

# SECTOR PROFILE

## ICT-Digital Media Pathways & Occupations



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Prepared by:

San Francisco Bay Center of Excellence for Labor Market Research



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## Introduction

To support the planning and development of career education (CE) programs and to inform information about different sector pathways within the Bay Area, the San Francisco Bay Center of Excellence (COE) for Labor Market Research developed a series of sector profiles highlighting trends in the labor market and postsecondary education and training programs that fall within each sector. These profiles highlight jobs that fall below, within, and above middle skill jobs. Middle skill jobs are those that typically require training beyond a high school diploma, but less than a bachelor's degree. These occupations are a critical component of the labor workforce and support the economic vitality of the Bay Area.

The Information Communication Technology (ICT)-Digital Media profile summarizes key findings on current and projected workforce demand, hourly wages for occupations within the sector by career pathway, and program information from community colleges in the region that offer training programs in ICT-Digital Media.

### What Pathways Make Up the ICT-Digital Media Sector?

This profile provides a snapshot of the labor market for ICT-Digital Media and focuses on four career pathways within the sector. The labor market data presented in this profile includes in-demand occupations by each pathway that have related education and training programs offered at community colleges across the Bay Area.

The four ICT-Digital Media career pathways below offer a range of opportunities for employment and advancement across skill levels.

#### ICT-DIGITAL MEDIA CAREER PATHWAYS

- 1 Communications, Information and Support Services
- 2 Data, Databases and Software Development
- 3 Networks, Computer Systems and Cybersecurity
- 4 Web Development and Digital Design

## Quick Facts About ICT-Digital Media in the Bay Area

Quick facts related to the ICT-Digital Media sector below feature labor market projections between 2021-2026 in the Bay Area, and community college program information for program years 2018-19 to 2020-21.

The ICT-Digital Media sector accounted for over 360,000 jobs in the Bay Region in 2021. Between 2021 and 2026, these jobs are projected to grow by 10% with 38,993 projected annual job openings.

ICT-Digital Media programs are offered at 28 community colleges in the Bay Area. More than 54,000 students enrolled in ICT-Digital Media programs each year at a Bay Region community college during program years 2018-19 to 2020-21, and 2,661 students completed a degree or certificate, on average. As for demographics, approximately 33% of students who enrolled between program years 2018-19 to 2020-21 were 20 to 24 years old. Males were predominantly represented among students who enrolled in ICT-Digital Media programs (55%), as well as students who identify as Hispanic (27%) or White (25%).

### Bay Area Quick Facts



**363,470**

Number of Jobs  
in 2021



**10%**

5-year  
Projected Job Growth



**38,993**

5-year  
Projected Annual Openings



**28**

Community Colleges (CC)  
Offering ICT-DM Programs



**54,439**

Students Enrolled in  
CC ICT-DM Programs  
(2018-19 to 2020-21)



**2,661**

CC Degrees/Certificates Awarded on  
Average in ICT-DM  
(2018-19 to 2020-21)

### Local Employers



- CyberCoders
- Amazon
- Apple
- Randstad
- Robert Half
- Google
- Meta
- Cynet Systems
- Motion Recruitment
- Revature Sunbelt Staffing

Source: Lightcast, Online Job Postings for Education, 2020-2022 [2023.01].

## Projected Employment for the ICT-Digital Media Sector

### Industry Employment Demand for ICT-Digital Media

The ICT-Digital Media sector includes sub-sectors and industries grouped under North American Industry Classification System (NAICS) codes 33, 51, 54, and 81, which is used to organize and categorize industries in the job market for the sector. A single two-digit NAICS code, for example, may represent several sub-sector and industry groups within the sector.

Overall, employment demand in the ICT-Digital Media sector is projected to grow in the Bay Region over the next several years (2021-2026) by 15% (Table 1). Approximately 457,698 workers in the Bay Region were employed in ICT-Digital Media industries in 2021, and this number is projected to increase to 528,423 workers by 2026.

**Table 1: Projected Industry Demand for ICT-Digital Media**

2021 JOBS	2026 JOBS	JOB CHANGE	% CHANGE
457,698	528,423	70,725	15%

Source: Lightcast, Projected Demand for ICT-Digital Media, 2021-2026 [2023.1].

### Occupational Demand for ICT-Digital Media by Career Pathway

Examining demand for ICT-Digital Media by career pathway, Table 2 summarizes the number of workers employed in each pathway in 2021 and the total number of openings projected between 2021-2026. The Data, Databases and Software Development career pathway had the most jobs in 2021 with 204,040 workers, and it's also projected to have the most job openings between 2021-2026, with 110,110.

**Table 2: Number of Jobs and Total Openings for ICT-Digital Media by Career Pathway (2021-2026)**

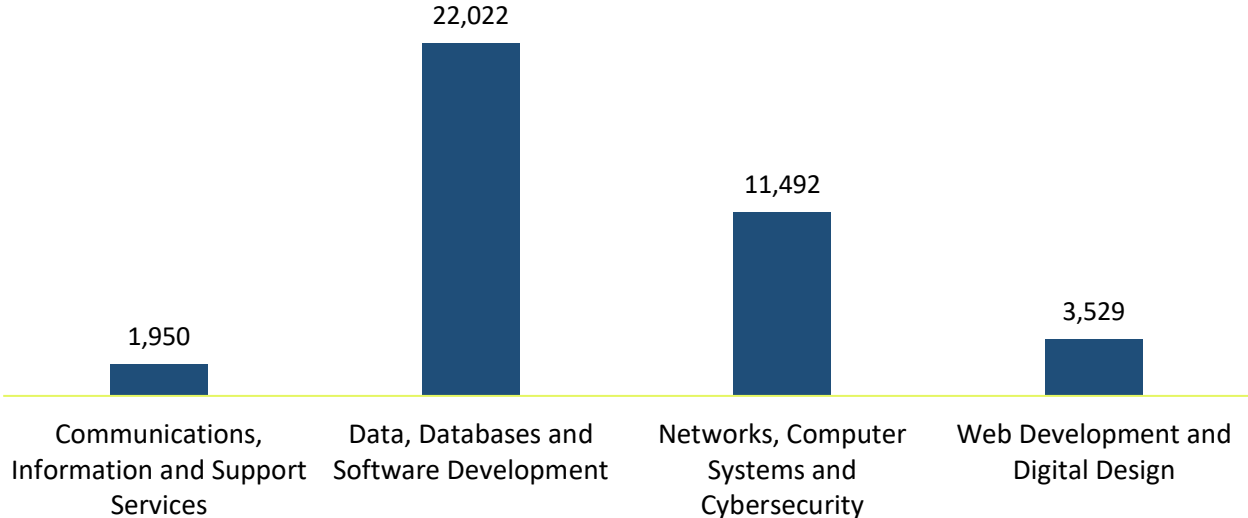
PATHWAY	2021 JOBS	2021 – 2026 OPENINGS*
Communications, Information and Support Services	15,967	9,760
Data, Databases and Software Development	204,040	110,110
Networks, Computer Systems and Cybersecurity	113,814	57,457
Web Development and Digital Design	29,649	17,641

Source: Lightcast, Projected Number of Jobs and Total Openings for ICT-Digital Media, 2021-2026 [2023.1].

\*2021-2026 Openings are new job openings and replacement job openings. Replacement openings are created as workers switch jobs, retire or leave for other reasons.

In terms of annual openings, Figure 1 presents projected average annual openings for each career pathway in ICT-Digital Media. More than 22,000 annual openings are projected for occupations in the Data, Databases and Software Development pathway between 2021 and 2026, followed by more than 11,000 projected annual openings in Networks, Computer Systems and Cybersecurity.

**Figure 1: Annual Job Openings for ICT-Digital Media by Career Pathway (2021-2026)**



Source: Lightcast, Projected Demand for ICT-Digital Media, 2021-2026 [2023.1].



## ICT-Digital Media Occupations and Skill Level by Career Pathway

When examining specific occupations in the ICT-Digital Media sector, Table 3 below presents data on employment and projected demand by occupation, grouped by career pathway and skill level. The Communications, Information and Support Services pathway and the Web Development and Digital Design pathway have the most occupations, with nine occupations each. Please note that the figures in Table 3 are calculated across regional data and totals may be subject to rounding error.

### SKILL LEVEL LEGEND

• = Below Middle Skill   • • = Middle Skill   • • • = Above Middle Skill

**Table 3: Projected Demand for ICT-Digital Media Occupations by Career Pathway (2021-2026)**

Skill Level	Occupation	Annual Openings	2021 Jobs	5-Yr Change	5-Yr % Change	5-Yr Replacement Jobs	Replacements as % of Openings
<b>COMMUNICATIONS, INFORMATION AND SUPPORT SERVICES PATHWAY</b>							
•	Media and Communication Workers, All Other	140	1,332	62	4%	628	90%
•	Photographic Process Workers and Processing Machine Operators	46	300	0	3%	213	92%
• •	Audio and Video Technicians	310	2,384	339	18%	1,215	75%
• •	Film and Video Editors	142	1,184	100	7%	596	84%
• •	Broadcast Announcers and Radio Disc Jockeys	84	624	29	7%	322	80%
• •	Camera Operators, Television, Video, and Film	60	485	44	5%	246	82%
• •	Sound Engineering Technicians	43	325	48	22%	167	73%
• • •	Producers and Directors	608	5,341	402	10%	2,610	83%
• • •	Editors	517	3,992	399	2%	2,102	89%
<b>Communications, Information and Support Services Total</b>		<b>1,950</b>	<b>15,967</b>	<b>1,423</b>	<b>9%</b>	<b>8,099</b>	<b>83%</b>
<b>DATA, DATABASES AND SOFTWARE DEVELOPMENT PATHWAY</b>							
•	Data Entry Keyers	456	3,349	71	-2%	2,114	96%
• •	Computer User Support Specialists	2,299	19,977	3,244	11%	8,232	81%
• • •	Software Developers	14,832	136,967	25,490	15%	48,665	72%
• • •	Software Quality Assurance Analysts and Testers	1,933	18,191	2,795	10%	6,866	79%

### SKILL LEVEL LEGEND

• = Below Middle Skill • • = Middle Skill • • • = Above Middle Skill

Skill Level	Occupation	Annual Openings	2021 Jobs	5-Yr Change	5-Yr % Change	5-Yr Replacement Jobs	Replacements as % of Openings
• • •	Data Scientists	1,082	8,897	1,963	19%	3,445	67%
• • •	Computer Programmers	823	10,694	210	-3%	3,674	94%
• • •	Database Administrators	300	2,918	438	10%	1,058	78%
• • •	Database Architects	297	3,047	392	7%	1,089	81%
	<b>Data, Databases and Software Development Total</b>	<b>22,022</b>	<b>204,040</b>	<b>34,603</b>	<b>8%</b>	<b>75,143</b>	<b>81%</b>

### NETWORKS, COMPUTER SYSTEMS AND CYBERSECURITY PATHWAY

• •	Information Security Analysts	1,556	12,468	2,884	18%	4,901	69%
• •	Network and Computer Systems Administrators	1,079	11,721	1,262	8%	4,113	83%
• •	Computer Network Architects	756	8,934	858	5%	2,881	85%
• •	Computer Network Support Specialists	502	4,134	781	13%	1,721	77%
• • •	Computer and Information Systems Managers	4,699	47,132	5,459	9%	18,031	83%
• • •	Computer Systems Analysts	2,331	24,102	2,792	9%	8,847	82%
• • •	Computer and Information Research Scientists	515	4,773	808	11%	1,763	77%
• • •	Computer and Information Systems Managers	54	550	59	11%	210	77%
	<b>Networks, Computer Systems and Cybersecurity Total</b>	<b>11,492</b>	<b>113,814</b>	<b>14,903</b>	<b>10%</b>	<b>42,467</b>	<b>79%</b>

### WEB DEVELOPMENT AND DIGITAL DESIGN PATHWAY

•	Photographers	575	4,683	645	9%	2,206	80%
•	Media and Communication Equipment Workers, All Other	54	538	9	1%	258	94%
•	Lighting Technicians	22	166	25	29%	85	56%
• •	Graphic Designers	794	7,555	451	6%	3,507	89%
• •	Web and Digital Interface Designers	704	5,549	1,032	12%	2,485	79%
• •	Web Developers	641	5,449	1,025	13%	2,173	76%

### SKILL LEVEL LEGEND

• = Below Middle Skill • • = Middle Skill • • • = Above Middle Skill

Skill Level	Occupation	Annual Openings	2021 Jobs	5-Yr Change	5-Yr % Change	5-Yr Replacement Jobs	Replacements as % of Openings
• •	Art Directors	282	2,231	188	8%	1,221	86%
• •	Special Effects Artists and Animators	275	2,247	145	3%	1,212	91%
• •	Fine Artists, Including Painters, Sculptors, and Illustrators	182	1,231	210	31%	701	69%
<b>Web Development and Digital Design Total</b>		<b>3,529</b>	<b>29,649</b>	<b>3,730</b>	<b>12%</b>	<b>13,848</b>	<b>80%</b>
<b>ICT-DIGITAL MEDIA TOTAL</b>		<b>38,993</b>	<b>363,470</b>	<b>54,659</b>	<b>10%</b>	<b>139,557</b>	<b>81%</b>

Source: Lightcast, Projected Demand for ICT-Digital Media Occupations, 2021-2026 [2023.1].

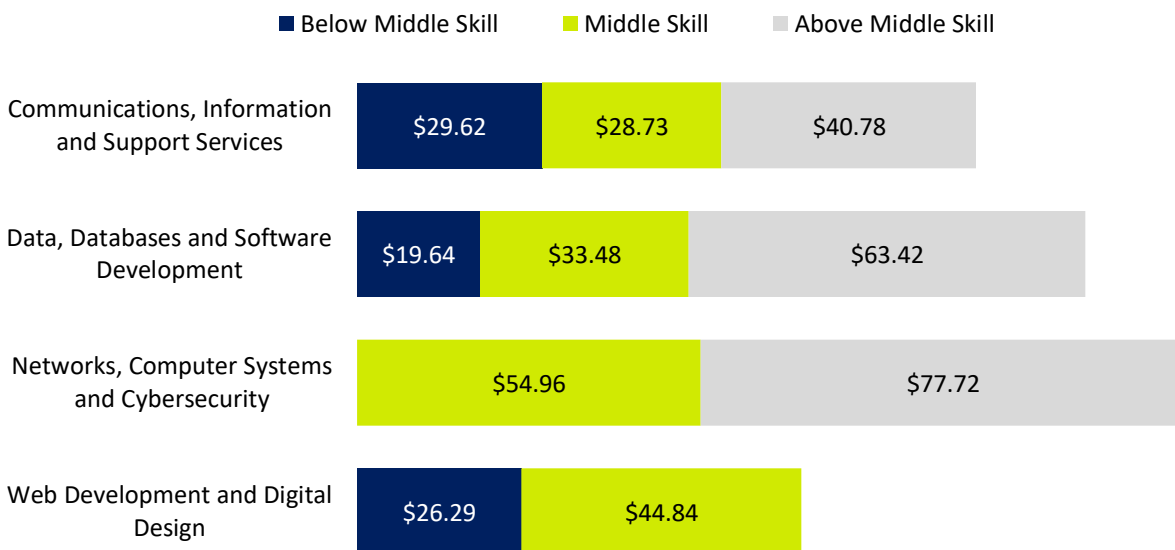




## ICT-Digital Media Occupational Wages by Career Pathway

In terms of wages, Figure 2 below presents the median averages for below middle skill, middle skill, and above middle skill jobs by career pathway. Table 4 summarizes wages by the 25<sup>th</sup> percentile, median and 75<sup>th</sup> percentile hourly earnings for each occupation in the Bay Region. The 25<sup>th</sup> percentile wage is used here as a proxy for entry-level earnings, while the 75<sup>th</sup> percentile represents estimated earnings for a more experienced worker in the occupation.

**Figure 2: Average Median Hourly Earnings for Career Pathways (2021-2026)**



Source: Lightcast, Projected Demand for ICT-Digital Media, 2021-2026 [2023.1].

**Table 4: Hourly Earnings for ICT-Digital Media Occupations by Career Pathway (2021-2026)**

SKILL LEVEL LEGEND		
•	= Below Middle Skill	• • • = Above Middle Skill
• •	= Middle Skill	

Skill Level	Occupation	25 <sup>th</sup> Pct. Hourly Earnings	Median Hourly Earnings	75 <sup>th</sup> Pct. Hourly Earnings
<b>COMMUNICATIONS, INFORMATION AND SUPPORT SERVICES PATHWAY</b>				
•	Media and Communication Workers, All Other	\$29.29	\$38.19	\$46.92
•	Photographic Process Workers and Processing Machine Operators	\$16.54	\$21.05	\$27.54
• •	Film and Video Editors	\$26.75	\$34.76	\$53.38
• •	Sound Engineering Technicians	\$26.01	\$31.45	\$44.6

### SKILL LEVEL LEGEND

• = Below Middle Skill • • = Middle Skill • • • = Above Middle Skill

Skill Level	Occupation	25 <sup>th</sup> Pct. Hourly Earnings	Median Hourly Earnings	75 <sup>th</sup> Pct. Hourly Earnings
• •	Camera Operators, Television, Video, and Film	\$23.31	\$27.09	\$39.47
• •	Audio and Video Technicians	\$21.67	\$26.89	\$34.08
• •	Broadcast Announcers and Radio Disc Jockeys	\$16.42	\$23.46	\$35.08
• • •	Producers and Directors	\$33.00	\$46.52	\$68.34
• • •	Editors	\$25.86	\$35.04	\$43.14
<b>Communications, Information and Support Services Total Averages</b>		<b>\$24.32</b>	<b>\$31.61</b>	<b>\$43.62</b>

### DATA, DATABASES AND SOFTWARE DEVELOPMENT PATHWAY

•	Data Entry Keyers	\$16.81	\$19.64	\$24.19
• •	Computer User Support Specialists	\$25.73	\$33.48	\$43.01
• • •	Software Developers	\$55.56	\$70.94	\$87.07
• • •	Data Scientists	\$52.04	\$69.31	\$78.51
• • •	Database Architects	\$52.00	\$73.26	\$92.81
• • •	Computer Programmers	\$43.75	\$55.79	\$66.78
• • •	Software Quality Assurance Analysts and Testers	\$43.66	\$57.00	\$71.82
• • •	Database Administrators	\$36.21	\$54.22	\$68.60
<b>Data, Databases and Software Development Total Averages</b>		<b>\$40.72</b>	<b>\$54.21</b>	<b>\$66.60</b>

### NETWORKS, COMPUTER SYSTEMS AND CYBERSECURITY PATHWAY

• •	Information Security Analysts	\$55.41	\$61.98	\$77.58
• •	Computer Network Architects	\$50.06	\$67.31	\$85.10
• •	Network and Computer Systems Administrators	\$41.87	\$54.80	\$63.34
• •	Computer Network Support Specialists	\$27.58	\$35.74	\$45.73
• • •	Computer and Information Systems Managers	\$72.32	\$92.67	\$109.76
• • •	Computer and Information Research Scientists	\$71.23	\$83.13	\$101.56

### SKILL LEVEL LEGEND

• = Below Middle Skill   • • = Middle Skill   • • • = Above Middle Skill

Skill Level	Occupation	25 <sup>th</sup> Pct. Hourly Earnings	Median Hourly Earnings	75 <sup>th</sup> Pct. Hourly Earnings
• • •	Computer Systems Analysts	\$44.27	\$57.34	\$72.47
	<b>Networks, Computer Systems and Cybersecurity Total Averages</b>	<b>\$51.82</b>	<b>\$64.71</b>	<b>\$79.36</b>

### WEB DEVELOPMENT AND DIGITAL DESIGN PATHWAY

•	Media and Communication Equipment Workers, All Other	\$19.66	\$29.49	\$43.30
•	Lighting Technicians	\$17.59	\$22.62	\$29.21
•	Photographers	\$16.32	\$26.77	\$43.60
• •	Art Directors	\$44.64	\$61.98	\$86.25
• •	Web and Digital Interface Designers	\$37.67	\$53.26	\$70.15
• •	Special Effects Artists and Animators	\$35.89	\$51.96	\$63.44
• •	Web Developers	\$33.09	\$45.38	\$64.97
• •	Graphic Designers	\$25.67	\$34.58	\$44.25
• •	Fine Artists, Including Painters, Sculptors, and Illustrators	\$12.99	\$21.88	\$32.92
	<b>Web Development and Digital Design Total Averages</b>	<b>\$27.06</b>	<b>\$38.66</b>	<b>\$53.12</b>
	<b>ICT-DIGITAL MEDIA TOTAL</b>	<b>\$34.88</b>	<b>\$46.03</b>	<b>\$59.36</b>

Source: Lightcast, 25<sup>th</sup> pct., Median, and 75<sup>th</sup> pct. Hourly Earnings for ICT-Digital Media Occupations, 2021-2026 [2023.1].

# Emerging Trends and Occupations in the ICT-Digital Media Sector

This report outlines various emerging trends in the ICT-Digital Media sector, which are driving transformation in artificial intelligence, data analytics, and machine learning. These trends include:

- Falling electronic storage prices, so there is no real limit to how much data can be stored and used;
- An order-of-magnitude increase in the computational performance of microprocessors; and
- The ability to transmit and receive data at very high speeds, on the bus (a physical “backbone” that connects power and/or data among various components) inside a machine, within a racked physical cluster of machines, and among machines across distance through cloud networking infrastructure.

Within this sector, job titles and Standard Occupational Classification (SOC) codes align with names and titles in previous years, sometimes with the word “cloud” or a specific product name like “AWS” (Amazon Web Services) inserted as a modifier. The nature of the work and the tools used to accomplish it, though, are rapidly changing. Databases were originally flat file systems (Supercalc, MVS, VM), then evolved to relational (Access, Oracle, DB2), then object-oriented “data lake” approaches (SQL Server, Amazon S3). Programming languages have evolved in parallel, from procedural/computational (FORTRAN, COBOL) to Object-oriented (Python, C++, SQL).

For the 12-month period of July 2022 to June 2023, Table 5 shows unique online job postings for various job titles of emerging occupations in the Bay Region for which SOC codes are not available. Unique job postings reflect the number of job postings that may be posted multiple times by the same company in the same region, but have been deduplicated and only counted once.

**Table 5: Job Titles and Unique Job Postings for Emerging Occupations**

Job Title	Unique Job Postings
Data Engineer	2,719
Data Analyst	2,042
Business Systems Analyst	1,455
IT Analyst	152
AI/Data Analytics Analyst/Specialist	98

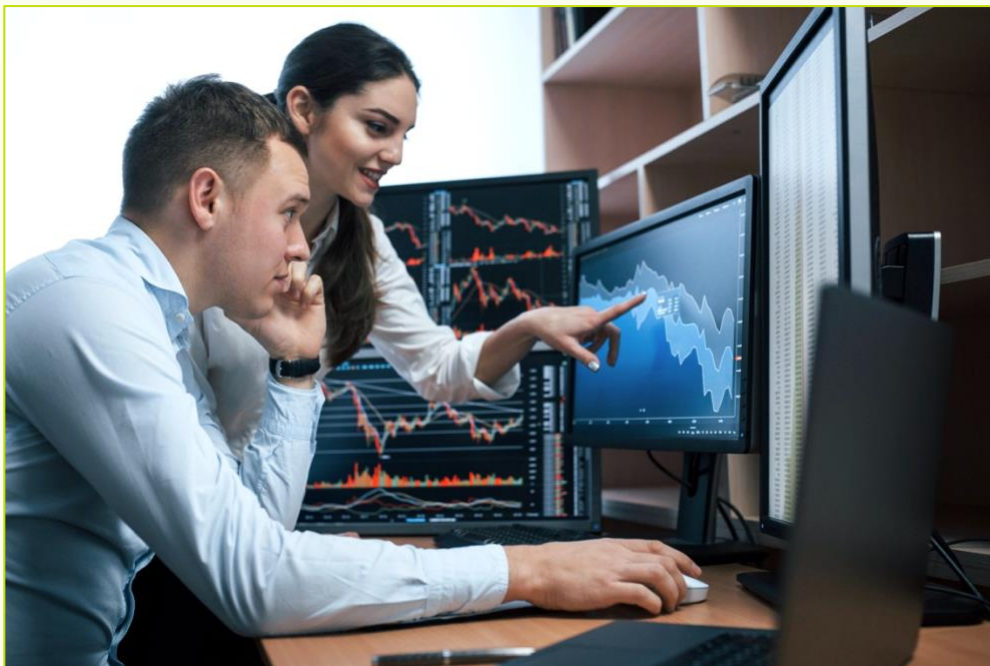
Source: Lightcast, Job Posting Analytics, 2022-2023 [2023.2].

## Emerging and Evolving Skills in the ICT-Digital Media Sector

The following skills continue to be emerging and evolving skills needed for ICT-Digital Media occupations:

- SQL
- Data Analysis
- Python
- Project Management
- Tableau
- Business Processes
- Systems Analysis
- Business Systems

The key challenge for the ICT-Digital Media pathway is for instructional programs to keep pace with a rapidly changing technology landscape. At this moment, for example, there are 275 “MS Access” mentions in the Chancellor’s Office Curriculum Inventory (COCI) database and zero references to “data lake.” While the portfolio of baseline ICT concepts and tools changes constantly, our institutional and instructional systems have evolved to change more slowly. Addressing this disconnect requires colleges to be more agile, with responsive workflows, and Minimally Viable Product (MVP) quality approaches to curriculum development in the ICT sector.

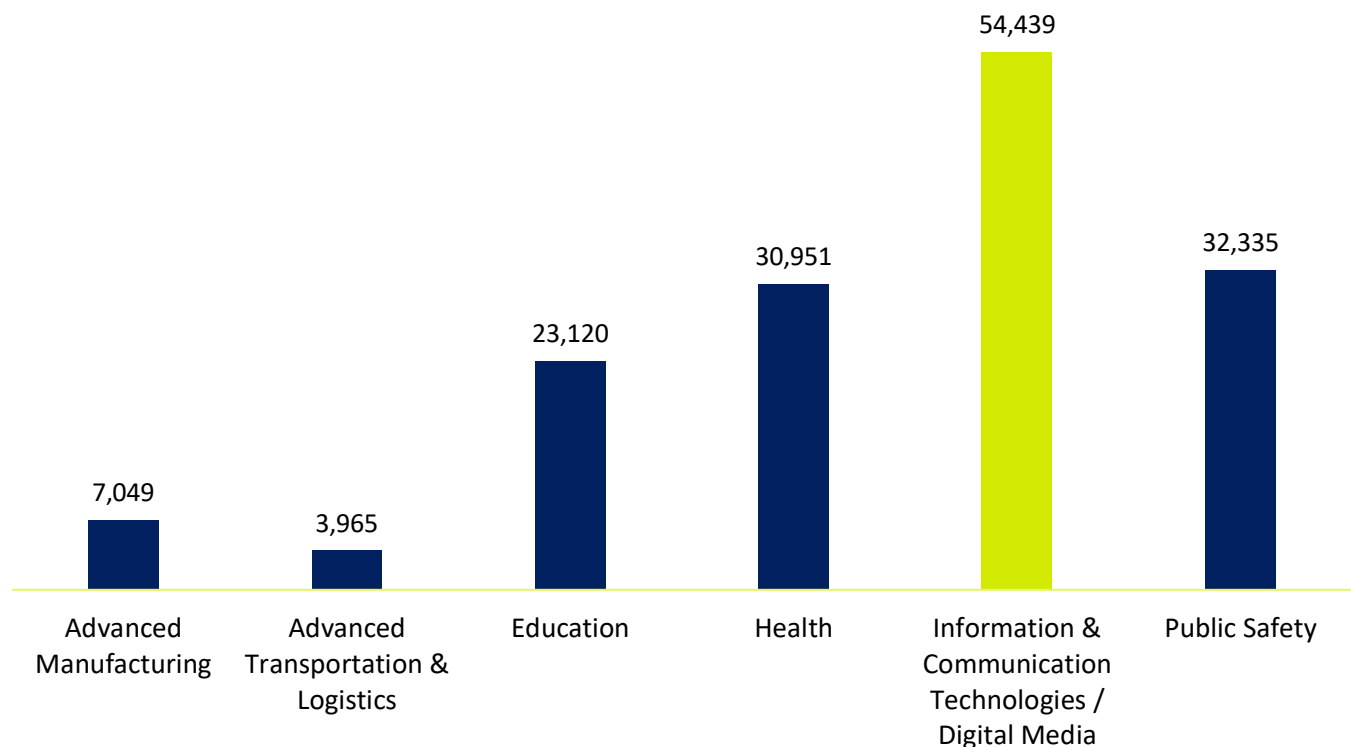


## ICT-Digital Media Community College Programs

California community colleges offer a variety of programs in ICT-Digital Media, training students for career pathways in Communications, Information and Support Services, Data, Databases and Software Development, Networks, Computer Systems and Cybersecurity, and Web Development and Digital Design. Colleges combine classroom instruction on campus, online, and/or as external work experiences. Of the 28 community colleges in the Bay region, all 28 colleges offer a program related to the ICT-Digital Media sector.

Figure 3 shows community college pipeline students by each of the Bay region's six priority sectors. During program years (PY) 2018-19 to 2020-21, more than 54,000 students enrolled in ICT-Digital Media courses each year, on average. These numbers represent an unduplicated count of students who took any single credit course or had positive attendance hours in any noncredit course in a TOP code related to ICT-Digital Media (Table 7).

**Figure 3: Community College Pipeline Students\* by Sector (3-YR Average, PY 2018-19 to PY 2020-21)**



Source: Cal-PASS Plus LaunchBoard. Program Years 2018-19 to 2020-21, Bay Area Community Colleges.

\*Community College Pipeline Students: Unduplicated count of "All students who took at least .5 units in any single credit course or who had at least 12 positive attendance hours in any noncredit course(s) on the selected TOP code in the selected year.

Thirty-six (36) Taxonomy of Program (TOP) codes related to ICT-Digital Media are presented in Table 6, along with the number of colleges in the region that awarded degrees and certificates in program years 2018-19 to 2020-21. Note that only data on programs are presented below, and may not include the number of students in courses offered that could be related to ICT-Digital Media.

**Table 6: ICT-Digital Media Programs at Community Colleges in the Bay Area (PY 2018-19 to 2020-21)**

TOP6	TOP6 Program Title	# Colleges w/Programs
051400	Office Technology-Office Computer Applications	23
070200	Computer Information Systems	15
070810	Computer Networking	15
060200	Journalism	14
070710	Computer Programming	14
103000	Graphic Art and Design	14
061430	Website Design and Development	11
060420	Television (including combined TV-film-video)	10
061400	Digital Media	10
070820	Computer Support	10
060430	Broadcast Journalism	9
060700	Technical Communication	9
061410	Multimedia	8
061460	Computer Graphics and Digital Imagery	8
070100	Information Technology, General	8
101200	Applied Photography	8
061220	Film Production	7
061440	Animation	7
070210	Software Applications	7
100500	Commercial Music	7
060400	Radio and Television	6
220610	Geographic Information Systems	6
070700	Computer Software Development	5
070800	Computer Infrastructure and Support	5

TOP6	TOP6 Program Title	# Colleges w/Programs
061420	Electronic Game Design	4
070900	World Wide Web Administration	4
061000	Mass Communications	3
060410	Radio	2
069900	Other Media and Communications	2
070720	Database Design and Administration	2
101300	Commercial Art	2
070910	E-Commerce (technology emphasis)	1
079900	Other Information Technology	1
061450	Desktop Publishing	0
070730	Computer Systems Analysis	0
093430	Telecommunications Technology	0

Source: CCCC Datamart. Program Years 2018-19 to 2020-21 by TOP6 Code, Bay Area Community Colleges.

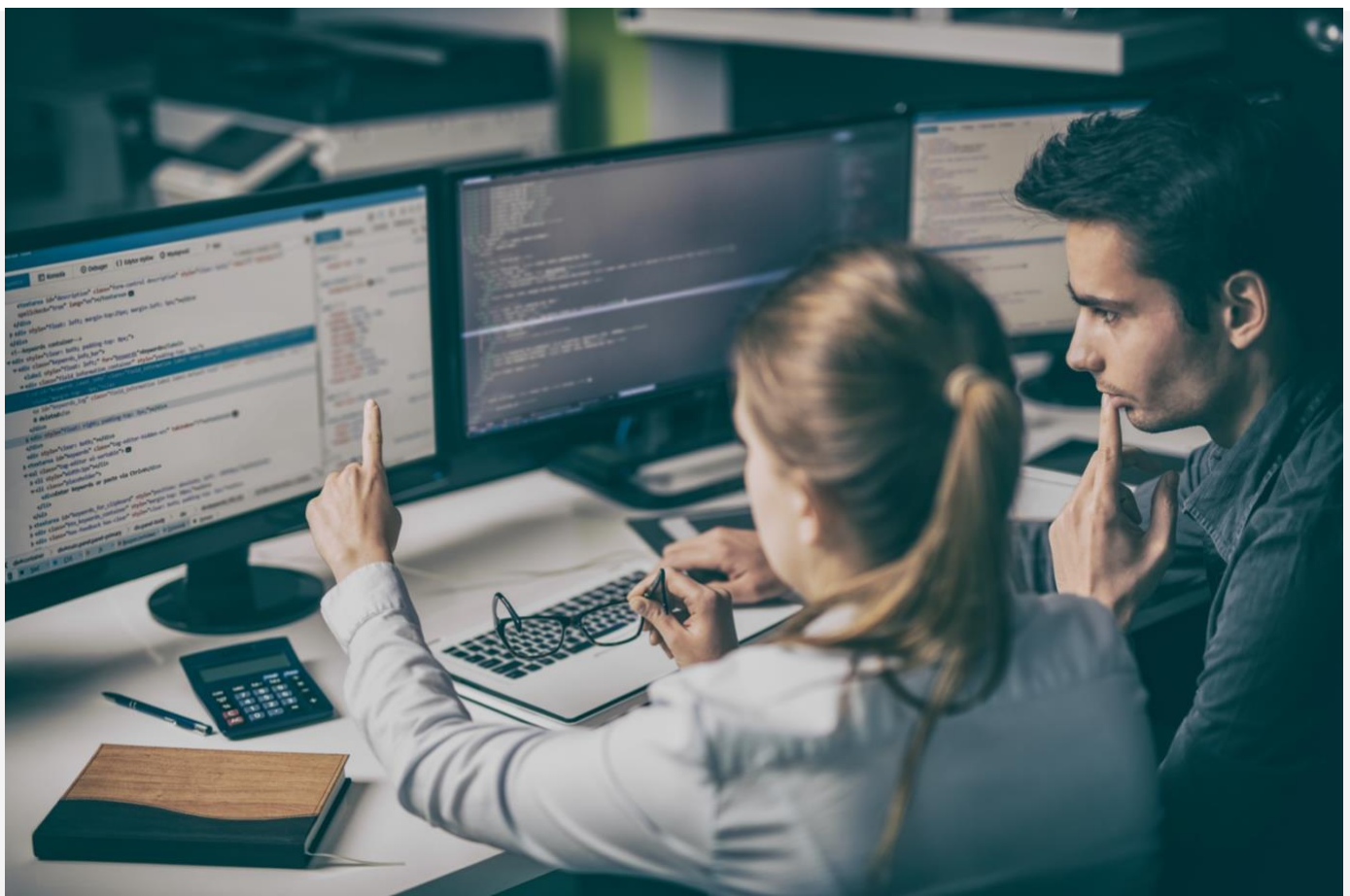




Table 7 and 8 summarize educational supply by analyzing the number of degrees awarded in related TOP and Classification of Instructional Programs (CIP) codes. According to TOP data, 2,661 degrees or certificates were awarded, on average, in a Bay Area community college between program years 2018-19 to 2020-21. The average number of degrees and certificates awarded in programs may include students who earned multiple degrees or certificates. According to CIP data (Table 8), non-community college institutions supply the Bay Area with 2,545 awards, on average, each year. Total awards for a TOP or CIP Program Title, which is the sum of all award types, may be subject to rounding error.

**Table 7: Awards for Community College Programs in the Bay Area (PY 2018-19 to 2020-21)**

TOP6	TOP6 Title	Associate Degree/ Associate for Transfer	Certificates	Credit	Noncredit	Total Awards
051400	Office Technology-Office Computer Applications	52	100	36	53	241
060200	Journalism	62	6	0	0	67
060400	Radio and Television	9	38	0	0	48
060410	Radio	0	2	1	0	3
060420	Television (including combined TV-film-video)	99	32	0	0	131
061000	Mass Communications	2	0	0	0	2
061220	Film Production	22	17	0	0	39
061400	Digital Media	31	58	0	0	89
061410	Multimedia	52	58	0	0	110
061420	Electronic Game Design	11	4	0	0	15
061430	Website Design and Development	8	33	0	0	41
061440	Animation	20	10	0	1	31
061460	Computer Graphics and Digital Imagery	0	50	12	0	62
069900	Other Media and Communications	2	0	0	0	2
070100	Information Technology, General	22	52	0	1	75
070200	Computer Information Systems	46	49	1	0	96
070210	Software Applications	27	52	0	30	109
070700	Computer Software Development	5	75	0	0	80

TOP6	TOP6 Title	Associate Degree/ Associate for Transfer	Bachelor's	Certificate	Noncredit /Credit Award	Total Awards
070710	Computer Programming	231	356	0	0	587
070720	Database Design and Administration	0	10	0	0	10
070800	Computer Infrastructure and Support	42	15	0	0	57
070810	Computer Networking	97	192	1	0	290
070820	Computer Support	5	52	0	0	57
070900	World Wide Web Administration	2	10	0	0	12
070910	E-Commerce (technology emphasis)	0	2	0	0	2
079900	Other Information Technology	0	16	0	0	16
100500	Commercial Music	36	33	1	0	70
101200	Applied Photography	11	59	0	0	70
101300	Commercial Art	7	0	0	0	7
103000	Graphic Art and Design	94	87	1	0	182
220610	Geographic Information Systems	11	49	0	0	60
<b>Total Awards</b>		<b>1,006</b>	<b>1,517</b>	<b>53</b>	<b>85</b>	<b>2,661</b>

Source: CCCC Datamart. Program Years 2018-19 to 2020-21 Annual Awards, by TOP6 Code, Bay Area Community Colleges.

**Table 8: Awards for Non-Community College Programs in the Bay Area (PY 2017-18 to 2019-20)**

<b>CIP - CIP Program Title</b>	<b>Associate Degree</b>	<b>Bachelor's Degree</b>	<b>Other Award</b>	<b>Total Awards</b>
52.0401 - Administrative Assistant and Secretarial Science, General	9	0	38	<b>47</b>
52.0407 - Business/Office Automation/Technology/Data Entry	0	0	42	<b>42</b>
09.0401 - Journalism	2	104	0	<b>106</b>
09.0701 - Radio and Television	0	249	0	<b>249</b>
23.1303 - Professional, Technical, Business, and Scientific Writing	0	11	0	<b>11</b>
09.0102 - Mass Communication/Media Studies	0	324	0	<b>324</b>
09.0702 - Digital Communication and Media/Multimedia	0	40	0	<b>40</b>
50.0102 - Digital Arts	6	39	0	<b>45</b>
09.9999 - Communication, Journalism, and Related Programs, Other	0	19	0	<b>19</b>
11.0101 - Computer and Information Sciences, General	0	12	0	<b>12</b>
11.0199 - Computer and Information Sciences, Other	0	235	0	<b>235</b>
11.0201 - Computer Programming/Programmer, General	0	15	0	<b>15</b>
11.0401 - Information Science/Studies	0	0	1	<b>1</b>
11.0103 - Information Technology	10	3	48	<b>61</b>
15.1204 - Computer Software Technology/Technician	0	3	0	<b>3</b>
11.1001 - Network and System Administration	9	0	1	<b>10</b>
11.1006 - Computer Support Specialist	0	0	82	<b>82</b>
11.1099 - Computer/Information Technology Services Administration and Management, Other	0	112	0	<b>112</b>
10.0203 - Recording Arts Technology/Technician	40	18	20	<b>78</b>
50.0903 - Music Performance, General	0	67	0	<b>67</b>
50.0913 - Music Technology	0	20	8	<b>28</b>
50.0409 - Graphic Design	4	70	0	<b>74</b>
50.0602 - Cinematography and Film/Video Production	16	91	15	<b>122</b>

CIP - CIP Program Title	Associate Degree	Bachelor's Degree	Other Award	Total Awards
50.0699 - Film/Video and Photographic Arts, Other	0	161	0	161
10.0304 - Animation, Interactive Technology, Video Graphics, and Special Effects	11	233	0	244
50.0411 - Game and Interactive Media Design	0	80	0	80
11.0801 - Web Page, Digital/Multimedia and Information Resources Design	6	51	0	57
11.0803 - Computer Graphics	17	73	0	90
11.0899 - Computer Software and Media Applications, Other	2	38	0	40
11.0301 - Data Processing and Data Processing Technology/Technician	0	11	0	11
11.0202 - Computer Programming, Specific Applications	0	3	0	3
11.0804 - Modeling, Virtual Environments and Simulation	10	66	0	76
<b>Total Awards</b>	<b>142</b>	<b>2,148</b>	<b>255</b>	<b>2,545</b>

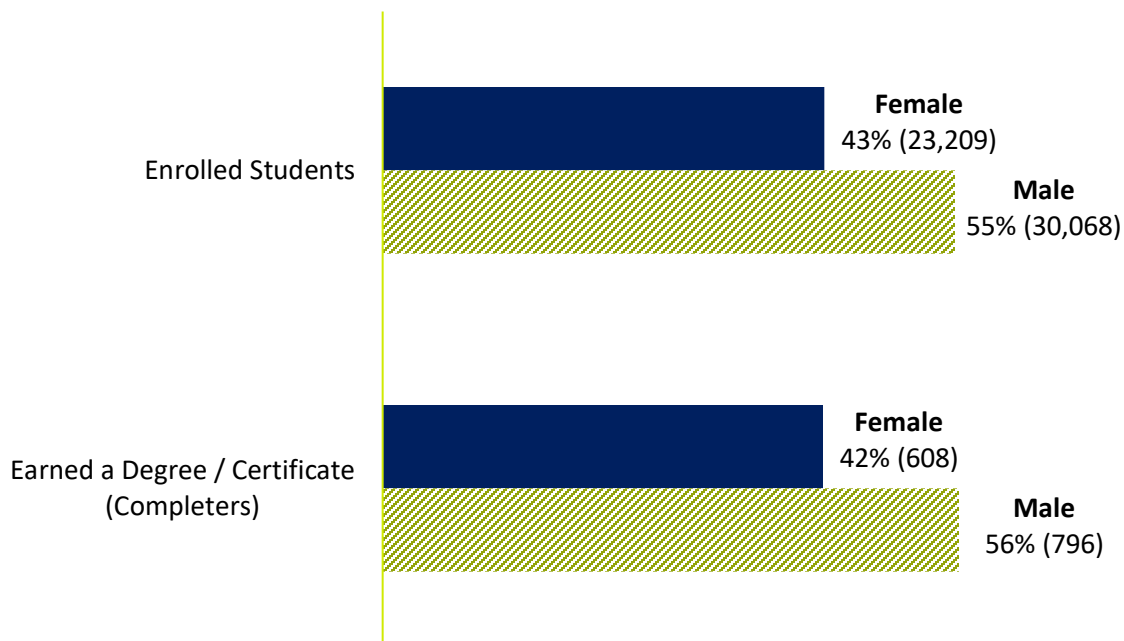
Source: Integrated Postsecondary Education Data System (IPEDS). Program Years 2017-18 to 2019-20 Annual Awards, by CIP Code, Bay Area Institutions.

## Demographic Profile of Students in ICT-Digital Media Programs

This sector profile also summarizes the demographics of students who enroll and complete a degree or certificate in ICT-Digital Media programs. Figures 4 through 6 below present data on students by gender, race and ethnicity, and age.

On average, more male students enroll (55%) and earn awards (56%) in ICT-Digital Media programs, compared to female students (43% and 42% respectively). Students who identify as Hispanic (27%) and White (25%) comprise the two largest groups by race and ethnicity among enrolled students, while students 20 to 24 years old are the most represented group among those who enroll and complete a program. The figures below provide greater detail on the demographic profiles of students who enrolled and earned degrees or certificates in ICT-Digital Media programs in the Bay Area.

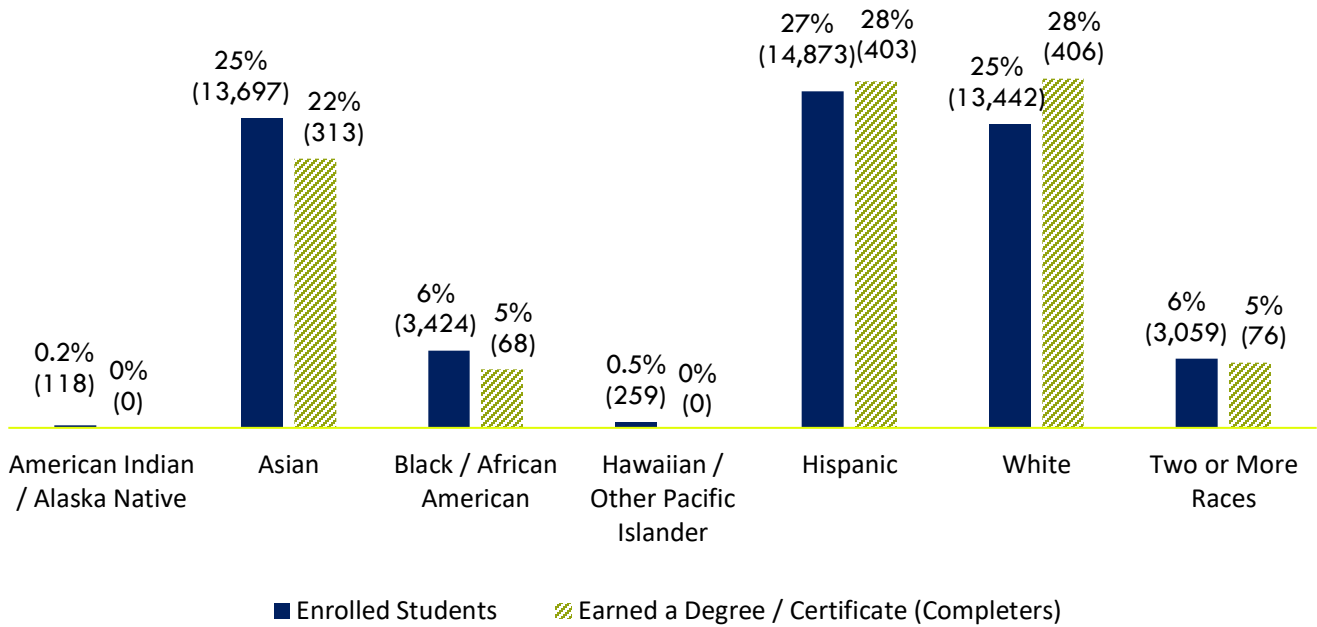
**Figure 4: Gender of Students in ICT-Digital Media Programs in the Bay Area (PY 2018-19 to 2020-21)**



Note: May not total 100 percent due to non-respondent/non-binary.

Source: Cal-PASS Plus LaunchBoard. Program Years 2018-19 to 2020-21 Programs, Bay Area Community Colleges

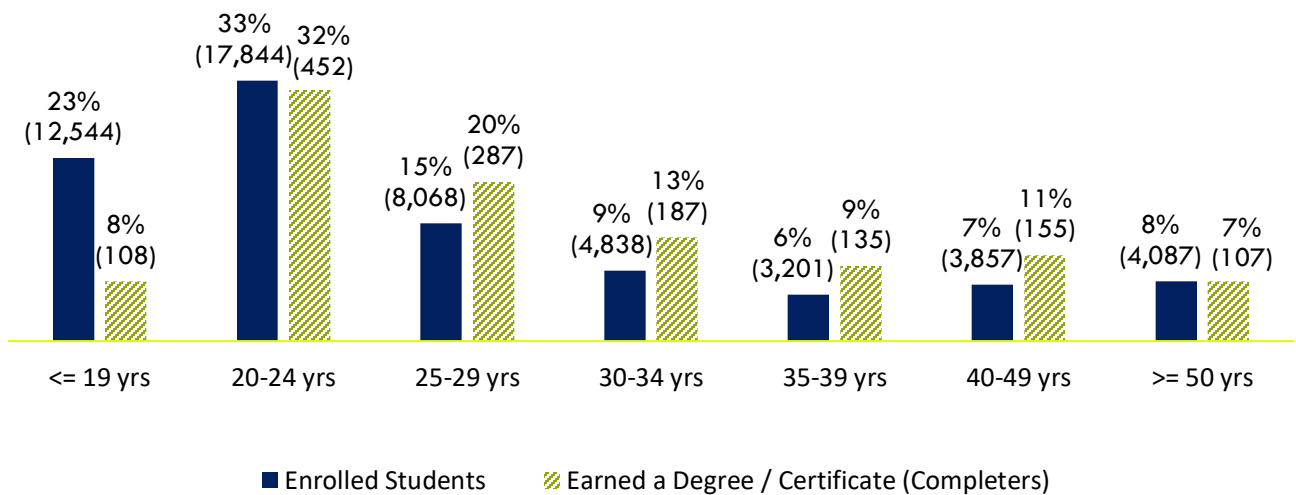
**Figure 5: Race/Ethnicity of Students in ICT-Digital Media Programs in the Bay Area (PY 2018-19 to 2020-21)**



Note: May not total 100 percent due to non-respondent/unknown.

Source: Cal-PASS Plus LaunchBoard. Program Years 2018-19 to 2020-21 Programs, Bay Area Community Colleges

**Figure 6: Ages of Students in ICT-Digital Media Programs in the Bay Area (PY 2018-19 to 2020-21)**



Note: May not total 100 percent due to non-respondent/unknown.

Source: Cal-PASS Plus LaunchBoard. Program Years 2018-19 to 2020-21 Programs, Bay Area Community Colleges

## Methodology

Occupations for this report were identified by use of job descriptions and skills listed in O\*Net. Labor demand data is sourced from Lightcast occupation and job postings data. Educational supply and student outcomes data is retrieved from multiple sources, including CCCCO Data Mart and CTE LaunchBoard.

## Sources

O\*Net Online

Lightcast

CTE LaunchBoard [www.calpassplus.org](http://www.calpassplus.org)

LaunchBoard

Statewide CTE Outcomes Survey

Employment Development Department Unemployment Insurance Dataset

Living Insight Center for Community Economic Development

Chancellor's Office MIS system

## Contacts

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