

# RESILIENT JOBS

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Top Jobs During the Great Recession and COVID-19 Pandemic

Orange County

October 2020



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## Executive Summary

In response to the current COVID-19 pandemic, the Orange County Center of Excellence for Labor Market Research (OC COE) conducted an analysis of industries and occupations that appear resilient during economic downturns and that were also important to the post-Great Recession economy (2010-2019). For the purpose of this study, industries and occupations that experienced employment growth or sustained employment levels prior to, during, and after the Great Recession (2007-2009) are considered *recession-resilient industries and jobs*.

To further determine which occupations are also *pandemic-resilient*, the recession-resilient jobs were compared with regional online job postings between March and August 2020. While the economic impacts of the Great Recession and those caused by the impact of the COVID-19 pandemic are not identical, there are similarities that are worth considering and which are addressed in this report. Following are the key findings for this study.

## Key Findings

- **Recession-resilient industries:** Only 92 industries, of the nearly 1,000 industries in the North American Industry Classification System (NAICS), have been identified as recession-resilient industries within Orange County.
- **Recession-resilient jobs:** Only 35 occupations, of the more than 800 occupations in the Standard Occupational Classification (SOC) system, have been identified as recession-resilient jobs in Orange County. Of those 35 recession-resilient jobs, 15 are considered middle-skill jobs, or jobs that could be trained by community college programs.<sup>1,2</sup>
- **Pandemic-resilient jobs:** There are 126 occupations that met the criteria to be considered pandemic-resilient. Of those, only 17 met the criteria to also be considered recession-resilient. More than 225,000 online job postings listed between March and June 2020 were reviewed to identify the top 100 jobs in each month, by number of job postings, within Orange County. During this period, the aforementioned 126 occupations made the monthly top 100 jobs list at least once.
- **Recession- and pandemic-resilient, middle-skill jobs:** There are 7 middle-skill jobs, or jobs that could be trained by community college programs, of the 17 recession- and pandemic-resilient jobs.

The OC COE encourages stakeholders to use this study as a resource for meaningful and engaging discussions. This labor market information is intended to help Orange County Community Colleges with program development and strategic planning as they assess priorities during this challenging and uncertain time. However, it is important to note that this study analyzes the *labor market demand* for jobs and does

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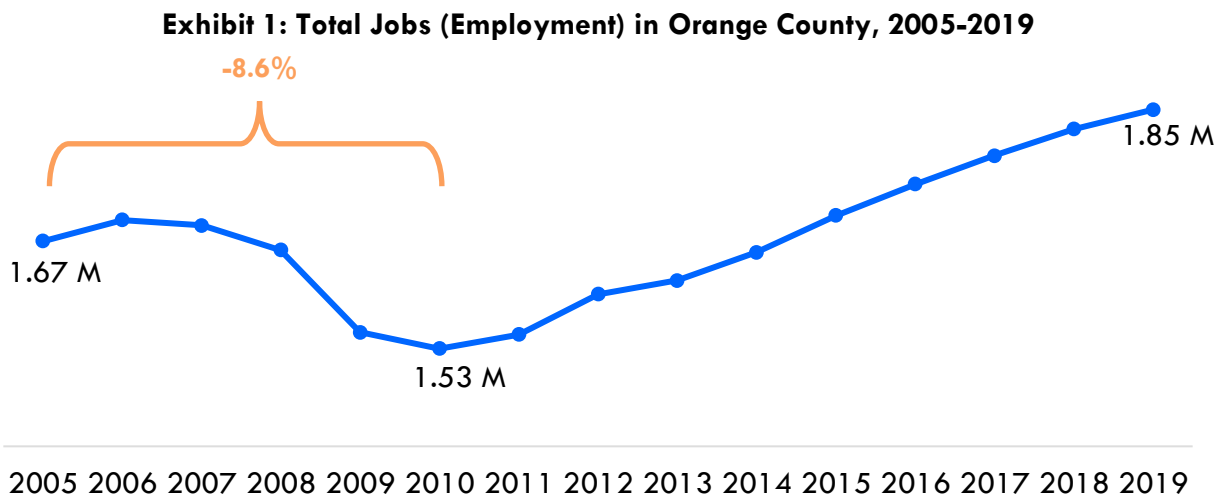
<sup>1</sup> The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. For more information, see [bls.gov/soc](https://www.bls.gov/soc/).

<sup>2</sup> Emsi 2020.3; QCEW, Non-QCEW, Self-Employed

not compare demand with labor market supply. If the region’s community colleges decide to create a new program for any of the occupations identified in this study, then per the Los Angeles/Orange County Regional Consortium’s program recommendation process, a formal request for a supply gap analysis, which compares demand with supply, would need to be made by the college and subsequently conducted by the OC COE.

## Introduction

The Great Recession (2007-2009) was considered “the severest labor market downturn since the Great Depression of the 1930s.”<sup>3</sup> The negative economic impact from the financial crisis persisted well after the Great Recession officially ended in 2009.<sup>4</sup> In Orange County specifically, the total number of jobs (employment) declined from 1.67 million jobs in 2005 to 1.53 million jobs in 2010—a nearly 9% decrease. Prior to the Great Recession, the number of jobs in Orange County peaked at 1.7 million in 2006; the number of jobs did not return to that level until 2015, six years after the end of the Great Recession. Exhibit 1 shows the number of jobs in Orange County from 2005 to 2019.



In response to the current COVID-19 pandemic, the OC COE conducted an analysis of industries and occupations that experienced employment growth or sustained employment levels before, during, and after the Great Recession. These occupations are considered “recession-resilient industries and jobs” for the purpose of this report. The recession-resilient jobs were compared with online job postings between March and August 2020 to determine which occupations are also *pandemic-resilient jobs*.

<sup>3</sup> Katz, L. (2015). Long-term unemployment in the Great Recession. EPRN. [erachapters.org/OJS/ojs-2.4.4-1/index.php/EPRN/article/download/1910/1907](http://erachapters.org/OJS/ojs-2.4.4-1/index.php/EPRN/article/download/1910/1907)

<sup>4</sup> [nber.org/papers/w17534.pdf](http://nber.org/papers/w17534.pdf)

## IMPORTANT DISCLAIMER

**It is important to note that the economic crises caused by the Great Recession and COVID-19 are not the same.** The Great Recession was triggered by a financial crisis spurred by a housing market crash and subsequent banking crisis, “as numerous financial institutions that had taken on high-risk mortgage-backed securities saw those portfolios wiped out as borrowers defaulted on their loans.”<sup>5</sup> The current COVID-19 recession is a result of lockdown measures designed to prevent the spread of COVID-19.<sup>6</sup> These measures forced businesses that were considered non-essential to shut down. As a result, the unemployment rate and unemployment insurance (UI) claims skyrocketed between February and April 2020.<sup>7</sup> Projections of when the economy will return to pre-COVID-19 levels have varied, with economists projecting different shapes of the recovery, ranging from U-shaped, V-shaped, W-shaped, Z-Shaped, or Nike-swoosh shaped.<sup>8</sup>

As more information about the impact of COVID-19 becomes available, the resilient jobs identified in this study may no longer be relevant to the current situation. However, this labor market information is intended to help Orange County Community Colleges with program development and strategic planning as they assess priorities during this difficult time. 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 (COEs), COE host districts, 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.

## Industries

### Recession-Resilient Industries

To identify recession-resilient industries that were also important to the post-Great Recession economy, the OC COE conducted an analysis of recession-resilient industries, which have:

- **Employment – Less than 7.3% employment decline between 2005 and 2009, as well as greater than 20.9% employment growth between 2010 and 2019:** On average, industries experienced a 7.3% employment decline between 2005 and the end of the Great Recession in Orange County. While these industries performed better than average during the Great Recession, it is also important to consider their performance during the post-recession recovery. On average, industries experienced a 20.9% increase in employment between 2010 and 2019 in Orange County.

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<sup>5</sup> <https://www.cnn.com/2020/04/09/what-happened-in-every-us-recession-since-the-great-depression.html>

<sup>6</sup> <https://www.weforum.org/agenda/2020/08/how-does-the-covid-recession-compare/>

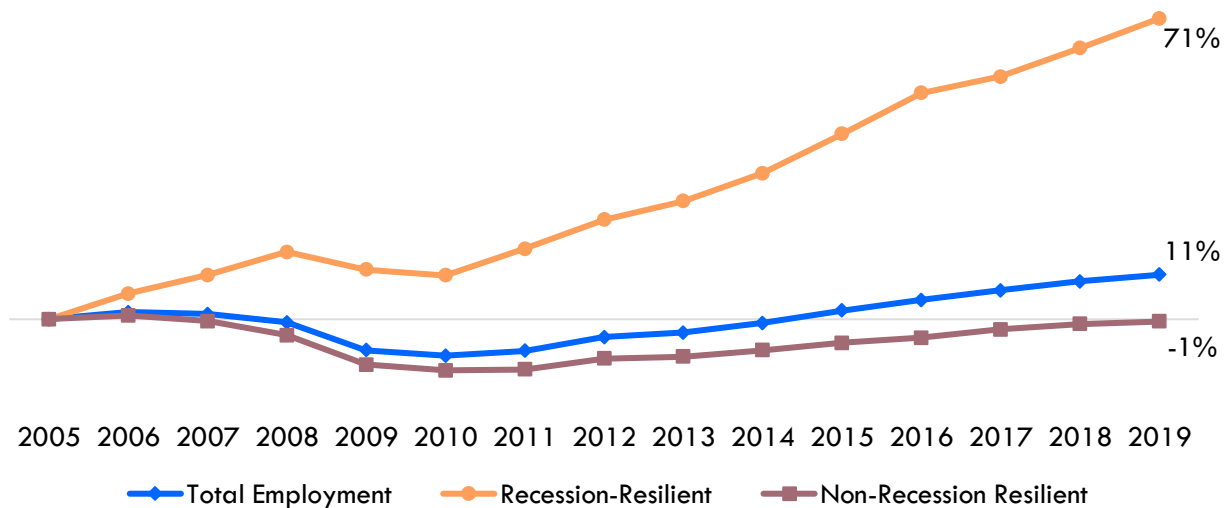
<sup>7</sup> <https://www.washingtonpost.com/graphics/2020/business/coronavirus-recession-equality/>

<sup>8</sup> <https://www.brookings.edu/blog/up-front/2020/05/04/the-abcs-of-the-post-covid-economic-recovery/>

- **Number of Jobs – Employment above the median number of jobs for all industries in the majority of years between 2005 and 2019:** While some industries may have experienced above average, or even exponential, growth during this time period, this criteria considers those industries that had a significant number of jobs in Orange County
- **Wages – Average hourly earnings at or above \$17.36:** The living wage for a single adult in Orange County is \$17.36. This figure measures the cost of basic expenses, including housing, food, health care, and transportation.<sup>9</sup> Generally, the living wage increases as family size increases; however, for the purpose of this study, only industries that have average hourly earnings at or above the living wage for a single adult were included in the analysis.<sup>10</sup>

Although there are nearly 1,000 industry codes in the North American Industry Classification System (NAICS), only 92 industries met the above criteria and are therefore considered recession-resilient industries for the purpose of this study. From 2005 to 2019, recession-resilient industries grew by 71%, while non-recession resilient industries declined by 1%. In 2005, recession-resilient industries accounted for 15.4% of all employment in Orange County. By 2019, these industries grew to account for 23.9% of all employment in the county, demonstrating their importance to the post-recession economy. Exhibit 2 shows the industry employment percentage change between 2005 and 2019 for recession-resilient industries, all industries, and non-recession-resilient industries.

**Exhibit 2: Industry Employment Percentage Change, 2005-2019**



<sup>9</sup> Center for Community Economic Development, last updated 2018. [insightcced.org/2018-self-sufficiency-standard](https://insightcced.org/2018-self-sufficiency-standard).

<sup>10</sup> The OC COE typically analyzes entry-level earnings as opposed to average earnings in labor market reports. However, industry data only includes average earnings and does not include percentile wages. For that reason, only average earnings are considered in this section.

Exhibit 3 shows the number of jobs in 2005 and 2019 for the top 15 recession-resilient industries (by number of jobs in 2019), as well as the change in the number of jobs both as an actual number and a percentage, as well as average hourly earnings. The industries in Exhibit 3 are sorted in descending order, starting with industries that had the highest number of jobs in 2019. A full list of the 92 recession-resilient industries is included in Appendix A.

It is important to note that the industries in Exhibit 3 were identified using historical annual job counts and, while representative of recession-resilient industries, may not be reflective of current conditions brought on by the COVID-19 pandemic. Currently, data is not available for the detailed 6-digit industries in Exhibit 3; however, data from the Employment Development Department (EDD) is available for subsectors, which are broader classifications that include multiple industries. While Amusement and Theme Parks (NAICS code 713110) had the highest number of jobs in 2019 across all recession-resilient industries, employment in the broader Amusement, Gambling & Recreation (NAICS code 713) subsector declined 46.5% between January 2020 and August 2020.<sup>11</sup> Additionally, Disney announced that it will lay off 28,000 employees across its Parks, Entertainment, and Products division. While an exact count is not available, the number of workers estimated to be laid off at the Disneyland Resort is over 6,500 employees.<sup>12</sup>

**Exhibit 3: Recession-Resilient Industries in Orange County (by 2019 Jobs)**

NAICS	Industry	2005 Jobs	2019 Jobs	2005-2019 Employment Change	2005 - 2019 % Employment Change	Average Hourly Earnings
713110	Amusement and Theme Parks	17,535	31,615	14,081	80%	\$18.75
902612	Colleges, Universities, and Professional Schools (State Government)	13,658	22,870	9,212	67%	\$42.91
541330	Engineering Services	15,037	18,278	3,241	22%	\$60.02
524210	Insurance Agencies and Brokerages	10,848	16,540	5,692	52%	\$51.71
621210	Offices of Dentists	12,402	16,280	3,877	31%	\$31.36
238210	Electrical Contractors and Other Wiring Installation Contractors	11,666	15,699	4,033	35%	\$39.81
522110	Commercial Banking	10,011	15,118	5,107	51%	\$57.66
541511	Custom Computer Programming Services	10,634	14,217	3,583	34%	\$64.73

<sup>11</sup> Analysis of EDD Employment by Industry Data: <https://www.labormarketinfo.edd.ca.gov/data/employment-by-industry.html>

<sup>12</sup> <https://www.ocregister.com/2020/10/05/disneyland-layoffs-include-2800-restaurant-workers-food-cart-vendors-and-club-33-staff/>

NAICS	Industry	2005 Jobs	2019 Jobs	2005-2019 Employment Change	2005 - 2019 % Employment Change	Average Hourly Earnings
452311	Warehouse Clubs and Supercenters	4,302	13,458	9,156	213%	\$19.35
541611	Administrative Management and General Management Consulting Services	5,166	12,497	7,331	142%	\$55.25
623110	Nursing Care Facilities (Skilled Nursing Facilities)	7,583	11,915	4,332	57%	\$28.38
611310	Colleges, Universities, and Professional Schools	7,786	11,723	3,937	51%	\$21.29
541512	Computer Systems Design Services	6,677	10,652	3,975	60%	\$68.64
611110	Elementary and Secondary Schools	8,665	10,127	1,462	17%	\$24.47
339112	Surgical and Medical Instrument Manufacturing	3,228	9,893	6,666	207%	\$64.57

## Occupations

### Recession-Resilient, Middle-Skill Jobs

The following sections provide an analysis of recession-resilient jobs, which have:

- Employment – Less than 7.3% employment decline between 2005 and 2009, as well as greater than 20.9% employment growth between 2010 and 2019:** On average, occupations experienced a 7.3% employment decline between 2005 and the end of the Great Recession. While these occupations performed better than average during the Great Recession, it is also important to consider their performance during the post-recession recovery. On average, occupations experienced a 20.9% increase in employment between 2010 and 2019.
- Annual Job Openings – Annual openings at or above the median during the Great Recession (2007-2009), as well as at or above the median between 2010 and 2019:** The median labor market demand for all occupations in Orange County during the Great Recession was 77 annual job openings. During the post-recession period, the median labor market demand was 76 annual job openings. This study excludes occupations that did not have labor market demand above the median in both periods.
- Wages – Entry-level hourly earnings are at or above \$17.36:** The living wage for a single adult in Orange County is \$17.36. This figure measures the cost of basic expenses, including housing,



food, health care, and transportation. Generally, the living wage increases as family size increases; however, for the purpose of this study, only occupations that provide entry-level hourly earnings at or above the living wage for a single adult were included in the analysis.

Although there are more than 800 occupational codes in the Standard Occupational Classification (SOC) system, only 35 occupations met the above criteria and are therefore considered recession-resilient jobs for the purpose of this study. Of the 35 recession-resilient jobs, 15 are considered middle-skill jobs. All 15 middle-skill, recession-resilient jobs fall into one of Orange County's eight priority and emerging sectors.<sup>13</sup>

Exhibit 4, on the following page, shows the typical entry-level education, annual job openings from 2007-2009 and 2010-2019, entry-level and median hourly earnings, and the employment percentage change between 2005 and 2019 for these recession-resilient middle-skill jobs. The occupations in Exhibit 4 are sorted in descending order, starting with occupations that had the highest number of annual job openings from 2007-2009. A full list of the 35 recession-resilient jobs is included in Appendix B.

Middle-skill jobs are generally occupations that require less than a bachelor's degree but more than a high school diploma. However, there are some exceptions. The OC COE found that while employers may report that they require at least a bachelor's degree for certain occupations, a significant percentage of the workforce in those occupations have an associate degree or less, which suggests that the community colleges could train for these occupations. These exceptions are also included in the following exhibit.<sup>14</sup>

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<sup>13</sup> The eight Priority and Emerging Sectors are: Advanced Manufacturing; Advanced Transportation and Logistics; Business and Entrepreneurship; Energy, Construction, and Utilities; Health; Information Communication Technology (ICT) and Digital Media; Life Sciences and Biotechnology; and Retail, Hospitality, and Tourism.

<sup>14</sup> The COE classifies middle-skill jobs as the following: 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.

**Exhibit 4: Recession-Resilient, Middle-Skill Jobs in Orange County (by Annual Openings).**

<b>SOC</b>	<b>Occupation</b>	<b>Typical Entry Level Education</b>	<b>Annual Openings (2007-2009)</b>	<b>Annual Openings (2010-2019)</b>	<b>Entry-Level Hourly Earnings (25th Percentile)</b>	<b>Median Hourly Earnings</b>	<b>2005 - 2019 % Employment Change</b>
13-1198	Project Management Specialists and Business Operations Specialists, All Other	Bachelor's degree	1,474	2,310	\$24.84	\$34.34	52%
41-3091	Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	High school diploma or equivalent	1,457	2,430	\$17.53	\$26.26	96%
29-1141	Registered Nurses	Bachelor's degree	1,234	1,685	\$40.49	\$49.22	40%
29-2052	Pharmacy Technicians	High school diploma or equivalent	281	293	\$17.45	\$21.18	66%
15-1257	Web Developers and Digital Interface Designers	Associate's degree	171	302	\$20.32	\$31.41	134%
13-1081	Logisticians	Bachelor's degree	166	325	\$30.30	\$38.59	120%
27-2012	Producers and Directors	Bachelor's degree	142	177	\$26.45	\$41.60	82%
15-1231	Computer Network Support Specialists	Associate's degree	134	213	\$25.00	\$31.72	23%
15-1241	Computer Network Architects	Bachelor's degree	120	183	\$37.56	\$53.10	39%
47-4011	Construction and Building Inspectors	High school diploma or equivalent	120	146	\$30.84	\$42.86	24%
29-1126	Respiratory Therapists	Associate's degree	100	100	\$31.50	\$36.35	47%
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	High school diploma or equivalent	96	136	\$25.43	\$34.41	36%
19-4099	Life, Physical, and Social Science Technicians, All Other	Associate's degree	88	121	\$17.98	\$24.44	33%
49-9062	Medical Equipment Repairers	Associate's degree	78	101	\$21.53	\$30.46	64%
31-9093	Medical Equipment Preparers	High school diploma or equivalent	78	86	\$17.51	\$21.80	39%

## Community College Programs Related to Recession-Resilient Jobs

Orange County Community Colleges have existing programs that could train job seekers for recession-resilient, middle-skill jobs. The OC COE reviewed active programs listed in the Chancellor’s Office Curriculum Inventory (COCI) to identify which community colleges offer programs related to these recession-resilient occupations. Exhibit 5 shows the related TOP code and title for each program, as well as colleges that have existing programs. Programs not offered by any Orange County Community College are denoted with an asterisk (\*). CTE faculty, administrators, and other **stakeholders should should review these programs to confirm that they provide the knowledge, skills, and abilities for students to successfully obtain employment in the occupations listed in Exhibit 5.**<sup>15</sup>

**Exhibit 5: Community College Programs Related to Recession-Resilient, Middle-Skill Jobs**

Occupation	Related TOP Code and Title	College
Project Management Specialists and Business Operations Specialists, All Other	0506.40 - Small Business and Entrepreneurship	Cypress
		Fullerton
		Santa Ana
		Saddleback
		Santiago Canyon
	0506.50 - Retail Store Operations and Management	Cypress
		Golden West
		Orange Coast
		Santa Ana
		Saddleback
		Irvine Valley
		Coastline
	0508.00 - International Business and Trade	Fullerton
		Fullerton
Santa Ana		
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	0509.40 - Sales and Salesmanship	Saddleback
		No programs
Registered Nurses	1 230.00 – Nursing*	No programs
		Golden West
	1 230.10 - Registered Nursing	Cypress
		Saddleback
		Santa Ana

<sup>15</sup> To find program titles as they are listed in the community college catalog system, visit [coci2.ccctechcenter.org/programs](http://coci2.ccctechcenter.org/programs) and search by the college name and TOP code as listed in Exhibit 5.

<b>Occupation</b>	<b>Related TOP Code and Title</b>	<b>College</b>
Pharmacy Technicians	1221.00 - Pharmacy Technology	Santa Ana
		North Orange Adult
Web Developers and Digital Interface Designers	0614.30 - Website Design and Development	Orange Coast
		Santa Ana
		Santiago Canyon
		Saddleback
	0702.10 - Software Applications	Irvine Valley
		Fullerton
		Fullerton
	0707.00 - Computer Software Development	Saddleback
		Irvine Valley
	0707.10 - Computer Programming	Coastline
		Orange Coast
		Santiago Canyon
		Fullerton
	0709.00 - World Wide Web Administration	Saddleback
0709.10 - E-Commerce (technology emphasis)		Saddleback
Logisticians	0510.00 - Logistics and Materials Transportation	Coastline
Producers and Directors	0604.00 - Radio and Television	Fullerton
		Saddleback
	0604.10 - Radio	Fullerton
		Santa Ana
	0604.20 - Television (including combined TV/film/video)	Fullerton
		Cypress
	0612.20 - Film Production	Orange Coast
Saddleback		
Computer Network Support Specialists	0707.10 - Computer Programming	Cypress
		Orange Coast
		Santiago Canyon
	0707.30 - Computer Systems Analysis	Fullerton
		Cypress
	0708.00 - Computer Infrastructure and Support	Cypress
		Coastline
Santiago Canyon		
Saddleback		

Occupation	Related TOP Code and Title	College
Computer Network Architects	0708.10 - Computer Networking	Santa Ana
		Cypress
		Saddleback
		Coastline
		Irvine Valley
	0708.20 - Computer Support	Fullerton
		Cypress
	0709.00 - World Wide Web Administration	Saddleback
	0701.00 - Information Technology, General	Santa Ana
	0702.00 - Computer Information Systems	Cypress
		Fullerton
		Santa Ana
		Santiago Canyon
Saddleback		
Irvine Valley		
Coastline		
0707.30 - Computer Systems Analysis	Cypress	
	Cypress	
0708.00 - Computer Infrastructure and Support	Coastline	
	Santiago Canyon	
	Saddleback	
	Santa Ana	
0708.10 - Computer Networking	Cypress	
	Saddleback	
	Coastline	
	Irvine Valley	
	Fullerton	
	0708.20 - Computer Support	Cypress
	0709.00 - World Wide Web Administration	Saddleback
Construction and Building Inspectors	0957.20 - Construction Inspection	Fullerton
		Saddleback
		Coastline
Respiratory Therapists	1210.00 - Respiratory Care/Therapy	Orange Coast
Mobile Heavy Equipment Mechanics, Except Engines	0116.00 - Agricultural Power Equipment Technology*	No programs
	0947.20 - Heavy Equipment Maintenance	Santiago Canyon
		Santa Ana
	0947.30 - Heavy Equipment Operation	Santiago Canyon

Occupation	Related TOP Code and Title	College
	0101.00 - Agriculture Technology and Sciences, General*	No programs
		Fullerton
Life, Physical, and Social Science Technicians, All Other	0430.00 - Biotechnology and Biomedical Technology	Santa Ana
		Santiago Canyon
		Irvine Valley
	0934.70 - Electron Microscopy*	No programs
	1920.00 - Ocean Technology*	No programs
		Fullerton
Medical Equipment Repairers	0430.00 - Biotechnology and Biomedical Technology	Santa Ana
		Santiago Canyon
		Irvine Valley
	0934.60 - Biomedical Instrumentation	Santa Ana
Medical Equipment Preparers	1209.00 - Hospital Central Service Technician*	No programs

### Pandemic-Resilient Jobs

For the purpose of this study, pandemic-resilient jobs are defined as *jobs with the highest number of online job postings per month between March 1 and August 31, 2020*. The OC COE reviewed more than 225,000 online job postings during this six-month period to identify the top 100 jobs each month in Orange County. Between March and August 2020, 126 individual occupations made the monthly top 100 jobs list at least once. These occupations, sorted in descending order by the number of months each occupation appeared in the top 100 jobs, are listed in Exhibit 6. Additionally, in order to identify which recession-resilient jobs are *also pandemic-resilient jobs*, the OC COE compared the list below with the list of 35 recession-resilient jobs (identified in the previous section). Occupations that appeared in both lists are noted below with an asterisk (\*) and are listed in detail in Exhibit 7.

**Exhibit 6: Pandemic Resilient Jobs (by most frequent)**

Occupation	March 2020	April 2020	May 2020	June 2020	July 2020	August 2020	# of Months in the Top 100 Jobs
Accountants and Auditors	•	•	•	•	•	•	6
Automotive Service Technicians and Mechanics	•	•	•	•	•	•	6
Bookkeeping, Accounting, and Auditing Clerks	•	•	•	•	•	•	6
Calibration Technologists and Technicians and Engineering Technicians, Except Drafters, All Other	•	•	•	•	•	•	6
Cashiers	•	•	•	•	•	•	6
Childcare Workers	•	•	•	•	•	•	6

Occupation	March 2020	April 2020	May 2020	June 2020	July 2020	August 2020	# of Months in the Top 100 Jobs
Civil Engineers	•	•	•	•	•	•	6
Combined Food Preparation and Serving Workers, Including Fast Food	•	•	•	•	•	•	6
Computer Occupations, All Other	•	•	•	•	•	•	6
Computer Systems Analysts	•	•	•	•	•	•	6
Computer User Support Specialists	•	•	•	•	•	•	6
Construction Managers	•	•	•	•	•	•	6
Cooks, Restaurant	•	•	•	•	•	•	6
Customer Service Representatives	•	•	•	•	•	•	6
Database Administrators and Architects	•	•	•	•	•	•	6
Driver/Sales Workers	•	•	•	•	•	•	6
Engineers, All Other	•	•	•	•	•	•	6
Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other	•	•	•	•	•	•	6
Financial Managers	•	•	•	•	•	•	6
First-Line Supervisors of Food Preparation and Serving Workers	•	•	•	•	•	•	6
First-Line Supervisors of Office and Administrative Support Workers	•	•	•	•	•	•	6
First-Line Supervisors of Retail Sales Workers	•	•	•	•	•	•	6
Food Service Managers	•	•	•	•	•	•	6
General and Operations Managers	•	•	•	•	•	•	6
Heavy and Tractor-Trailer Truck Drivers	•	•	•	•	•	•	6
Home Health and Personal Care Aides	•	•	•	•	•	•	6
Hotel, Motel, and Resort Desk Clerks	•	•	•	•	•	•	6
Human Resources Specialists*	•	•	•	•	•	•	6
Industrial Production Managers	•	•	•	•	•	•	6
Information Security Analysts	•	•	•	•	•	•	6
Inspectors, Testers, Sorters, Samplers, and Weighers	•	•	•	•	•	•	6
Insurance Sales Agents	•	•	•	•	•	•	6
Janitors and Cleaners, Except Maids and Housekeeping Cleaners	•	•	•	•	•	•	6
Laborers and Freight, Stock, and Material Movers, Hand	•	•	•	•	•	•	6
Lawyers*	•	•	•	•	•	•	6
Licensed Practical and Licensed Vocational Nurses	•	•	•	•	•	•	6
Light Truck Drivers	•	•	•	•	•	•	6

Occupation	March 2020	April 2020	May 2020	June 2020	July 2020	August 2020	# of Months in the Top 100 Jobs
Loan Interviewers and Clerks	•	•	•	•	•	•	6
Loan Officers	•	•	•	•	•	•	6
Maids and Housekeeping Cleaners	•	•	•	•	•	•	6
Maintenance and Repair Workers, General	•	•	•	•	•	•	6
Management Analysts*	•	•	•	•	•	•	6
Market Research Analysts and Marketing Specialists*	•	•	•	•	•	•	6
Marketing Managers	•	•	•	•	•	•	6
Mechanical Engineers	•	•	•	•	•	•	6
Medical and Clinical Laboratory Technicians	•	•	•	•	•	•	6
Medical and Health Services Managers*	•	•	•	•	•	•	6
Medical Assistants	•	•	•	•	•	•	6
Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	•	•	•	•	•	•	6
Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other	•	•	•	•	•	•	6
Medical Secretaries and Administrative Assistants	•	•	•	•	•	•	6
Merchandise Displayers and Window Trimmers	•	•	•	•	•	•	6
Network and Computer Systems Administrators	•	•	•	•	•	•	6
Nursing Assistants	•	•	•	•	•	•	6
Office Clerks, General	•	•	•	•	•	•	6
Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other*	•	•	•	•	•	•	6
Production Workers, All Other	•	•	•	•	•	•	6
Property, Real Estate, and Community Association Managers	•	•	•	•	•	•	6
Purchasing Agents, Except Wholesale, Retail, and Farm Products	•	•	•	•	•	•	6
Real Estate Sales Agents	•	•	•	•	•	•	6
Receptionists and Information Clerks	•	•	•	•	•	•	6
Registered Nurses*	•	•	•	•	•	•	6
Retail Salespersons	•	•	•	•	•	•	6
Sales Managers	•	•	•	•	•	•	6



Occupation	March 2020	April 2020	May 2020	June 2020	July 2020	August 2020	# of Months in the Top 100 Jobs
Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products	•	•	•	•	•	•	6
Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products	•	•	•	•	•	•	6
Secretaries and Administrative Assistants, Except Legal, Medical, and Executive	•	•	•	•	•	•	6
Security Guards	•	•	•	•	•	•	6
Shipping, Receiving, and Inventory Clerks	•	•	•	•	•	•	6
Software Developers and Software Quality Assurance Analysts and Testers*	•	•	•	•	•	•	6
Speech-Language Pathologists*	•	•	•	•	•	•	6
Stockers and Order Fillers	•	•	•	•	•	•	6
Waiters and Waitresses	•	•	•	•	•	•	6
Web Developers and Digital Interface Designers*	•	•	•	•	•	•	6
Computer Programmers	•	•		•	•	•	5
Cost Estimators	•	•	•	•	•		5
Data Entry Keyers	•	•	•		•	•	5
Dishwashers	•		•	•	•	•	5
First-Line Supervisors of Mechanics, Installers, and Repairers	•		•	•	•	•	5
Insurance Underwriters		•	•	•	•	•	5
Middle School Teachers, Except Special and Career/Technical Education		•	•	•	•	•	5
Operations Research Analysts	•	•	•	•	•		5
Pharmacy Technicians*	•	•		•	•	•	5
Physicians, All Other; and Ophthalmologists, Except Pediatric	•	•	•	•	•		5
Teachers And Instructors, All Other, Except Substitute Teachers	•	•	•		•	•	5
Compliance Officers*	•		•	•		•	4
Electrical Engineers	•	•	•	•			4
Graphic Designers	•	•	•		•		4
Human Resources Managers	•	•	•		•		4
Life, Physical, and Social Science Technicians, All Other*		•	•	•		•	4
Paralegals and Legal Assistants	•			•	•	•	4

Occupation	March 2020	April 2020	May 2020	June 2020	July 2020	August 2020	# of Months in the Top 100 Jobs
Preschool Teachers, Except Special Education	•			•	•	•	
Production, Planning, and Expediting Clerks	•		•		•	•	4
Project Management Specialists and Business Operations Specialists, All Other*		•	•	•		•	4
Securities, Commodities, and Financial Services Sales Agents	•	•			•	•	4
Team Assemblers	•		•	•	•		4
Computer Network Architects*		•	•	•			3
Construction Laborers			•		•	•	3
Counter Attendants, Cafeteria, Food Concession, and Coffee Shop		•		•		•	3
Executive Secretaries and Executive Administrative Assistants	•	•	•				3
Heating, Air Conditioning, and Refrigeration Mechanics and Installers			•		•	•	3
Industrial Truck and Tractor Operators				•	•	•	3
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel*	•			•	•		3
Animal Caretakers			•			•	2
Architectural and Engineering Managers		•	•				2
Dental Assistants				•		•	2
Dining Room and Cafeteria Attendants and Bartender Helpers	•			•			2
Electrical and Electronic Engineering Technologists and Technicians				•		•	2
Exercise Trainers and Group Fitness Instructors	•			•			2
First-Line Supervisors of Production and Operating Workers		•	•				2
Home Health and Personal Care Aides					•	•	2
Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop			•	•			2
Natural Sciences Managers	•	•					2
Packers and Packagers, Hand					•	•	2
Payroll and Timekeeping Clerks	•	•					2
Personal Financial Advisors	•	•					2
Administrative Services Managers					•		1
Bakers	•						1

Occupation	March 2020	April 2020	May 2020	June 2020	July 2020	August 2020	# of Months in the Top 100 Jobs
Bartenders				•			1
Claims Adjusters, Examiners, and Investigators		•					1
Computer-Controlled Machine Tool Operators, Metal and Plastic			•				1
Elementary School Teachers, Except Special Education						•	1
Medical Scientists, Except Epidemiologists*		•					1
Mental Health Counselors		•					1
Psychiatrists					•		1
Teaching Assistants, Except Postsecondary						•	1

\*Denotes a recession-resilient job

## Recession- and Pandemic-Resilient, Middle-Skill Jobs

Of the over 800 occupations in the SOC system, there are 17 occupations that are considered **both** recession-resilient and pandemic-resilient in Orange County. Of those, seven are considered middle-skill jobs. These occupations, along with their typical entry-level education, entry-level wages, and median wages for each occupation, are listed in Exhibit 7. Middle-skill jobs are noted with an asterisk (\*).

### Exhibit 7: Recession- and Pandemic-Resilient Occupations in Orange County

Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings
Compliance Officers	Bachelor's degree	\$27.95	\$38.11
Computer Network Architects*	Bachelor's degree	\$37.56	\$53.10
Human Resources Specialists	Bachelor's degree	\$24.50	\$31.43
Lawyers	Doctoral or professional degree	\$38.29	\$65.04
Life, Physical, and Social Science Technicians, All Other*	Associate's degree	\$17.98	\$24.44
Management Analysts	Bachelor's degree	\$29.76	\$41.85
Market Research Analysts and Marketing Specialists	Bachelor's degree	\$22.98	\$30.67
Medical and Health Services Managers	Bachelor's degree	\$40.12	\$58.48
Medical Scientists, Except Epidemiologists	Doctoral or professional degree	\$41.64	\$49.04
Personal Service Managers, All Other; Entertainment and	Bachelor's degree	\$24.99	\$44.80

Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings
Recreation Managers, Except Gambling; and Managers, All Other			
Pharmacy Technicians*	High school diploma or equivalent	\$17.45	\$21.18
Project Management Specialists and Business Operations Specialists, All Other*	Bachelor's degree	\$24.84	\$34.34
Registered Nurses*	Bachelor's degree	\$40.49	\$49.22
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel*	High school diploma or equivalent	\$17.53	\$26.26
Software Developers and Software Quality Assurance Analysts and Testers	Bachelor's degree	\$43.48	\$56.74
Speech-Language Pathologists	Master's degree	\$35.39	\$44.42
Web Developers and Digital Interface Designers*	Associate's degree	\$20.32	\$31.41

*\*Denotes a middle-skill job*

## Conclusion

This study provides an overview of industries and jobs that appear resilient during economic downturns, including the current COVID-19 pandemic, in Orange County. There were 92 out of nearly 1,000 industries and 35 out of more than 800 occupations – 15 of which are considered middle-skill – that were identified as recession-resilient throughout the region. There were 126 occupations that met this study's criteria for pandemic-resilient jobs out of the more than 225,000 online job postings that were analyzed. This culminated in 17 occupations that are considered recession-resilient with seven of these being middle-skill jobs (another seven required a bachelor's degree and three required a graduate degree).

Given all of the identified recession-resilient industries and jobs, pandemic-resilient jobs, and recession- and pandemic-resilient jobs, the OC COE recommends the Orange County Community Colleges prioritizing the programs, credit and noncredit, that train for the seven occupations listed in Exhibit 8 which are recession-resilient, pandemic-resilient, and middle-skill jobs that have entry-level wages above the \$17.36 living wage in Orange County. The OC COE encourages stakeholders to use this study as a resource for meaningful and engaging discussions. This study was produced in the hope that it would provide guidance for the community colleges as they prioritize and develop programs for students to become more resilient in the labor market. Though recession-resilient, pandemic-resilient, middle-skill jobs are the most relevant to the current economic climate, Orange County Community Colleges should also consider focusing on existing programs that train for pandemic-resilient occupations to meet short-term needs brought on by the COVID-19 pandemic, while also focusing on recession-resilient occupations for long-term planning and program development.

As a reminder, it is important to again note that this study analyzes the labor market demand for jobs and does not compare demand with supply. If the region’s community colleges decide to create a new program for any of the occupations identified in this study, then per the Los Angeles/Orange County Regional Consortium’s program recommendation process, a formal request for a supply gap analysis, which compares demand with supply, would need to be made by the college and subsequently conducted by the OC COE.

**Exhibit 8: Recession- and Pandemic-Resilient Middle-Skill Occupations in Orange County**

<b>Occupation</b>	<b>Typical Entry-Level Education</b>	<b>Entry-Level Hourly Earnings (25th Percentile)</b>	<b>Median Hourly Earnings</b>
Computer Network Architects	Bachelor's degree	\$37.56	\$53.10
Life, Physical, and Social Science Technicians, All Other	Associate's degree	\$17.98	\$24.44
Pharmacy Technicians	High school diploma or equivalent	\$17.45	\$21.18
Project Management Specialists and Business Operations Specialists, All Other	Bachelor's degree	\$24.84	\$34.34
Registered Nurses	Bachelor's degree	\$40.49	\$49.22
Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel	High school diploma or equivalent	\$17.53	\$26.26
Web Developers and Digital Interface Designers*	Associate's degree	\$20.32	\$31.41

## Appendices

### Appendix A: Recession-Resilient Industries

The 92 recession-resilient industries identified in this study are provided in Exhibit 9 below. Links to each industry’s description from the Census Bureau can be accessed by clicking on each individual industry name.

**Exhibit 9: Recession-Resilient Industries**

NAICS	Industry	2005 Jobs	2019 Jobs	2005-2019 Employment Change	2005 - 2019 % Employment Change	Average Hourly Earnings
713110	<a href="#">Amusement and Theme Parks</a>	17,535	31,615	14,081	80%	\$18.75
902612	<a href="#">Colleges, Universities, and Professional Schools (State Government)</a>	13,658	22,870	9,212	67%	\$42.91
541330	<a href="#">Engineering Services</a>	15,037	18,278	3,241	22%	\$60.02
524210	<a href="#">Insurance Agencies and Brokerages</a>	10,848	16,540	5,692	52%	\$51.71
621210	<a href="#">Offices of Dentists</a>	12,402	16,280	3,877	31%	\$31.36
238210	<a href="#">Electrical Contractors and Other Wiring Installation Contractors</a>	11,666	15,699	4,033	35%	\$39.81
522110	<a href="#">Commercial Banking</a>	10,011	15,118	5,107	51%	\$57.66
541511	<a href="#">Custom Computer Programming Services</a>	10,634	14,217	3,583	34%	\$64.73
452311	<a href="#">Warehouse Clubs and Supercenters</a>	4,302	13,458	9,156	213%	\$19.35
541611	<a href="#">Administrative Management and General Management Consulting Services</a>	5,166	12,497	7,331	142%	\$55.25
623110	<a href="#">Nursing Care Facilities (Skilled Nursing Facilities)</a>	7,583	11,915	4,332	57%	\$28.38
611310	<a href="#">Colleges, Universities, and Professional Schools</a>	7,786	11,723	3,937	51%	\$21.29
541512	<a href="#">Computer Systems Design Services</a>	6,677	10,652	3,975	60%	\$68.64
611110	<a href="#">Elementary and Secondary Schools</a>	8,665	10,127	1,462	17%	\$24.47
339112	<a href="#">Surgical and Medical Instrument Manufacturing</a>	3,228	9,893	6,666	207%	\$64.57
621610	<a href="#">Home Health Care Services</a>	5,007	9,647	4,639	93%	\$23.26
236118	<a href="#">Residential Remodelers</a>	6,374	8,685	2,311	36%	\$26.10

NAICS	Industry	2005 Jobs	2019 Jobs	2005-2019 Employment Change	2005 - 2019 % Employment Change	Average Hourly Earnings
621340	<a href="#">Offices of Physical, Occupational and Speech Therapists, and Audiologists</a>	3,385	8,478	5,093	150%	\$28.07
511210	<a href="#">Software Publishers</a>	3,261	8,354	5,092	156%	\$81.88
541613	<a href="#">Marketing Consulting Services</a>	3,460	7,390	3,930	114%	\$37.54
541211	<a href="#">Offices of Certified Public Accountants</a>	5,508	7,063	1,556	28%	\$51.26
621491	<a href="#">HMO Medical Centers</a>	155	6,998	6,842	4403%	\$58.09
454110	<a href="#">Electronic Shopping and Mail-Order Houses</a>	3,120	6,645	3,525	113%	\$29.77
623312	<a href="#">Assisted Living Facilities for the Elderly</a>	4,527	6,609	2,081	46%	\$21.00
334510	<a href="#">Electromedical and Electrotherapeutic Apparatus Manufacturing</a>	1,494	6,497	5,002	335%	\$86.24
424210	<a href="#">Drugs and Druggists' Sundries Merchant Wholesalers</a>	3,875	6,321	2,446	63%	\$61.76
336413	<a href="#">Other Aircraft Parts and Auxiliary Equipment Manufacturing</a>	4,462	5,905	1,442	32%	\$44.63
339116	<a href="#">Dental Laboratories</a>	3,147	5,298	2,151	68%	\$34.22
541940	<a href="#">Veterinary Services</a>	3,812	5,207	1,395	37%	\$28.71
621399	<a href="#">Offices of All Other Miscellaneous Health Practitioners</a>	1,220	4,562	3,342	274%	\$32.94
624190	<a href="#">Other Individual and Family Services</a>	1,892	4,562	2,669	141%	\$22.72
238160	<a href="#">Roofing Contractors</a>	2,828	3,970	1,142	40%	\$34.26
623311	<a href="#">Continuing Care Retirement Communities</a>	1,255	3,818	2,563	204%	\$20.75
423830	<a href="#">Industrial Machinery and Equipment Merchant Wholesalers</a>	3,358	3,766	408	12%	\$49.90
334419	<a href="#">Other Electronic Component Manufacturing</a>	1,818	3,614	1,796	99%	\$38.62
621330	<a href="#">Offices of Mental Health Practitioners (except Physicians)</a>	1,152	3,386	2,234	194%	\$20.47
541380	<a href="#">Testing Laboratories</a>	2,077	3,201	1,124	54%	\$36.99
623220	<a href="#">Residential Mental Health and Substance Abuse Facilities</a>	1,235	3,149	1,914	155%	\$26.93
531120	<a href="#">Lessors of Nonresidential Buildings (except Miniwarehouses)</a>	2,318	3,042	724	31%	\$51.73

NAICS	Industry	2005 Jobs	2019 Jobs	2005-2019 Employment Change	2005 - 2019 % Employment Change	Average Hourly Earnings
237310	<a href="#">Highway, Street, and Bridge Construction</a>	1,744	3,040	1,296	74%	\$53.79
519130	<a href="#">Internet Publishing and Broadcasting and Web Search Portals</a>	825	2,974	2,150	261%	\$72.89
711510	<a href="#">Independent Artists, Writers, and Performers</a>	2,461	2,882	421	17%	\$20.95
423610	<a href="#">Electrical Apparatus and Equipment, Wiring Supplies, and Related Equipment Merchant Wholesalers</a>	2,157	2,692	536	25%	\$46.49
238390	<a href="#">Other Building Finishing Contractors</a>	1,887	2,617	730	39%	\$36.75
561210	<a href="#">Facilities Support Services</a>	408	2,480	2,072	507%	\$27.96
621420	<a href="#">Outpatient Mental Health and Substance Abuse Centers</a>	460	2,380	1,919	417%	\$28.09
621910	<a href="#">Ambulance Services</a>	1,526	2,326	800	52%	\$24.71
488510	<a href="#">Freight Transportation Arrangement</a>	1,518	2,159	641	42%	\$34.67
611710	<a href="#">Educational Support Services</a>	1,002	2,148	1,146	114%	\$22.81
541213	<a href="#">Tax Preparation Services</a>	1,465	2,103	638	44%	\$29.67
524292	<a href="#">Third Party Administration of Insurance and Pension Funds</a>	1,152	1,934	782	68%	\$41.78
238290	<a href="#">Other Building Equipment Contractors</a>	1,098	1,883	785	71%	\$56.83
512110	<a href="#">Motion Picture and Video Production</a>	1,103	1,802	699	63%	\$37.23
711211	<a href="#">Sports Teams and Clubs</a>	911	1,750	839	92%	\$96.42
311812	<a href="#">Commercial Bakeries</a>	775	1,730	955	123%	\$29.05
622310	<a href="#">Specialty (except Psychiatric and Substance Abuse) Hospitals</a>	1,055	1,725	670	64%	\$31.27
561790	<a href="#">Other Services to Buildings and Dwellings</a>	1,508	1,721	213	14%	\$18.70
562111	<a href="#">Solid Waste Collection</a>	901	1,718	817	91%	\$35.25
621492	<a href="#">Kidney Dialysis Centers</a>	679	1,602	924	136%	\$40.05
339114	<a href="#">Dental Equipment and Supplies Manufacturing</a>	988	1,575	587	59%	\$65.72
446191	<a href="#">Food (Health) Supplement Stores</a>	873	1,502	630	72%	\$25.22
624110	<a href="#">Child and Youth Services</a>	671	1,492	822	123%	\$23.20



NAICS	Industry	2005 Jobs	2019 Jobs	2005-2019 Employment Change	2005 - 2019 % Employment Change	Average Hourly Earnings
334417	<a href="#">Electronic Connector Manufacturing</a>	760	1,440	679	89%	\$37.23
221210	<a href="#">Natural Gas Distribution</a>	876	1,341	465	53%	\$81.25
621498	<a href="#">All Other Outpatient Care Centers</a>	450	1,263	813	181%	\$33.62
532490	<a href="#">Other Commercial and Industrial Machinery and Equipment Rental and Leasing</a>	433	1,251	818	189%	\$38.56
424130	<a href="#">Industrial and Personal Service Paper Merchant Wholesalers</a>	942	1,217	274	29%	\$34.81
448150	<a href="#">Clothing Accessories Stores</a>	613	1,212	599	98%	\$20.80
711320	<a href="#">Promoters of Performing Arts, Sports, and Similar Events without Facilities</a>	835	1,151	316	38%	\$20.83
238150	<a href="#">Glass and Glazing Contractors</a>	979	1,083	104	11%	\$35.72
446199	<a href="#">All Other Health and Personal Care Stores</a>	486	1,063	577	119%	\$53.04
424810	<a href="#">Beer and Ale Merchant Wholesalers</a>	479	1,047	568	119%	\$49.18
237990	<a href="#">Other Heavy and Civil Engineering Construction</a>	556	961	405	73%	\$74.95
332912	<a href="#">Fluid Power Valve and Hose Fitting Manufacturing</a>	655	960	305	47%	\$45.91
335999	<a href="#">All Other Miscellaneous Electrical Equipment and Component Manufacturing</a>	501	928	427	85%	\$49.68
446130	<a href="#">Optical Goods Stores</a>	530	846	315	59%	\$19.75
541820	<a href="#">Public Relations Agencies</a>	636	828	192	30%	\$37.28
332913	<a href="#">Plumbing Fixture Fitting and Trim Manufacturing</a>	350	825	475	136%	\$44.87
448110	<a href="#">Men's Clothing Stores</a>	620	807	187	30%	\$19.62
423730	<a href="#">Warm Air Heating and Air-Conditioning Equipment and Supplies Merchant Wholesalers</a>	383	787	404	106%	\$69.36
541720	<a href="#">Research and Development in the Social Sciences and Humanities</a>	130	759	629	484%	\$31.42
336415	<a href="#">Guided Missile and Space Vehicle Propulsion Unit and Propulsion Unit Parts Manufacturing</a>	147	747	600	408%	\$69.94

NAICS	Industry	2005 Jobs	2019 Jobs	2005-2019 Employment Change	2005 - 2019 % Employment Change	Average Hourly Earnings
488190	<a href="#">Other Support Activities for Air Transportation</a>	265	739	475	179%	\$39.53
621999	<a href="#">All Other Miscellaneous Ambulatory Health Care Services</a>	417	692	275	66%	\$43.35
236117	<a href="#">New Housing For-Sale Builders</a>	240	686	447	187%	\$68.48
325998	<a href="#">All Other Miscellaneous Chemical Product and Preparation Manufacturing</a>	461	671	210	46%	\$48.41
811219	<a href="#">Other Electronic and Precision Equipment Repair and Maintenance</a>	468	633	165	35%	\$34.07
332721	<a href="#">Precision Turned Product Manufacturing</a>	392	624	232	59%	\$41.14
712110	<a href="#">Museums</a>	363	595	233	64%	\$21.76
335122	<a href="#">Commercial, Industrial, and Institutional Electric Lighting Fixture Manufacturing</a>	574	524	-50	-9%	\$39.97
813920	<a href="#">Professional Organizations</a>	309	445	136	44%	\$55.51
423130	<a href="#">Tire and Tube Merchant Wholesalers</a>	332	439	107	32%	\$51.20

## Appendix B: Recession-Resilient Jobs

The 35 recession-resilient jobs identified in this study are provided in Exhibit 10 below. Middle-skill jobs are denoted with an asterisk (\*). Links to each occupation's description from O\*NET can be accessed by clicking on each individual occupation.

**Exhibit 10: Recession-Resilient Jobs in Orange County**

SOC	Occupation	Typical Entry Level Education	Annual Openings (2007-2009)	Annual Openings (2010-2019)	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	2005 - 2019 % Employment Change
13-1198	<a href="#">Project Management Specialists and Business Operations Specialists, All Other*</a>	Bachelor's degree	1,474	\$2,310.44	\$24.84	\$34.34	33%
41-3091	<a href="#">Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel*</a>	High school diploma or equivalent	1,457	\$2,429.56	\$17.53	\$26.26	96%
13-1111	<a href="#">Management Analysts</a>	Bachelor's degree	1,235	\$1,314.89	\$29.76	\$41.85	203%
29-1141	<a href="#">Registered Nurses*</a>	Bachelor's degree	1,234	\$1,684.78	\$40.49	\$49.22	21%
15-1256	<a href="#">Software Developers and Software Quality Assurance Analysts and Testers</a>	Bachelor's degree	1,064	\$1,902.33	\$43.48	\$56.74	40%
11-9198	<a href="#">Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other</a>	Bachelor's degree	825	\$1,315.78	\$24.99	\$44.80	134%
23-1011	<a href="#">Lawyers</a>	Doctoral or professional degree	705	\$823.11	\$38.29	\$65.04	86%
13-1161	<a href="#">Market Research Analysts and Marketing Specialists</a>	Bachelor's degree	699	\$1,463.89	\$22.98	\$30.67	52%
13-1071	<a href="#">Human Resources Specialists</a>	Bachelor's degree	576	\$986.56	\$24.50	\$31.43	104%
19-1042	<a href="#">Medical Scientists, Except Epidemiologists</a>	Doctoral or professional degree	316	\$213.00	\$41.64	\$49.04	57%

SOC	Occupation	Typical Entry Level Education	Annual Openings (2007-2009)	Annual Openings (2010-2019)	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	2005 - 2019 % Employment Change
29-2052	<a href="#">Pharmacy Technicians*</a>	High school diploma or equivalent	281	\$292.67	\$17.45	\$21.18	82%
21-2011	<a href="#">Clergy</a>	Bachelor's degree	274	\$327.00	\$23.23	\$33.86	28%
11-9111	<a href="#">Medical and Health Services Managers</a>	Bachelor's degree	264	\$309.56	\$40.12	\$58.48	39%
21-1021	<a href="#">Child, Family, and School Social Workers</a>	Bachelor's degree	238	\$366.00	\$20.53	\$27.27	51%
13-1041	<a href="#">Compliance Officers</a>	Bachelor's degree	188	\$474.22	\$27.95	\$38.11	92%
15-1257	<a href="#">Web Developers and Digital Interface Designers*</a>	Associate's degree	171	\$301.78	\$20.32	\$31.41	96%
13-1081	<a href="#">Logisticians*</a>	Bachelor's degree	166	\$325.33	\$30.30	\$38.59	120%
25-9031	<a href="#">Instructional Coordinators</a>	Master's degree	146	\$221.33	\$25.16	\$38.85	73%
27-2012	<a href="#">Producers and Directors*</a>	Bachelor's degree	142	\$176.67	\$26.45	\$41.60	82%
15-1231	<a href="#">Computer Network Support Specialists*</a>	Associate's degree	134	\$212.78	\$25.00	\$31.72	23%
11-9151	<a href="#">Social and Community Service Managers</a>	Bachelor's degree	125	\$402.11	\$25.94	\$35.33	103%
15-1241	<a href="#">Computer Network Architects*</a>	Bachelor's degree	120	\$183.00	\$37.56	\$53.10	49%
47-4011	<a href="#">Construction and Building Inspectors*</a>	High school diploma or equivalent	120	\$145.89	\$30.84	\$42.86	24%
21-1023	<a href="#">Mental Health and Substance Abuse Social Workers</a>	Master's degree	114	\$169.67	\$18.17	\$26.82	51%
43-4061	<a href="#">Eligibility Interviewers, Government Programs</a>	High school diploma or equivalent	107	\$160.11	\$22.34	\$25.12	47%
19-3031	<a href="#">Clinical, Counseling, and School Psychologists</a>	Doctoral or professional degree	102	\$130.44	\$36.13	\$46.59	26%
29-1126	<a href="#">Respiratory Therapists*</a>	Associate's degree	100	\$100.00	\$31.50	\$36.35	47%
29-1127	<a href="#">Speech-Language Pathologists</a>	Master's degree	100	\$166.22	\$35.39	\$44.42	66%
49-3042	<a href="#">Mobile Heavy Equipment Mechanics, Except Engines*</a>	High school diploma or equivalent	96	\$136.11	\$25.43	\$34.41	36%

SOC	Occupation	Typical Entry Level Education	Annual Openings (2007-2009)	Annual Openings (2010-2019)	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	2005 - 2019 % Employment Change
19-4099	<a href="#">Life, Physical, and Social Science Technicians, All Other*</a>	Associate's degree	88	\$121.11	\$17.98	\$24.44	39%
11-9033	<a href="#">Education Administrators, Postsecondary</a>	Master's degree	87	\$96.89	\$38.32	\$53.02	49%
29-1122	<a href="#">Occupational Therapists</a>	Master's degree	82	\$105.33	\$40.37	\$48.25	76%
49-9062	<a href="#">Medical Equipment Repairers*</a>	Associate's degree	78	\$100.78	\$21.53	\$30.46	64%
31-9093	<a href="#">Medical Equipment Preparers*</a>	High school diploma or equivalent	78	\$86.44	\$17.51	\$21.80	39%
29-1071	<a href="#">Physician Assistants</a>	Master's degree	77	\$76.78	\$52.08	\$59.58	80%

## Appendix C: Pandemic-Resilient Jobs

The 126 pandemic-resilient jobs identified in this study are listed in Exhibit 11. Middle-skill jobs are denoted with an asterisk (\*). Links to each occupation's description from O\*NET can be accessed by clicking on each individual occupation.

**Exhibit 11: Pandemic-Resilient Jobs in Orange County**

SOC	Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	# of Months in the Top 100 Jobs
13-2011	<a href="#">Accountants and Auditors</a>	Bachelor's degree	\$25.16	\$33.64	6
49-3023	<a href="#">Automotive Service Technicians and Mechanics*</a>	Postsecondary nondegree award	\$15.62	\$21.98	6
43-3031	<a href="#">Bookkeeping, Accounting, and Auditing Clerks*</a>	Some college, no degree	\$17.49	\$22.56	6
17-3098	<a href="#">Calibration Technologists and Technicians and Engineering Technicians, Except Drafters, All Other*</a>	Associate's degree	\$23.47	\$29.92	6
41-2011	<a href="#">Cashiers</a>	No formal educational credential	\$12.47	\$13.35	6
39-9011	<a href="#">Childcare Workers*</a>	High school diploma or equivalent	\$12.00	\$12.93	6
17-2051	<a href="#">Civil Engineers</a>	Bachelor's degree	\$36.13	\$51.33	6
35-3021	<a href="#">Combined Food Preparation and Serving Workers, Including Fast Food</a>	No formal educational credential	\$12.42	\$13.25	6
15-1199	<a href="#">Computer Occupations, All Other*</a>	Bachelor's degree	\$26.33	\$37.12	6
15-1211	<a href="#">Computer Systems Analysts</a>	Bachelor's degree	\$37.01	\$47.84	6
15-1232	<a href="#">Computer User Support Specialists*</a>	Some college, no degree	\$21.08	\$26.51	6
11-9021	<a href="#">Construction Managers*</a>	Bachelor's degree	\$31.02	\$50.55	6
35-2014	<a href="#">Cooks, Restaurant</a>	No formal educational credential	\$12.81	\$14.31	6
43-4051	<a href="#">Customer Service Representatives*</a>	High school diploma or equivalent	\$14.84	\$18.38	6
15-1245	<a href="#">Database Administrators and Architects</a>	Bachelor's degree	\$32.24	\$43.36	6

SOC	Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	# of Months in the Top 100 Jobs
53-3031	<a href="#">Driver/Sales Workers</a>	High school diploma or equivalent	\$12.54	\$15.21	6
17-2199	<a href="#">Engineers, All Other</a>	Bachelor's degree	\$35.20	\$49.45	6
13-2098	<a href="#">Financial and Investment Analysts, Financial Risk Specialists, and Financial Specialists, All Other</a>	Bachelor's degree	\$28.22	\$38.44	6
11-3031	<a href="#">Financial Managers</a>	Bachelor's degree	\$44.99	\$64.34	6
35-1012	<a href="#">First-Line Supervisors of Food Preparation and Serving Workers*</a>	High school diploma or equivalent	\$13.30	\$15.99	6
43-1011	<a href="#">First-Line Supervisors of Office and Administrative Support Workers*</a>	High school diploma or equivalent	\$22.70	\$28.86	6
41-1011	<a href="#">First-Line Supervisors of Retail Sales Workers*</a>	High school diploma or equivalent	\$13.87	\$17.69	6
11-9051	<a href="#">Food Service Managers*</a>	High school diploma or equivalent	\$15.86	\$23.08	6
11-1021	<a href="#">General and Operations Managers</a>	Bachelor's degree	\$35.12	\$53.43	6
53-3032	<a href="#">Heavy and Tractor-Trailer Truck Drivers*</a>	Postsecondary nondegree award	\$17.83	\$22.87	6
31-1128	<a href="#">Home Health and Personal Care Aides</a>	High school diploma or equivalent	\$12.42	\$13.17	6
43-4081	<a href="#">Hotel, Motel, and Resort Desk Clerks</a>	High school diploma or equivalent	\$12.79	\$14.39	6
13-1071	<a href="#">Human Resources Specialists*</a>	Bachelor's degree	\$24.50	\$31.43	6
11-3051	<a href="#">Industrial Production Managers*</a>	Bachelor's degree	\$38.22	\$51.13	6
15-1212	<a href="#">Information Security Analysts</a>	Bachelor's degree	\$36.29	\$48.96	6
51-9061	<a href="#">Inspectors, Testers, Sorters, Samplers, and Weighers*</a>	High school diploma or equivalent	\$14.68	\$19.31	6
41-3021	<a href="#">Insurance Sales Agents*</a>	High school diploma or equivalent	\$18.02	\$24.72	6

SOC	Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	# of Months in the Top 100 Jobs
37-2011	<a href="#">Janitors and Cleaners, Except Maids and Housekeeping Cleaners</a>	No formal educational credential	\$12.79	\$14.92	6
53-7062	<a href="#">Laborers and Freight, Stock, and Material Movers, Hand</a>	No formal educational credential	\$12.76	\$14.48	6
23-1011	<a href="#">Lawyers*</a>	Doctoral or professional degree	\$38.29	\$65.04	6
29-2061	<a href="#">Licensed Practical and Licensed Vocational Nurses*</a>	Postsecondary nondegree award	\$24.77	\$28.93	6
53-3033	<a href="#">Light Truck Drivers</a>	High school diploma or equivalent	\$14.64	\$18.55	6
43-4131	<a href="#">Loan Interviewers and Clerks*</a>	High school diploma or equivalent	\$16.20	\$21.10	6
13-2072	<a href="#">Loan Officers*</a>	Bachelor's degree	\$18.45	\$28.36	6
37-2012	<a href="#">Maids and Housekeeping Cleaners</a>	No formal educational credential	\$12.13	\$14.47	6
49-9071	<a href="#">Maintenance and Repair Workers, General*</a>	High school diploma or equivalent	\$15.63	\$20.48	6
13-1111	<a href="#">Management Analysts*</a>	Bachelor's degree	\$29.76	\$41.85	6
13-1161	<a href="#">Market Research Analysts and Marketing Specialists*</a>	Bachelor's degree	\$22.98	\$30.67	6
11-2021	<a href="#">Marketing Managers</a>	Bachelor's degree	\$46.11	\$66.00	6
17-2141	<a href="#">Mechanical Engineers</a>	Bachelor's degree	\$37.38	\$48.55	6
29-2012	<a href="#">Medical and Clinical Laboratory Technicians*</a>	Associate's degree	\$20.32	\$27.81	6
11-9111	<a href="#">Medical and Health Services Managers*</a>	Bachelor's degree	\$40.12	\$58.48	6
31-9092	<a href="#">Medical Assistants*</a>	Postsecondary nondegree award	\$14.67	\$17.63	6
29-2098	<a href="#">Medical Dosimetrists, Medical Records Specialists, and Health Technologists and Technicians, All Other*</a>	Postsecondary nondegree award	\$16.91	\$21.59	6
43-6013	<a href="#">Medical Secretaries and Administrative Assistants*</a>	High school diploma or equivalent	\$16.96	\$20.45	6



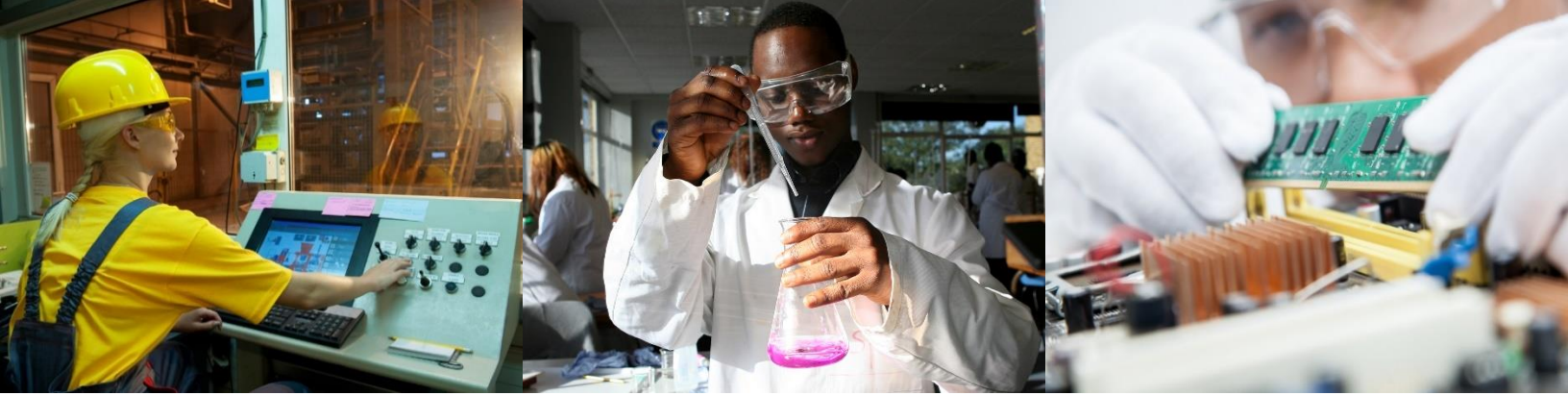
SOC	Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	# of Months in the Top 100 Jobs
27-1026	<a href="#">Merchandise Displayers and Window Trimmers</a>	High school diploma or equivalent	\$12.71	\$14.96	6
15-1244	<a href="#">Network and Computer Systems Administrators*</a>	Bachelor's degree	\$33.30	\$42.80	6
31-1131	<a href="#">Nursing Assistants*</a>	Postsecondary nondegree award	\$14.70	\$16.78	6
43-9061	<a href="#">Office Clerks, General</a>	High school diploma or equivalent	\$13.81	\$17.29	6
11-9198	<a href="#">Personal Service Managers, All Other; Entertainment and Recreation Managers, Except Gambling; and Managers, All Other*</a>	Bachelor's degree	\$24.99	\$44.80	6
51-9199	<a href="#">Production Workers, All Other</a>	High school diploma or equivalent	\$12.69	\$14.18	6
11-9141	<a href="#">Property, Real Estate, and Community Association Managers*</a>	High school diploma or equivalent	\$16.89	\$29.22	6
13-1023	<a href="#">Purchasing Agents, Except Wholesale, Retail, and Farm Products</a>	Bachelor's degree	\$25.16	\$33.31	6
41-9022	<a href="#">Real Estate Sales Agents*</a>	High school diploma or equivalent	\$18.52	\$29.50	6
43-4171	<a href="#">Receptionists and Information Clerks</a>	High school diploma or equivalent	\$13.46	\$15.97	6
29-1141	<a href="#">Registered Nurses*</a>	Bachelor's degree	\$40.49	\$49.22	6
41-2031	<a href="#">Retail Salespersons</a>	No formal educational credential	\$12.59	\$14.23	6
11-2022	<a href="#">Sales Managers</a>	Bachelor's degree	\$33.02	\$53.06	6
41-4012	<a href="#">Sales Representatives, Wholesale and Manufacturing, Except Technical and Scientific Products*</a>	High school diploma or equivalent	\$20.52	\$30.47	6
41-4011	<a href="#">Sales Representatives, Wholesale and Manufacturing, Technical and Scientific Products</a>	Bachelor's degree	\$31.43	\$41.40	6

SOC	Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	# of Months in the Top 100 Jobs
43-6014	<a href="#">Secretaries and Administrative Assistants, Except Legal, Medical, and Executive*</a>	High school diploma or equivalent	\$16.30	\$20.73	6
33-9032	<a href="#">Security Guards</a>	High school diploma or equivalent	\$12.88	\$14.39	6
43-5071	<a href="#">Shipping, Receiving, and Inventory Clerks</a>	High school diploma or equivalent	\$13.65	\$16.25	6
15-1256	<a href="#">Software Developers and Software Quality Assurance Analysts and Testers*</a>	Bachelor's degree	\$43.48	\$56.74	6
29-1127	<a href="#">Speech-Language Pathologists*</a>	Master's degree	\$35.39	\$44.42	6
53-7065	<a href="#">Stockers and Order Fillers</a>	High school diploma or equivalent	\$12.80	\$14.41	6
35-3031	<a href="#">Waiters and Waitresses</a>	No formal educational credential	\$12.44	\$13.44	6
15-1257	<a href="#">Web Developers and Digital Interface Designers*</a>	Associate's degree	\$20.32	\$31.41	6
15-1251	<a href="#">Computer Programmers</a>	Bachelor's degree	\$33.84	\$43.75	5
13-1051	<a href="#">Cost Estimators*</a>	Bachelor's degree	\$24.99	\$33.62	5
43-9021	<a href="#">Data Entry Keyers*</a>	High school diploma or equivalent	\$14.15	\$16.57	5
35-9021	<a href="#">Dishwashers</a>	No formal educational credential	\$12.37	\$12.98	5
49-1011	<a href="#">First-Line Supervisors of Mechanics, Installers, and Repairers*</a>	High school diploma or equivalent	\$32.39	\$42.11	5
13-2053	<a href="#">Insurance Underwriters</a>	Bachelor's degree	\$26.81	\$35.96	5
25-2022	<a href="#">Middle School Teachers, Except Special and Career/Technical Education</a>	Bachelor's degree	\$33.75	\$41.79	5
15-2031	<a href="#">Operations Research Analysts</a>	Bachelor's degree	\$32.88	\$42.92	5
29-2052	<a href="#">Pharmacy Technicians*</a>	High school diploma or equivalent	\$17.45	\$21.18	5

SOC	Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	# of Months in the Top 100 Jobs
29-1228	<a href="#">Physicians, All Other; and Ophthalmologists, Except Pediatric</a>	Doctoral or professional degree	\$61.65	\$121.83	5
25-3099	<a href="#">Teachers And Instructors, All Other, Except Substitute Teachers</a>	Bachelor's degree	\$13.58	\$17.87	5
13-1041	<a href="#">Compliance Officers*</a>	Bachelor's degree	\$27.95	\$38.11	4
17-2071	<a href="#">Electrical Engineers</a>	Bachelor's degree	\$39.44	\$54.93	4
27-1024	<a href="#">Graphic Designers*</a>	Bachelor's degree	\$18.64	\$27.00	4
11-3121	<a href="#">Human Resources Managers</a>	Bachelor's degree	\$44.59	\$61.02	4
19-4099	<a href="#">Life, Physical, and Social Science Technicians, All Other*</a>	Associate's degree	\$17.98	\$24.44	4
23-2011	<a href="#">Paralegals and Legal Assistants*</a>	Associate's degree	\$16.32	\$22.85	4
25-2011	<a href="#">Preschool Teachers, Except Special Education*</a>	Associate's degree	\$13.04	\$14.80	4
43-5061	<a href="#">Production, Planning, and Expediting Clerks*</a>	High school diploma or equivalent	\$17.95	\$23.83	4
13-1198	<a href="#">Project Management Specialists and Business Operations Specialists, All Other*</a>	Bachelor's degree	\$24.84	\$34.34	4
41-3031	<a href="#">Securities, Commodities, and Financial Services Sales Agents</a>	Bachelor's degree	\$18.95	\$24.39	4
51-2092	<a href="#">Team Assemblers</a>	High school diploma or equivalent	\$12.90	\$14.98	4
15-1241	<a href="#">Computer Network Architects*</a>	Bachelor's degree	\$37.56	\$53.10	3
47-2061	<a href="#">Construction Laborers</a>	No formal educational credential	\$14.43	\$20.12	3
35-3022	<a href="#">Counter Attendants, Cafeteria, Food Concession, and Coffee Shop</a>	No formal educational credential	\$12.38	\$13.02	3
43-6011	<a href="#">Executive Secretaries and Executive Administrative Assistants*</a>	High school diploma or equivalent	\$25.90	\$32.23	3
49-9021	<a href="#">Heating, Air Conditioning, and Refrigeration Mechanics and Installers*</a>	Postsecondary nondegree award	\$22.19	\$29.56	3

SOC	Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	# of Months in the Top 100 Jobs
53-7051	<a href="#">Industrial Truck and Tractor Operators</a>	No formal educational credential	\$14.43	\$17.58	3
41-3091	<a href="#">Sales Representatives of Services, Except Advertising, Insurance, Financial Services, and Travel*</a>	High school diploma or equivalent	\$17.53	\$26.26	3
39-2021	Animal Caretakers	High school diploma or equivalent	\$12.04	\$13.79	2
11-9041	<a href="#">Architectural and Engineering Managers</a>	Bachelor's degree	\$67.40	\$83.54	2
31-9091	<a href="#">Dental Assistants*</a>	Postsecondary nondegree award	\$15.80	\$19.40	2
35-9011	<a href="#">Dining Room and Cafeteria Attendants and Bartender Helpers</a>	No formal educational credential	\$12.38	\$13.00	2
17-3023	<a href="#">Electrical and Electronic Engineering Technologists and Technicians*</a>	Associate's degree	\$23.54	\$30.85	2
39-9031	<a href="#">Exercise Trainers and Group Fitness Instructors*</a>	High school diploma or equivalent	\$14.27	\$22.96	2
51-1011	<a href="#">First-Line Supervisors of Production and Operating Workers*</a>	High school diploma or equivalent	\$22.13	\$29.46	2
31-1128	<a href="#">Home Health and Personal Care Aides</a>	High school diploma or equivalent	\$12.42	\$13.17	2
35-9031	<a href="#">Hosts and Hostesses, Restaurant, Lounge, and Coffee Shop</a>	No formal educational credential	\$12.40	\$13.08	2
11-9121	<a href="#">Natural Sciences Managers</a>	Bachelor's degree	\$54.07	\$71.90	2
53-7064	<a href="#">Packers and Packagers, Hand</a>	No formal educational credential	\$12.47	\$13.28	2
43-3051	<a href="#">Payroll and Timekeeping Clerks*</a>	High school diploma or equivalent	\$19.97	\$25.36	2
13-2052	<a href="#">Personal Financial Advisors</a>	Bachelor's degree	\$23.69	\$33.52	2
11-3011	<a href="#">Administrative Services Managers*</a>	Bachelor's degree	\$35.62	\$50.04	1
51-3011	<a href="#">Bakers</a>	No formal educational credential	\$12.48	\$13.84	1
35-3011	<a href="#">Bartenders</a>	No formal educational credential	\$12.35	\$13.05	1

SOC	Occupation	Typical Entry-Level Education	Entry-Level Hourly Earnings (25th Percentile)	Median Hourly Earnings	# of Months in the Top 100 Jobs
13-1031	<a href="#">Claims Adjusters, Examiners, and Investigators*</a>	High school diploma or equivalent	\$27.30	\$36.08	1
51-4011	<a href="#">Computer-Controlled Machine Tool Operators, Metal and Plastic*</a>	High school diploma or equivalent	\$16.19	\$20.54	1
25-2021	<a href="#">Elementary School Teachers, Except Special Education</a>	Bachelor's degree	\$33.66	\$42.38	1
19-1042	<a href="#">Medical Scientists, Except Epidemiologists*</a>	Doctoral or professional degree	\$41.64	\$49.04	1
21-1014	<a href="#">Mental Health Counselors</a>	Master's degree	\$16.68	\$22.22	1
29-1223	<a href="#">Psychiatrists</a>	Doctoral or professional degree	\$83.34	\$119.85	1
25-9045	<a href="#">Teaching Assistants, Except Postsecondary*</a>	Some college, no degree	\$14.93	\$17.60	1



### Important Disclaimers

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

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

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Orange County Center of Excellence for Labor Market Research

