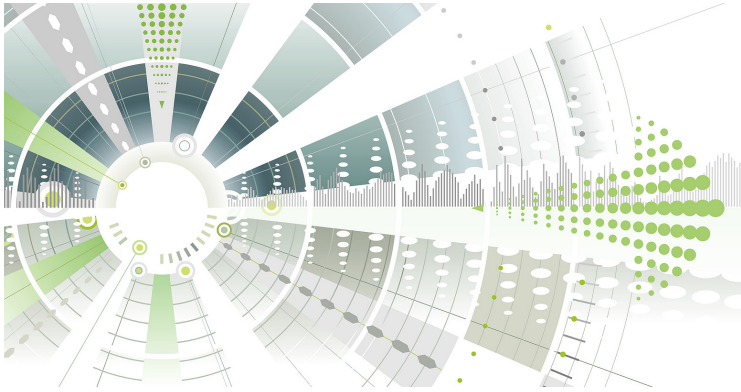


April 2018



# OPPORTUNITIES FOR CAREER EDUCATION TO CLOSE THE MIDDLE-SKILL JOBS GAP IN **SAN DIEGO COUNTY**



**C·O·E**  
CENTERS OF EXCELLENCE  
Inform Connect Advance



CALIFORNIA  
COMMUNITY  
COLLEGES  
SAN DIEGO  
IMPERIAL  
COUNTIES  
REGIONAL  
CONSORTIUM

# Table of Contents

Introduction..... 1

Significance of Middle-Skill Jobs in San Diego County ..... 3

Top Middle-Skill Jobs ..... 4

Program Supply for Top Middle-Skill Jobs ..... 8

Key Findings and Recommendations..... 13

    Recommendations for Short-Term Certificate Programs..... 15

    Programs Recommended for Increased Awards..... 19

    Recommendations for Further Analysis..... 26

Appendix A: Data Definitions..... 28

Appendix B: Demand, Supply and Gaps – Definitions and Methodology..... 29

Appendix C: Top 100 Middle-Skill Jobs in San Diego County ..... 33

## About the Centers of Excellence

This study was funded by Strong Workforce Program funds and produced by the Centers of Excellence (COE) for Labor Market Research. The COE are funded in part by the California Community Colleges Chancellor’s Office, Economic and Workforce Development (EWD) Program. One of the goals of EWD is to “support the regional alignment between the Career Technical Education programs of the community college system and the needs of California’s Priority and Emerging Sectors.”<sup>1</sup> The COE supports this goal by delivering regional workforce research and technical expertise to the California Community Colleges for program decision-making and resource development. More information about the Centers of Excellence is available at [coeccc.net](http://coeccc.net).

1. Economic and Workforce Development Program. Annual Report. California Community Colleges Chancellor’s Office. 2017

## 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. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence, 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.

© 2018 California Community Colleges Chancellor’s Office, Economic and Workforce Development Program



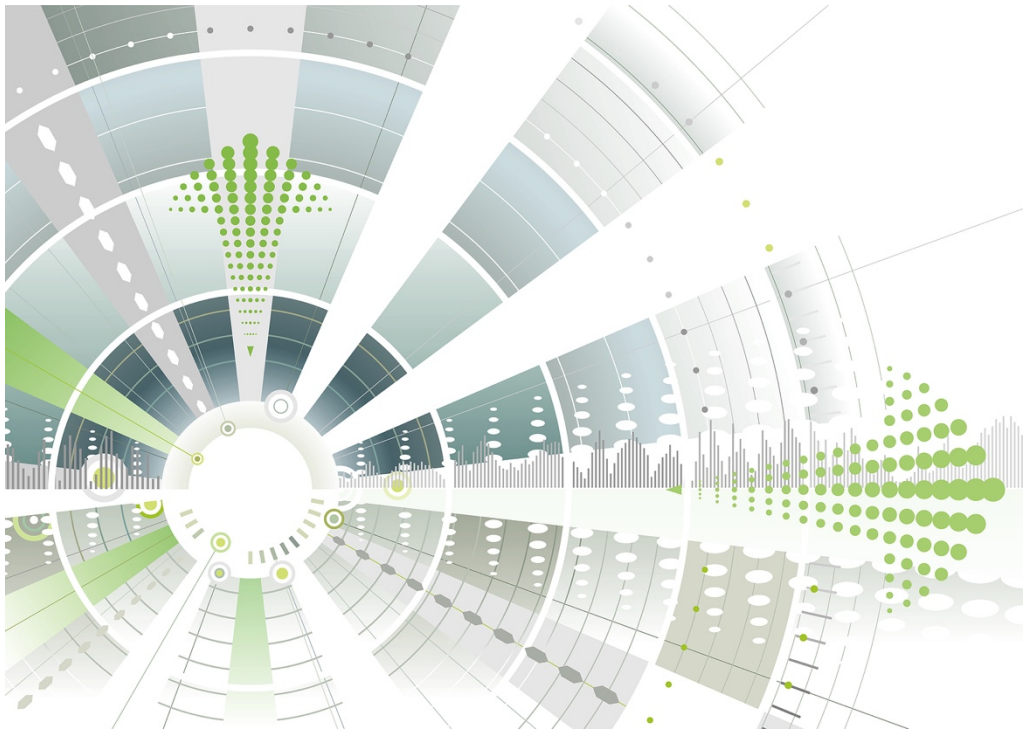
Prepared by:  
Tina Ngo Bartel  
Director  
Center of Excellence for Labor Market Research  
San Diego-Imperial Region

## Introduction

In 2015, San Diego County's local Workforce Development Board conducted a study on the region's middle-skill jobs and identified that approximately 35 percent of "San Diegans ages 25 and older lack the post-secondary credentials to fill middle-skill job openings"<sup>1</sup> and that more than 38 percent of households earn below the Self-Sufficiency Standard, the amount needed to meet basic living needs in San Diego County without public assistance.<sup>2</sup> Community colleges have the potential to close this "jobs gap" with Career Education<sup>3</sup> programs. By providing training for the top middle-skill jobs, the community colleges can help workers progress into careers that provide a living wage and provide employers with qualified employees as they compete in a global economy.<sup>4</sup>

Public Career Education programs have already been proven to benefit students and workers. A recent report by the Brookings Institution analyzed labor market outcomes and debt incurred by students who completed Career Education programs across the United States and found that "public sector students outperform for-profit students on nearly every measure, suggesting that the overwhelming majority of for-profit students would be better off attending a public institution."<sup>5</sup>

Beyond the national level, this study aims to understand where the middle-skill job opportunities are in San Diego County and explores job gaps (or labor supply gaps) that could potentially be filled with public Career Education programs.



<sup>1</sup> San Diego Workforce Partnership. *San Diego County - Middle-Skill Jobs: Gaps and Opportunities*. November 2015. [workforce.org/sites/default/files/pdfs/reports/industry/middle-skill\\_jobs\\_gaps\\_and\\_opportunities\\_2015.pdf](http://workforce.org/sites/default/files/pdfs/reports/industry/middle-skill_jobs_gaps_and_opportunities_2015.pdf)

<sup>2</sup> The Self-Sufficiency Standard determines the hourly wages that a single adult needs to earn in order to meet basic needs and is based on real-world assumptions of the costs of food, health care, transportation, housing, etc. that vary over time and across geographic locations. [selfsufficiencystandard.org](http://selfsufficiencystandard.org)

<sup>3</sup> Also known as Career Technical Education or CTE programs

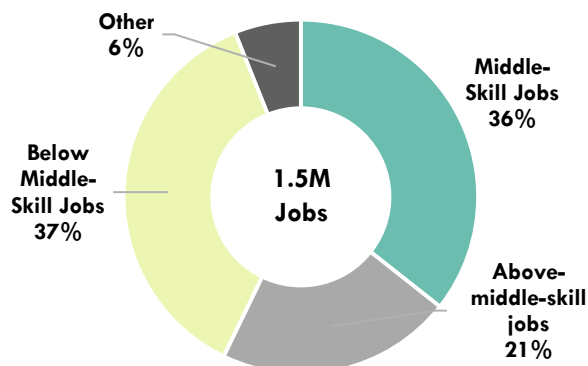
<sup>4</sup> Economic and Workforce Development Program. *Annual Report*. California Community Colleges Chancellor's Office. 2017.

<sup>5</sup> [brookings.edu/blog/brown-center-chalkboard/2018/02/09/gainfully-employed-new-evidence-on-the-earnings-employment-and-debt-of-for-profit-certificate-students](http://brookings.edu/blog/brown-center-chalkboard/2018/02/09/gainfully-employed-new-evidence-on-the-earnings-employment-and-debt-of-for-profit-certificate-students)

## Significance of Middle-Skill Jobs in San Diego County

Middle-skill jobs constitute a significant portion of the San Diego labor market. In 2017, 36 percent of the 1,583,115 jobs in San Diego County were middle-skill jobs and 21 percent were above-middle-skill jobs (Figure 1).<sup>6</sup>

**Figure 1. Jobs Breakdown in San Diego County, 2017**



Middle-skill jobs have median hourly earnings<sup>7</sup> of \$22.10, which is higher than the self-sufficient hourly wage for a single adult to minimally meet basic living needs without public assistance (\$13.09),<sup>8</sup> and higher than the average median hourly earnings of all jobs (\$19.30) in the region (Figure 2).<sup>9</sup>

**Figure 2. Median Hourly Earnings vs. Self-Sufficiency Standard**



San Diego County employers have difficulty filling middle-skill jobs. Between January and December 2017, employers posted 2.21 million online job postings for middle-skill jobs. Only 348,419 of these job postings were unique, which indicates that, on average, an employer posted a job six times in an effort to fill the position. Comparatively, employers posted 1.5 million online job postings for *above-middle-skill jobs*, and only 280,586 were unique.<sup>10</sup>

### Defining Middle-Skill Jobs

To define “middle-skill jobs,” the Centers of Excellence for Labor Market Research across the state of California examined 867 occupational codes from the Standard Occupational Classification (SOC)<sup>1</sup> system and classified 298 occupational codes as “middle-skill jobs” and 204 codes as “above-middle-skill jobs.”

Middle-skill jobs include:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor’s degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

Above-middle-skill jobs include occupations that require an educational attainment of a bachelor’s degree or higher (excluding those in the middle-skills jobs category, as defined above).

For more information about the definition of middle-skill and above-middle-skill jobs, see Appendix B.

<sup>1</sup> “The 2018 Standard Occupational Classification (SOC) system is a federal statistical standard used by federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data.” (bls.gov/soc)

<sup>6</sup> Economic Modeling Specialists, Int’l. (Emsi). San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW+ Self-employed. 2007-2022.

<sup>7</sup> Hourly earnings are the wages per hour, excluding benefits, of a worker in an occupation. Median hourly earnings are in the middle of the wage distribution for an occupation: half of the workers make more, half of them make less.

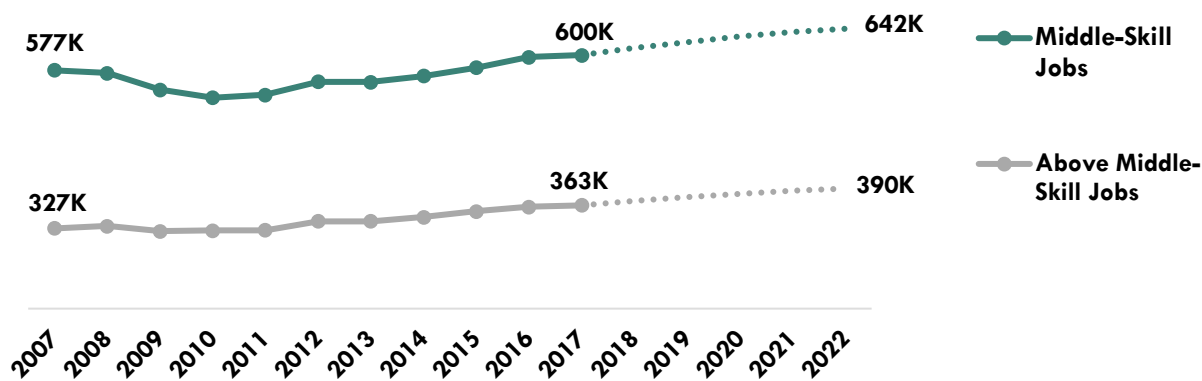
<sup>8</sup> The Self-Sufficiency Standard determines the hourly wages that an individual needs to earn in order to meet basic needs. [selfsufficiencystandard.org](http://selfsufficiencystandard.org)

<sup>9</sup> Emsi. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW+ Self-employed. 2007-2022.

<sup>10</sup> Emsi. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW+ Self-employed. 2017-2022.

Not only do employers have difficulty filling existing middle-skill jobs, but they will also experience hiring challenges as these middle-skill jobs grow. Between 2017 and 2022, the number of middle-skill jobs in the region is projected to increase by 41,450 jobs or seven percent (Figure 3).<sup>11</sup>

Figure 3. Number of People Employed in Middle-Skill and Above-Middle-Skill Jobs in San Diego County



### Top Middle-Skill Jobs

To better understand employers’ needs, this study analyzes the top middle-skill jobs and their supply gaps and makes recommendations for program development. “Top jobs” are occupations that have the most labor market demand, stable employment growth, and entry-level wages at or above the Self-Sufficiency Standard. The top 100 middle-skill jobs have the following characteristics:

- Most number of annual openings between 2017 and 2022
- Entry-level hourly earnings (25<sup>th</sup> percentile) greater than or equal to \$13.09
- No employment decline between 2017 and 2022

Table 1 lists the top 100 middle-skill jobs that are analyzed in this study. (For specific details on each top middle-skill job, including wages, job growth and educational requirements, see [Appendix C.](#)) Occupational titles in Table 1 with an asterisk (\*) have an oversupply of labor. The remaining occupations have supply gaps. A supply gap indicates that there is more labor market demand than labor market supply for an occupation. Conversely, a labor surplus (oversupply) indicates that there is more labor market supply than labor demand.

#### Labor Market Demand: Annual Openings

Annual (job) openings are used to determine labor market demand. This number estimates employment change and turnover for an occupation each year between 2017 and 2022. Annual openings include:

- Job Growth: An employer experiences increased demand for products and hires new employees to increase production. If job growth is zero or negative, then any and all openings are due to replacement needs.
- Replacement Needs: An employer hires replacement workers for employees who leave the workforce or change occupations. Replacement rates are derived from national 10-year, occupation-specific percentages published by the U.S. Bureau of Labor Statistics Employment Projections program.

<sup>11</sup> Emsi. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW+ Self-employed. 2007-2022.

## Defining Top Middle-Skill Jobs

“Top jobs” are occupations that have the most labor market demand, stable employment growth, and entry-level wages at or above the Self-Sufficiency Standard. The most labor market demand is defined as the highest number of annual job openings between 2017 and 2022. For more information about annual openings, see “Labor Market Demand: Annual Openings.” Stable employment growth indicates that an occupation is projected to have no employment decline between 2017 and 2022. Entry-level wages are the hourly earnings, excluding benefits, that the 25<sup>th</sup> percentile of current workers within an occupation make. Only occupations with entry-level wages of at least \$13.09 per hour were included in this study because they allowed entry-level workers to earn a self-sufficient wage.

In addition to listing the labor market demand for the top 100 middle-skill jobs, Table 1 also illustrates their relationship to the California Community Colleges’ Priority and Emerging Sectors. According to the California Community Colleges Chancellor’s Office, 10 industry sectors merit priority in terms of resources and program development due to their “labor market needs and opportunities to prepare students to compete in a global economy.”<sup>12</sup> These Priority and Emerging Sectors include:

- Advanced Manufacturing
- Business & Entrepreneurship
- Energy, Construction & Utilities
- Health Care
- Life Sciences
- Global Trade
- Tourism
- Agricultural, Water & Environmental Technologies
- Information and Communication Technologies & Digital Media
- Advanced Transportation and Logistics

## Top Jobs’ Relationship to Priority and Emerging Sectors

Table 1 defines the top 100 middle-skill jobs’ relationship to the Priority and Emerging Sectors in two ways:

- The top middle-skill job is also a top job in one of the sectors based on staffing patterns
- The top middle-skill job is also a sector-specific job based on feedback from industry experts

To find the top jobs in the Priority and Emerging Sectors, the Centers of Excellence (COE) first defined each sector by North American Industry Classification System (NAICS) codes. NAICS is the standard used by federal statistical agencies to collect, analyze and publish data related to the industry sectors. An industry sector is defined as a group of businesses that produce similar goods and services and share similar production processes for creating the goods and services they sell. After defining the industry sectors, the COE conducted a staffing patterns analysis to identify the top 100 jobs in each sector. According to the California Employment Development Department, “Staffing patterns are a list of the occupations employed within a particular industry, or a list of the industries that employ a particular occupation.” These staffing patterns were then cross-referenced with the top 100 middle-skill jobs in Table 1. Additionally, industry experts reviewed the top 100 middle-skill jobs in Table 1 and provided feedback on their importance in each sector. Table 1 illustrates these relationships from the quantitative and qualitative analyses with a notation (\*).

<sup>12</sup> Economic and Workforce Development Program. Annual Report. California Community Colleges Chancellor’s Office. 2017.

**Table 1. Top 100 Middle-Skill Jobs by Labor Market Demand Within Priority and Emerging Sectors**

\* = Oversupply

AM = Advanced Manufacturing

BE = Business &amp; Entrepreneurship

ECU = Energy, Construction &amp; Utilities

HC = Health Care

LS = Life Sciences

GT = Global Trade

T = Tourism

AWET = Agricultural, Water &amp; Environmental Technologies

ICT = Information and Communication Technologies

ATL = Advanced Transportation and Logistics

SOC	Occupational Title	2017-22 Annual Openings	AM	BE	ECU	HC	LS	GT	T	AWET	ICT	ATL
43-4051	Customer Service Representatives	2,920		•	•	•	•	•	•	•	•	•
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	2,683	•		•	•	•	•	•	•		•
29-1141	Registered Nurses	1,810				•	•					
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,743	•		•	•	•	•	•	•		•
41-3099	Sales Representatives, Services, All Other	1,578			•	•			•		•	
41-1011	First-Line Supervisors of Retail Sales Workers	1,542							•			
13-1199	Business Operations Specialists, All Other	1,439	•	•	•	•	•	•	•	•	•	•
49-9071	Maintenance and Repair Workers, General	1,303	•		•	•	•	•	•	•		•
31-9092	Medical Assistants*	1,180				•						
47-2031	Carpenters	1,178	•		•			•				
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	1,132			•		•		•	•		•
43-6013	Medical Secretaries	1,058				•						
47-2111	Electricians	1,026	•		•			•		•		•
53-3032	Heavy and Tractor-Trailer Truck Drivers	988			•			•		•		•
39-9031	Fitness Trainers and Aerobics Instructors	835							•			
47-2152	Plumbers, Pipefitters, and Steamfitters	799	•		•			•		•		
43-6011	Executive Secretaries & Executive Admin Assistants	768				•	•					•
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	732			•					•		
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	650	•		•			•		•		•
29-2061	Licensed Practical and Licensed Vocational Nurses	645				•						
41-3021	Insurance Sales Agents	554										
15-1151	Computer User Support Specialists	548			•	•	•				•	•
31-9091	Dental Assistants	533				•						
43-5061	Production, Planning, and Expediting Clerks	505	•		•		•	•	•	•		•
51-1011	First-Line Supervisors of Production and Operating Workers	474	•				•	•		•		•
51-4041	Machinists	447					•	•		•		•
33-3051	Police and Sheriff's Patrol Officers	398										
23-2011	Paralegals and Legal Assistants	397					•					
51-4121	Welders, Cutters, Solderers, and Brazers	397	•		•			•		•		•
21-1093	Social and Human Service Assistants	391				•						
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	390	•	•	•		•	•	•	•		•
11-9021	Construction Managers*	374		•	•					•		•
53-3022	Bus Drivers, School or Special Client	358										
51-2022	Electrical and Electronic Equipment Assemblers	357	•					•				•
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	348			•							
41-1012	First-Line Supervisors of Non-Retail Sales Workers	341						•	•	•		
13-1051	Cost Estimators*	341		•	•			•		•		•
11-3011	Administrative Services Managers*	339		•		•	•	•	•	•		•
15-1199	Computer Occupations, All Other*	326	•					•			•	•
11-9141	Property, Real Estate, and Community Association Managers	324		•	•							
29-2052	Pharmacy Technicians	304				•						
49-1011	First-Line Supervisors of Mechanics, Installers, & Repairers	299	•		•			•	•	•		•
43-6012	Legal Secretaries	296										
47-2211	Sheet Metal Workers	295	•		•			•				
35-1011	Chefs and Head Cooks*	290							•			
39-1021	First-Line Supervisors of Personal Service Workers*	288				•			•			
13-1081	Logisticians	281	•	•			•	•		•		•
33-3012	Correctional Officers and Jailers	266										
13-2072	Loan Officers	264		•								
17-3023	Electrical and Electronics Engineering Technicians	260			•							•



**Table 1. Top 100 Middle-Skill Jobs by Labor Market Demand Within Priority and Emerging Sectors (Continued)**

\* = Oversupply

AM = Advanced Manufacturing

BE = Business & Entrepreneurship

ECU = Energy, Construction & Utilities

HC = Health Care

LS = Life Sciences

GT = Global Trade

T = Tourism

AWET = Agricultural, Water & Environmental Technologies

ICT = Information and Communication Technologies

ATL = Advanced Transportation and Logistics

SOC	Occupational Title	2017-22 Annual Openings	AM	BE	ECU	HC	LS	GT	T	AWET	ICT	ATL
31-9099	Healthcare Support Workers, All Other	259				•						
47-2073	Operating Engineers & Other Construction Equipment Operators	256			•					•		
13-1031	Claims Adjusters, Examiners, and Investigators	255										
13-1151	Training and Development Specialists	252	•	•		•	•	•	•			•
15-1142	Network and Computer Systems Administrators*	251	•				•	•			•	•
15-1134	Web Developers	239					•	•			•	
33-2011	Firefighters*	237										
33-3021	Detectives and Criminal Investigators	228										
29-2012	Medical and Clinical Laboratory Technicians	228				•	•					
29-2099	Health Technologists and Technicians, All Other	227				•						
49-9041	Industrial Machinery Mechanics	227	•		•		•	•		•		•
27-4021	Photographers	219										•
31-9097	Phlebotomists	211				•						
29-2021	Dental Hygienists	205				•						
43-3051	Payroll and Timekeeping Clerks*	201										
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	200								•		•
43-4131	Loan Interviewers and Clerks	186										
43-4161	Human Resources Assistants, Except Payroll & Timekeeping	182										
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	180							•			•
27-3091	Interpreters and Translators	179										
29-2071	Medical Records and Health Information Technicians	178				•						
49-3021	Automotive Body and Related Repairers	176										
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	171							•			
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	165	•				•	•		•	•	•
25-4031	Library Technicians	164										
47-4011	Construction and Building Inspectors	155			•							•
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	153						•		•		
13-1022	Wholesale and Retail Buyers, Except Farm Products	152		•				•				
17-3029	Engineering Technicians, Except Drafters, All Other	150	•		•		•	•			•	•
17-3011	Architectural and Civil Drafters	146			•							•
15-1152	Computer Network Support Specialists	145									•	
11-3051	Industrial Production Managers	144	•	•			•	•		•		•
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	143						•		•		
51-2011	Aircraft Structure, Surfaces, Rigging & Systems Assemblers	142						•				•
13-2082	Tax Preparers*	141		•								
49-3011	Aircraft Mechanics and Service Technicians	137	•					•				•
29-2011	Medical and Clinical Laboratory Technologists	135				•	•					
29-2034	Radiologic Technologists	129				•						
19-4099	Life, Physical, and Social Science Technicians, All Other	126					•					
29-2056	Veterinary Technologists and Technicians*	125				•						
31-2021	Physical Therapist Assistants	122				•						
43-5011	Cargo and Freight Agents	120						•				•
11-9081	Lodging Managers	113		•					•			
51-8031	Water and Wastewater Treatment Plant and System Operators	104			•					•		
47-2221	Structural Iron and Steel Workers	103			•							
17-3022	Civil Engineering Technicians	102			•							•
15-1143	Computer Network Architects	101	•				•				•	•
29-2055	Surgical Technologists	101				•						
47-2121	Glaziers	99			•							
11-3071	Transportation, Storage, and Distribution Managers	99		•				•		•		
Total Labor Market Demand		45,457										



## Program Supply for Top Middle-Skill Jobs

Labor market demand for the top middle-skill jobs amounts to 45,457<sup>13</sup> job openings each year between 2017 and 2022. To determine whether there are enough qualified workers to meet this labor market demand, this study examines potential labor supply from the educational institutions in the region. Supply for an occupation can be estimated by analyzing the number of program completers or awards in a related Taxonomy or Programs (TOP) or Classification of Instructional Programs (CIP) code. There are 172 six-digit TOP (TOP6) program codes related to the middle-skill jobs analyzed in this study. Table 2 lists the top middle-skill jobs and their related programs in the region. Because a TOP code or program may train for more than one occupation, simply aggregating all supply from a related TOP code may overestimate supply for that occupation. For example, TOP6 code 050940 Sales and Salesmanship trains for both Customer Service Representatives (43-4051) and Sales Representatives, Services, All Other (41-3099). Therefore, 050940 Sales and Salesmanship was omitted from Sales Representatives, Services, All Other in Table 2 because it was already accounted for in Customer Service Representatives. Table 2 analyzes program supply for the top middle-skill jobs with this method, removing duplicate codes whenever necessary.

### Labor Market Supply: Program Awards

Program award data represents the supply of students that can potentially fill labor market demand. Supply can be estimated by analyzing Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP) codes. TOP is a system of numerical codes used at the state level to collect and report information on community college programs and courses throughout the state that have similar outcomes. TOP was designed to aggregate information about programs, but local program titles often differ substantially from college to college. For example, one college's program may be titled "Mechanized Agriculture," another college's program may be titled "Agriculture Engineering Technology," and a third college's program may be titled "Agriculture Equipment Operations & Maintenance." Because they have similar outcomes, information on all three is collected and reported at the state level under TOP code 011600, which carries the standardized title "Agricultural Power Equipment Technology."

Other educational institutional programs were identified using CIP codes and then cross-walked to TOP codes. CIP codes are a taxonomy of academic disciplines at institutions of higher education in the United States and Canada. CIP codes are used at the federal level and for non-community-college programs. The CIP was originally developed by the National Center for Education Statistics of the United States Department of Education. For more information about the differences between TOP and CIP codes, see Appendix B.

---

<sup>13</sup> EMSI

**Table 2. Labor Market Demand vs. Program Supply for the Top 100 Middle-Skill Jobs in San Diego County**

--" indicates that the TOP code(s) for that job was(were) omitted and accounted for elsewhere in the table

"0" indicates that a program for that TOP code exists in the region, but there was no supply

"N/A" indicates that no program exists for that TOP code in the region

SOC	Occupational Title	2017-22 Annual Openings	Supply Gap or Oversupply	2013-15 Average Awards	TOP6	TOP6 Program Title
43-4051	Customer Service Representatives	2,920	Supply Gap	5	050940	Sales and Salesmanship
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	2,683	Supply Gap	1,206	051400	Office Technology/ Office Computer Applications
29-1141	Registered Nurses	1,810	Supply Gap	553	120310	Registered Nursing
43-1011	First-Line Supervisors of Office and Administrative Support Workers	1,743	Supply Gap	9	050630 050970 051440	Management Development and Supervision E-Commerce (Business Emphasis) Office Management
41-3099	Sales Representatives, Services, All Other	1,578	Supply Gap	--	--	--
41-1011	First-Line Supervisors of Retail Sales Workers	1,542	Supply Gap	78	050650	Retail Store Operations and Management
13-1199	Business Operations Specialists, All Other	1,439	Supply Gap	59	050640	Small Business and Entrepreneurship
49-9071	Maintenance and Repair Workers, General	1,303	Supply Gap	0	094500	Industrial Systems Technology and Maintenance
31-9092	Medical Assistants	1,180	Oversupply	1,396	120800 120810	Medical Assisting Clinical Medical Assisting
47-2031	Carpenters	1,178	Supply Gap	99	095210 095250	Carpentry Mill and Cabinet Work
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	1,132	Supply Gap	87	130320 050800 050900	Fashion Merchandising International Business and Trade Marketing and Distribution
43-6013	Medical Secretaries	1,058	Supply Gap	405	051420 120820 122310	Medical Office Technology Administrative Medical Assisting Health Information Coding
47-2111	Electricians	1,026	Supply Gap	115	095220	Electrical
53-3032	Heavy and Tractor-Trailer Truck Drivers	988	Supply Gap	N/A	094750	Truck and Bus Driving
39-9031	Fitness Trainers and Aerobics Instructors	835	Supply Gap	125	083500 083510 083520 083550 083560 083580 083700 122800	Physical Education Physical Fitness and Body Movement Fitness Trainer Intercollegiate Athletics Coaching Adapted Physical Education Health Education Athletic Training and Sports Medicine
47-2152	Plumbers, Pipefitters, and Steamfitters	799	Supply Gap	221	095230	Plumbing, Pipefitting and Steamfitting
43-6011	Executive Secretaries and Executive Administrative Assistants	768	Supply Gap	--	--	--
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	732	Supply Gap	26	095260 095280 210210	Masonry, Tile, Cement, Lath and Plaster Drywall and Insulation Public Works
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	650	Supply Gap	0	095500 095680	Laboratory Science Technology Industrial Quality Control
29-2061	Licensed Practical and Licensed Vocational Nurses	645	Supply Gap	378	123020	Licensed Vocational Nursing
41-3021	Insurance Sales Agents	554	Supply Gap	0	051200	Insurance
15-1151	Computer User Support Specialists	548	Supply Gap	39	070210 070800 070820	Software Applications Computer Infrastructure and Support Computer Support
31-9091	Dental Assistants	533	Supply Gap	410	124010	Dental Assistant
43-5061	Production, Planning, and Expediting Clerks	505	Supply Gap	3	051000	Logistics and Materials Transportation
51-1011	First-Line Supervisors of Production and Operating Workers	474	Supply Gap	--	--	--

SOC	Occupational Title	2017-22 Annual Openings	Supply Gap or Oversupply	2013-15 Average Awards	TOP6	TOP6 Program Title
51-4041	Machinists	447	Supply Gap	54	095630	Machining and Machine Tools
33-3051	Police and Sheriff's Patrol Officers	398	Supply Gap	81	210550	Police Academy
23-2011	Paralegals and Legal Assistants	397	Supply Gap	72	140200	Paralegal
51-4121	Welders, Cutters, Solderers, and Brazers	397	Supply Gap	343	095650	Welding Technology
21-1093	Social and Human Service Assistants	391	Supply Gap	222	126100 130100  130560 210400 210440 210450	Community Health Care Worker Family and Consumer Sciences, General Parenting and Family Education Human Services Alcohol and Controlled Substances Disability Services
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	390	Supply Gap	--	--	--
11-9021	Construction Managers*	374	Oversupply	689	050100 095700	Business and Commerce, General Civil and Construction Management Technology
53-3022	Bus Drivers, School or Special Client	358	Supply Gap	N/A	094750	Truck and Bus Driving
51-2022	Electrical and Electronic Equipment Assemblers	357	Supply Gap	148	092400 093400	Engineering Technology, General Electronics and Electric Technology
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	348	Supply Gap	323	094600	Environmental Control Technology
41-1012	First-Line Supervisors of Non-Retail Sales Workers	341	Supply Gap	--	--	--
13-1051	Cost Estimators*	341	Oversupply	438	050600	Business Management
11-3011	Administrative Services Managers*	339	Oversupply	1,885	050500	Business Administration
15-1199	Computer Occupations, All Other	326	Oversupply	456	061420 070100 070200 070600 070910 079900 220610	Electronic Game Design Information Technology, General Computer Information Systems Computer Science (Transfer) E-Commerce (Technology Emphasis) Other Information Technology Geographic Information Systems
11-9141	Property, Real Estate, and Community Association Managers	324	Supply Gap	54	051100	Real Estate
29-2052	Pharmacy Technicians	304	Supply Gap	176	122100	Pharmacy Technology
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	299	Supply Gap	62	093440	Electrical Systems and Power Transmission
43-6012	Legal Secretaries	296	Supply Gap	10	051410	Legal Office Technology
47-2211	Sheet Metal Workers	295	Supply Gap	36	095640	Sheet Metal and Structural Metal
35-1011	Chefs and Head Cooks	290	Oversupply	1,052	130600 130630 130710	Nutrition, Foods, and Culinary Arts Culinary Arts Restaurant and Food Services and Management
39-1021	First-Line Supervisors of Personal Service Workers	288	Oversupply	1,303	300700	Cosmetology and Barbering
13-1081	Logisticians	281	Supply Gap	--	--	--
33-3012	Correctional Officers and Jailers	266	Supply Gap	51	210510	Corrections
13-2072	Loan Officers	264	Supply Gap	0	051110	Escrow
17-3023	Electrical and Electronics Engineering Technicians	260	Supply Gap	42	093410 093430 094300	Computer Electronics Telecommunications Technology Instrumentation Technology
31-9099	Healthcare Support Workers, All Other	259	Supply Gap	10	120830 122000	Health Facility Unit Coordinator Speech/Language Pathology and Audiology
47-2073	Operating Engineers and Other Construction Equipment Operators	256	Supply Gap	0	094730	Heavy Equipment Operation
13-1031	Claims Adjusters, Examiners, and Investigators	255	Supply Gap	0	051200	Insurance
13-1151	Training and Development Specialists	252	Supply Gap	N/A	086000	Educational Technology
15-1142	Network and Computer Systems Administrators	251	Oversupply	303	070810 093430	Computer Networking Telecommunications Technology

SOC	Occupational Title	2017-22 Annual Openings	Supply Gap or Oversupply	2013-15 Average Awards	TOP6	TOP6 Program Title
15-1134	Web Developers	239	Supply Gap	236	061430 070700 070710 070900 070910	Website Design and Development Computer Software Development Computer Programming World Wide Web Administration E-Commerce (Technology Emphasis)
33-2011	Firefighters	237	Oversupply	292	213300 213310 213350	Fire Technology Wildland Fire Technology Fire Academy
33-3021	Detectives and Criminal Investigators	228	Supply Gap	79	210540	Forensics, Evidence, and Investigation
29-2012	Medical and Clinical Laboratory Technicians	228	Supply Gap	43	093470 095500 120500	Electron Microscopy Laboratory Science Technology Medical Laboratory Technology
29-2099	Health Technologists and Technicians, All Other	227	Supply Gap	27	121100 121200 121400	Polysomnography Electro-Neurodiagnostic Technology Orthopedic Assistant
49-9041	Industrial Machinery Mechanics	227	Supply Gap	9	095600	Manufacturing and Industrial Technology
27-4021	Photographers	219	Supply Gap	200	050910 061400 100100 100200 101100 101200	Advertising Digital Media Fine Arts, General Art (Painting, Drawing, and Sculpture) Photography Applied Photography
31-9097	Phlebotomists	211	Supply Gap	0	120510	Phlebotomy
29-2021	Dental Hygienists	205	Supply Gap	49	124020	Dental Hygienist
43-3051	Payroll and Timekeeping Clerks	201	Oversupply	557	050200	Accounting
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	200	Supply Gap	86	094700	Diesel Technology
43-4131	Loan Interviewers and Clerks	186	Supply Gap	18	050400	Banking and Finance
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	182	Supply Gap	N/A	N/A	N/A
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	180	Supply Gap	15	300900	Travel Services and Tourism
27-3091	Interpreters and Translators	179	Supply Gap	28	060700 061000 085010 110100	Technical Communication Mass Communications Sign Language Interpreting Foreign Languages, General
29-2071	Medical Records and Health Information Technicians	178	Supply Gap	28	122300	Health Information Technology
49-3021	Automotive Body and Related Repairers	176	Supply Gap	48	094900	Automotive Collision Repair
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	171	Supply Gap	147	010900 010910 010930 010940 011510	Horticulture Landscape Design and Maintenance Nursery Technology Turfgrass Technology Parks and Outdoor Recreation
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	165	Supply Gap	--	--	--
25-4031	Library Technicians	164	Supply Gap	22	160200	Library Technician (Aide)
47-4011	Construction and Building Inspectors	155	Supply Gap	31	095720	Construction Inspection
53-1031	First-Line Supervisors of Transportation and Material- Moving Machine and Vehicle Operators	153	Supply Gap	2	094740	Railroad and Light Rail Operations
13-1022	Wholesale and Retail Buyers, Except Farm Products	152	Supply Gap	N/A	050920	Purchasing
17-3029	Engineering Technicians, Except Drafters, All Other	150	Supply Gap	38	094610 099900	Energy Systems Technology Other Engineering and Related Industrial Technologies
17-3011	Architectural and Civil Drafters	146	Supply Gap	142	020100 095300 095310	Architecture and Architectural Technology Drafting Technology Architectural Drafting

SOC	Occupational Title	2017-22 Annual Openings	Supply Gap or Oversupply	2013-15 Average Awards	TOP6	TOP6 Program Title
15-1152	Computer Network Support Specialists	145	Supply Gap	0	070730	Computer Systems Analysis
11-3051	Industrial Production Managers*	144	Supply Gap	--	--	--
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	143	Supply Gap	--	--	--
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	142	Supply Gap	92	095000 095010 095020	Aeronautical and Aviation Technology Aviation Airframe Mechanics Aviation Powerplant Mechanics
13-2082	Tax Preparers	141	Oversupply	570	050200 050210	Accounting Tax Studies
49-3011	Aircraft Mechanics and Service Technicians	137	Supply Gap	--	--	--
29-2011	Medical and Clinical Laboratory Technologists	135	Supply Gap	--	--	--
29-2034	Radiologic Technologists	129	Supply Gap	71	122500	Radiologic Technology
19-4099	Life, Physical, and Social Science Technicians, All Other	126	Supply Gap	60	043000	Biotechnology and Biomedical Technology
29-2056	Veterinary Technologists and Technicians	125	Oversupply	237	010210	Veterinary Technician (Licensed)
31-2021	Physical Therapist Assistants	122	Supply Gap	46	122200	Physical Therapist Assistant
43-5011	Cargo and Freight Agents	120	Supply Gap	--	--	--
11-9081	Lodging Managers	113	Supply Gap	39	130700 130720	Hospitality Lodging Management
51-8031	Water and Wastewater Treatment Plant and System Operators	104	Supply Gap	92	095800	Water and Wastewater Technology
47-2221	Structural Iron and Steel Workers	103	Supply Gap	--	--	--
17-3022	Civil Engineering Technicians	102	Supply Gap	2	210210	Public Works
15-1143	Computer Network Architects	101	Supply Gap	--	--	--
29-2055	Surgical Technologists	101	Supply Gap	55	121700	Surgical Technician
47-2121	Glaziers	99	Supply Gap	N/A	095240	Glazing
11-3071	Transportation, Storage, and Distribution Managers*	99	Supply Gap	22	210200 302000 302010	Public Administration Aviation and Airport Management and Services Aviation and Airport Management
Total Demand		45,457		16,403	Total Supply	

\*TOP codes associated with these occupations include 050100 Business Commerce, General, 050500 Business Administration and 050600 Business Management. Comparing labor market demand for these occupations against program supply in these three TOP codes indicates that there is an oversupply of labor for all these occupations. However, it could be argued that business-related TOP codes do not train specifically for these occupations, so these supply numbers may be overestimated.

### Disclaimer about Supply Gap Analysis

Subtracting program awards (labor supply) from annual openings (labor demand) is a basic analysis of supply gaps in labor market research. The data should be used to discuss the potential gaps or oversupply of workers for these occupations; however, it should not be the only basis for determining whether or not a program should be developed. The data is incomplete; it does not include workers who are currently in the labor force who could fill these positions or program supply from educational institutions that do not publicly disclose their completion or outcomes data.

## Key Findings and Recommendations

The following findings resulted from analyzing labor market demand, program supply and supply gaps of the top middle-skill jobs in San Diego County:

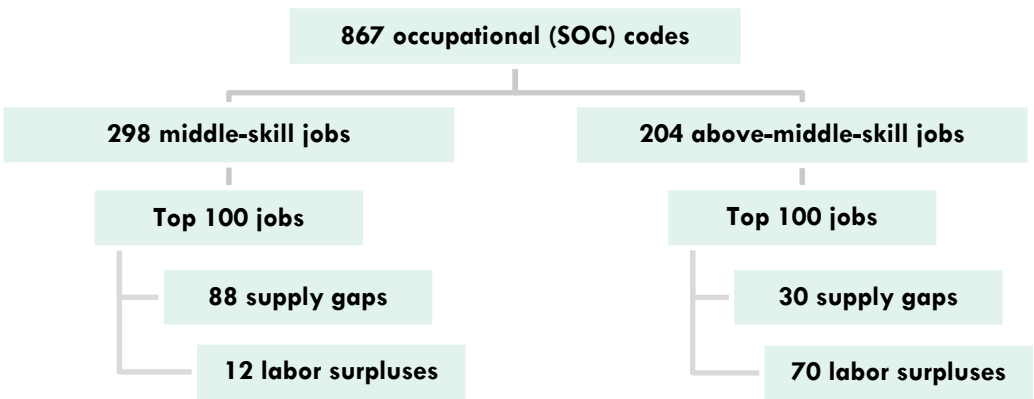
- Training for the top middle-skill jobs can provide job seekers with opportunities for income mobility. As previously mentioned, the average median hourly wage of all middle-skill jobs is \$22.10, the average median hourly wage of all jobs in the region is \$19.30, and the Self-Sufficiency Standard is \$13.09. The average median hourly wage of the top 100 middle-skill jobs analyzed in this study is \$26.70, which is higher than all three (Figure 4).

Figure 4. Median Hourly Earnings vs Self-Sufficiency Standard



- Of the top 100 middle-skill jobs identified in this study, 88 have supply gaps and 12 have labor surpluses. Comparatively, the top 100 above-middle-skill jobs have only 30 supply gaps, suggesting that middle-skill jobs have more opportunities to develop programs than above-middle-skill jobs (Figure 5).

Figure 5. Analysis of Middle-Skill Job Gaps



- The top 100 middle-skill jobs have a labor market demand of 45,457 annual job openings a program supply of 16,403 awards. That is a difference of 29,044 awards that could be produced by the region to meet labor market demand. Across the top 100 middle-skill jobs, the median supply gap is 260 awards.

- Not all middle-skill jobs need to be filled with an associate degree. Of the 45,457 annual job openings, 16 percent of labor market demand are related to supervisory or management roles, 17 percent are related to sales roles, and 17 percent are related to administrative or secretarial roles (Figure 6). The majority of these occupations require less than an associate degree as their typical entry-level education. This suggests that there are opportunities for short-term certificate programs that can fill these roles. Short-term certificate programs require less than two years to complete.

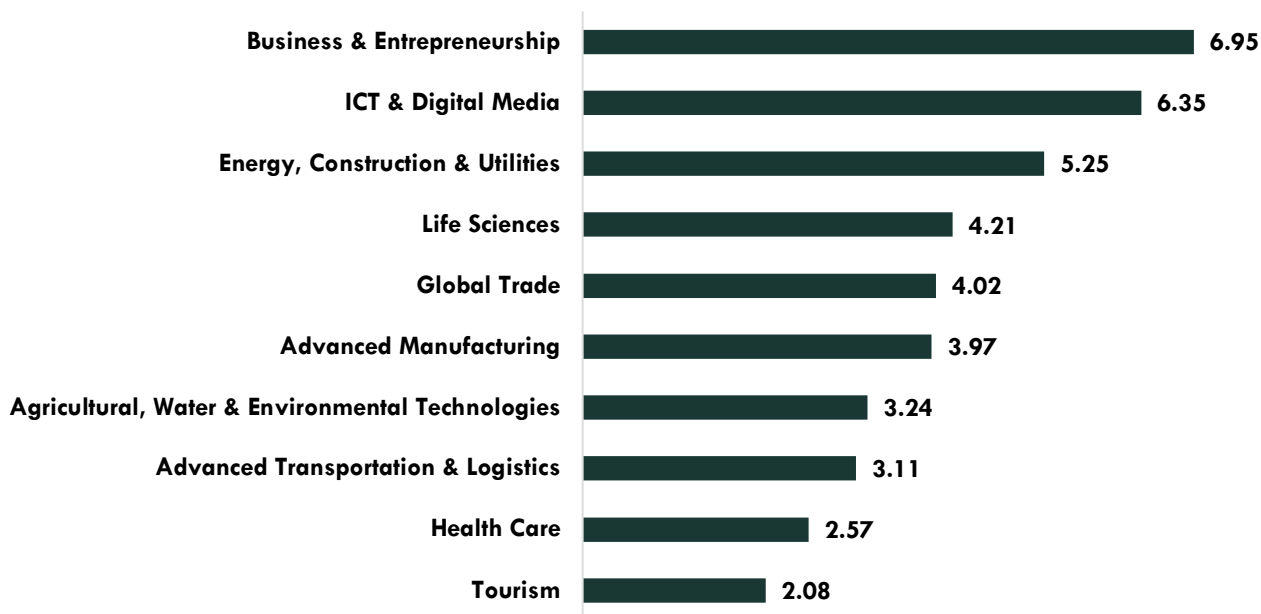
**Figure 6. Percentage of Top Middle-Skill Jobs with Management, Sales or Administrative Titles\***



\*These percentages have some overlap because an occupation may have more than one role: For example, First-Line Supervisors of Office and Administrative Support Workers are both supervisory and administrative positions.

- As indicated in Table 2, nearly all top middle-skill jobs are also a top job in one or more of the Priority and Emerging Sectors. By closing the supply gaps in the top middle-skill jobs, educational and training providers are also generating new jobs in the Priority and Emerging Sectors. Figure 7 illustrates how many total jobs will be added to the region as a result of a new job added to a Priority and Emerging Sector.<sup>14</sup> A jobs multiplier includes the initial job addition and its resulting yield. For example, Business and Entrepreneurship's jobs multiplier is 6.95, which is comprised of the initial job added (1.0) and the additional yield (5.95). In other words, a new job added in the Business and Entrepreneurship sector generates 5.95 other jobs in the region.

**Figure 7. Jobs Multipliers by Priority and Emerging Sector**



<sup>14</sup> Emsi. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW+ Self-employed. 2007-2022. Jobs multiplier data is based on Emsi's model, which incorporates data from the Bureau of Economic Analysis.



## Recommendations for Short-Term Certificate Programs

Comparing labor market demand with program supply suggests that there are 88 supply gaps for the top 100 middle-skill jobs. As previously mentioned, some of these supply gaps could be filled with short-term certificate programs due to their training and education requirements. A short-term certificate program can be a program with an award of at least one but less than two academic years, or a program with an award of less than one academic year.

Programs (TOP6 codes) with the following characteristics are recommended for short-term certificate programs:

- There is a supply gap of 100 or more for the occupation(s) that the program trains for; **and**
- The majority of middle-skill jobs that the program (TOP6) trains for require short- to moderate-term on-the-job training and/or a high school diploma; **and**
- The program trains for three or more top middle-skill jobs; **or**
- There are fewer than five colleges that offer the program in the region and there are fewer than four other TOP6 codes that train for the same occupation.

The following tables list the TOP6 codes recommended for short-term certificate programs based on the California Community Colleges' Priority and Emerging Sectors. The TOP codes for each sector were derived by from CalPASS Plus's "LaunchBoard Sector Explanation."<sup>15</sup> Some TOP codes are associated with more than one sector and are shown more than once in the tables below.

### Disclaimer about Recommendations for Short-Term Certificate Programs

While this study makes recommendations for short-term programs based on specific parameters, this information should not be the only basis for developing short-term certificate programs. There are many factors to consider before developing a new program. For example, the TOP6 codes recommended in the Advanced Transportation and Logistics sector require significant investments in space and equipment (e.g., vehicles), and colleges in the region may not have the capacity or resources to meet those needs.

Additionally, some short-term certificate programs may be more suited for current working professionals (also known as incumbent workers) than for new graduates entering the labor force. For example, TOP6 050630 Management Development and Supervision presumably trains individuals for management positions after they have acquired prior training and experience. Short-term certificate programs can help incumbent workers upskill their knowledge base in a particular field. Incumbent workers who take courses to learn new skills are also known as "skills-builders" in the community college system. See Recommendations for Further Analysis, which further elaborates on developing short-term programs for skills-builders.

<sup>15</sup> [calpassplus.org/MediaLibrary/calpassplus/publicweb/Documents/sector-explanation.docx](https://calpassplus.org/MediaLibrary/calpassplus/publicweb/Documents/sector-explanation.docx)

**Table 3. TOP6 Codes Recommended for Short-Term Certificate Programs**

**Business and Entrepreneurship**

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
050630	Management Development and Supervision	\$26.37 \$28.00 \$31.47 \$36.15 \$39.63 \$40.86 \$46.10	First-Line Supervisors of Office and Administrative Support Workers First-Line Supervisors of Production and Operating Workers First-Line Supervisors of Mechanics, Installers, and Repairers Construction Managers Administrative Services Managers Logisticians Industrial Production Managers	<ul style="list-style-type: none"> <li>• Southwestern</li> </ul>
050900	Marketing and Distribution	\$23.42 \$25.20 \$33.82	Wholesale and Retail Buyers, Except Farm Products Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products Purchasing Agents, Except Wholesale, Retail, and Farm Products	<ul style="list-style-type: none"> <li>• National University</li> <li>• Grossmont</li> <li>• San Diego Mesa</li> <li>• Southwestern</li> </ul>
050940	Sales and Salesmanship	\$17.52 \$24.10 \$25.20	Customer Service Representatives Sales Representatives, Services, All Other Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	<ul style="list-style-type: none"> <li>• Palomar</li> <li>• San Diego City</li> </ul>
050970	E-Commerce (Business Emphasis)	\$17.77 \$26.37 \$35.66	Business Operations Specialists, All Other First-Line Supervisors of Office and Administrative Support Workers First-Line Supervisors of Retail Sales Workers	<ul style="list-style-type: none"> <li>• Southwestern</li> </ul>
050920	Purchasing	\$23.42 \$39.63 \$33.82	Wholesale and Retail Buyers, Except Farm Products Administrative Services Managers Purchasing Agents, Except Wholesale, Retail, and Farm Products	<ul style="list-style-type: none"> <li>• None</li> </ul>

**ICT and Digital Media**

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
051400	Office Technology/Office Computer Applications	\$18.42 \$21.42 \$28.25	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive Cargo and Freight Agents Executive Secretaries and Executive Administrative Assistants	<ul style="list-style-type: none"> <li>• San Diego College</li> <li>• San Diego Continuing Ed</li> <li>• Cuyamaca</li> <li>• Grossmont</li> <li>• MiraCosta</li> <li>• Palomar</li> <li>• San Diego Mesa</li> <li>• San Diego Miramar</li> <li>• Southwestern</li> <li>• United Education Institute (UEI)-Chula Vista</li> <li>• UEI-San Marcos</li> </ul>
070910	E-Commerce (Technology Emphasis)	\$17.77 \$21.55 \$27.05 \$41.93	First-Line Supervisors of Retail Sales Workers Web Developers Computer User Support Specialists Computer Occupations, All Other	<ul style="list-style-type: none"> <li>• MiraCosta</li> <li>• Southwestern</li> </ul>

## Advanced Transportation and Logistics

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
051000	Logistics and Materials Transportation	\$21.42 \$21.50  \$22.18 \$26.64  \$31.29 \$40.86 \$46.10	Cargo and Freight Agents First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand Production, Planning, and Expediting Clerks First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators Logisticians Engineering Technicians, Except Drafters, All Other Industrial Production Managers	<ul style="list-style-type: none"> <li>Southwestern</li> </ul>
094740	Railroad and Light Rail Operations	\$26.64	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	<ul style="list-style-type: none"> <li>San Diego City</li> </ul>

## Life Sciences and Biotech

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
095680	Industrial Quality Control	\$19.62	Inspectors, Testers, Sorters, Samplers, and Weighers	<ul style="list-style-type: none"> <li>San Diego City</li> </ul>

## Global Trade

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
050800	International Business and Trade	\$23.42 \$25.20  \$35.66	Wholesale and Retail Buyers, Except Farm Products Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products Business Operations Specialists, All Other	<ul style="list-style-type: none"> <li>Grossmont</li> <li>Palomar</li> <li>Southwestern</li> </ul>
050920	Purchasing	\$23.42 \$33.82 \$39.63	Wholesale and Retail Buyers, Except Farm Products Purchasing Agents, Except Wholesale, Retail, and Farm Products Administrative Services Managers	<ul style="list-style-type: none"> <li>None</li> </ul>

## Health Care

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
120820	Administrative Medical Assisting	\$18.99	Medical Secretaries	<ul style="list-style-type: none"> <li>MiraCosta</li> <li>Palomar</li> <li>Southwestern</li> </ul>

## Other

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
051200	Insurance	\$23.01 \$30.84	Insurance Sales Agents Claims Adjusters, Examiners, and Investigators	<ul style="list-style-type: none"> <li>Southwestern</li> </ul>
051410	Legal Office Technology	\$22.53	Legal Secretaries	<ul style="list-style-type: none"> <li>San Diego City</li> <li>Southwestern</li> </ul>

## Tourism

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
050630	Management Development and Supervision	\$26.37 \$28.00 \$31.47 \$36.15 \$39.63 \$40.86 \$46.10	First-Line Supervisors of Office and Administrative Support Workers First-Line Supervisors of Production and Operating Workers First-Line Supervisors of Mechanics, Installers, and Repairers Construction Managers Administrative Services Managers Logisticians Industrial Production Managers	<ul style="list-style-type: none"> <li>Southwestern</li> </ul>
050900	Marketing and Distribution	\$23.42 \$25.20 \$33.82	Wholesale and Retail Buyers, Except Farm Products Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products Purchasing Agents, Except Wholesale, Retail, and Farm Products	<ul style="list-style-type: none"> <li>National University</li> <li>Grossmont</li> <li>San Diego Mesa</li> <li>Southwestern</li> </ul>
050940	Sales and Salesmanship	\$17.52 \$24.10 \$25.20	Customer Service Representatives Sales Representatives, Services, All Other Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	<ul style="list-style-type: none"> <li>Palomar</li> <li>San Diego City</li> </ul>
051440	Office Management	\$26.37 \$39.63	First-Line Supervisors of Office and Administrative Support Workers Administrative Services Managers	<ul style="list-style-type: none"> <li>None</li> </ul>
130320	Fashion Merchandising	\$23.42 \$25.20	Wholesale and Retail Buyers, Except Farm Products Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	<ul style="list-style-type: none"> <li>Fashion Institute of Design &amp; Merchandising-San Diego</li> <li>Palomar</li> <li>San Diego Mesa</li> <li>Argosy University-The Art Institute of California-San Diego</li> </ul>
300900	Travel Services and Tourism	\$18.46	Reservation and Transportation Ticket Agents and Travel Clerks	<ul style="list-style-type: none"> <li>MiraCosta</li> <li>San Diego Mesa</li> <li>Southwestern</li> </ul>

## Programs Recommended for Increased Awards

The supply gap analysis indicates that there are several TOP codes with existing training programs already in the region but could be further developed to meet labor market demand. Programs with the following characteristics are recommended for increased awards:

- There is a supply gap of 100 or more for the occupation(s) that the program trains for; **and**
- There are fewer than four other TOP6 codes that train for the same occupation(s).

The following tables list the recommended programs for increased awards. The TOP codes associated with each sector were derived from CalPASS Plus's "LaunchBoard Sector Explanation."<sup>16</sup> Some TOP codes are associated with more than one sector and are shown more than once in the tables below.

### Disclaimer about Recommendations for Increased Awards

While this study makes recommendations for increased awards, this study should not be the only basis for growing existing programs. There are many factors to consider before expanding current programs. For example, some of the Health Care TOP6 codes require clinical placement at Health Care organizations for students to complete the programs, but the region may not have the capacity to meet those needs. Similarly, other programs may be at capacity due to limitations in space and resources and cannot expand.

**Table 4. Programs Recommended for Increased Awards**

#### Life Sciences

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
043000	Biotechnology and Biomedical Technology	\$22.99	Life, Physical, and Social Science Technicians, All Other	<ul style="list-style-type: none"> <li>• MiraCosta</li> <li>• San Diego City</li> <li>• San Diego Mesa</li> <li>• San Diego Miramar</li> <li>• Southwestern</li> </ul>
095500	Laboratory Science Technology	\$19.62 \$21.24	Inspectors, Testers, Sorters, Samplers, and Weighers Medical and Clinical Laboratory Technicians	<ul style="list-style-type: none"> <li>• San Diego Mesa</li> <li>• Southwestern</li> </ul>
095680	Industrial Quality Control	\$19.62	Inspectors, Testers, Sorters, Samplers, and Weighers	<ul style="list-style-type: none"> <li>• San Diego City</li> </ul>

#### Global Trade

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
050800	International Business and Trade	\$23.42 \$25.20 \$35.66	Wholesale and Retail Buyers, Except Farm Products Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products Business Operations Specialists, All Other	<ul style="list-style-type: none"> <li>• Grossmont</li> <li>• Palomar</li> <li>• Southwestern</li> </ul>

<sup>16</sup> [calpassplus.org/MediaLibrary/calpassplus/publicweb/Documents/sector-explanation.docx](http://calpassplus.org/MediaLibrary/calpassplus/publicweb/Documents/sector-explanation.docx)

## Energy, Construction and Utilities

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
020100	Architecture and Architectural Technology	\$27.71 \$31.29	Architectural and Civil Drafters Engineering Technicians, Except Drafters, All Other	<ul style="list-style-type: none"> <li>• Southwestern</li> <li>• MiraCosta</li> <li>• Palomar</li> <li>• San Diego Mesa</li> <li>• Southwestern</li> </ul>
093440	Electrical Systems and Power Transmission	\$30.78 \$31.47	Electrical and Electronics Engineering Technicians First-Line Supervisors of Mechanics, Installers, and Repairers	<ul style="list-style-type: none"> <li>• San Diego City</li> </ul>
093470	Electronics and Electric Technology	\$17.33 \$22.99 \$30.78	Electrical and Electronic Equipment Assemblers Life, Physical, and Social Science Technicians, All Other Electrical and Electronics Engineering Technicians	<ul style="list-style-type: none"> <li>• San Diego Continuing Ed</li> <li>• San Diego City</li> </ul>
095210	Carpentry	\$18.40 \$34.36	Carpenters First-Line Supervisors of Construction Trades and Extraction Workers	<ul style="list-style-type: none"> <li>• Palomar</li> </ul>
095220	Electrical	\$29.06 \$34.36	Electricians First-Line Supervisors of Construction Trades and Extraction Workers	<ul style="list-style-type: none"> <li>• Palomar</li> <li>• San Diego City</li> </ul>
095230	Plumbing, Pipefitting and Steamfitting	\$24.73 \$31.47 \$34.36	Plumbers, Pipefitters, and Steamfitters First-Line Supervisors of Mechanics, Installers, and Repairers First-Line Supervisors of Construction Trades and Extraction Workers	<ul style="list-style-type: none"> <li>• San Diego Continuing Ed</li> <li>• San Diego City</li> </ul>
095250	Mill and Cabinet Work	\$18.40	Carpenters	<ul style="list-style-type: none"> <li>• Palomar</li> </ul>
095260	Masonry, Tile, Cement, Lath and Plaster	\$34.36	First-Line Supervisors of Construction Trades and Extraction Workers	<ul style="list-style-type: none"> <li>• Palomar</li> </ul>
095700	Civil and Construction Management Technology	\$34.36	First-Line Supervisors of Construction Trades and Extraction Workers Construction Managers	<ul style="list-style-type: none"> <li>• CET-El Centro</li> <li>• CET-San Diego</li> <li>• San Diego Mesa</li> <li>• Southwestern</li> </ul>
095720	Construction Inspection	\$33.83 \$34.36	Construction and Building Inspectors First-Line Supervisors of Construction Trades and Extraction Workers	<ul style="list-style-type: none"> <li>• Palomar</li> <li>• San Diego Mesa</li> <li>• Southwestern</li> </ul>

## Advanced Transportation and Logistics

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
051000	Logistics and Materials Transportation	\$21.42 \$21.50 \$22.18 \$26.64 \$31.29 \$40.86 \$46.10	Cargo and Freight Agents First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand Production, Planning, and Expediting Clerks First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators Logisticians Engineering Technicians, Except Drafters, All Other Industrial Production Managers	<ul style="list-style-type: none"> <li>• Southwestern</li> </ul>
094700	Diesel Technology	\$23.25 \$28.12	Bus and Truck Mechanics and Diesel Engine Specialists Operating Engineers and Other Construction Equipment Operators	<ul style="list-style-type: none"> <li>• Palomar</li> <li>• San Diego Miramar</li> </ul>
094740	Railroad and Light Rail Operations	\$26.64	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	<ul style="list-style-type: none"> <li>• San Diego City</li> </ul>
094900	Automotive Collision Repair	\$17.38	Automotive Body and Related Repairers	<ul style="list-style-type: none"> <li>• San Diego Adult</li> <li>• Palomar</li> </ul>

## Business and Entrepreneurship

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
050630	Management Development and Supervision	\$26.37 \$28.00 \$31.47 \$36.15 \$39.63 \$40.86 \$46.10	First-Line Supervisors of Office and Administrative Support Workers First-Line Supervisors of Production and Operating Workers First-Line Supervisors of Mechanics, Installers, and Repairers Construction Managers Administrative Services Managers Logisticians Industrial Production Managers	<ul style="list-style-type: none"> <li>Southwestern</li> </ul>
050640	Small Business and Entrepreneurship	\$35.66 \$39.63	Business Operations Specialists, All Administrative Services Managers	<ul style="list-style-type: none"> <li>San Diego Continuing Ed</li> <li>Cuyamaca</li> <li>MiraCosta</li> <li>San Diego City</li> <li>Southwestern</li> </ul>
050900	Marketing and Distribution	\$23.42 \$25.20 \$33.82	Wholesale and Retail Buyers, Except Farm Products Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products Purchasing Agents, Except Wholesale, Retail, and Farm Products	<ul style="list-style-type: none"> <li>National University</li> <li>Grossmont</li> <li>San Diego Mesa</li> <li>Southwestern</li> </ul>
050940	Sales and Salesmanship	\$17.52 \$24.10 \$25.20	Customer Service Representatives Sales Representatives, Services, All Other Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	<ul style="list-style-type: none"> <li>Palomar</li> <li>San Diego City</li> </ul>
050970	E-Commerce (Business Emphasis)	\$17.77 \$26.37 \$35.66	First-Line Supervisors of Retail Sales Workers First-Line Supervisors of Office and Administrative Support Workers Business Operations Specialists, All Other	<ul style="list-style-type: none"> <li>Southwestern</li> </ul>
050920	Purchasing	\$23.42 \$33.82 \$39.63	Wholesale and Retail Buyers, Except Farm Products Purchasing Agents, Except Wholesale, Retail, and Farm Products Administrative Services Managers	<ul style="list-style-type: none"> <li>None</li> </ul>

## Tourism

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
050630	Management Development and Supervision	\$26.37 \$28.00 \$31.47 \$36.15 \$39.63 \$40.86 \$46.10	First-Line Supervisors of Office and Administrative Support Workers First-Line Supervisors of Production and Operating Workers First-Line Supervisors of Mechanics, Installers, and Repairers Construction Managers Administrative Services Managers Logisticians Industrial Production Managers	<ul style="list-style-type: none"> <li>Southwestern</li> </ul>
050650	Retail Store Operations and Management	\$17.77 \$23.42	First-Line Supervisors of Retail Sales Workers Wholesale and Retail Buyers, Except Farm Products	<ul style="list-style-type: none"> <li>Grossmont</li> <li>MiraCosta</li> <li>Palomar</li> <li>San Diego City</li> </ul>
050900	Marketing and Distribution	\$23.42 \$25.20 \$33.82	Wholesale and Retail Buyers, Except Farm Products Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products Purchasing Agents, Except Wholesale, Retail, and Farm Products	<ul style="list-style-type: none"> <li>National University</li> <li>Grossmont</li> <li>San Diego Mesa</li> <li>Southwestern</li> </ul>



TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
050940	Sales and Salesmanship	\$17.52 \$24.10 \$25.20	Customer Service Representatives Sales Representatives, Services, All Other Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	<ul style="list-style-type: none"> <li>Palomar</li> <li>San Diego City</li> </ul>
051440	Office Management	\$26.37	First-Line Supervisors of Office and Administrative Support Workers Administrative Services Managers	<ul style="list-style-type: none"> <li>None</li> </ul>
130320	Fashion Merchandising	\$23.42 \$25.20	Wholesale and Retail Buyers, Except Farm Products Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	<ul style="list-style-type: none"> <li>Fashion Institute of Design &amp; Merchandising-San Diego</li> <li>Palomar</li> <li>San Diego Mesa</li> <li>Argosy University-The Art Institute of California-San Diego</li> </ul>
300900	Travel Services and Tourism	\$18.46	Reservation and Transportation Ticket Agents and Travel Clerks	<ul style="list-style-type: none"> <li>MiraCosta</li> <li>San Diego Mesa</li> <li>Southwestern</li> </ul>

### Advanced Manufacturing

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
093470	Electronics and Electric Technology	\$17.33 \$22.99 \$30.78	Electrical and Electronic Equipment Assemblers Life, Physical, and Social Science Technicians, All Other Electrical and Electronics Engineering Technicians	<ul style="list-style-type: none"> <li>San Diego Continuing Ed</li> <li>San Diego City</li> </ul>
095000	Aeronautical and Aviation Technology	\$21.73 \$29.87	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers Aircraft Mechanics and Service Technicians	<ul style="list-style-type: none"> <li>San Diego Miramar</li> </ul>
095010	Aviation Airframe Mechanics	\$21.73 \$29.87	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers Aircraft Mechanics and Service Technicians	<ul style="list-style-type: none"> <li>San Diego Miramar</li> </ul>
095020	Aviation Powerplant Mechanics	\$21.73 \$29.87	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers Aircraft Mechanics and Service Technicians	<ul style="list-style-type: none"> <li>San Diego Miramar</li> </ul>
095600	Manufacturing and Industrial Technology	\$19.62 \$20.65 \$23.72 \$26.80 \$30.48 \$31.29	Inspectors, Testers, Sorters, Samplers, and Weighers Computer-Controlled Machine Tool Operators, Metal and Plastic Machinists Industrial Machinery Mechanics Structural Iron and Steel Workers Engineering Technicians, Except Drafters, All Other	<ul style="list-style-type: none"> <li>San Diego Continuing Ed</li> <li>San Diego City</li> </ul>
095630	Machining and Machine Tools	\$20.65 \$23.72	Computer-Controlled Machine Tool Operators, Metal and Plastic Machinists	<ul style="list-style-type: none"> <li>MiraCosta</li> <li>San Diego City</li> </ul>
095640	Sheet Metal and Structural Metal	\$27.19	Sheet Metal Workers	<ul style="list-style-type: none"> <li>San Diego Adult</li> <li>Palomar</li> <li>San Diego City</li> </ul>
210210	Public Works	\$27.88 \$34.36	Civil Engineering Technicians First-Line Supervisors of Construction Trades and Extraction Workers	<ul style="list-style-type: none"> <li>Palomar</li> </ul>

## Health Care

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
120310	Registered Nursing	\$43.63	Registered Nurses	<ul style="list-style-type: none"> <li>• National University</li> <li>• United States University</li> <li>• San Diego State University</li> <li>• California State University-San Marcos</li> <li>• Point Loma Nazarene University</li> <li>• Grossmont</li> <li>• MiraCosta</li> <li>• Palomar</li> <li>• San Diego City</li> <li>• Southwestern</li> <li>• Brightwood College-San Diego</li> </ul>
120500	Medical Laboratory Technology	\$21.24	Medical and Clinical Laboratory Technicians	<ul style="list-style-type: none"> <li>• San Diego Miramar</li> <li>• Southwestern</li> </ul>
120820	Administrative Medical Assisting	\$18.99	Medical Secretaries	<ul style="list-style-type: none"> <li>• MiraCosta</li> <li>• Palomar</li> <li>• Southwestern</li> </ul>
121400	Orthopedic Assistant	\$20.86 \$32.56 \$37.04	Health Technologists and Technicians, All Other Physical Therapist Assistants Medical and Clinical Laboratory Technologists	<ul style="list-style-type: none"> <li>• Grossmont</li> </ul>
122000	Speech/Language Pathology and Audiology	\$20.06	Healthcare Support Workers, All Other	<ul style="list-style-type: none"> <li>• Grossmont</li> </ul>
122100	Pharmacy Technology	\$17.01	Pharmacy Technicians	<ul style="list-style-type: none"> <li>• Pima Medical Institute-Chula Vista</li> <li>• United Education Institute-San Marcos</li> <li>• Brightwood College-Vista</li> </ul>
122300	Health Information Technology	\$21.40 \$27.05	Medical Records and Health Information Technicians Computer User Support Specialists	<ul style="list-style-type: none"> <li>• National University</li> <li>• San Diego Mesa</li> </ul>
122310	Health Information Coding	\$18.99 \$21.40	Medical Secretaries Medical Records and Health Information Technicians	<ul style="list-style-type: none"> <li>• San Diego College</li> <li>• Concorde Career College-San Diego</li> <li>• Southwestern</li> <li>• Brightwood College-Chula Vista</li> <li>• Brightwood College-San Diego</li> <li>• Brightwood College-Vista</li> </ul>
123020	Licensed Vocational Nursing	\$25.99	Licensed Practical and Licensed Vocational Nurses	<ul style="list-style-type: none"> <li>• Concorde Career College-San Diego</li> <li>• MiraCosta</li> <li>• San Diego City</li> <li>• Southwestern</li> <li>• United Education Institute-Chula Vista</li> <li>• Brightwood College-San Diego</li> <li>• Brightwood College-Vista</li> </ul>

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
124010	Dental Assistant	\$19.69	Dental Assistants	<ul style="list-style-type: none"> <li>• Pima Medical Institute-Chula Vista</li> <li>• Concorde Career College-San Diego</li> <li>• Palomar</li> <li>• San Diego Mesa</li> <li>• United Education Institute-Chula Vista</li> <li>• United Education Institute-UEI College San Marcos</li> <li>• Brightwood College-San Diego</li> <li>• Brightwood College-Vista</li> </ul>
124020	Dental Hygienist	\$44.09	Dental Hygienists	<ul style="list-style-type: none"> <li>• Southwestern</li> <li>• Concorde Career College-San Diego</li> </ul>

### ICT and Digital Media

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
070100	Information Technology, General	\$30.78 \$39.31 \$41.93 \$50.71	Electrical and Electronics Engineering Technicians Network and Computer Systems Administrators Computer Occupations, All Other Computer Network Architects	<ul style="list-style-type: none"> <li>• Associated Technical College-San Diego</li> <li>• Advanced Training Associates</li> <li>• Cuyamaca</li> <li>• Southwestern</li> </ul>
070200	Computer Information Systems	\$27.05 \$30.78 \$39.31 \$41.93 \$50.71	Computer User Support Specialists Electrical and Electronics Engineering Technicians Network and Computer Systems Administrators Computer Occupations, All Other Computer Network Architects	<ul style="list-style-type: none"> <li>• MiraCosta</li> <li>• Palomar</li> <li>• San Diego City</li> <li>• San Diego Mesa</li> <li>• San Diego Miramar</li> <li>• Southwestern</li> </ul>
070600	Computer Science (Transfer)	\$21.55 \$41.93 \$31.24	Web Developers Computer Occupations, All Other Computer Network Support Specialists	<ul style="list-style-type: none"> <li>• MiraCosta</li> <li>• Southwestern</li> </ul>
070700	Computer Software Development	\$21.55 \$31.24 \$41.93	Web Developers Computer Network Support Specialists Computer Occupations, All Other	<ul style="list-style-type: none"> <li>• Palomar</li> </ul>
070800	Computer Infrastructure and Support	\$27.05 \$31.24 \$39.31 \$41.93 \$50.71	Computer User Support Specialists Computer Network Support Specialists Network and Computer Systems Administrators Computer Occupations, All Other Computer Network Architects	<ul style="list-style-type: none"> <li>• Coleman University</li> <li>• San Diego City</li> <li>• Southwestern</li> </ul>
070820	Computer Support	\$27.05 \$31.24 \$39.31 \$41.93 \$50.71	Computer User Support Specialists Computer Network Support Specialists Network and Computer Systems Administrators Computer Occupations, All Other Computer Network Architects	<ul style="list-style-type: none"> <li>• San Diego Adult</li> <li>• Palomar</li> <li>• San Diego City</li> <li>• Southwestern</li> </ul>
093430	Telecommunications Technology	\$30.78 \$39.31	Electrical and Electronics Engineering Technicians Network and Computer Systems Administrators	<ul style="list-style-type: none"> <li>• San Diego City</li> <li>• Southwestern</li> </ul>

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
051400	Office Technology/Office Computer Applications	\$18.42 \$21.42 \$28.25	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive Cargo and Freight Agents Executive Secretaries and Executive Administrative Assistants	<ul style="list-style-type: none"> <li>• San Diego College</li> <li>• San Diego Continuing Ed</li> <li>• Cuyamaca</li> <li>• Grossmont</li> <li>• MiraCosta</li> <li>• Palomar</li> <li>• San Diego Mesa</li> <li>• San Diego Miramar</li> <li>• Southwestern</li> <li>• United Education Institute (UEI)-Chula Vista</li> <li>• UEI-San Marcos</li> </ul>
070910	E-Commerce (Technology Emphasis)	\$17.77 \$21.55 \$27.05 \$41.93	First-Line Supervisors of Retail Sales Workers Web Developers Computer User Support Specialists Computer Occupations, All Other	<ul style="list-style-type: none"> <li>• MiraCosta</li> <li>• Southwestern</li> </ul>

## Other

TOP6	TOP6 Program Title	Median Hourly Earnings	Related Top Middle-Skill Jobs	Colleges Offering the Program
050400	Banking and Finance	\$20.78	Loan Interviewers and Clerks	<ul style="list-style-type: none"> <li>• National University</li> <li>• San Diego Miramar</li> <li>• Southwestern</li> </ul>
051200	Insurance	\$23.01 \$30.84	Insurance Sales Agents Claims Adjusters, Examiners, and Investigators	<ul style="list-style-type: none"> <li>• Southwestern</li> </ul>
051410	Legal Office Technology	\$22.53	Legal Secretaries	<ul style="list-style-type: none"> <li>• San Diego City</li> <li>• Southwestern</li> </ul>
085010	Sign Language Interpreting	\$24.10	Interpreters and Translators	<ul style="list-style-type: none"> <li>• Palomar</li> <li>• San Diego Mesa</li> </ul>
086000	Educational Technology	\$33.96	Training and Development Specialists	<ul style="list-style-type: none"> <li>• None</li> </ul>
160200	Library Technician (Aide)	\$20.85	Library Technicians	<ul style="list-style-type: none"> <li>• Palomar</li> </ul>
210510	Corrections	\$33.83	Correctional Officers and Jailers	<ul style="list-style-type: none"> <li>• Grossmont</li> <li>• San Diego Miramar</li> <li>• Southwestern</li> </ul>
210540	Forensics, Evidence, and Investigation	\$39.41 \$42.20	Police and Sheriff's Patrol Officers Detectives and Criminal Investigators	<ul style="list-style-type: none"> <li>• Grossmont</li> <li>• Palomar</li> <li>• San Diego Miramar</li> <li>• Southwestern</li> </ul>
210550	Police Academy	\$39.41 \$42.20	Police and Sheriff's Patrol Officers Detectives and Criminal Investigators	<ul style="list-style-type: none"> <li>• Grossmont</li> <li>• Palomar</li> <li>• San Diego Miramar</li> <li>• Southwestern</li> </ul>

## Recommendations for Further Analysis

The following recommendations for further research could be coupled with this labor market analysis to help with decision-making in regard to programs and course offerings:

- **Validate whether the recommended TOP codes for short-term certificate programs currently train skills-builders:** Many of the TOP codes that this study recommends for short-term certificate programs may already train for skills-builders in the region. Skills-builders are students who take higher-level Career Education courses, but do not complete a community college program or transfer to a four-year institution.<sup>17</sup> These skills-builders may take a college course to obtain new skills and/or to increase their earnings, but do not need to complete an associate degree program to achieve those goals. By understanding what programs train skills-builders, colleges in the region may want to consider which courses, rather than programs, to market to students and working professionals.
- **Examine how well existing programs currently meet labor market needs:** While this study makes recommendations for program development based on labor market information, it lacks information about the programs themselves. By conducting a program evaluation, the community colleges can gain insight as to why so many programs exist in the region for the top 100 middle-skill jobs, but supply from each program is significantly low. This analysis should be followed by recommendations on how the colleges could increase program supply for those recommended TOP codes.
- **Conduct primary research to validate these recommendations with employers:** This study provides lists of recommended TOP codes for short-term certificate and associate degree programs. However, the recommendations have not been validated by industry or businesses. Collecting primary data directly from employers will help further confirm program recommendations.
- **Analyze other occupations that might be affected by technology, policy, demographics, or other changes:** This study examines the top 100 middle-skill jobs by labor market demand in the region; however, training and educational providers in the region may also want to keep a pulse on occupations that will be affected by factors other than labor market demand. One factor to consider is that not all jobs are filled by workers who reside in the region. In comparing the number of jobs with the number of resident workers, there are thousands of occupations filled by people commuting into the region. Figures 8 and 9 list the top 10 middle-skill jobs that are filled by commuters and the top 10 middle-skill jobs that residents commute out of the region to fill. For example, employers in the region reported employing 24,587 Registered Nurses and 23,890 residents in the region reported to be employed as Registered Nurses in 2017. The difference between the number of jobs and resident workers suggests that there are 697 workers who commute into the region to fill the employment need for that occupation (Figure 8).<sup>18</sup> Comparatively, there are 10,281 jobs and 10,824 resident workers for the occupation, Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products. The difference between the number of jobs and the number of resident workers suggests that 543 San Diegans commute out or telecommute for these positions outside of the region (Figure 9).<sup>19</sup>

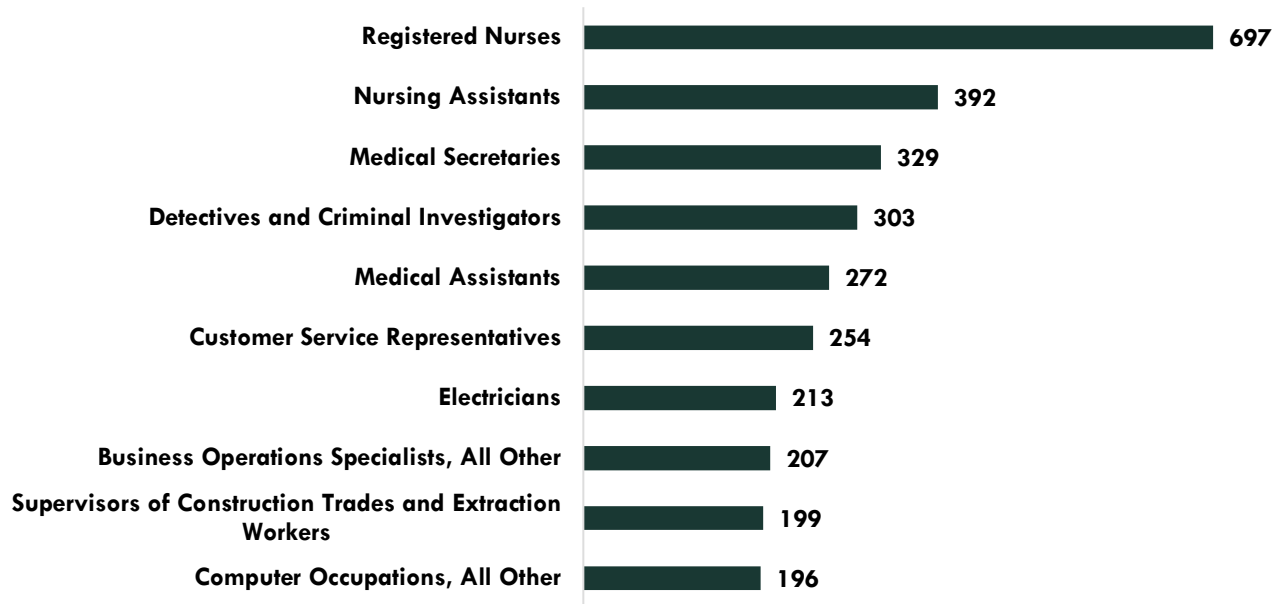
---

<sup>17</sup> [doingwhatmatters.cccco.edu/ForCollegeLeadership/SkillsBuilders.aspx](http://doingwhatmatters.cccco.edu/ForCollegeLeadership/SkillsBuilders.aspx)

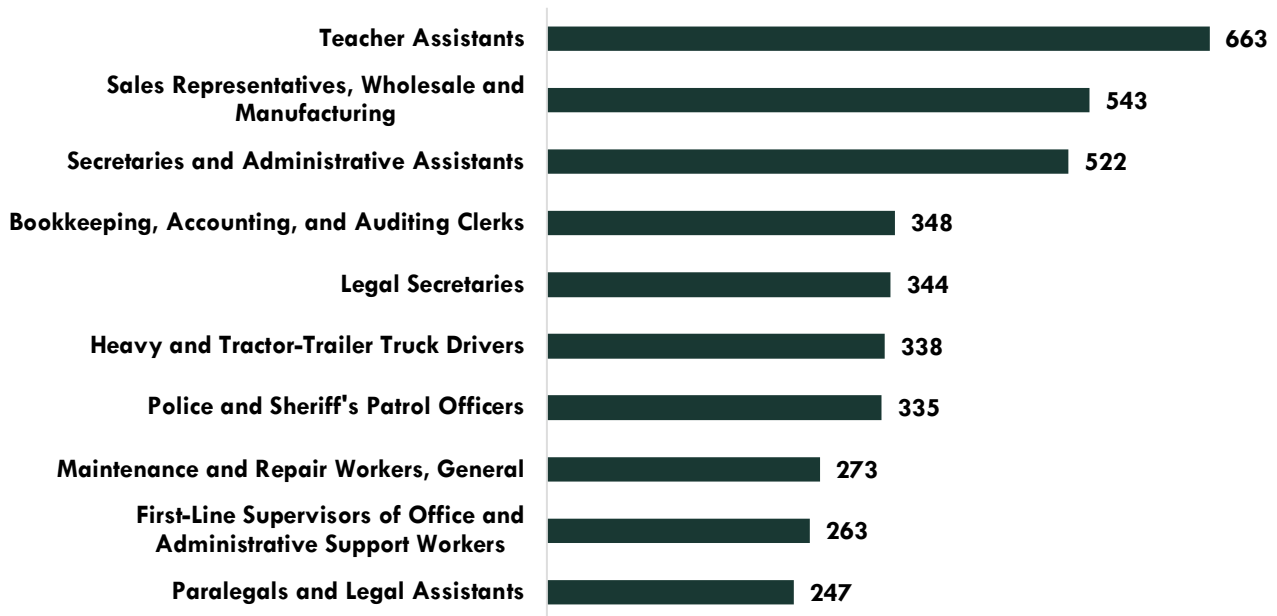
<sup>18</sup> Emsi. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW+ Self-employed. 2007-2022.

<sup>19</sup> Emsi. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW+ Self-employed. 2007-2022.

**Figure 8. Top 10 Middle-Skill Jobs Filled by Commuters into the Region, San Diego 2017**



**Figure 9. Top 10 Middle-Skill Jobs with Residents Commuting Out the Region, San Diego 2017**



## Appendix A: Data Definitions

**SOC Code and Occupational Title:** The Standard Occupational Classification System (SOC) is a statistical standard used by federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data. All workers are classified into one of the 867 SOC codes and their occupational titles.

**Annual (Job) Openings** are the estimated employment change and turnover for an occupation each year between 2017 and 2022. This number is used to determine labor market demand. Annual openings combine two types of data sets:

- **Job Growth:** An employer experiences greater demand for its products and hires new employees to increase production. If job growth is zero or negative, then any and all openings are due to replacement needs.
- **Replacement Needs:** An employer hires replacement workers for employees who leave the workforce or change occupations. Replacement rates are derived from national 10-year, occupation-specific percentages published by the U.S. Bureau of Labor Statistics (BLS) Employment Projections program. Annual openings data includes the new BLS “separations” methodology in its calculation of replacement needs job opportunities.

**Number of Jobs in 2017** indicates the total number of people employed in that occupation as of 2017.

**2017-2022 % Jobs Change** is the percentage change from 2017 to 2022, using number of jobs in 2017 as the baseline.

**Entry-Level Hourly Earnings** are the hourly earnings made by the 25th percentile of current workers within an occupation. The self-sufficient wage for San Diego County is \$13.09 per hour. Only occupations that allow entry-level workers to earn the self-sufficient wage or higher were included in the top 100 jobs list.

**Median Hourly Earnings** are the wages per hour, excluding benefits, of a worker in an occupation. Median hourly earnings are in the middle of the wage distribution for an occupation: Half of the workers make more, half make less.

**Typical Entry-Level Education + On-the-Job Training (OJT) + Work Experience (Exp.)** represents the educational attainment and training most often needed to enter the occupation. Typical entry-level education can be a high school diploma, associate degree, bachelor’s degree, etc. Work experience can range from less than five years to more than five years. On-the-job training needed to attain skills competency for an occupation has three levels:

- **Long-term OJT:** More than 12 months
- **Moderate-term OJT:** More than 1 month and up to 12 months
- **Short-term OJT:** One month or less

**Priority and Emerging Sector Top Job** indicates that the top middle-skill job is also one of the top 100 jobs in the listed Priority and Emerging Sector.

**3-Year Average Supply** is the three-year average of awards for a specific TOP6 code between PY13-14 and PY15-16.

**TOP6 and TOP6 Program Title** illustrate which programs train for a specific occupational code (SOC). The TOP6 codes were selected based on the COE’s TOP-SOC crosswalk.



## Appendix B: Demand, Supply and Gaps – Definitions and Methodology

### Middle-Skill and Above-Middle-Skill Jobs

In order to analyze employment trends, the Centers of Excellence for Labor Market Research (COE)<sup>20</sup> across the state of California examined 867 occupational codes from the Standard Occupational Classification (SOC)<sup>21</sup> system and classified 298 occupations as “middle-skill jobs” and 204 occupations as “above-middle-skill jobs.” According to the COE, middle-skill jobs have the following training and education requirements:

- Some college coursework, a postsecondary certificate, and/or an associate degree; or
- High school diploma or equivalent with on-the-job training greater than 12 months; or
- Apprenticeship; or
- Bachelor’s degree if at least 33 percent of workers in the occupation, age 25 or higher, have completed, as their highest level of education, some college coursework or an associate degree.

Of the 298 middle-skill jobs, the top 100 jobs were defined by the following parameters:

- Highest number of annual openings between 2017 and 2022;
- Entry-level hourly earnings (25<sup>th</sup> percentile) greater than or equal to \$13.09; and
- No employment decline between 2017 and 2022.

Similarly, the top 100 above-middle-skill jobs were defined by the following parameters:

- Educational attainment of a bachelor’s degree or higher (excluding those in the middle-skill jobs list above)
- Highest number of annual openings between 2017 and 2022;
- Entry-level hourly earnings (25<sup>th</sup> percentile) greater than or equal to \$13.09; and
- No employment decline between 2017 and 2022.

The tables in the following pages list the top 100 middle-skill and above-middle-skill jobs based on the aforementioned parameters, sorted in alphabetical order. Occupational titles with an asterisk (\*) have an oversupply of labor. The remaining occupations have supply gaps.

### Defining Top Priority Sector Jobs

To find the top jobs in Priority and Emerging Sectors, the COE first defined each sector by NAICS codes. After defining the industry sectors, the COE conducted a staffing patterns analysis. According to the California Employment Development Department, “Staffing patterns are a list of the occupations employed within a particular industry, or a list of the industries that employ a particular occupation.” Because they are different than traditionally defined industry sectors, ICT & Digital Media, Business & Entrepreneurship, and Global Trade cannot be defined by NAICS alone. These professions are employed across multiple sectors; therefore, SOC codes are also used to define these three sectors. In addition to being a top job in the staffing patterns analysis, if a top middle-skill job also overlapped with an SOC code that defines one of these three sectors, then that middle-skill job was also considered a “top priority sector job” in ICT & Digital Media, Business & Entrepreneurship, and/or Global Trade.

---

<sup>20</sup> coeccc.net

<sup>21</sup> bls.gov/soc

## Top 100 Middle-Skill Jobs List

SOC	Occupational Title
11-3011	Administrative Services Managers*
49-3011	Aircraft Mechanics and Service Technicians
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers
17-3011	Architectural and Civil Drafters
49-3021	Automotive Body and Related Repairers
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists
53-3022	Bus Drivers, School or Special Client
13-1199	Business Operations Specialists, All Other
43-5011	Cargo and Freight Agents
47-2031	Carpenters
35-1011	Chefs and Head Cooks*
17-3022	Civil Engineering Technicians
13-1031	Claims Adjusters, Examiners, and Investigators
15-1143	Computer Network Architects
15-1152	Computer Network Support Specialists
15-1199	Computer Occupations, All Other*
15-1151	Computer User Support Specialists
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic
47-4011	Construction and Building Inspectors
11-9021	Construction Managers*
33-3012	Correctional Officers and Jailers
13-1051	Cost Estimators*
43-4051	Customer Service Representatives
31-9091	Dental Assistants
29-2021	Dental Hygienists
33-3021	Detectives and Criminal Investigators
51-2022	Electrical and Electronic Equipment Assemblers
17-3023	Electrical and Electronics Engineering Technicians
47-2111	Electricians
17-3029	Engineering Technicians, Except Drafters, All Other
43-6011	Executive Secretaries and Executive Administrative Assistants
33-2011	Firefighters*
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers
41-1012	First-Line Supervisors of Non-Retail Sales Workers
43-1011	First-Line Supervisors of Office and Administrative Support Workers
39-1021	First-Line Supervisors of Personal Service Workers*
51-1011	First-Line Supervisors of Production and Operating Workers
41-1011	First-Line Supervisors of Retail Sales Workers
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators
39-9031	Fitness Trainers and Aerobics Instructors
47-2121	Glaziers
29-2099	Health Technologists and Technicians, All Other
31-9099	Healthcare Support Workers, All Other
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers
53-3032	Heavy and Tractor-Trailer Truck Drivers
43-4161	Human Resources Assistants, Except Payroll and Timekeeping
49-9041	Industrial Machinery Mechanics

SOC	Occupational Title
11-3051	Industrial Production Managers
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers
41-3021	Insurance Sales Agents
27-3091	Interpreters and Translators
43-6012	Legal Secretaries
25-4031	Library Technicians
29-2061	Licensed Practical and Licensed Vocational Nurses
19-4099	Life, Physical, and Social Science Technicians, All Other
43-4131	Loan Interviewers and Clerks
13-2072	Loan Officers
11-9081	Lodging Managers
13-1081	Logisticians
51-4041	Machinists
49-9071	Maintenance and Repair Workers, General
29-2012	Medical and Clinical Laboratory Technicians
29-2011	Medical and Clinical Laboratory Technologists
31-9092	Medical Assistants*
29-2071	Medical Records and Health Information Technicians
43-6013	Medical Secretaries
15-1142	Network and Computer Systems Administrators*
47-2073	Operating Engineers and Other Construction Equipment Operators
23-2011	Paralegals and Legal Assistants
43-3051	Payroll and Timekeeping Clerks*
29-2052	Pharmacy Technicians
31-9097	Phlebotomists
27-4021	Photographers
31-2021	Physical Therapist Assistants
47-2152	Plumbers, Pipefitters, and Steamfitters
33-3051	Police and Sheriff's Patrol Officers
43-5061	Production, Planning, and Expediting Clerks
11-9141	Property, Real Estate, and Community Association Managers
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products
29-2034	Radiologic Technologists
29-1141	Registered Nurses
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks
41-3099	Sales Representatives, Services, All Other
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive
47-2211	Sheet Metal Workers
21-1093	Social and Human Service Assistants
47-2221	Structural Iron and Steel Workers
29-2055	Surgical Technologists
13-2082	Tax Preparers*
13-1151	Training and Development Specialists
11-3071	Transportation, Storage, and Distribution Managers
29-2056	Veterinary Technologists and Technicians*
51-8031	Water and Wastewater Treatment Plant and System Operators
15-1134	Web Developers
51-4121	Welders, Cutters, Solderers, and Brazers
13-1022	Wholesale and Retail Buyers, Except Farm Products

### Top 100 Above-Middle-Skill Jobs List

SOC	Occupational Title
13-2011	Accountants and Auditors
25-3011	Adult Basic and Secondary Education and Literacy Teachers and Instructors*
17-2011	Aerospace Engineers
17-1011	Architects, Except Landscape and Naval
11-9041	Architectural and Engineering Managers*
27-1011	Art Directors*
19-1021	Biochemists and Biophysicists*
19-1029	Biological Scientists, All Other*
19-4021	Biological Technicians
17-2031	Biomedical Engineers*
13-2031	Budget Analysts*
19-2031	Chemists*
11-1011	Chief Executives*
21-1021	Child, Family, and School Social Workers*
17-2051	Civil Engineers
19-3031	Clinical, Counseling, and School Psychologists*
27-2022	Coaches and Scouts*
21-1099	Community and Social Service Specialists, All Other*
13-1041	Compliance Officers
15-1111	Computer and Information Research Scientists*
11-3021	Computer and Information Systems Managers*
17-2061	Computer Hardware Engineers*
15-1121	Computer Systems Analysts
13-2041	Credit Analysts*
15-1141	Database Administrators*
29-1021	Dentists, General*
29-1031	Dietitians and Nutritionists*
21-2021	Directors, Religious Activities and Education
11-9032	Education Administrators, Elementary and Secondary School*
11-9033	Education Administrators, Postsecondary*
11-9031	Education Administrators, Preschool and Childcare Center/Program*
25-9099	Education, Training, and Library Workers, All Other
21-1012	Educational, Guidance, School, and Vocational Counselors*
17-2071	Electrical Engineers*
17-2072	Electronics Engineers, Except Computer*
25-2021	Elementary School Teachers, Except Special Education*
17-2199	Engineers, All Other*
17-2081	Environmental Engineers*
19-2041	Environmental Scientists and Specialists, Including Health*
29-1062	Family and General Practitioners*
13-2051	Financial Analysts*
11-3031	Financial Managers
13-2099	Financial Specialists, All Other*
13-1131	Fundraisers
11-1021	General and Operations Managers*
21-1091	Health Educators*
21-1022	Healthcare Social Workers
11-3121	Human Resources Managers*
13-1071	Human Resources Specialists
17-2112	Industrial Engineers

SOC	Occupational Title
25-9031	Instructional Coordinators
25-2012	Kindergarten Teachers, Except Special Education
23-1011	Lawyers*
25-4021	Librarians
13-1111	Management Analysts*
11-9199	Managers, All Other*
13-1161	Market Research Analysts and Marketing Specialists
11-2021	Marketing Managers*
21-1013	Marriage and Family Therapists
17-2141	Mechanical Engineers*
11-9111	Medical and Health Services Managers*
19-1042	Medical Scientists, Except Epidemiologists*
13-1121	Meeting, Convention, and Event Planners
21-1023	Mental Health and Substance Abuse Social Workers
21-1014	Mental Health Counselors*
19-1022	Microbiologists
25-2022	Middle School Teachers, Except Special and Career/Technical Education*
27-2041	Music Directors and Composers
11-9121	Natural Sciences Managers*
29-1171	Nurse Practitioners
29-1122	Occupational Therapists*
15-2031	Operations Research Analysts*
13-2052	Personal Financial Advisors*
29-1051	Pharmacists*
29-1123	Physical Therapists*
29-1071	Physician Assistants*
29-1069	Physicians and Surgeons, All Other*
25-1099	Postsecondary Teachers*
21-1092	Probation Officers and Correctional Treatment Specialists*
27-3031	Public Relations Specialists*
11-3061	Purchasing Managers
41-9031	Sales Engineers
11-2022	Sales Managers*
41-4011	Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products
25-2031	Secondary School Teachers, Except Special and Career/Technical Education*
41-3031	Securities, Commodities, and Financial Services Sales Agents
11-9151	Social and Community Service Managers*
15-1132	Software Developers, Applications*
15-1133	Software Developers, Systems Software*
25-2052	Special Education Teachers, Kindergarten and Elementary School*
25-2053	Special Education Teachers, Middle School*
25-2054	Special Education Teachers, Secondary School*
29-1127	Speech-Language Pathologists*
21-1011	Substance Abuse and Behavioral Disorder Counselors*
25-3098	Substitute Teachers
25-3099	Teachers and Instructors, All Other
27-3042	Technical Writers
19-3051	Urban and Regional Planners
29-1131	Veterinarians*
27-3043	Writers and Authors*

## Defining Supply Gaps

To determine whether an occupation has a supply gap, simply subtract the labor supply from labor demand. For the purpose of this study, labor supply is defined as the number of completions or awards that the region produces for an occupation, and labor demand is defined as the number of annual openings for an occupation.

There are two sources of supply data that the COE analyzed for this study: California Community Colleges Chancellor's Office Management Information System (MIS) Data Mart and Economic Modeling Specialists Int'l (Emsi). Supply data in Emsi originates from Integrated Postsecondary Education Data System (IPEDS), which uses Classification of Instructional Program (CIP) codes. Conversely, supply data in the MIS Data Mart uses Taxonomy of Programs (TOP) codes. Different coding systems result in differences in supply numbers and, ultimately, supply gaps. For example, according to Emsi, there is an oversupply of workers for Registered Nurses. However, according to Data Mart, there is a supply gap:

SOC Code	Occupational Title	2017-2022 Annual Openings	2017 Regional Completions (Emsi)	Supply Gap or Oversupply (Emsi)	PY2013-15 3-Yr Average Supply (Data Mart)	Supply Gap or Oversupply (Data Mart)
29-1141	Registered Nurses	1,810	1,829	-19	560	1,250

In this study, the COE determined that only occupations with an oversupply of workers in both Emsi and Data Mart would be considered occupations that had an oversupply of workers. Because Data Mart is more up to date (see Differences Between Data Mart and IPEDS section below), if the occupation had an oversupply in Emsi and a supply gap in Data Mart, then that occupation would be considered to have a supply gap.

### Data Mart Limitations:

- Data is provided as yearly snapshots, rather than following a cohort of students over time.
- Data on local low-unit certificate programs may be missing because districts are not required to report such data to the Chancellor's Office.
- Program award data is based on the number of awards given, rather than the number of students who received awards, which affects estimates of the supply of qualified workers.
- All information is based on a single TOP code, which may not align directly with colleges or their programs.

### Emsi or IPEDS Limitations:

- Program completion data is not complete, likely related to reporting errors and compliance issues.
- Educational programs that do not participate in federal student aid programs are not included in the database.
- Program completion data are reported by CIP codes, not the TOP codes used by California community colleges.

### Differences Between Data Mart and IPEDS:

- Academic years for which the number of awards is reported in IPEDS and Data Mart differ because of the longer time lag for IPEDS data. The COE supply tables use the latest available datasets; therefore, the data for the most recent academic year (e.g., 2015-2016) may be representative of community college awards only because IPEDS data for the same academic year might not be available yet.
- The COE supply tables are organized by TOP code program. To provide the number of awards for postsecondary institutions other than community colleges, TOP codes were cross-referenced with relevant CIP codes. This match is imperfect, with gaps and overlaps between the two coding systems.
- There is inconsistency in the classification of awards below an associate degree between the two data sources. IPEDS classifies certificate-level awards by program duration (e.g., award 1 < 2 academic year, award < 1 academic year, etc.), while Data Mart classifies data by type of certificate in semester units (e.g., certificate 30 to < 60 semester units, certificate 6 to < 18 semester units). Because of these differences in certificate-level award classification, it is difficult to compare certificate completion between community colleges and other postsecondary education providers.

## Appendix C: Top 100 Middle-Skill Jobs in San Diego County

SOC Code	Occupational Title	# Jobs (Employed) in 2017	2017-2022 % Jobs Change	2017-22 Annual Openings	Entry-Level Hourly Earnings	Median Hourly Earnings	Typical Entry-Level Education + On-the-Job Training (OJT) + Work Experience (Exp.)
43-4051	Customer Service Representatives	20,718	6%	2,920	\$13.84	\$17.52	HS (HS) diploma or equivalent + Short-term OJT
43-6014	Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	22,598	5%	2,683	\$15.16	\$18.42	HS diploma or equivalent + Short-term OJT
29-1141	Registered Nurses	24,587	11%	1,810	\$34.85	\$43.63	Bachelor's degree
43-1011	First-Line Supervisors of Office and Administrative Support Workers	15,234	7%	1,743	\$21.23	\$26.37	HS diploma or equivalent + Less than 5 years exp.
41-3099	Sales Representatives, Services, All Other	12,347	4%	1,578	\$16.97	\$24.10	HS diploma or equivalent + Moderate-term OJT
41-1011	First-Line Supervisors of Retail Sales Workers	13,540	3%	1,542	\$13.55	\$17.77	HS diploma or equivalent + Less than 5 years exp.
13-1199	Business Operations Specialists, All Other	14,217	5%	1,439	\$25.84	\$35.66	Bachelor's degree
49-9071	Maintenance and Repair Workers, General	11,493	7%	1,303	\$14.68	\$18.48	HS diploma or equivalent + Long-term OJT
31-9092	Medical Assistants	7,545	21%	1,180	\$14.88	\$17.23	Postsecondary non-degree award
47-2031	Carpenters	11,831	3%	1,178	\$14.04	\$18.40	HS diploma or equivalent + Apprenticeship
41-4012	Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	10,281	4%	1,132	\$18.43	\$25.20	HS diploma or equivalent + Moderate-term OJT
43-6013	Medical Secretaries	7,369	15%	1,058	\$15.59	\$18.99	HS diploma or equivalent + Moderate-term OJT
47-2111	Electricians	7,302	13%	1,026	\$22.44	\$29.06	HS diploma or equivalent + Apprenticeship
53-3032	Heavy and Tractor-Trailer Truck Drivers	8,431	5%	988	\$15.63	\$18.72	Postsecondary non-degree award + Short-term OJT
39-9031	Fitness Trainers and Aerobics Instructors	4,157	13%	835	\$13.10	\$20.09	HS diploma or equivalent + Short-term OJT
47-2152	Plumbers, Pipefitters, and Steamfitters	5,941	13%	799	\$17.90	\$24.73	HS diploma or equivalent + Apprenticeship
43-6011	Executive Secretaries and Executive Administrative Assistants	7,170	0%	768	\$22.92	\$28.25	HS diploma or equivalent + Less than 5 years exp.
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	6,570	5%	732	\$24.38	\$34.36	HS diploma or equivalent + 5 years exp. or more
51-9061	Inspectors, Testers, Sorters, Samplers, and Weighers	5,113	4%	650	\$14.84	\$19.62	HS diploma or equivalent + Moderate-term OJT
29-2061	Licensed Practical and Licensed Vocational Nurses	5,627	19%	645	\$22.24	\$25.99	Postsecondary non-degree award
41-3021	Insurance Sales Agents	4,954	6%	554	\$19.38	\$23.01	HS diploma or equivalent + Moderate-term OJT
15-1151	Computer User Support Specialists	6,250	7%	548	\$22.29	\$27.05	Some college, no degree
31-9091	Dental Assistants	3,730	14%	533	\$16.05	\$19.69	Postsecondary non-degree award
43-5061	Production, Planning, and Expediting Clerks	4,539	4%	505	\$17.03	\$22.18	HS diploma or equivalent + Moderate-term OJT
51-1011	First-Line Supervisors of Production and Operating Workers	4,530	3%	474	\$20.53	\$28.80	HS diploma or equivalent + 5 years exp. or more
51-4041	Machinists	3,603	10%	447	\$16.91	\$23.72	HS diploma or equivalent + Long-term OJT
33-3051	Police and Sheriff's Patrol Officers	5,089	7%	398	\$32.35	\$39.41	HS diploma or equivalent + Moderate-term OJT
23-2011	Paralegals and Legal Assistants	3,446	6%	397	\$24.49	\$30.52	Associate degree

SOC Code	Occupational Title	# Jobs (Employed) in 2017	2017-2022 % Jobs Change	2017-22 Annual Openings	Entry-Level Hourly Earnings	Median Hourly Earnings	Typical Entry-Level Education + On-the-Job Training (OJT) + Work Experience (Exp.)
51-4121	Welders, Cutters, Solderers, and Brazers	3,388	5%	397	\$17.06	\$23.14	HS diploma or equivalent + Moderate OJT
21-1093	Social and Human Service Assistants	2,513	15%	391	\$13.70	\$16.82	HS diploma or equivalent + Short-term OJT
13-1023	Purchasing Agents, Except Wholesale, Retail, and Farm Products	4,042	5%	390	\$24.94	\$33.82	Bachelor's degree + Long-term OJT
11-9021	Construction Managers	5,143	0%	374	\$18.72	\$36.15	Bachelor's degree + Moderate term OJT
53-3022	Bus Drivers, School or Special Client	2,107	20%	358	\$13.80	\$17.54	HS diploma or equivalent + Short-term OJT
51-2022	Electrical and Electronic Equipment Assemblers	2,921	2%	357	\$13.17	\$17.33	HS diploma or equivalent + Moderate-term OJT
49-9021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	2,505	18%	348	\$16.90	\$26.03	Postsecondary non-degree award + Long-term OJT
41-1012	First-Line Supervisors of Non-Retail Sales Workers	3,709	0%	341	\$17.18	\$23.73	HS diploma or equivalent + Less than 5 years exp.
13-1051	Cost Estimators	2,971	8%	341	\$25.15	\$31.84	Bachelor's degree
11-3011	Administrative Services Managers	3,662	6%	339	\$31.25	\$39.63	Bachelor's degree + Less than 5 years exp.
15-1199	Computer Occupations, All Other	4,410	3%	326	\$28.82	\$41.93	Bachelor's degree
11-9141	Property, Real Estate, and Community Association Managers	4,134	1%	324	\$19.78	\$23.20	HS diploma or equivalent + Less than 5 years exp.
29-2052	Pharmacy Technicians	3,312	6%	304	\$13.76	\$17.01	HS diploma or equivalent + Moderate OJT
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	2,954	7%	299	\$25.01	\$31.47	HS diploma or equivalent + Less than 5 years exp.
43-6012	Legal Secretaries	2,734	1%	296	\$18.98	\$22.53	HS diploma or equivalent + Moderate OJT
47-2211	Sheet Metal Workers	2,361	9%	295	\$18.71	\$27.19	HS diploma or equivalent + Apprenticeship
35-1011	Chefs and Head Cooks	1,927	11%	290	\$16.14	\$18.69	HS diploma or equivalent + 5 years or more exp.
39-1021	First-Line Supervisors of Personal Service Workers	2,248	13%	288	\$13.50	\$18.47	HS diploma or equivalent + Less than 5 years exp.
13-1081	Logisticians	2,518	7%	281	\$32.88	\$40.86	Bachelor's degree
33-3012	Correctional Officers and Jailers	2,690	8%	266	\$27.82	\$33.83	HS diploma or equivalent + Moderate-term OJT
13-2072	Loan Officers	2,979	3%	264	\$25.74	\$36.57	Bachelor's degree + Moderate-term OJT
17-3023	Electrical and Electronics Engineering Technicians	2,945	1%	260	\$24.61	\$30.78	Associate degree
31-9099	Healthcare Support Workers, All Other	1,844	7%	259	\$16.75	\$20.06	HS diploma or equivalent
47-2073	Operating Engineers and Other Construction Equipment Operators	2,078	6%	256	\$23.44	\$28.12	HS diploma or equivalent + Moderate-term OJT
13-1031	Claims Adjusters, Examiners, and Investigators	2,995	2%	255	\$23.78	\$30.84	HS diploma or equivalent + Long-term OJT
13-1151	Training and Development Specialists	2,257	7%	252	\$26.62	\$33.96	Bachelor's degree + Less than 5 years exp.
15-1142	Network and Computer Systems Administrators	3,384	6%	251	\$31.60	\$39.31	Bachelor's degree
15-1134	Web Developers	2,723	8%	239	\$16.24	\$21.55	Associate degree
33-2011	Firefighters	3,061	6%	237	\$23.79	\$29.28	Postsecondary non-degree award + Long-term OJT
29-2012	Medical and Clinical Laboratory Technicians	2,409	15%	228	\$14.47	\$21.24	Associate degree



SOC Code	Occupational Title	# Jobs (Employed) in 2017	2017-2022 % Jobs Change	2017-22 Annual Openings	Entry-Level Hourly Earnings	Median Hourly Earnings	Typical Entry-Level Education + On-the-Job Training (OJT) + Work Experience (Exp.)
33-3021	Detectives and Criminal Investigators	3,284	3%	228	\$40.96	\$42.20	HS diploma or equivalent + Moderate OJT + Less than 5 years exp.
29-2099	Health Technologists and Technicians, All Other	1,960	24%	227	\$16.80	\$20.86	HS diploma or equivalent
49-9041	Industrial Machinery Mechanics	1,957	13%	227	\$22.65	\$26.80	HS diploma or equivalent + Long-term OJT
27-4021	Photographers	2,116	10%	219	\$14.02	\$16.73	HS diploma or equivalent + Long-term OJT
31-9097	Phlebotomists	1,350	22%	211	\$16.43	\$18.78	Postsecondary non-degree award
29-2021	Dental Hygienists	2,278	14%	205	\$39.45	\$44.09	Associate degree
43-3051	Payroll and Timekeeping Clerks	1,994	1%	201	\$18.78	\$22.53	HS diploma or equivalent + Moderate-term OJT
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	1,740	11%	200	\$16.91	\$23.25	HS diploma or equivalent + Long-term OJT
43-4131	Loan Interviewers and Clerks	1,731	5%	186	\$16.47	\$20.78	HS diploma or equivalent + Short-term OJT
43-4161	Human Resources Assistants, Except Payroll and Timekeeping	1,627	1%	182	\$17.21	\$20.69	Associate degree
43-4181	Reservation and Transportation Ticket Agents and Travel Clerks	1,436	9%	180	\$13.83	\$18.46	HS diploma or equivalent + Short-term OJT
27-3091	Interpreters and Translators	1,444	15%	179	\$20.33	\$24.10	Bachelor's degree + Short-term OJT
29-2071	Medical Records and Health Information Technicians	2,104	11%	178	\$15.32	\$21.40	Postsecondary non-degree award
49-3021	Automotive Body and Related Repairers	1,523	9%	176	\$13.92	\$17.38	HS diploma or equivalent + Long-term OJT
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	1,750	1%	171	\$14.74	\$17.35	HS diploma or equivalent + Less than 5 years exp.
51-4011	Computer-Controlled Machine Tool Operators, Metal and Plastic	1,207	16%	165	\$15.43	\$20.65	HS diploma or equivalent + Moderate-term OJT
25-4031	Library Technicians	1,123	6%	164	\$16.85	\$20.85	Postsecondary non-degree award
47-4011	Construction and Building Inspectors	1,289	5%	155	\$26.18	\$33.83	HS diploma or equivalent + Moderate-term OJT + 5 years or more exp.
53-1031	First-Line Supervisors of Transportation and Material-Moving Machine and Vehicle Operators	1,286	7%	153	\$18.25	\$26.64	HS diploma or equivalent + Less than 5 years exp.
13-1022	Wholesale and Retail Buyers, Except Farm Products	1,241	4%	152	\$21.25	\$23.42	Bachelor's degree + Long-term OJT
17-3029	Engineering Technicians, Except Drafters, All Other	1,609	3%	150	\$25.92	\$31.29	Associate degree
17-3011	Architectural and Civil Drafters	1,638	2%	146	\$23.18	\$27.71	Associate degree
15-1152	Computer Network Support Specialists	1,728	5%	145	\$25.36	\$31.24	Associate degree
11-3051	Industrial Production Managers	1,790	5%	144	\$36.44	\$46.10	Bachelor's degree + 5 years or more OJT
53-1021	First-Line Supervisors of Helpers, Laborers, and Material Movers, Hand	1,308	3%	143	\$17.37	\$21.50	HS diploma or equivalent + Less than 5 years exp.
51-2011	Aircraft Structure, Surfaces, Rigging, and Systems Assemblers	801	30%	142	\$17.23	\$21.73	HS diploma or equivalent + Moderate-term OJT
13-2082	Tax Preparers	1,205	5%	141	\$17.95	\$22.03	HS diploma or equivalent + Moderate-term OJT
49-3011	Aircraft Mechanics and Service Technicians	1,213	16%	137	\$25.08	\$29.87	Postsecondary non-degree award



SOC Code	Occupational Title	# Jobs (Employed) in 2017	2017-2022 % Jobs Change	2017-22 Annual Openings	Entry-Level Hourly Earnings	Median Hourly Earnings	Typical Entry-Level Education + On-the-Job Training (OJT) + Work Experience (Exp.)
29-2011	Medical and Clinical Laboratory Technologists	1,344	17%	135	\$29.95	\$37.04	Bachelor's degree
29-2034	Radiologic Technologists	1,503	16%	129	\$26.49	\$34.61	Associate degree
19-4099	Life, Physical, and Social Science Technicians, All Other	977	5%	126	\$17.26	\$22.99	Associate degree
29-2056	Veterinary Technologists and Technicians	963	22%	125	\$16.29	\$20.27	Associate degree
31-2021	Physical Therapist Assistants	596	34%	122	\$25.32	\$32.56	Associate degree
43-5011	Cargo and Freight Agents	1,031	15%	120	\$17.01	\$21.42	HS diploma or equivalent + Short-term OJT
11-9081	Lodging Managers	978	6%	113	\$20.24	\$26.95	HS diploma or equivalent + Less than 5 years exp.
51-8031	Water & Wastewater Treatment Plant and System Operators	1,089	6%	104	\$25.10	\$30.37	HS diploma or equivalent + Long-term OJT
47-2221	Structural Iron and Steel Workers	916	3%	103	\$20.08	\$30.48	HS diploma or equivalent + Apprenticeship
17-3022	Civil Engineering Technicians	1,019	6%	102	\$22.90	\$27.88	Associate degree
15-1143	Computer Network Architects	1,280	7%	101	\$39.69	\$50.71	Bachelor's degree + 5 years or more OJT
29-2055	Surgical Technologists	942	13%	101	\$22.33	\$26.59	Postsecondary non-degree award
47-2121	Glaziers	820	3%	99	\$16.69	\$24.43	HS diploma or equivalent + Apprenticeship
11-3071	Transportation, Storage, and Distribution Managers	1,119	6%	99	\$33.93	\$41.95	HS diploma or equivalent + 5 years or more exp.

Source: Emsi. San Diego County (6073). 2017.04 Class of Worker. QCEW + Non-QCEW+ Self-employed. 2007-2022.

