

ADVANCED MANUFACTURING SECTOR PROFILE



**Key Findings from the Los Angeles County
Sector Analysis Project**

September 2021



CALIFORNIA COMMUNITY COLLEGES
LAOCRC
los angeles | orange county regional consortium



Prepared by:
Los Angeles County
Center of Excellence
for Labor Market Research

Introduction

To support the collaborative planning and development of career education (CE) programs and to inform regional investments in Los Angeles County, the Los Angeles County Center of Excellence has developed a series of sector profiles examining trends in the labor market and postsecondary education and training programs addressing local hiring needs.¹

These profiles highlight in-demand and well-paid middle-skill jobs—those jobs that typically require some form of education or training beyond a high school diploma, but less than a bachelor’s degree. These occupations are a critical component of the workforce overall and support the economic vitality of the region and state.

This profile of the advanced manufacturing sector summarizes key findings on current and projected workforce demand, hourly wages, job postings, and program and training data from area community colleges and other training providers. For the purpose of this analysis, advanced manufacturing occupations with a promising outlook have been divided into three groups, those requiring:

- 1) No college
- 2) Some college
- 3) A bachelor’s degree or higher

Quick Facts

Employment



99,388
Jobs in 2019

8,602
Annual Job Openings

-12%
5-year Projected
Growth

\$33.40
Average Hourly
Earnings

Education



32
Community Colleges and
Other Training Providers
with Programs

8,182
Community College
Students Enrolled
(2018-19)

956
Community College
Awards (2019-20)

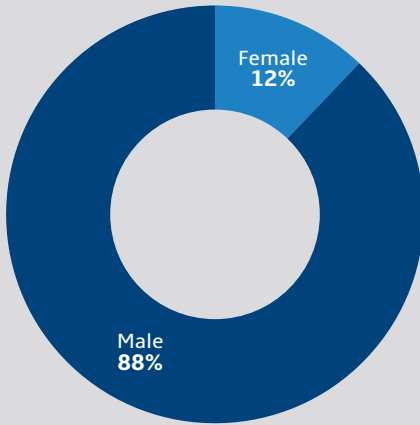
1,004
Awards from Proprietary
Schools/Other Training
Providers (2018-19)

¹ **Impact of the COVID-19 pandemic:** This profile relies largely on 2019 employment and education data preceding the pandemic. The exception is job posting data from 2020. Due to severe economic impacts from the pandemic, job posting data should not be considered an accurate depiction of employer demand; however, the frequency of certain data points can provide insights into the types of workers and skill sets that employers are seeking. Annual job openings are derived from the labor market analytics firm Emsi whose projections are modeled on recorded (historical) employment figures and incorporate several underlying assumptions, including the assumption that the economy during the projection period will be at approximately full employment or potential output. At this time, it is not possible to quantify the economic impact of COVID-19 on projections of occupational employment. A complete list of data sources is provided on the last page of this profile.

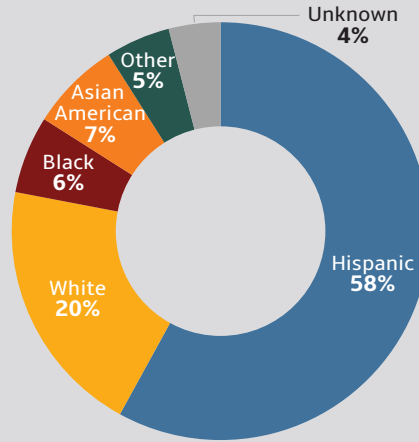
Introduction

Student Demographics

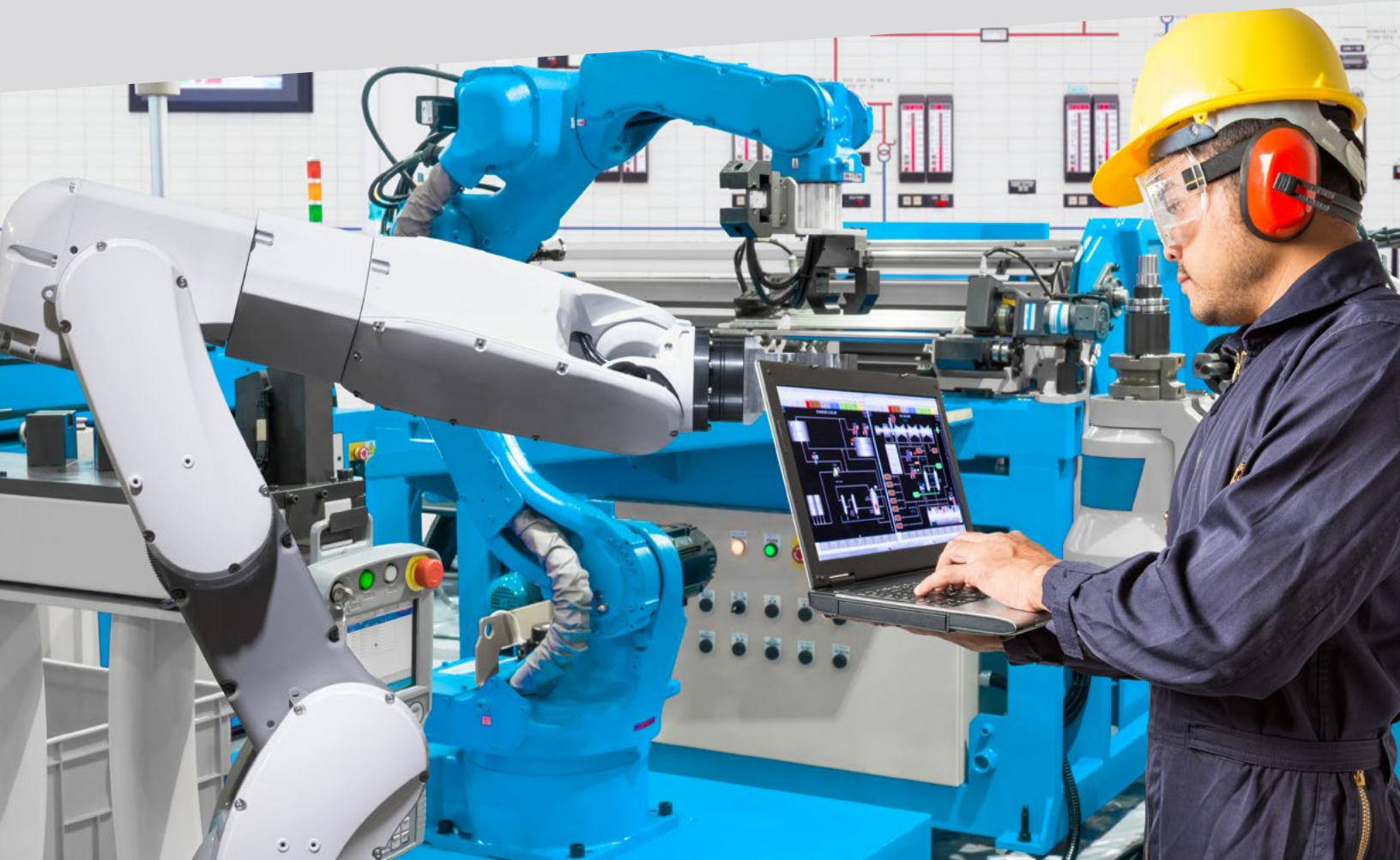
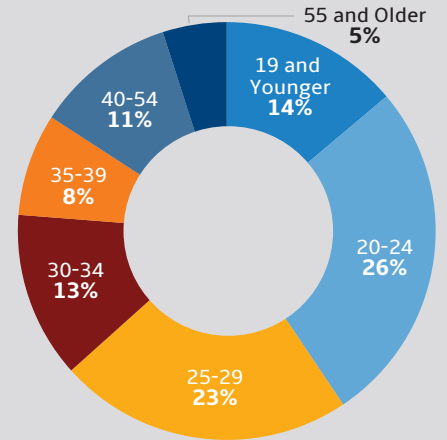
Student Gender



Student Race/Ethnicity²



Student Age



² Due to low percentages the "other" category represents American Indian/Native Alaskan, Filipino, and two or more races. Please note: This report uses race and ethnicity data from LaunchBoard collected by the California Community Colleges. The terms in this document, including white, Hispanic, and Black, adhere to the terms and definitions the California Community Colleges use in collecting its data. For definitions, please refer to <https://webdata.cccco.edu/ded/std/std10.pdf>.

Student Employment Outcomes

Data on community college students exiting advanced manufacturing programs in Los Angeles County shows the percentage of students who obtained employment in a job closely related to their field of study steadily increasing over the four years. On average, these students earned a median income of \$37,168 after exiting an advanced manufacturing program.

Exhibit 1. Students with a job closely related to their field of study

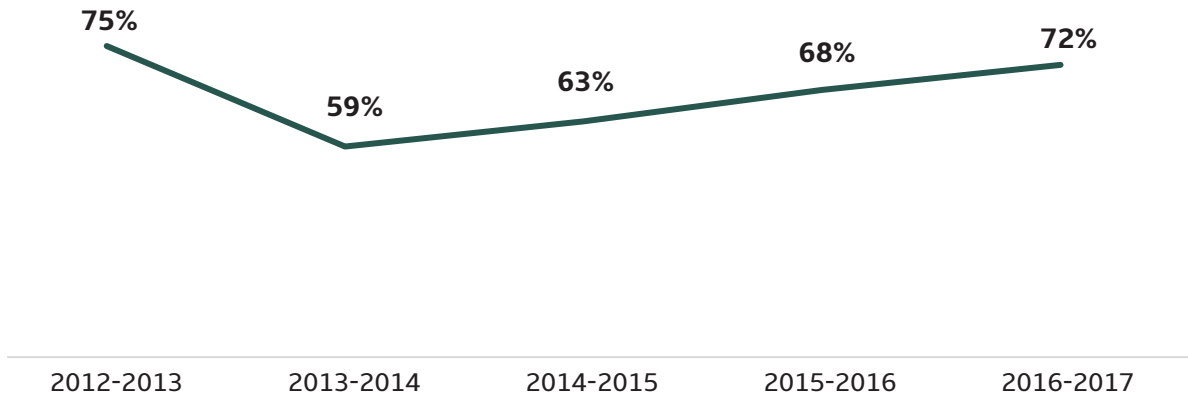
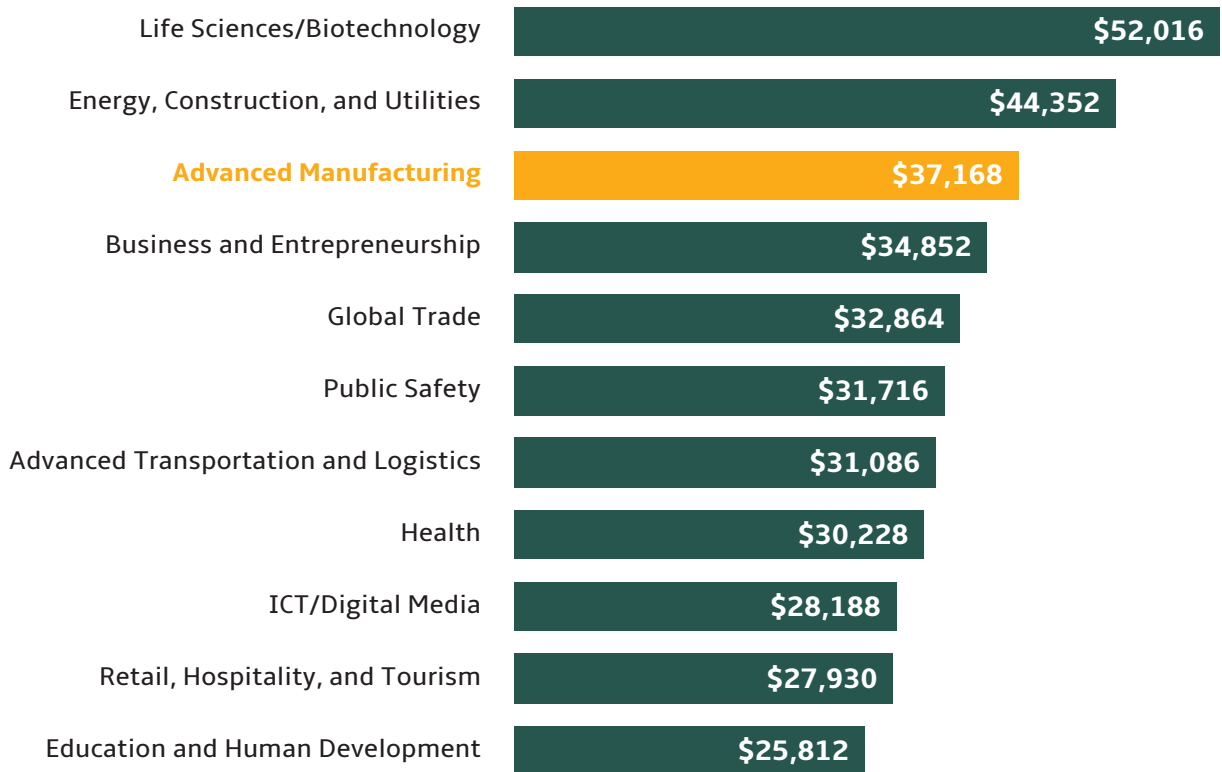


Exhibit 2. Median annual earnings for exiting students, 2017-18

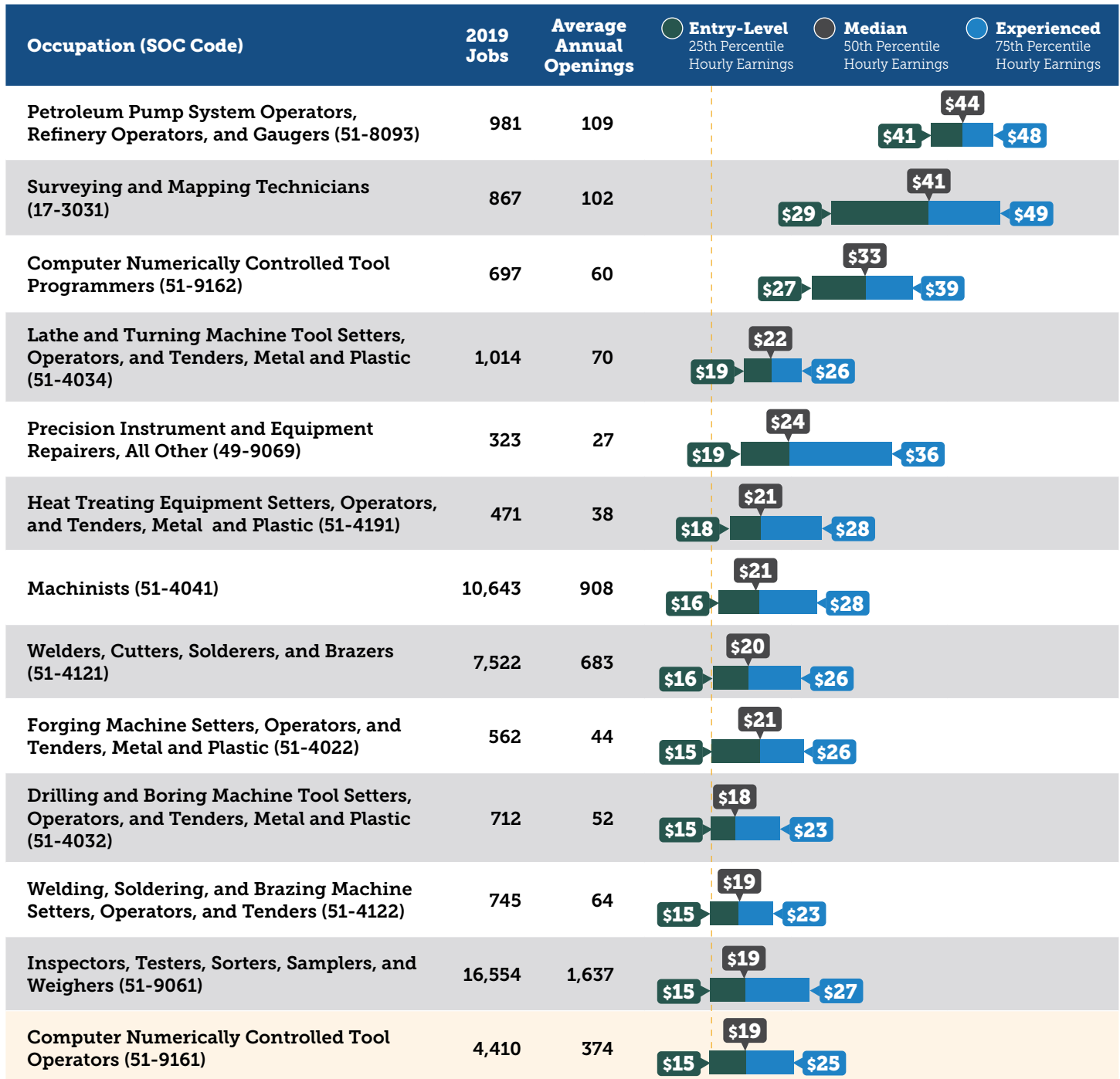


Occupations Requiring No College

Employment Demand Analysis

Twenty-three advanced manufacturing occupations that do not require a college education for employment account for 65,866 jobs in the county. Combined they have 5,924 projected annual openings (new + replacement jobs). The largest occupation, in number of 2019 jobs, is inspectors, testers, sorters, samplers, and weighers. This occupation is also projected to have the most annual job openings, 1,637. Please note that some occupations in this grouping have entry-level wages close to Los Angeles County's living wage.

Exhibit 3. Occupational employment, annual openings, and wages



Yellow rows have starting salaries below Living Wage

--- \$15.04/hour Living Wage

Continued on next page

Occupations Requiring No College

Exhibit 3. Occupational employment, annual openings, and wages (continued)

Occupation (SOC Code)	2019 Jobs	Average Annual Openings	Entry-Level 25th Percentile Hourly Earnings	Median 50th Percentile Hourly Earnings	Experienced 75th Percentile Hourly Earnings
Aircraft Structure, Surfaces, Rigging, and Systems Assemblers (51-2011)	1,273	102	\$15	\$19	\$29
Metal Workers and Plastic Workers, All Other (51-4199)	526	47	\$15	\$18	\$22
Photographic Process Workers and Processing Machine Operators (51-9151)	901	96	\$15	\$19	\$28
Computer, Automated Teller, and Office Machine Repairers (49-2011)	3,383	299	\$15	\$19	\$25
Molding, Coremaking, and Casting Machine Setters, Operators, and Tenders, Metal and Plastic (51-4072)	1,762	141	\$15	\$18	\$23
Rolling Machine Setters, Operators, and Tenders, Metal and Plastic (51-4023)	391	40	\$15	\$18	\$27
Cutting, Punching, and Press Machine Setters, Operators, and Tenders, Metal and Plastic (51-4031)	4,010	346	\$15	\$17	\$21
Grinding, Lapping, Polishing, and Buffing Machine Tool Setters, Operators, and Tenders, Metal and Plastic (51-4033)	2,595	228	\$15	\$17	\$22
Printing Press Operators (51-5112)	4,811	385	\$15	\$18	\$23
Ophthalmic Laboratory Technicians (51-9083)	712	72	\$14	\$18	\$23

Yellow rows have starting salaries below Living Wage

----- \$15.04/hour Living Wage



Occupations Requiring No College

Job Posting Finding

Advanced manufacturing occupations that do not require college are associated with an array of industries related to biotech and medical applications in job postings: research and development in biotechnology, pharmaceutical preparation manufacturing, medical laboratories, medicinal and botanical manufacturing, general medical and surgical hospitals, and testing laboratories.

A search of online job postings for the 23 advanced manufacturing occupations that do not require a postsecondary education shows 8,122 postings in 2020 in Los Angeles County. The top five job titles were listed in 820 postings. The job title that occurred most frequently, quality inspector, appeared in more than 200 postings.

Exhibit 4. Top job titles in job postings

Job Title	Job Postings
Quality Inspector	216
Quality Control Inspector	201
Quality Assurance Specialist	144
Welder	140
Quality Assurance Inspector	119

In Los Angeles County, employers who posted the most ads were SpaceX, Northrop Grumman, and Pathway Group.

Exhibit 5. Top employers in job postings

Employer	Job Postings
SpaceX	152
Northrop Grumman	63
Pathway Group	45
Aerojet	43
Repligen Corporation	39

Occupations Requiring No College

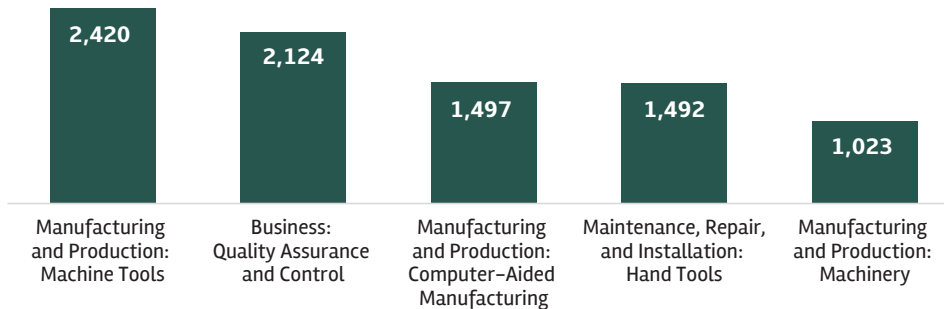
Local area job postings show how employers are grouped by industry. In Los Angeles County, the aircraft manufacturing industry posted the most job ads, a total of 99, followed by guided missile and space vehicle manufacturing, 91 job ads, and aircraft engine and engine parts manufacturing, 47 job ads.

Exhibit 6. Top industries in job postings³

Industry	Job Postings
Aircraft Manufacturing	99
Guided Missile and Space Vehicle Manufacturing	91
Aircraft Engine and Engine Parts Manufacturing	47
Research and Development in Biotechnology	42
Pharmaceutical Preparation Manufacturing	28

One way to determine how in-demand skills coalesce across occupations and industries is to look at skill clusters which can offer a broader picture of employer needs. The skill cluster areas for this group of occupations includes manufacturing and production; business; and maintenance, repair, and installation.

Exhibit 7. In-demand skill clusters



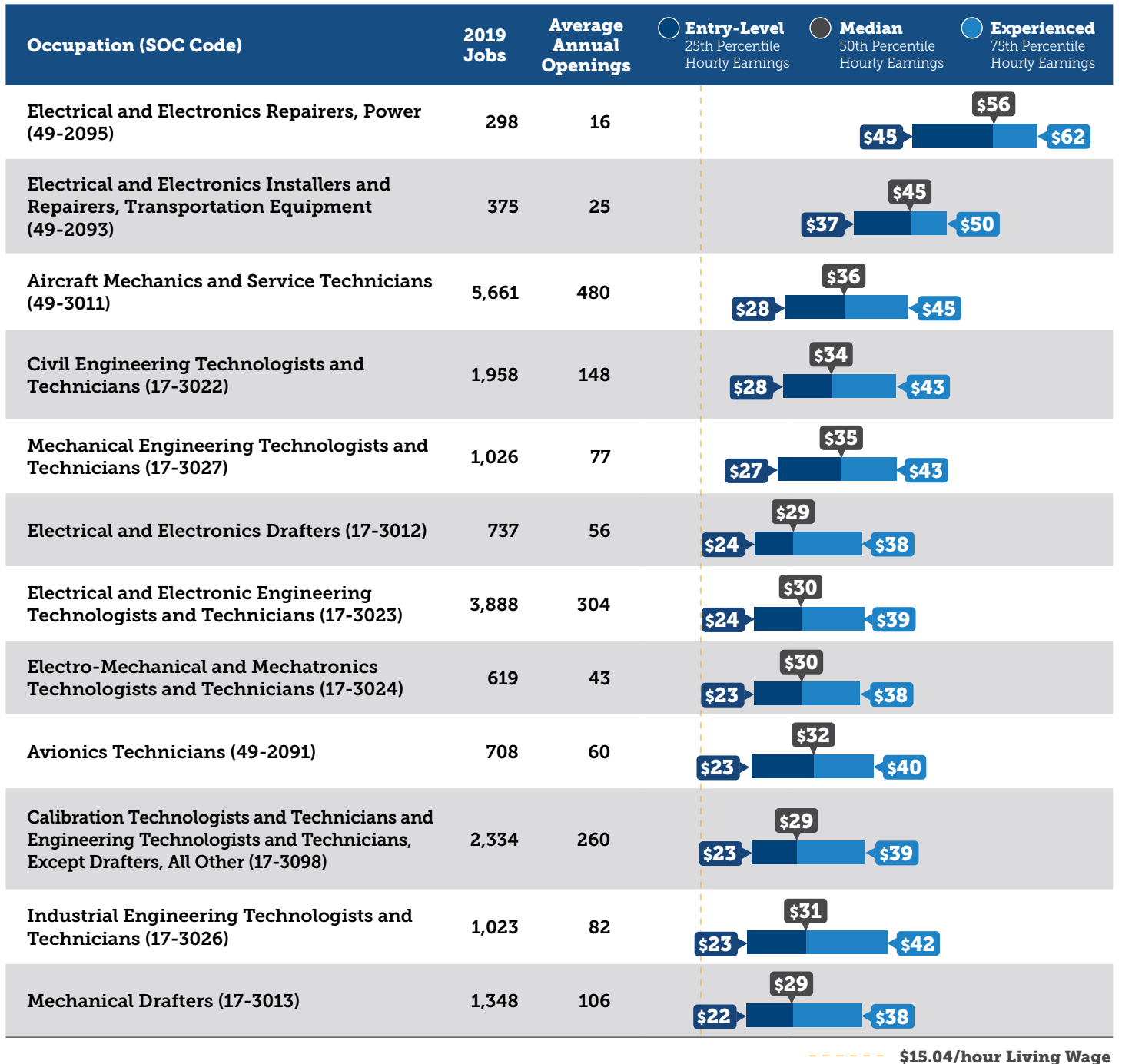
³ Note: 89% of records have been excluded because they do not include an industry. As a result, the chart below may not be representative of the full sample.

Occupations Requiring Some College

Employment Demand Analysis

Sixteen advanced manufacturing occupations that require some college education but less than a bachelor's degree account for 24,348 jobs in the county. Combined they have 2,082 projected annual openings (new + replacement jobs). The largest occupation, in number of 2019 jobs, is aircraft mechanics and service technicians. This occupation is projected to have the most annual job openings, 480.

Exhibit 8. Occupational employment, annual openings, and wages



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Occupations Requiring Some College

Exhibit 8. Occupational employment, annual openings, and wages (continued)

Occupation (SOC Code)	2019 Jobs	Average Annual Openings	Entry-Level 25th Percentile Hourly Earnings	Median 50th Percentile Hourly Earnings	Experienced 75th Percentile Hourly Earnings
Electrical and Electronics Repairers, Commercial and Industrial Equipment (49-2094)	1,167	73	\$22	\$30	\$42
Electric Motor, Power Tool, and Related Repairers (49-2092)	504	26	\$17	\$22	\$27
Environmental Science and Protection Technicians, Including Health (19-40420)	1,249	147	\$15	\$23	\$35
Prepress Technicians and Workers (51-5111)	1,455	140	\$15	\$20	\$25

Yellow rows have starting salaries below Living Wage

--- \$15.04/hour Living Wage



Occupations Requiring Some College

Job Posting Finding

Job titles for technicians dominate the category of advanced manufacturing occupations that require some college education. Technician job titles include the following terms: production, low voltage, calibration, electromechanical, electrical, electronics, maintenance, avionics, electrical repair, environmental, and aircraft maintenance.

A search of online job postings for the 16 advanced manufacturing occupations that require some college shows 7,365 postings in 2020 in Los Angeles County. The top five job titles were listed in 736 postings. The job title that occurred most frequently, maintenance technician, appeared in 360 postings.

Exhibit 9. Top job titles in job postings

Job Title	Job Postings
Maintenance Technician	360
Test Technician	110
Engineering Technician	96
Manufacturing Technician	90
Mechanical Technician	80

In Los Angeles County, employers who posted the most ads were Northrop Grumman, The Boeing Company, and SpaceX.

Exhibit 10. Top employers in job postings

Employer	Job Postings
Northrop Grumman	322
The Boeing Company	203
SpaceX	123
L3Harris	64
Anthem Blue Cross	62

Occupations Requiring Some College

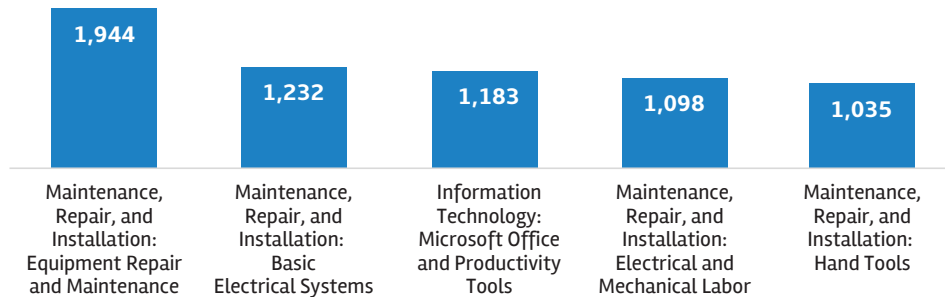
Local area job postings show how employers are grouped by industry. In Los Angeles County, aircraft manufacturing posted the most job ads, a total of 584, followed by direct health and medical insurance carriers, 70 job ads, and tire dealers, 61 job ads.

Exhibit 11. Top industries in job postings⁴

Industry	Job Postings
Aircraft Manufacturing	584
Direct Health and Medical Insurance Carriers	70
Tire Dealers	61
Pharmaceutical Preparation Manufacturing	50
Couriers and Express Delivery Services	48

One way to determine how in-demand skills coalesce across occupations and industries is to look at skill clusters which can offer a broader picture of employer needs. The skill cluster areas for this group of occupations are maintenance, repair, and installation; and information technology.

Exhibit 12. In-demand skill clusters



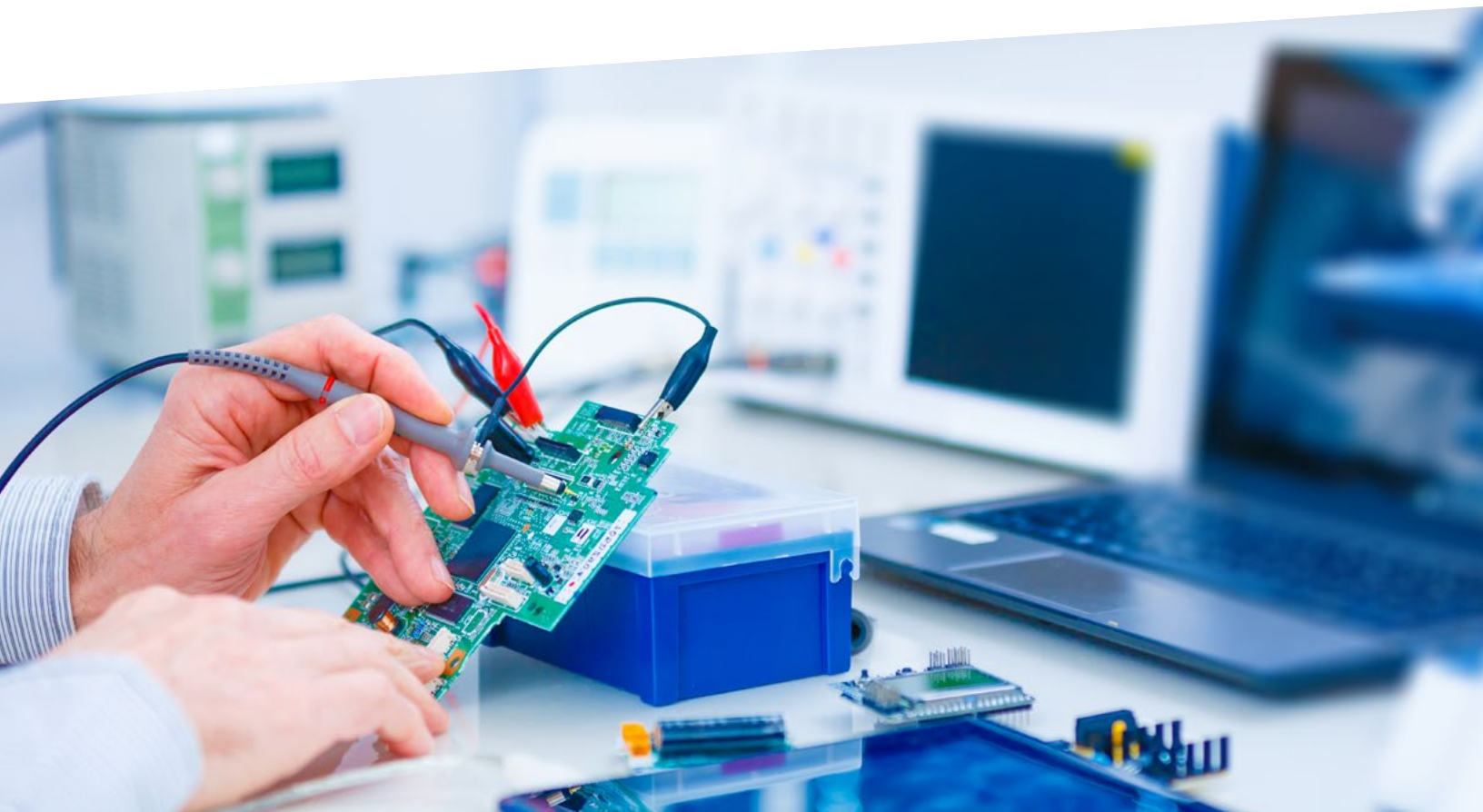
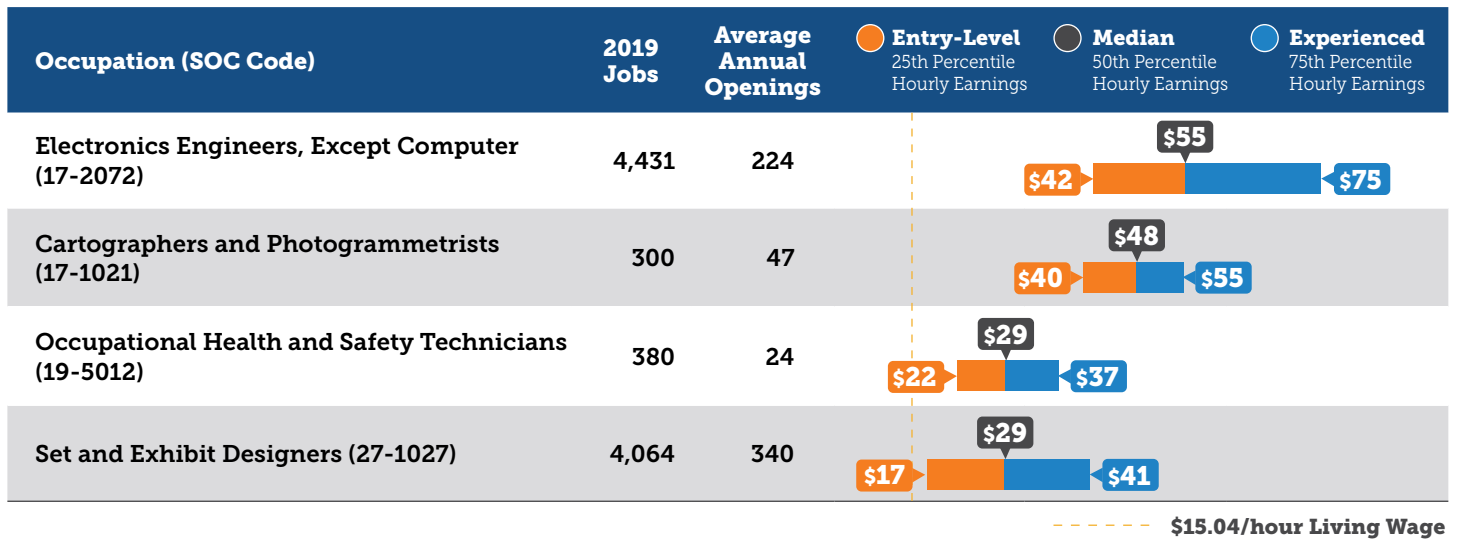
⁴ Note: 74% of records have been excluded because they do not include an industry. As a result, the chart below may not be representative of the full sample.

Occupations Requiring a Bachelor's Degree or Higher

🔍 Employment Demand Analysis

Four advanced manufacturing occupations that require a bachelor's degree or higher account for 9,174 jobs in Los Angeles County. Combined they have 636 projected annual openings (new + replacement jobs). The largest occupation, in number of 2019 jobs, is electronics engineers, except computer. This occupation is projected to offer 224 annual openings, while set and exhibit designers is projected to offer 340 annual openings.

Exhibit 13. Occupational employment, annual openings, and wages



Occupations Requiring a Bachelor's Degree or Higher

Job Posting Finding

Employers with job postings related to the four advanced manufacturing occupations requiring a bachelor's degree or higher are primarily associated with aerospace, defense, engineering, and technology. Examples include GeoLogics Corporation, Lockheed Martin Corporation, Peak Technical Services Inc., L3Harris, Canoo, SpaceX, and Science Applications International Corporation (SAIC).

A search of online job postings for the four occupations that require a bachelor's degree or higher shows 1,970 postings in 2020 in Los Angeles County. The top five job titles were listed in 187 postings. The job title that occurred most frequently, safety coordinator, appeared in 75 postings.

Exhibit 14. Top job titles in job postings

Job Title	Job Postings
Safety Coordinator	75
RF Engineer	33
FPGA Engineer	28
RF Test Engineer	28
Electronics Engineer	23

In Los Angeles County, employers who posted the most ads were The Boeing Company, Northrop Grumman, and Raytheon.

Exhibit 15. Top employers in job postings

Employer	Job Postings
The Boeing Company	512
Northrop Grumman	172
Raytheon	140
HRL Laboratories	40
Aerospace Corporation	39

Occupations Requiring a Bachelor's Degree or Higher

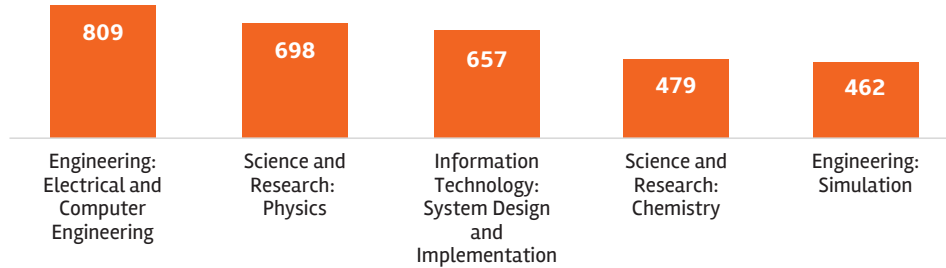
Local area job postings show how employers are grouped by industry. In Los Angeles County, aircraft manufacturing posted the most job ads, a total of 697, followed by search detection, navigation, guidance, aeronautical, and nautical system and instrument manufacturing, 140 job ads, and engineering services, 23 job ads.

Exhibit 16. Top industries in job postings⁵

Industry	Job Postings
Aircraft Manufacturing	697
Search, Detection, Navigation, Guidance, Aeronautical, and Nautical System and Instrument Manufacturing	140
Engineering Services	23
Software Publishers	10
Guided Missile and Space Vehicle Manufacturing	9

One way to determine how in-demand skills coalesce across occupations and industries is to look at skill clusters which can offer a broader picture of employer needs. The skill cluster areas for this group of occupations are engineering, science and research, and information technology.

Exhibit 17. In-demand skill clusters



⁵ Note: 50% of records have been excluded because they do not include an industry. As a result, the chart below may not be representative of the full sample.

Occupations Requiring a Bachelor's Degree or Higher

Education & Training Supply Analysis

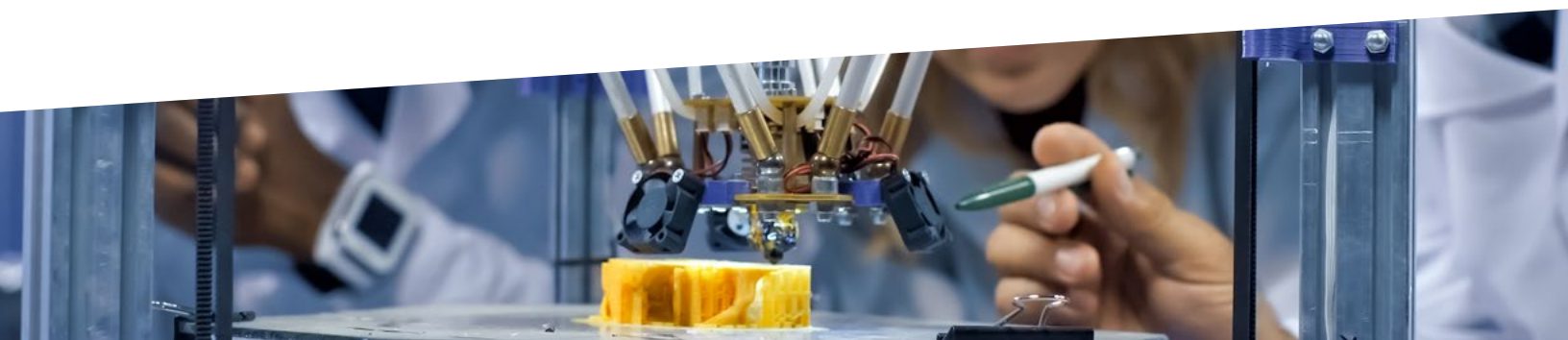
In Los Angeles County, 16 community colleges and 16 proprietary schools and other training providers offer programs related to the 43 advanced manufacturing occupations. In the 2019-20 academic year, community colleges conferred 956 awards, and proprietary schools and other training providers conferred 1,004 awards in the 2018-19 academic year.

Exhibit 18. Total awards by academic year⁶

	2017	2018	2019
Community Colleges	1,007	1,003	956
Proprietary Schools & Other Training Providers	1,134	1,225	1,004

Exhibit 19. Education and training programs

Community Colleges	<ul style="list-style-type: none"> · Engineering Technology, General (requires Trigonometry) (TOP 0924.00) · Electronics and Electric Technology (TOP 0934.00) · Computer Electronics (TOP 0934.10) · Industrial Electronics (TOP 0934.20) · Industrial Systems Technology and Maintenance (TOP 0945.00) · Aeronautical and Aviation Technology (TOP 0950.00) · Electrical, Electronic, and Electro-Mechanical Drafting (TOP 0953.30) · Mechanical Drafting (TOP 0953.40) · Manufacturing and Industrial Technology (TOP 0956.00) · Machining and Machine Tools (TOP 0956.30) · Welding Technology (TOP 0956.50) · Surveying (TOP 0957.30) · Technical Illustration (TOP 0953.60)
Proprietary Schools and Training Providers	<ul style="list-style-type: none"> · Engineering Technology, General (CIP 15.0000) · Electrical, Electronic and Communications Engineering Technology/Technician (CIP 15.0303) · Industrial Technology/Technician (CIP 15.0612) · Manufacturing Engineering Technology/Technician (CIP 15.0613) · Quality Control Technology/Technician (CIP 15.0702) · Mechanical Engineering/Mechanical Technology/Technician (CIP 15.0805) · Computer Engineering Technology/Technician (CIP 15.1201) · Computer Installation and Repair Technology/Technician (CIP 47.0104) · Appliance Installation and Repair Technology/Technician (CIP 47.0106) · Airframe Mechanics and Aircraft Maintenance Technology/Technician (CIP 47.0607) · Machine Tool Technology/Machinist (CIP 48.0501) · Welding Technology/Welder (CIP 48.0508) · Illustration (CIP 50.0410)



⁶ Due to different data collection periods, the most recent three-year period of available data for community colleges is 2017-18 to 2019-20 while the three-year period for proprietary schools and other training providers is 2016-17 to 2018-19.

More About the Centers of Excellence

The Centers of Excellence (COE) for Labor Market Research deliver regional workforce research and technical expertise to California Community Colleges for program decision-making and resource-development. This information has proven valuable to colleges in beginning, revising, or updating economic development and Career Education (CE) programs, strengthening grant applications, assisting in the accreditation process, and in supporting strategic planning efforts.

The Centers of Excellence Initiative is funded in part by the Chancellor's Office, California Community Colleges, Economic and Workforce Development Program. The Centers aspire to be the leading source of regional workforce information and insight for California Community Colleges. More information about the Centers of Excellence is available at coecc.net.

Prepared by:

Luke Meyer

Director, Los Angeles County Center of Excellence for Labor Market Research

Hosted by Mt. San Antonio College

909-247-8510

lmeyer7@mtsac.edu

To download a copy of this, visit LA/Orange County under *Studies by Region* coecc.net.

Sources

Emsi 2021.1, QCEW, non-QCEW, Self-Employed; Centers of Excellence Skill/Occupation Crosswalk; Burning Glass Technologies' Labor Insight Real-time Labor Market Information tool; CalPASS Plus/LaunchBoard; California Community Colleges Chancellor's Office Data Mart; Integrated Postsecondary Education Data System (IPEDS); Chancellor's Office Curriculum Inventory System (COCI).

Important Disclaimer

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and the report findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host college/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.

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