










Management Information Systems Occupations

Labor Market Analysis: San Diego County

November 2022

Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED EDUCATION FOR MAJORITY OF OCCUPATIONS ANALYZED
 Do Not Proceed with New Program	 	 	<input checked="" type="checkbox"/> Bachelor's Degree+ <input type="checkbox"/> Associate Degree <input type="checkbox"/> Some College or Certificate <input type="checkbox"/> HS Diploma or Equivalent <input type="checkbox"/> Less than a HS Diploma <input type="checkbox"/> Apprenticeship
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	
 	HIGH 	HIGH 	

This brief provides labor market information about *Management Information Systems Occupations* to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning. *Management Information Systems Occupations* include “Computer Occupations, All Other,” and “Computer Systems Analysts,” “Computer Programmers,” “Network and Computer Systems Administrators,” and “Web Developers.” According to available labor market information, *Management Information Systems Occupations* in San Diego County have a labor market demand of 1,940 annual job openings (while average demand for a single occupation in San Diego County is 245 annual job openings), and 24 institutions supply 2,436 awards for these occupations, suggesting that there is an oversupply in the labor market. Entry-level and median wages are above the living wage for these occupations. This brief recommends not proceeding with developing a new program but supports a program modification because 1) there is an oversupply in the region; 2) there is a high number of institutions that provide training for these occupations; but 3) entry-level wages are above the living wage. **The colleges should also note that employers typically require a bachelor's degree as the minimum educational requirement for these occupations.**

Introduction

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

- **Computer Occupations, All Other** (SOC 15-1299): All computer occupations not listed separately.
- **Computer Systems Analysts** (SOC 15-1211): Analyze science, engineering, business, and other data processing problems to develop and implement solutions to complex applications problems, system administration issues, or network concerns. Perform systems management and integration functions, improve existing computer systems, and review computer system capabilities, workflow, and schedule limitations. May analyze or recommend commercially available software.
- **Computer Programmers** (SOC 15-1251): Create, modify, and test the code and scripts that allow computer applications to run. Work from specifications drawn up by software and web developers or other individuals. May develop and write computer programs to store, locate, and retrieve specific documents, data, and information.
- **Network and Computer Systems Administrators** (SOC 15-1244): Install, configure, and maintain an organization's local area network (LAN), wide area network (WAN), data communications network, operating systems, and physical and virtual servers. Perform system monitoring and verify the integrity and availability of hardware, network, and server resources and systems. Review system and application logs and verify completion of scheduled jobs, including system backups. Analyze network and server resource consumption and control user access. Install and upgrade software and maintain software licenses. May assist in network modeling, analysis, planning, and coordination between network and data communications hardware and software.
- **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.

For the purpose of this report, these occupations are referred to as *Management Information Systems Occupations*.

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

Projected Occupational Demand

Between 2021 and 2026, *Management Information Systems Occupations* are projected to increase by 614 net jobs or two percent (Exhibit 1a). Employers in San Diego County will need to hire 1,940 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.

Exhibit 1a: Number of Jobs for Management Information Systems Occupations (2011-2026)²

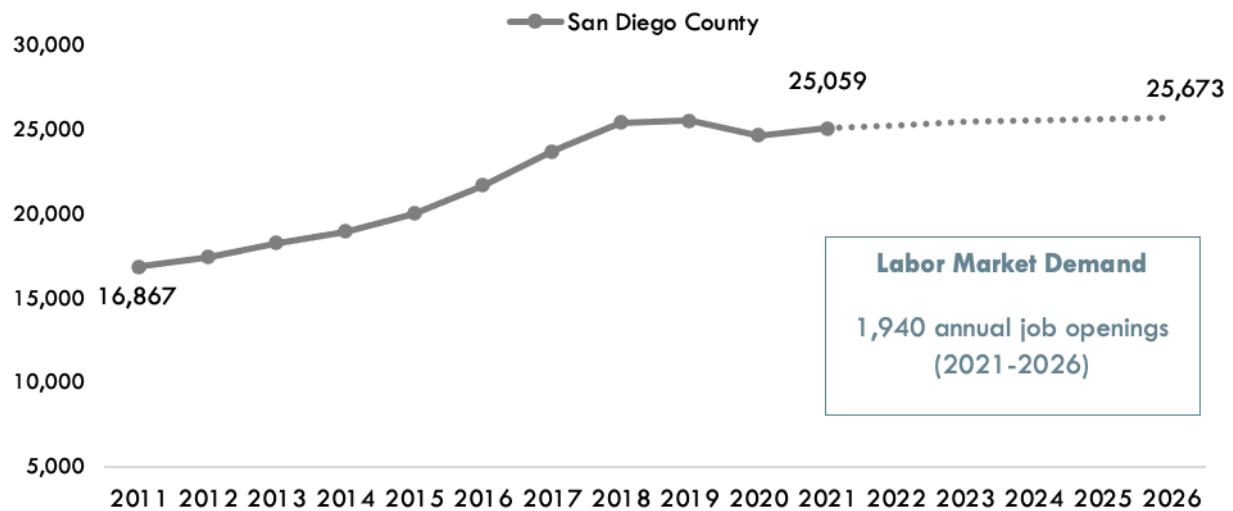


Exhibit 1b disaggregates the projected number of jobs change by occupation. “Computer Occupations, All Other” are projected to have the most labor market demand between 2021 and 2026, with 825 annual job openings.

Exhibit 1b: Number of Jobs for Management Information Systems Occupations in San Diego County (2021-2026)³

Occupational Title	2021 Jobs	2026 Jobs	2021 - 2026 Net Jobs Change	2021 - 2026 % Net Jobs Change	Annual Job Openings (Demand)
Computer Occupations, All Other	10,195	10,555	360	4%	825
Computer Systems Analysts	5,949	6,258	309	5%	485
Computer Programmers	4,412	4,186	-226	-5%	286
Network and Computer Systems Administrators	3,104	3,203	99	3%	226
Web Developers	1,399	1,471	72	5%	118
Total	25,059	25,673	614	2%	1,940

² EMSI 2022.03; QCEW, Non-QCEW, Self-Employed.

³ EMSI 2022.03; QCEW, Non-QCEW, Self-Employed.

Earnings

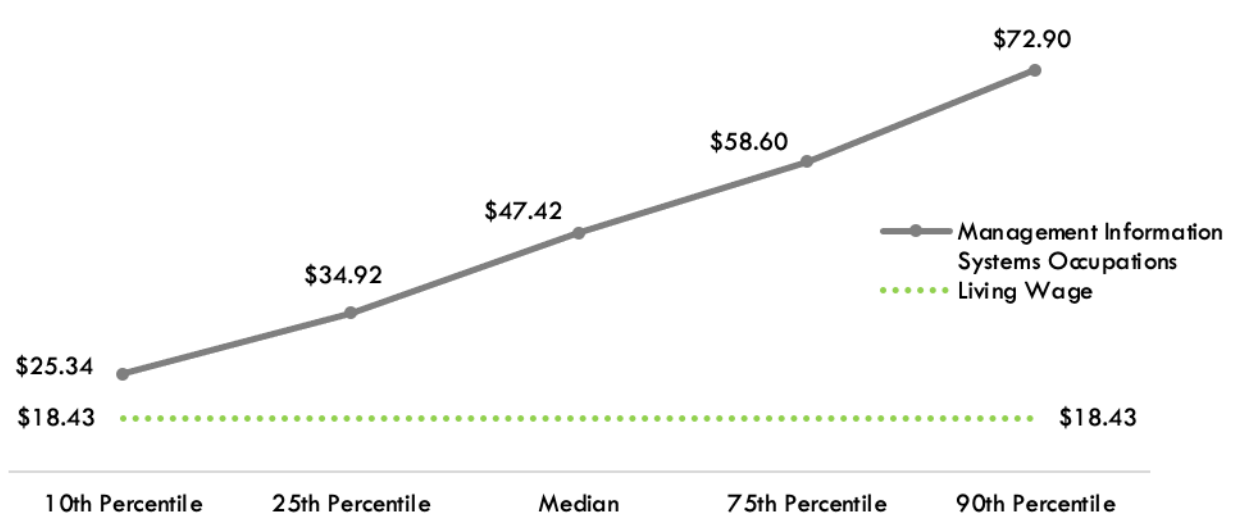
Exhibit 2a disaggregates hourly earnings by occupation. The entry-level hourly earnings for *Management Information Systems Occupations* range from \$24.17 to \$45.98.

Exhibit 2a: Hourly Earnings for Management Information Systems Occupations in San Diego County⁴

Occupational Title	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Computer Programmers	\$45.98	\$59.64	\$62.97
Computer Systems Analysts	\$37.89	\$48.49	\$62.50
Network and Computer Systems Administrators	\$37.01	\$47.15	\$59.07
Computer Occupations, All Other	\$29.54	\$46.75	\$61.57
Web Developers	\$24.17	\$35.05	\$46.88

On average, the entry-level hourly earnings for *Management Information Systems Occupations* are \$34.92; this is more than the living wage for a single adult in San Diego County, which is \$18.43 per hour (Exhibit 2b).⁵

Exhibit 2b: Average Hourly Earnings⁶ for Management Information Systems Occupations in San Diego County⁷



⁴ EMSI 2022.03; QCEW, Non-QCEW, Self-Employed.

⁵ "Family Needs Calculator (formerly the California Family Needs Calculator)," Insight: Center for Community Economic Development, last updated 2021. insightccd.org/family-needs-calculator/.

⁶ 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

⁷ EMSI 2022.03; QCEW, Non-QCEW, Self-Employed.

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.⁸ There are 17 TOP codes and 27 CIP codes related to *Management Information Systems Occupations* (Exhibit 3).

Exhibit 3: Related TOP and CIP Codes for *Management Information Systems Occupations*⁹

TOP or CIP Code	TOP or CIP Program Title
TOP 0509.70	E-Commerce (business emphasis)
TOP 0614.20	Electronic Game Design
TOP 0614.30	Website Design and Development
TOP 0701.00	Information Technology, General
TOP 0702.00	Computer Information Systems
TOP 0702.10	Software Applications
TOP 0707.00	Computer Software Development
TOP 0707.10	Computer Programming
TOP 0707.30	Computer Systems Analysis
TOP 0708.00	Computer Infrastructure and Support
TOP 0708.10	Computer Networking
TOP 0708.20	Computer Support
TOP 0709.00	World Wide Web Administration
TOP 0709.10	E-Commerce (technology emphasis)
TOP 0799.00	Other Information Technology
TOP 0934.30	Telecommunications Technology
TOP 2206.10	Geographic Information Systems
CIP 10.0304	Animation, Interactive Technology, Video Graphics and Special Effects
CIP 11.0101	Computer and Information Sciences, General
CIP 11.0103	Information Technology
CIP 11.0199	Computer and Information Sciences, Other
CIP 11.0201	Computer Programming/Programmer, General
CIP 11.0202	Computer Programming, Specific Applications
CIP 11.0203	Computer Programming, Vendor/Product Certification
CIP 11.0299	Computer Programming, Other
CIP 11.0501	Computer Systems Analysis/Analyst

⁸ TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data).

⁹ This brief uses a conservative estimate of program supply and only calculates awards from the TOP codes listed in Exhibit 3.

TOP or CIP Code	TOP or CIP Program Title
CIP 11.0601	Data Entry/Microcomputer Applications, General
CIP 11.0602	Word Processing
CIP 11.0801	Web Page, Digital/Multimedia and Information Resources Design
CIP 11.0899	Computer Software and Media Applications, Other
CIP 11.0901	Computer Systems Networking and Telecommunications
CIP 11.1001	Network and System Administration/Administrator
CIP 11.1002	System, Networking, and LAN/WAN Management/Manager
CIP 11.1003	Computer and Information Systems Security/Information Assurance
CIP 11.1004	Web/Multimedia Management and Webmaster
CIP 11.1005	Information Technology Project Management
CIP 11.1006	Computer Support Specialist
CIP 15.0305	Telecommunications Technology/Technician
CIP 15.1202	Computer Technology/Computer Systems Technology
CIP 15.1204	Computer Software Technology/Technician
CIP 45.0702	Geographic Information Science and Cartography
CIP 47.0103	Communications Systems Installation and Repair Technology
CIP 50.0411	Game and Interactive Media Design
CIP 52.0208	E-Commerce/Electronic Commerce

According to TOP data, nine community colleges supply the region with awards for these occupations: Cuyamaca College, Grossmont College, MiraCosta College, Palomar College, San Diego City College, San Diego College of Continuing Education, San Diego Mesa College, San Diego Miramar College, and Southwestern College. According to CIP data, 15 non-community-college institutions supply the region with awards: Alliant International University-San Diego, Ashford University, Associated Technical College-San Diego, ATA College, California College San Diego, California Institute of Arts & Technology, California Institute of Arts & Technology-National City, Escondido Adult School, ICOHS College, National University, Platt College-San Diego, Point Loma Nazarene University, Poway Adult School, San Diego Global Knowledge University, and Vista Adult School (Exhibit 4).

**Exhibit 4: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions
(Program Year 2017-18 through Program Year 2020-21 Average)**

TOP6 or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
0509.70	E-Commerce (business emphasis)	1	0	1
	• Southwestern	1	0	
0614.20	Electronic Game Design	6	0	6
	• Palomar	0	0	
	• San Diego Mesa	1	0	
	• Southwestern	5	0	
0614.30	Website Design and Development	455	0	455
	• Cuyamaca	4	0	
	• MiraCosta	11	0	
	• Palomar	2	0	
	• San Diego Cont. Ed.	411	0	
	• San Diego Mesa	14	0	
	• Southwestern	13	0	
0701.00	Information Technology, General	29	0	29
	• Grossmont	8	0	
	• MiraCosta	2	0	
	• Palomar	12	0	

TOP6 or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
	• Southwestern	7	0	
0702.00	Computer Information Systems	97	0	97
	• MiraCosta	4	0	
	• Palomar	20	0	
	• San Diego City	1	0	
	• San Diego Cont. Ed.	47	0	
	• San Diego Mesa	14	0	
	• San Diego Miramar	7	0	
	• Southwestern	4	0	
0702.10	Software Applications	176	0	176
	• Grossmont	1	0	
	• MiraCosta	11	0	
	• San Diego City	3	0	
	• San Diego Cont. Ed.	156	0	
	• San Diego Miramar	3	0	
	• Southwestern	2	0	
0707.00	Computer Software Development	37	0	37
	• Grossmont	0	0	
	• MiraCosta	8	0	
	• Palomar	20	0	
	• San Diego Cont. Ed.	9	0	
0707.10	Computer Programming	51	0	51
	• Grossmont	21	0	
	• MiraCosta	17	0	
	• Palomar	5	0	
	• San Diego City	6	0	
	• Southwestern	2	0	

TOP6 or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
0708.00	Computer Infrastructure and Support	407	0	407
	• Grossmont	11	0	
	• MiraCosta	23	0	
	• San Diego City	31	0	
	• San Diego Cont. Ed.	342	0	
0708.10	Computer Networking	60	0	60
	• Cuyamaca	8	0	
	• Grossmont	4	0	
	• MiraCosta	9	0	
	• Palomar	19	0	
	• San Diego Cont. Ed.	18	0	
	• Southwestern	2	0	
0708.20	Computer Support	339	0	339
	• MiraCosta	2	0	
	• San Diego Cont. Ed.	336	0	
	• Southwestern	1	0	
0709.00	World Wide Web Administration	15	0	15
	• Grossmont	14	0	
	• Palomar	1	0	
0709.10	E-Commerce (technology emphasis)	4	0	4
	• MiraCosta	3	0	
	• Southwestern	1	0	
0799.00	Other Information Technology	296	0	296
	• San Diego Cont. Ed.	296	0	
0934.30	Telecommunications Technology	3	0	3
	• San Diego City	3	0	

TOP6 or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
2206.10	Geographic Information Systems	39	0	39
	• Palomar	20	0	
	• San Diego Mesa	15	0	
	• Southwestern	4	0	
10.0304	Animation, Interactive Technology, Video Graphics and Special Effects	0	5	5
	• Newschool of Architecture and Design	0	5	
	• Platt College-San Diego	0	0	
11.0101	Computer and Information Sciences, General	0	29	29
	• Associated Technical College-San Diego	0	15	
	• ATA College	0	13	
	• Poway Adult School	0	1	
11.0103	Information Technology	0	35	35
	• Alliant International University-San Diego	0	2	
	• Ashford University	0	2	
	• Point Loma Nazarene University	0	15	
	• Poway Adult School	0	2	
	• University of California-San Diego	0	14	
11.0201	Computer Programming/Programmer, General	0	14	14
	• California College San Diego	0	14	
11.0202	Computer Programming, Specific Applications	0	0	0
	• California Institute of Arts & Technology	0	0	
	• California Institute of Arts & Technology-National City	0	0	

TOP6 or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
11.0203	Computer Programming, Vendor/Product Certification	0	4	4
	• Vista Adult School	0	4	
11.0299	Computer Programming, Other	0	1	1
	• Poway Adult School	0	1	
11.0602	Word Processing	0	8	8
	• California Institute of Arts & Technology	0	8	
11.0801	Web Page, Digital/Multimedia and Information Resources Design	0	15	15
	• California Institute of Arts & Technology	0	2	
	• San Diego Global Knowledge University	0	13	
11.0899	Computer Software and Media Applications, Other	0	70	70
	• ATA College	0	3	
	• Escondido Adult School	0	29	
	• Poway Adult School	0	26	
	• Vista Adult School	0	12	
11.0901	Computer Systems Networking and Telecommunications	0	1	1
	• Poway Adult School	0	1	
11.1001	Network and System Administration/Administrator	0	17	17
	• California Institute of Arts & Technology	0	13	
	• California Institute of Arts & Technology-National City	0	2	
	• ICOHS College	0	2	
11.1002	System, Networking, and LAN/WAN Management/Manager	0	7	7
	• California Institute of Arts & Technology	0	6	

TOP6 or CIP Code	TOP or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
	<ul style="list-style-type: none"> California Institute of Arts & Technology-National City 	0	1	
11.1003	Computer and Information Systems Security/Information Assurance	0	2	2
	<ul style="list-style-type: none"> Vista Adult School 	0	2	
11.1005	Information Technology Project Management	0	65	65
	<ul style="list-style-type: none"> National University 	0	65	
11.1006	Computer Support Specialist	0	7	7
	<ul style="list-style-type: none"> ICOHS College 	0	0	
	<ul style="list-style-type: none"> Poway Adult School 	0	7	
15.1202	Computer Technology/Computer Systems Technology	0	138	138
	<ul style="list-style-type: none"> ATA College 	0	2	
	<ul style="list-style-type: none"> California Institute of Arts & Technology 	0	125	
	<ul style="list-style-type: none"> California Institute of Arts & Technology-National City 	0	10	
	<ul style="list-style-type: none"> Point Loma Nazarene University 	0	1	
15.1204	Computer Software Technology/Technician	0	3	3
	<ul style="list-style-type: none"> ATA College 	0	3	
			Total	2,436

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply¹⁰ suggests that there is an **oversupply** for these occupations in San Diego County, with **1,940** annual openings and **2,436** awards. Comparatively, there are **19,171** annual openings in California and **10,049** awards, suggesting that there is a supply gap across the state¹¹ (Exhibit 5).

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

	Demand (Annual Openings)	Supply (Total Annual Average Supply)	Supply Gap or Oversupply
San Diego	1,940	2,436	496
California	19,171	10,049	9,122

Please note: This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

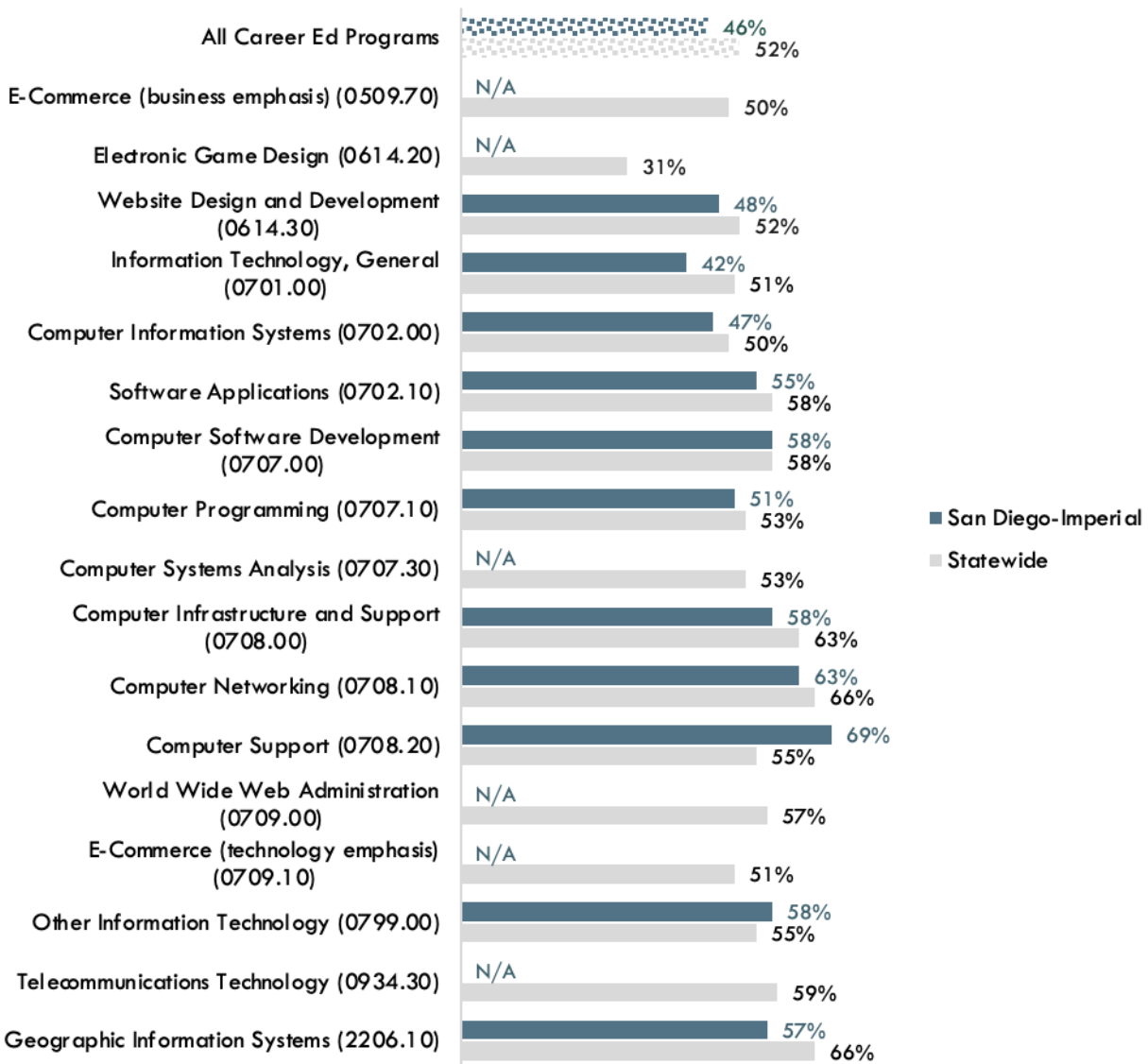
¹⁰ Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

¹¹ "Supply and Demand," Centers of Excellence Student Outcomes, coecc.net/our-resources.

Student Outcomes and Regional Comparisons

According to the California Community Colleges LaunchBoard, 42 to 69 percent of students in the San Diego-Imperial region earned a living wage after completing a program related to *Management Information Systems Occupations*, compared to 31 to 66 percent statewide and 52 percent of students in Career Education programs in general across the state (Exhibit 6a).¹²

Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, PY2019-20¹³



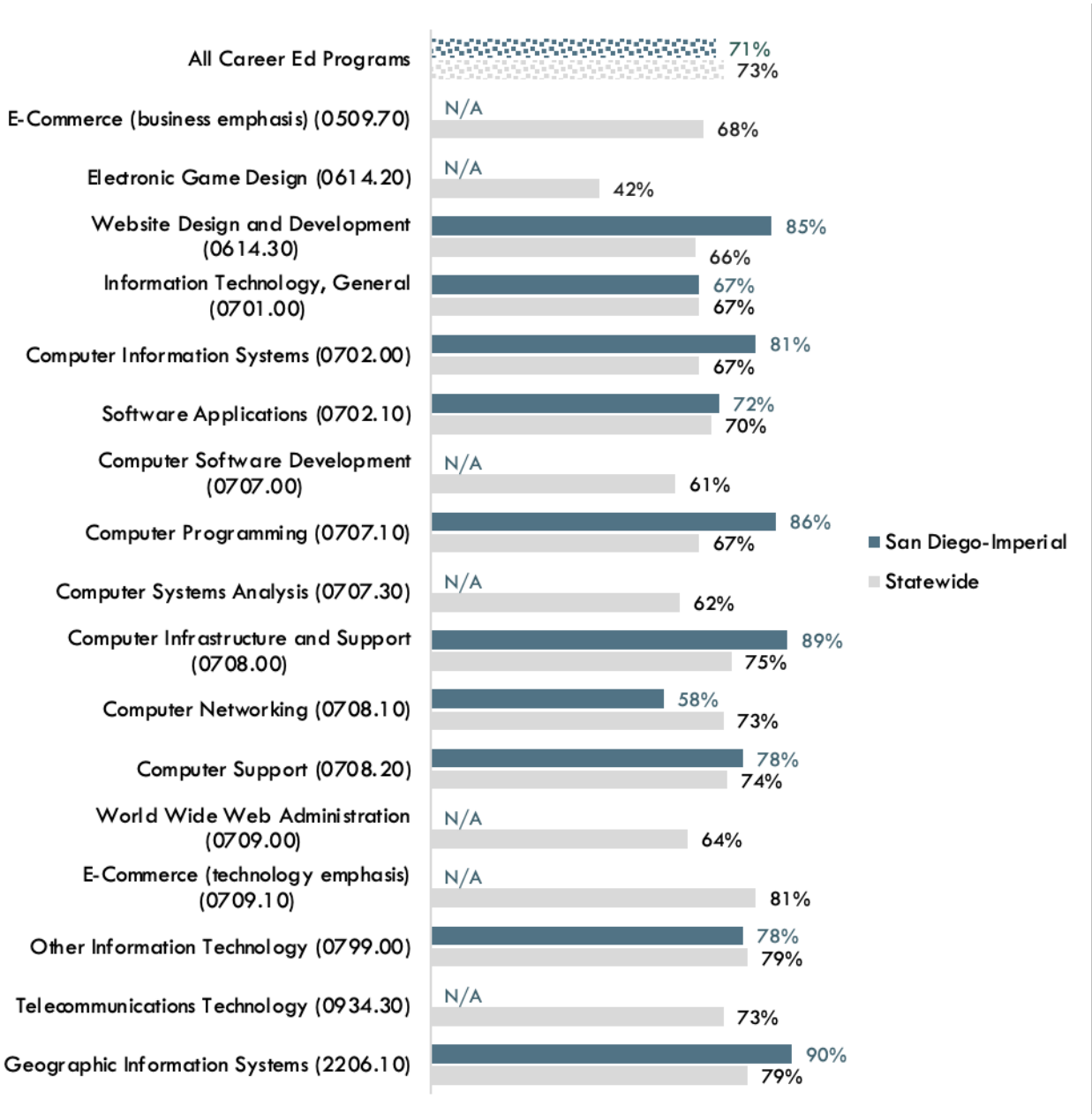
"N/A" indicates insufficient data

¹² "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

¹³ Most recent year with available data is Program Year 2019-20. Among completers and skills builders who exited, the percentage of students who attained a living wage.

According to the California Community Colleges LaunchBoard, 58 to 90 percent of students in the San Diego-Imperial region obtained a job closely related to their field of study after completing a program related to *Management Information Systems Occupations*, compared to 42 to 81 percent statewide and 73 percent of students in Career Education programs in general across the state (Exhibit 6b).¹⁴

Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program, PY2018-19¹⁵



"N/A" indicates insufficient data

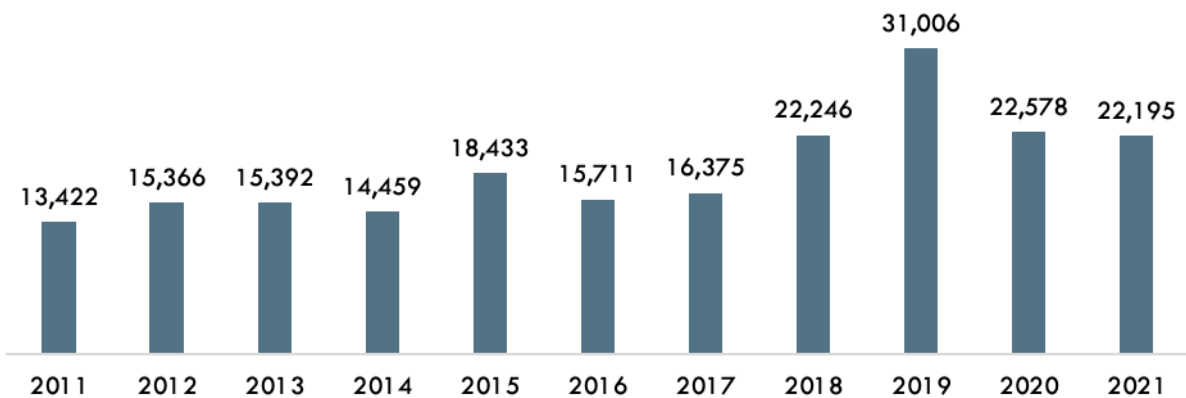
¹⁴ "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

¹⁵ Most recent year with available data is Program Year 2018-19. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2011 and 2021, there was an average of 18,835 online job postings per year for *Management Information Systems Occupations* in San Diego County (Exhibit 7). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 1b). While this brief includes online jobs postings data, the community colleges should note that this type of data is impacted by several variables: employers may post a position multiple times to increase the pool of applicants; a job posting can remain posted after a business decides not to fill a position; or an employer may use one posting to fill multiple positions, for example.

Exhibit 7: Number of Online Job Postings for *Management Information Systems Occupations* in San Diego County (2011-2021)¹⁶



¹⁶ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2011-2022.

Top Employers

Between January 1, 2019 and December 31, 2021, the top five employers in San Diego County for *Management Information Systems Occupations* were [Qualcomm](#), [Northrop Grumman](#), [General Atomics](#), [University of California San Diego](#), and [Deloitte](#) based on online job postings (Exhibit 8).

Exhibit 8: Top Employers for *Management Information Systems Occupations* in San Diego County¹⁷

Top Employers	
<ul style="list-style-type: none">• Qualcomm• Northrop Grumman• General Atomics• University of California San Diego• Deloitte	<ul style="list-style-type: none">• Booz Allen Hamilton Inc.• Leidos• Anthem Blue Cross• Accenture• Illumina Incorporated

Education, Skills, and Certifications

Management Information Systems Occupations have a national educational attainment of a [bachelor's degree](#) (Exhibit 9a).

Exhibit 9a: National Educational Attainment for *Management Information Systems Occupations*¹⁸

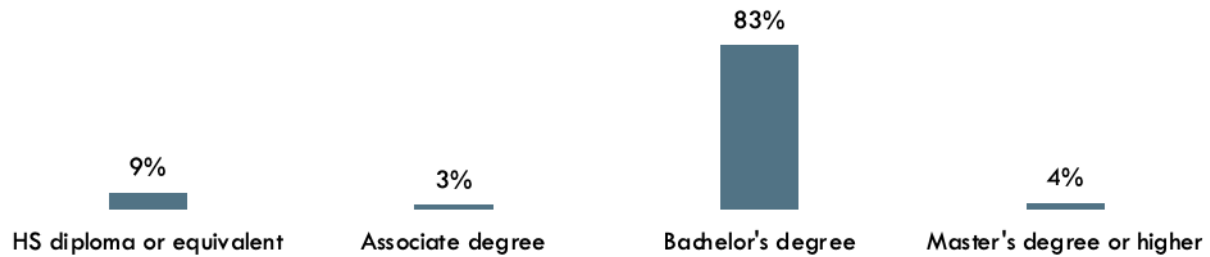
Occupational Title	Typical Entry-Level Education
Computer Occupations, All Other	Bachelor's degree
Computer Programmers	Bachelor's degree
Computer Systems Analysts	Bachelor's degree
Network and Computer Systems Administrators	Bachelor's degree
Web Developers	Bachelor's degree

¹⁷ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2019-2021.

¹⁸ EMSI 2022.03; QCEW, Non-QCEW, Self-Employed.

Based on online job postings between January 1, 2019 and December 31, 2021 in San Diego County, employers posted a **bachelor's degree** as the educational requirement for *Management Information Systems Occupations* (Exhibit 9b).¹⁹

Exhibit 9b: Educational Requirements for Management Information Systems Occupations in San Diego County²⁰



*May not total 100% due to rounding

Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2019 and December 31, 2021.

Exhibit 10: Top Skills for Management Information Systems Occupations in San Diego County²¹

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • Project Management • Software Development • Systems Engineering • Quality Assurance and Control • Scheduling • Customer Service • Information Systems • Software Engineering • Budgeting • Scrum • Data Analysis • Business Process • System Administration • Technical Support • Project Planning and Development Skills 	<ul style="list-style-type: none"> • Communication Skills • Teamwork / Collaboration • Problem Solving • Planning • Troubleshooting • Writing • Research • Detail-Oriented • Organizational Skills • Creativity • Written Communication • Verbal / Oral Communication • Presentation Skills • Multi-Tasking • Time Management 	<ul style="list-style-type: none"> • SQL • Microsoft Excel • Python • JavaScript • Linux • Java • Software Engineering • Scrum • C++ • Microsoft PowerPoint • Oracle • Atlassian JIRA • Git • SAP • VMware

¹⁹ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2019-2021.

²⁰ "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified April 9, 2021. bls.gov/emp/tables/educational-attainment.htm.

²¹ Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2019-2021.

Exhibit 11 lists the top certification that appeared in online job postings between January 1, 2019 and December 31, 2021.

Exhibit 11: Top Certification for *Management Information Systems Occupations* in San Diego County²²

Top Certification in Online Job Postings

1. Security Clearance
 2. CompTIA Security+
 3. Project Management Certification
 4. Project Management Professional (PMP)
 5. IT Infrastructure Library (ITIL) Certification
 6. Cisco Certified Network Associate (CCNA)
 7. Certified Information Systems Security Professional (CISSP)
 8. Microsoft Certified Solutions Associate (MCSA)
 9. Certified ScrumMaster (CSM)
 10. Microsoft Certified Solutions Expert (MCSE)
 11. SANS/GIAC Certification
 12. CompTIA Network+
 13. Systems Security Certified Practitioner (SSCP)
 14. GIAC Security Essentials Certification
 15. Cisco Certified Network Professional (CCNP)
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²² Burning Glass Technologies, "Labor Insight Real-Time Labor Market Information Tool." 2019-2021.

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San Diego-Imperial Center of Excellence for Labor Market Research



Important Disclaimers

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

This workforce demand report uses state and federal job projection data that was developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.