selected TOP code and region. These metrics are based on records submitted to the California Community Colleges Chancellor's Office Management Information Systems (MIS) by community colleges, which come from self-reported student information from CCC Apply and the National Student Clearinghouse. Employment and earnings metrics are sourced from California's Employment Development Department's Unemployment Insurance database. When available, outcomes for completers are reported to demonstrate the impact that earning a degree or certificate can have on employment and earnings. For more information on the types of students included for each metric, please see the web link for LaunchBoard's Strong Workforce Program Metrics Data Element Dictionary in the References section (LaunchBoard, 2023a). Finally, employment in a job closely related to the field of study comes from self-reported student responses on the CTE Employment Outcomes Survey (CTEOS) administered by Santa Rosa Junior College (LaunchBoard, 2023a).

Appendix: References

Type of Data	Source
Occupational Projections, Wages, and Job Postings	Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment. https://lightcast.io/
Living Wage (UW)	Center for Women's Welfare, University of Washington. (2024). The self-sufficiency standard for California 2024. http://www.selfsufficiencystandard.org/ . This calculation measures the income necessary for an individual of family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. The living wage for one adult in San Bernardino County is \$20.07 per hour (\$42,392 annually). The living wage for one adult in Riverside County is \$20.76 per hour (\$43,854 annually). The average living wage to represent Inland Empire/Desert is \$20.42 per hour (\$43,123 annually).
Living Wage (MIT)	The living wage is derived from MIT's Living Wage Calculator, which measures the income necessary for an individual of family to afford basic expenses. The data assesses the cost of housing, food, childcare, health care, transportation, and taxes. For more information, see: https://livingwage.mit.edu/pages/methodology The living wage for one adult in San Bernardino County is \$25.17 per hour (\$52,353.60 annually). The living wage for one adult in Riverside County is \$26.30 per hour (\$54,704 annually). The average living wage to represent Inland Empire/Desert is \$25.74 per hour (53,539.20 annually)
Typical Education and Training Requirements, and Educational Attainment	The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, see https://www.bls.gov/emp/documentation/education/tech.htm
Educational Supply	The CCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions). For more information, see https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions

Student Metrics and Demographics	LaunchBoard, a statewide data system supported by the California Community Colleges Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: https://www.calpassplus.org/LaunchBoard/Home.aspx
----------------------------------	---