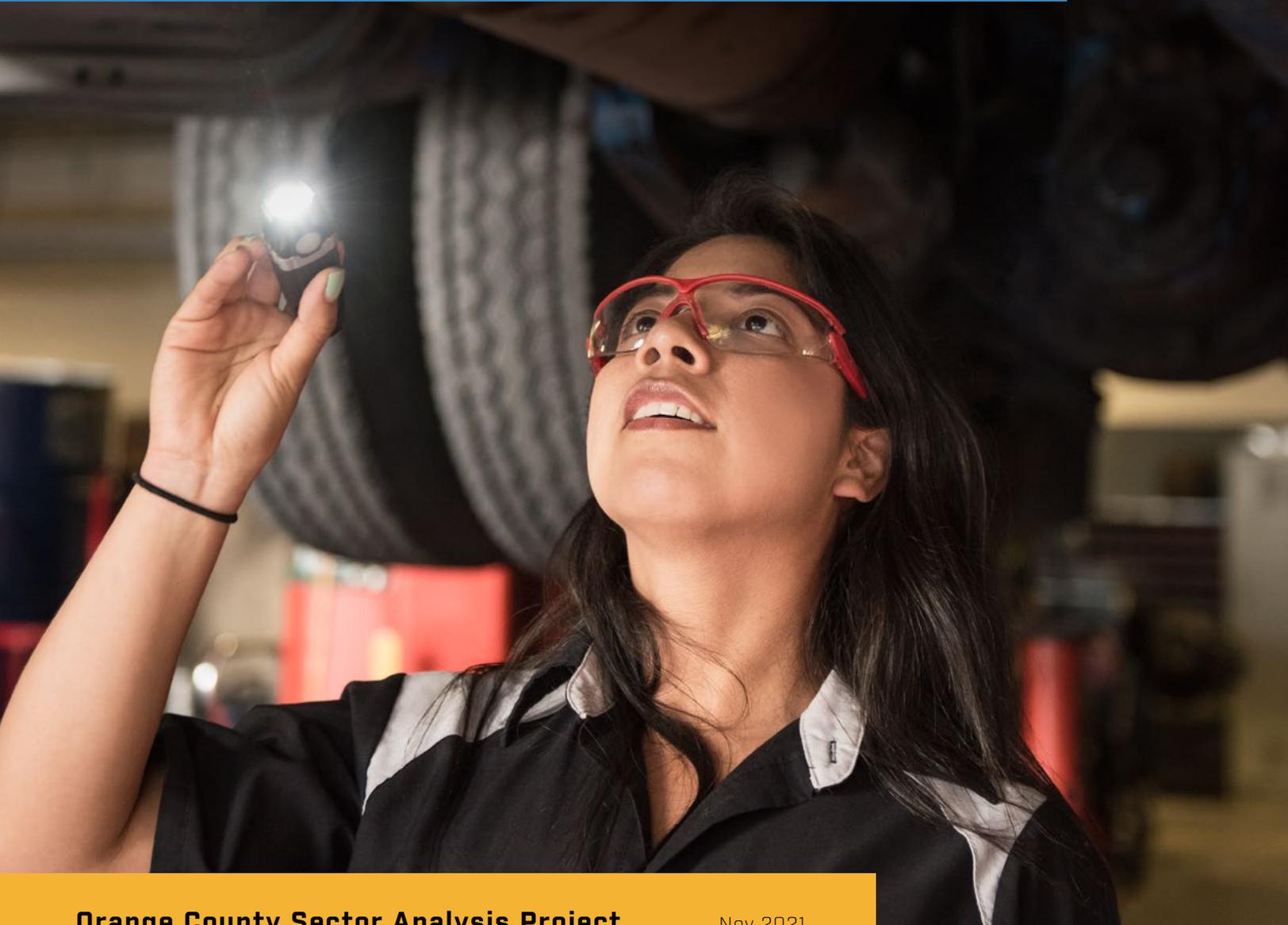


ADVANCED TRANSPORTATION & LOGISTICS



Orange County Sector Analysis Project

Nov 2021

Prepared by:
Orange County Center of Excellence
for Labor Market Research

POWERED BY



Orange County Community Colleges

ADVANCED TRANSPORTATION AND LOGISTICS

Demand and Supply Analysis: Orange County 2021

TABLE OF CONTENTS

2021 ORANGE COUNTY SECTOR ANALYSIS PROJECT DATA REFRESH	2
INTRODUCTION	2
ADVANCED TRANSPORTATION AND LOGISTICS TOP MIDDLE-SKILL JOBS	4
ADVANCED TRANSPORTATION AND LOGISTICS MIDDLE-SKILL JOBS WITH ENTRY-LEVEL WAGES BELOW CALIFORNIA FAMILY NEEDS CALCULATOR	6
FOCUS GROUP INSIGHTS – THE BIG PICTURE	8
KEY FINDINGS: ADVANCED TRANSPORTATION AND LOGISTICS.....	9
APPENDIX A: METHODOLOGY AND ADVANCED TRANSPORTATION AND LOGISTICS DATA DEFINITIONS	11
APPENDIX B: OCCUPATIONAL DIFFERENCES BETWEEN 2019 AND 2021 VERSIONS	14
APPENDIX C: DEFINITIONS FOR ADVANCED TRANSPORTATION AND LOGISTICS MIDDLE-SKILL JOBS	15
APPENDIX D: ADVANCED TRANSPORTATION AND LOGISTICS DEMAND AND SUPPLY DATA.....	17

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 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.

2021 ORANGE COUNTY SECTOR ANALYSIS PROJECT DATA REFRESH

The Orange County Sector Analysis Project was originally completed in 2019. In addition to the normal annual refresh of labor market information, the COVID-19 pandemic and subsequent economic recession occurred after the first publication. Furthermore, since 2019, the Bureau of Labor Statistics (BLS) updated the Standard Occupational Classification (SOC) system, which resulted in the removal, modification, or addition of occupations and their definitions. The Integrated Postsecondary Data Education System (IPEDS) also updated the Classification of Instructional Programs (CIP) classification system, which removed, modified, or added new CIP codes. The changes in these federal data systems required the Centers of Excellence to create an updated TOP-CIP-SOC crosswalk and determine skill classifications for new SOC codes. Moreover, the living wage for a single adult in Orange County increased from \$17.39 per hour to \$20.63 per hour.

To address these changes, and to provide the most recent labor market data available, the Orange County Center of Excellence for Labor Market Research (COE) pulled and analyzed current labor market information in November 2021 and applied the same methodology that was used in 2019 to update the data included in this brief. Due to these updates, two occupations from the 2019 brief are included in this update but have new SOC codes. There is one new occupation in this brief that was not included in the 2019 version. The occupations that were removed, changed, or added, as well as detailed explanations of these differences for each occupation, are summarized in Appendix B.

INTRODUCTION

This sector brief is a product of the Orange County Sector Analysis Project. It provides information about the Advanced Transportation and Logistics sector in Orange County, one of Orange County's six priority sectors; it compares labor market demand with educational program supply for middle-skill jobs and provides qualitative information from experts in the field. Orange County community colleges could use the information in this report for strategic planning and discussions about program development, career pathways work, sector strategies, noncredit-to-credit pipelines, apprenticeship programs, and work-based learning opportunities.

All of the Orange County Sector Analysis Project briefs began with quantitative labor market demand and supply analysis; however, they also include qualitative information derived from the project's focus group discussions. Between July and August 2019, the COE hosted a total of 12 sector-specific focus groups with regional stakeholders, including faculty and deans, as well as regional and state directors for employer engagement. One of these focus groups was specific to the Advanced Transportation and Logistics sector. The objectives of the focus groups were to identify labor market supply gaps (supply gaps) in middle-skill jobs; understand where programs exist or do not exist to fill in the supply gaps; and discuss how Orange County's community colleges could close the supply gaps. Focus group participants reviewed the demand and supply analysis prior to meeting and provided intelligence regarding how they are working to close supply gaps as well as the challenges they encounter in their programs; this valuable information could not be captured via traditional labor market research methods. The COE recorded then analyzed these discussions which resulted in the "Focus Group Insights" sections throughout this brief, supplementing traditional, quantitative labor market data with important, qualitative information.

Middle-Skill Jobs and Living Wage Introduction

In this brief, middle-skill jobs include: all occupations that require an educational requirement of some college, associate degree or apprenticeship; all occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or all occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training.

In this brief, top middle-skill jobs are defined as jobs that have both the most labor market demand (annual job openings) and entry-level wages at or above the California Family Needs Calculator¹ (commonly known as a "living wage"). The living wage is the hourly wage that a single adult needs to earn in order to meet basic needs in Orange County, and is currently \$20.63 per hour. The living wage is defined by the California Family Needs Calculator, which calculates the income necessary to cover costs including housing, food, transportation, health care, and other basic necessities.

¹ <https://insightccd.org/family-needs-calculator/>



Entry-level wage is defined as the 25th percentile hourly wage, which means that 25% of all workers in that occupation earn equal to or below this amount. Percentile wages represent the distribution of wages for each occupation. Generally, workers with minimal education and experience can expect to earn wages near the 10th percentile. With the additional education and training students receive in community college programs, they are more likely to earn wages at the 25th percentile, rather than the 10th percentile. Generally, with even more education and experience, students could expect to progress and earn the median wage, which is defined as the 50th percentile hourly wage.

Demand Introduction

For the purpose of this report, labor market demand is determined by the number of annual job openings employers expect to fill due to job growth and employee turnover between 2020 and 2025. Job growth is when an employer experiences increased demand for products and hires new employees to increase production, while employee turnover is when an employer hires replacement workers for employees who leave the workforce or change occupations.

Supply Introduction

Supply is determined by the average annual-number of related awards (e.g., certificates, degrees) generated between 2017 and 2020 by the region's community colleges and other educational institutions (e.g., private providers) for the purpose of this report. However, it should be noted that a student may earn more than one award; therefore, supply may be overestimated for certain occupations.

Whether or not there is a supply gap is determined by the difference between the demand and supply. The methodology regarding how these numbers are calculated is described in Appendix A.

FOCUS GROUP INSIGHTS

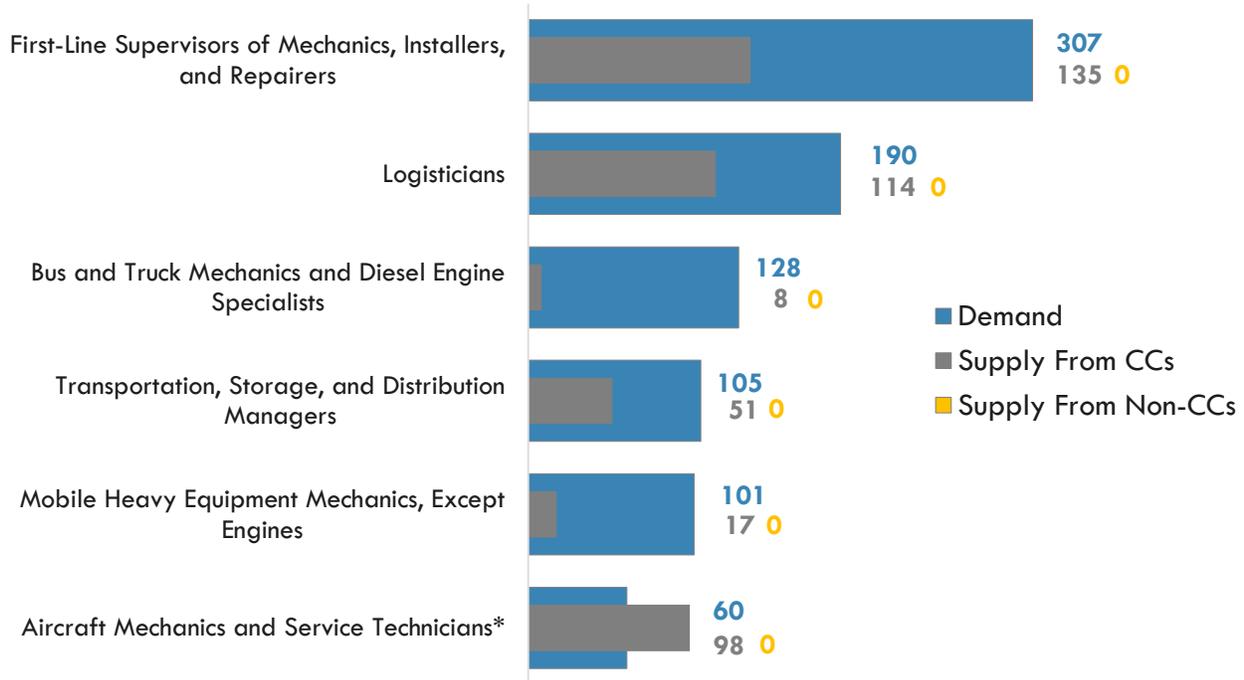
The Advanced Transportation and Logistics sector focus group included three faculty members – one counselor and two academic – and three administrators from four of the seven community colleges that offered Advanced Transportation and Logistics programs in Orange County between 2015 and 2017. The Regional Director for Employer Engagement also attended the focus group.

Focus group participants identified several data limitations, challenges in expanding programs, and other issues that were common across multiple sectors. The cross-sector, common themes are expanded on and explained in further detail in the standalone Orange County Sector Analysis Project Executive Summary report. Focus group participants also reported on limitations and challenges that were unique to the Advanced Transportation and Logistics sector. This sector-specific information is highlighted throughout this report in the Focus Group Insights and the Focus Group Insights – The Big Picture sections.

ADVANCED TRANSPORTATION AND LOGISTICS TOP MIDDLE-SKILL JOBS

This section compares Orange County’s labor market demand for the top middle-skill jobs in Advanced Transportation and Logistics with program supply from the region’s community colleges and non-community college providers (Exhibit 1). As seen in Exhibit 2, the entry-level wages² for these top middle-skill jobs are higher than the \$20.63 per hour living wage. Descriptions for each occupational title can be found in Appendix C. Detailed supply and demand data analyzed for each occupation, including supply numbers by institutions is included in Appendix D.

Exhibit 1: Advanced Transportation and Logistics Top Middle-Skill Jobs in Orange County: Labor Market Demand vs. Program Supply



(Please note: * indicates that the occupation has an oversupply of labor, ^ indicates that this occupation’s demand has been met, and N/A indicates that no community college program reported awards for this occupation or no community college program is available for this occupation.)

FOCUS GROUP INSIGHTS

Unmanned Aerial Vehicles/Drones

Focus group participants pointed out that the supply and demand figures in this report did not include data for unmanned aerial vehicles (UAV), more commonly known as drones. Currently, there is no occupation in the Standard Occupational Classification (SOC) system for drones, and it is unlikely that an occupation will be added in the future. Previous research from the COE has shown that drone piloting is an additional skill that can be added to make students more marketable for existing occupations, such as those in public safety, photography and videography, and surveying and GIS.

Certifications

Faculty members and the regional director for employment engagement identified several certifications for which Orange County community college programs train. Certifications for piloting include Federal Aviation Administration (FAA) Airmen Certificate and, for drone pilots, FAA Part 107. Focus group participants also identified several automotive certifications: Automotive Emission Control Specialist, Automotive Service Excellence (ASE), and Mobile Air Conditioning Society (MACS) 609 Certification. It is important to note that the supply figures included in this report do not include individuals that already hold these certifications, so supply for some occupations may be understated.

² In this report, entry-level wage is defined as the 25th percentile hourly wage, which means that 25% of all workers in the field earn equal to or below this amount. Generally, workers with less experience earn lower wages.

Exhibit 2. Advanced Transportation and Logistics Top Middle-Skill Jobs in Orange County: Entry-Level and Median Wages

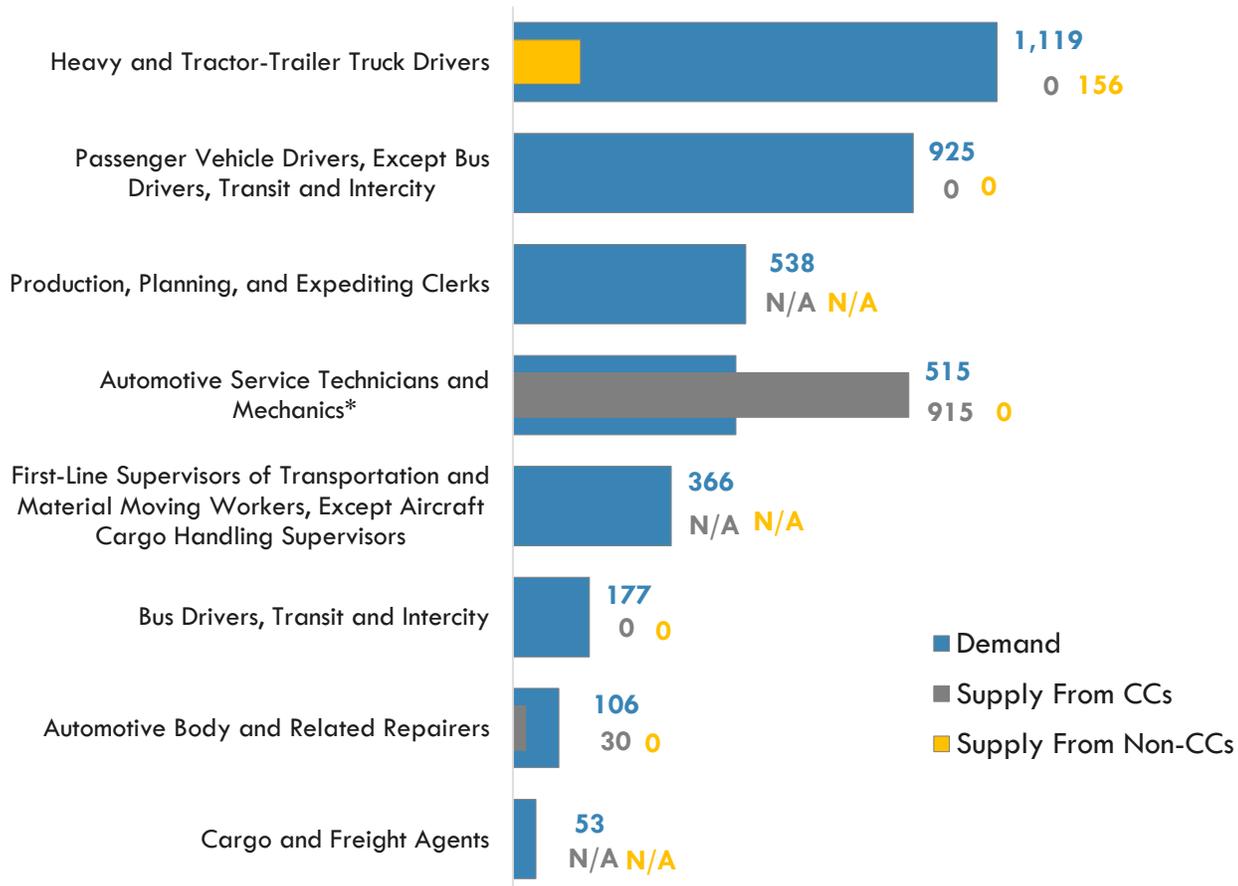
SOC Code	SOC (Occupational) Title	Demand (Annual Openings)	Entry-Level Wage (25 th Percentile)	Median Wage
49-1011	First-Line Supervisors of Mechanics, Installers, and Repairers	307	\$32.65	\$42.44
13-1081	Logisticians	190	\$32.45	\$41.01
49-3031	Bus and Truck Mechanics and Diesel Engine Specialists	128	\$25.43	\$30.83
11-3071	Transportation, Storage, and Distribution Managers	105	\$34.46	\$47.76
49-3042	Mobile Heavy Equipment Mechanics, Except Engines	101	\$25.23	\$32.72
49-3011	Aircraft Mechanics and Service Technicians*	60	\$26.72	\$34.74

ADVANCED TRANSPORTATION AND LOGISTICS MIDDLE-SKILL JOBS WITH ENTRY-LEVEL WAGES BELOW CALIFORNIA FAMILY NEEDS CALCULATOR

While it is important to understand which top middle-skill jobs have opportunities for increased program supply, it is also important to consider middle-skill occupations that have entry-level wages below the regional living wage but median wages above it. Since wages generally increase with additional experience and training, students could potentially earn self-sustaining wages with additional apprenticeship or work-based learning opportunities.

As seen in Exhibit 3, middle-skill Advanced Transportation and Logistics jobs with entry-level wages below the regional living wage have a significant number of annual job openings (labor market demand).

Exhibit 3: Advanced Transportation and Logistics Middle-Skill Jobs in Orange County with Entry-Level Wages Below the Regional Living Wage



(Please note: * indicates that the occupation has an oversupply of labor, ^ indicates that this occupation's demand has been met, and N/A indicates that no community college program reported awards for this occupation or no community college program is available for this occupation.)

Please note: Supply for Automotive Service Technicians and Mechanics is overstated due to the automatic conferral of low-unit, local certificates by Santa Ana College in 2017-18.

While these occupations have entry-level wages below the California Family Needs Calculator of \$20.63 per hour, occupations such as Heavy and Tractor-Trailer Truck Drivers; Production, Planning, and Expediting Clerks; Automotive Service Technicians and Mechanics; First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors; Bus Drivers, Transit and Intercity; Automotive Body and Related Repairers; and Cargo and Freight Agents have median wages higher than the regional living wage as denoted via the gray shading in Exhibit 4.

Exhibit 4. Advanced Transportation and Logistics Middle-Skill Jobs with Entry-Level Earnings Below the California Family Needs Calculator in Orange County: Entry-Level and Median Wages

SOC Code	SOC (Occupational) Title	Demand (Annual Openings)	Entry-Level Wage (25 th Percentile)	Median Wage
53-3032	Heavy and Tractor-Trailer Truck Drivers	1,119	\$19.14	\$23.91
53-3058	Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	925	\$11.02	\$15.42
43-5061	Production, Planning, and Expediting Clerks	538	\$19.15	\$24.82
49-3023	Automotive Service Technicians and Mechanics*	515	\$17.04	\$23.94
53-1047	First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	366	\$20.46	\$26.41
53-3052	Bus Drivers, Transit and Intercity	177	\$17.41	\$22.05
49-3021	Automotive Body and Related Repairers	106	\$15.93	\$23.50
43-5011	Cargo and Freight Agents	53	\$18.55	\$23.60

FOCUS GROUP INSIGHTS

Wages for Automotive Service Technicians and Mechanics

Focus group participants said that wages for the Automotive Service Technicians and Mechanics occupation appeared low and that, in their experience, wages were much higher. While standardized occupational titles are useful for classifying, collecting, and disseminating data in general, they do not always provide a complete picture of the demand and wages for specific job titles. The Automotive Service Technicians and Mechanics occupation includes several roles and titles, including lube technicians, service technician, and automobile mechanic. Prolific positions that are typically considered entry-level and require less experience, like lube technicians, have low wages and bring the entry-level and median wages down for this occupation. Focus group participants said that colleges should train students on wage expectations for these different roles.

Additionally, wages for self-employed Automotive Service Technician and Mechanics are nearly two dollars lower. This could be because self-employed workers may underreport their income if they are paid in cash.

FOCUS GROUP INSIGHTS – THE BIG PICTURE

Focus group participants addressed other issues and challenges that cannot be captured by traditional labor market information and provided insight on the tactics colleges and employers are currently using to address supply gaps in the Advanced Transportation and Logistics sector.

How Employers are Filling Supply Gaps

According to focus group participants, employers are primarily relying on internal training to address supply gaps. In many cases, particularly for automotive dealers, companies have manufacturer-specific training that workers go through when they are initially hired. Faculty members also noted that automation has required employers to re-train their workforce to keep up with current technology.

“In automotive, we focus on the fundamentals and employers actually have corporate training centers where they add on manufacturer-specific training or skills.”
– Regional Director for Employer Engagement

Employer Engagement

Faculty from multiple colleges noted that they are working to connect students with employers that have a need for qualified workers. Fullerton College has held recruitment events with the Orange County Automobile Dealers Association (OCADA) on their campus. Local industry partners, including new car dealerships, parts stores, and independent repair shops also contact Fullerton College’s shop manager and request students to fill employment opportunities.

Creative Ways Community Colleges are Offering Programs

Focus group participants identified some creative ways they are offering programs and some of the challenges they face when developing new ways to offer programs. Faculty and administrators said that virtual reality training is becoming more prominent, but the cost of this equipment is prohibitive. According to one faculty member, virtual reality for commercial piloting technology is developing so quickly that new technology quickly becomes obsolete. An administrator suggested using Strong Workforce Program (SWP) funds to keep up with these technological advances.

Some colleges are also exploring the idea of an automotive internship class to help students build relationships with an employer and increase their chances of permanent employment.

Challenges in Expanding Programs

Focus group participants identified several challenges to expanding programs in the Advanced Transportation and Logistics sector. Many of these challenges, including the lack of dedicated space, difficulty hiring faculty and staff, and high costs for equipment, cut across all sectors. However, focus group participants identified some unique challenges for this sector, such as the rapid development of new technology and automation. Another challenge specific to drone pilots is the changing regulatory landscape and uncertainty about future flight regulations. These advances make it difficult for faculty to define the specific training needed in these areas.

Automation

Focus group participants believe that automation will hurt this sector more than others. The Regional Director for Employer Engagement pointed to the recent decision by the Los Angeles Board of Harbor Commissioners decision to allow the Maersk shipping company to use automated electric cargo handlers at the Port of Los Angeles.³ Additionally, there is currently high demand for Heavy and Tractor Trailer Truck Drivers, but future demand for this occupation could be greatly affected by self-driving trucks.

Though automation will likely impact the demand for many of the occupations in this report, it could also provide opportunities to teach new skills and re-train current workers. In the case of the Port of Los Angeles, dockworkers reached an agreement that provides training for workers to repair and service automated machines.⁴ Similar training or re-training programs could put workers at a lower risk of losing their job to automation.

³ <https://abc7.com/business/port-of-las-largest-tenant-gets-green-light-to-automate-terminals/5389793/>

⁴ <https://labusinessjournal.com/news/2019/jul/18/deal-reached-over-automation-port/>

KEY FINDINGS: ADVANCED TRANSPORTATION AND LOGISTICS

Based on the demand and supply data, as well as the focus group insights analyzed in this brief, the COE identified the following key research findings and recommendations:

Demand and Supply Key Findings

4,690

annual job openings
(labor market demand)

1,524

average annual program awards
(labor market supply)

3,166

supply gap (number of
awards needed to close the gap)

Focus Group Key Findings and Recommendations

Key Finding	Recommendation
<p>1. Automation could hurt the Advanced Transportation and Logistics sectors more than others: The rapid development of autonomous vehicles and the recent decision by the Los Angeles Board of Harbor Commissioners to allow the Maersk shipping company to use automated electric cargo handlers at the Port of Los Angeles highlight some ways automation could hurt Advanced Transportation and Logistics sector. Additionally, there is currently high demand for Heavy and Tractor Trailer Truck Drivers, but future demand for this occupation could be greatly affected by self-driving trucks.</p>	<p>1. Though automation will likely impact the demand for many Advanced Transportation and Logistics occupations, it could also provide opportunities to teach new skills and re-train current workers. In the case of the Port of Los Angeles, dockworkers reached an agreement that provides training for workers to repair and service automated machines. Orange County community colleges could offer similar training or re-training programs that could put workers at a lower risk of losing their job to automation.</p>
<p>2. Wages for Automotive Service Technicians and Mechanics could be misleading: Entry-level wages for Automotive Service Technicians and Mechanics are below the regional living wage, which is currently \$20.63. However, this occupation includes several roles and titles, including lube technicians, service technician, and automobile mechanic. While standardized occupational titles are useful for classifying, collecting, and disseminating data in general, they do not always provide a complete picture of the demand and wages for specific job titles. Proliferous positions that are typically considered entry-level and require less experience, like lube technicians, have low wages and bring the entry-level and median wages down for this occupation.</p>	<p>2. To help students better understand wage expectations and career progression, the Regional Employer Engagement Team could work with faculty members and administrators to define common career paths and job titles within occupations. This information can then be shared with counselors so that students can learn about their career options and how their earnings potential changes with additional education and experience.</p>

Key Finding	Recommendation
<p>3. New technology, automation, and the changing regulatory landscape make it difficult for faculty to define the specific training needed for some areas; keeping up with these trends can be expensive: Due to the bureaucratic nature of the community college system, colleges are not always able to stay current with the most recent training technology, such as flight simulators. By the time colleges can adopt new technology, newer versions have often been released. Additionally, changes in flight regulations, and the potential for future regulations, for drone pilots creates uncertainty about the skills and knowledge students will need to succeed in associated occupations.</p>	<p>3. Faculty, administrators, and the Regional Employer Engagement Team could work with key employers to identify which training technology and platforms would be most cost effective for providing the skills and training students need to meet employers' demand for workers. This would allow colleges to focus their finite resources in areas that will be the most effective in supporting student success.</p>
<p>4. Knowledge, Skills, and Abilities (KSAs) for the sector have not been validated by employers: The OC Sector Analysis Project brief examines job gaps, but does not explore the specific KSAs taught at the colleges and compare them to the labor market's demand for Advanced Transportation and Logistics KSAs.</p>	<p>4. To determine if the region's community colleges are training for the right KSAs, the Regional Employer Engagement Team should convene employers in a "regional advisory group" where employers can review program KSAs, provide feedback, and validate the KSAs' current relevance and demand in the labor market.</p>

APPENDIX A: METHODOLOGY AND ADVANCED TRANSPORTATION AND LOGISTICS DATA DEFINITIONS

The Centers of Excellence for Labor Market Research (COE) prepared this report by analyzing data from occupations and education programs. Occupational data is derived from Emsi, a software program that consolidates data from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS) and other government agencies. Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

The California Community Colleges (CCC) define “sectors” by TOP codes. To determine what occupations should be analyzed in this brief, the COE first reviewed the TOP codes associated with the sector and then matched them with the SOC codes. According to the CCC, the following six-digit TOP codes define the Advanced Transportation and Logistics sector:

TOP6 Program Name	TOP6 Code
Air Traffic Control	3020.30
Alternative Fuels and Advanced Transportation Technology	0948.40
Automotive Collision Repair	0949.00
Automotive Technology	0948.00
Aviation Airframe Mechanics	0950.10
Aviation and Airport Management	3020.10
Aviation and Airport Management and Services	3020.00
Aviation Powerplant Mechanics	0950.20
Diesel Technology	0947.00
Heavy Equipment Maintenance	0947.20
Heavy Equipment Operation	0947.30
Logistics and Materials Transportation	0510.00
Marine Technology	0959.00
Motorcycle, Outboard and Small Engine Repair	3020.20
Piloting	3020.20
Railroad and Light Rail Operations	0947.40
Recreational Vehicle Service	0948.50
Truck and Bus Driving	0947.50
Upholstery Repair – Automotive	0949.10

Using a TOP-SOC crosswalk, the COE then identified middle-skill jobs for which programs within these TOP codes train. The COE examined more than 850 occupational codes from the Standard Occupational Classification (SOC)⁵ system and identified approximately 300 occupational codes as middle-skill jobs.

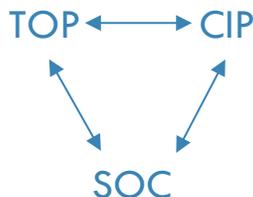
Middle-skill jobs include:

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

For this study, the COE analyzed occupations with a labor market demand of at least 50 annual job openings. (For comparison, the average and median demand for an occupation in Orange County is 307 and 63 annual job openings, respectively.)⁶ The number of annual job openings estimates employment change and turnover for an occupation each year between 2018 and 2023. Annual job openings include:

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

The COE then cross-referenced the SOC codes with CIP and TOP codes to compare labor market demand with program supply. The following diagram illustrates this process:



The COE determined labor market supply for an occupation or SOC code by analyzing the number of program completers or awards in a related TOP or CIP code. The COE developed a “supply table” with this information, which is the source of the program supply data for this report. TOP data comes from the California Community Colleges Chancellor’s Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data), also known as IPEDS. TOP is a system of numerical codes used at the state level to collect and report information on California community college programs and courses throughout the state that have similar outcomes. CIP codes are a taxonomy of academic disciplines at institutions of higher education in the United States and Canada. Institutions outside of the California community college system do not use TOP codes in their reporting systems.

Because a TOP/CIP code may train for more than one occupation, simply aggregating all supply from all related codes may overestimate supply for an occupation. Therefore, the COE de-duplicated TOP codes that trained for more than one occupation to avoid counting the program supply more than once. Doing so provides a more accurate representation of the supply gaps in the region by occupation. This information can be seen in the demand and supply tables in Appendix D of this study.

⁵ SOC is a federal statistical standard used by EDD, BLS and other federal agencies to classify workers into occupational categories for the purpose of collecting, calculating, or disseminating data.

⁶ Emsi. Data set 2021.3. QCEW Employees + Non-QCEW + Self-Employed. 2020-2025.

Qualitative Methodology

An integral aspect of the Orange County Sector Analysis Project was the qualitative data collected during the project's focus groups. In May 2019, the COE created an advisory group comprised of the Orange County Regional Consortium Director as well as five CTE deans and directors that represented the four community college districts in Orange County. The advisory group created a process and timeline for inviting faculty and administrators to participate in focus groups to better understand where programs exist or do not exist to fill supply gaps and discuss how Orange County's community colleges could close the supply gaps for the county's eight priority and emerging sectors.

To create the invite list of faculty and administrators, Regional Directors for Employer Engagement and career education deans at each college were asked to identify faculty and administrators that could represent their respective colleges in the sector-specific focus groups. Once this list was compiled, the career education deans invited faculty and administrators to express their interest in participating in a focus group via email. The email introduced the COE, provided an overview of the Orange County Sector Analysis Project, described the goals of the focus groups, and informed faculty that they would be compensated for their participation, and that lunch would be provided for all participants. All those that stated their interest were then connected with the COE who managed the focus groups scheduling and details.

In order to be as inclusive as possible, 12 focus groups were scheduled for the eight sectors – four sectors had one focus group each and four sectors had two focus groups each, during a three-week period from July to August 2019. All focus groups participants received a confirmation email before the event that included the focus group agenda, their sector-specific draft brief, and a pre-assignment with questions based off of the information contained in the draft sector briefs. Focus group participants were instructed to complete and bring the pre-assignment to the convening so that they were prepared to discuss the data, the challenges they face in their programs, and strategies to close supply gaps. Each focus group was recorded, with permission of the participants, by the COE solely for transcription purposes.

The COE conducted no more than two focus group sessions per day. During the focus groups the Orange County Sector Analysis Project was explained and then the information contained in the draft sector briefs was presented in detail. Participants were encouraged to ask questions and engage in dialogue throughout the entire focus group session. The COE took notes of each discussion as well as recorded the sessions, with permission of the participants and solely for transcription purposes.

Following the conclusion of the focus groups, the COE compiled the audio files, transcripts, notes, and pre-assignments to conduct a qualitative analysis of the themes for each focus group and to identify commonalities across multiple focus groups. The findings from this analysis have been highlighted throughout this report in the "Focus Group Insight" sections

APPENDIX B: OCCUPATIONAL DIFFERENCES BETWEEN 2019 AND 2021 VERSIONS

Removed Occupations

There were not any occupations from the 2019 version of this brief that were not included in the 2021 version.

SOC Code Changes

The following occupations were included in the 2019 version of this brief but are listed under a new SOC code in this brief due to BLS's update of the SOC system:

- Bus Drivers, Transit and Intercity (53-3021)
 - This occupation was updated by BLS to Bus Drivers, Transit and Intercity (53-3052)
- Bus Drivers, School or Special Client (53-3022)
 - This occupation was updated by BLS to Bus Drivers, Transit and Intercity (53-3052)

New Occupations

The following occupations were not included in the 2019 brief because they either did not meet the annual job openings criteria in 2019, were classified as below or above middle-skill in 2019, or a new SOC code was created by BLS:

- First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors (53-1047)
- Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity (53-3058)

APPENDIX C: DEFINITIONS FOR ADVANCED TRANSPORTATION AND LOGISTICS MIDDLE-SKILL JOBS

The following definitions and sample job titles for each occupation are derived from O*NET, the nation’s primary source of occupational information. The O*NET database contains hundreds of standardized and occupation-specific descriptors on nearly 1,000 occupations. O*NET is developed and sponsored by the U.S. Department of Labor⁷

Aircraft Mechanics and Service Technicians (SOC 49-3011): Diagnose, adjust, repair, or overhaul aircraft engines and assemblies, such as hydraulic and pneumatic systems. Sample job titles include:

- Aircraft Maintenance Technician
- Aircraft Mechanic
- Aircraft Restorer
- Aircraft Technician
- Airframe and Powerplant Mechanic
- Helicopter Mechanic

Automotive Body and Related Repairers (SOC 49-3021): Repair and refinish automotive vehicle bodies and straighten vehicle frames. Sample job titles include:

- Collision Technician
- Body and Frame Technician
- Auto Body Painter
- Refinish Technician
- Collision Repair Technician
- Body Repairer

Automotive Service Technicians and Mechanics (SOC 49-3023): Diagnose, adjust, repair, or overhaul automotive vehicles. Sample job titles include:

- Transmission Rebuilder
- Service Technician
- Truck Technician
- Automobile Mechanic (Auto Mechanic)
- Lube Technician
- Trim Technician

Bus and Truck Mechanics and Diesel Engine Specialists (SOC 49-3031): Diagnose, adjust, repair, or overhaul buses and trucks, or maintain and repair any type of diesel engines. Includes mechanics working primarily with automobile or marine diesel engines. Sample job titles include:

- Diesel Mechanic
- Trailer Mechanic
- Truck Mechanic
- Transit Mechanic
- Service Technician
- General Repair Mechanic

Bus Drivers, Transit and Intercity (SOC 53-3052): Drive bus or motor coach, including regular route operations, charters, and private carriage. May assist passengers with baggage. May collect fares or tickets. Sample job titles include:

- Motor Coach Operator
- Bus Operator
- Transit Operator
- Charter Coach Driver
- Tram Driver
- Tour Bus Driver

Cargo and Freight Agents (SOC 43-5011): Expedite and route movement of incoming and outgoing cargo and freight shipments in airline, train, and trucking terminals, and shipping docks. Take orders from customers and arrange pickup of freight and cargo for delivery to loading platform. Prepare and examine bills of lading to determine shipping charges and tariffs. Sample job titles include:

- Transportation Broker
- Yardmaster/Customer Service/Crew Dispatching
- Traffic Clerk
- Special Services Agent
- Ocean Forwarder
- Route Specialist

⁷ <https://www.onetonline.org/>

First-Line Supervisors of Mechanics, Installers, and Repairers (SOC 49-1011): Directly supervise and coordinate the activities of mechanics, installers, and repairers. Excludes team or work leaders. Sample job titles include:

- Service Manager
- Maintenance Superintendent
- Maintenance Supervisor
- Maintenance Planner
- Maintenance Foreman
- Electrical Supervisor

First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors (SOC 53-1047): Directly supervise and coordinate activities of material-moving machine and vehicle operators and helpers. Ample job titles include:

- Dock supervisor
- Driver Manager
- Fleet Manager
- On Car Supervisor
- Transportation Supervisor
- Warehouse Supervisor

Heavy and Tractor-Trailer Truck Drivers (SOC 53-3032): Drive a tractor-trailer combination or a truck with a capacity of at least 26,000 pounds Gross Vehicle Weight (GVW). May be required to unload truck. Requires commercial drivers' license. Sample job titles include:

- Semi-Truck Driver
- Mixer Driver
- Line Haul Driver
- Tractor Trailer Operator
- Roll Off Driver
- Log Truck Driver

Logisticians (SOC 13-1081): Analyze and coordinate the logistical functions of a firm or organization. Responsible for the entire life cycle of a product, including acquisition, distribution, internal allocation, delivery, and final disposal of resources. Sample job titles include:

- Production Planner
- Logistics Engineer
- Systems Engineer
- Supply Chain Analyst
- Logistics Analyst

Mobile Heavy Equipment Mechanics, Except Engines (SOC 49-3042): Diagnose, adjust, repair, or overhaul mobile mechanical, hydraulic, and pneumatic equipment, such as cranes, bulldozers, graders, and conveyors, used in construction, logging, and surface mining. Sample job titles include:

- Equipment Mechanic
- Construction Equipment Mechanic
- Shop Technician
- Mechanic
- Heavy Equipment Technician
- Heavy Equipment Field Mechanic

Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity (SOC 53-3058): Drive a motor vehicle to transport passengers on an unplanned basis and charge a fare, usually based on a meter. Drive a motor vehicle to transport passengers on a planned or scheduled basis. May collect a fare. Includes nonemergency medical transporters and hearse drivers. Because this is a new SOC code created by the BLS, sample job titles are not currently available

Production, Planning, and Expediting Clerks (SOC 49-3023): Coordinate and expedite the flow of work and materials within or between departments of an establishment according to production schedule. Duties include reviewing and distributing production, work, and shipment schedules; conferring with department supervisors to determine progress of work and completion dates; and compiling reports on progress of work, inventory levels, costs, and production problems. Sample job titles include:

- Production Assistant
- Production Scheduler
- Production Planner
- Production Controller
- Inventory Control Specialist
- Material Coordinator

Transportation, Storage, and Distribution Managers (SOC 11-3071): Plan, direct, or coordinate transportation, storage, or distribution activities in accordance with organizational policies and applicable government laws or regulations. Includes logistics managers

- Distribution Center Manager
- Distribution Manager
- Global Transportation Director
- Logistics Director
- Supply Chain Logistics Manager

APPENDIX D: ADVANCED TRANSPORTATION AND LOGISTICS DEMAND AND SUPPLY DATA

The following tables compare labor market demand and program supply by occupation. Because a TOP/CIP code may train for more than one occupation, simply aggregating all supply from all related codes may overestimate supply for that occupation. Therefore, the COE de-duplicated TOP codes that train for more than one occupation to avoid counting program supply more than once. This de-duplication process is denoted by the “Accounted for Above” statements in the tables on the following pages.

Additionally, the COE reviewed program data from the LaunchBoard⁸ and the statewide COE Supply Table⁹ and identified conflicting information. For certain occupations, LaunchBoard indicates that a college has a program for that occupation, but the COE Supply Table does not show program data for that college, and vice versa. These discrepancies are marked with the following:

- + The COE Supply Table indicates that this college supplies awards for this TOP code, but this college is not listed in the LaunchBoard
- * LaunchBoard indicates that this college/school supplies awards for this TOP code, but this college is not listed in COE Supply Table

The demand and supply tables in the following pages have three categories:

1. **Supply Gap** – If Average Annual Openings exceed Average Annual Awards by more than 25 percent, then the cell is shaded in light green.
2. **Supply Met** – If Average Annual Openings is within 25 percent +/- of Average Annual Awards, then the cell is shaded in light blue.
3. **Oversupply** – If Average Annual Awards exceed the Average Annual Awards by more than 25 percent, then the cell is shaded in red.

⁸ calpassplus.org/LaunchBoard/Home.aspx

⁹ <https://coeccc.net/our-resources/supply-and-demand/>

DEMAND AND SUPPLY DATA FOR TOP ADVANCED TRANSPORTATION AND LOGISTICS MIDDLE-SKILL JOBS IN ORANGE COUNTY

OCCUPATIONAL TITLE	AVERAGE ANNUAL OPENINGS (2020-2025)	SUPPLY GAP/ SUPPLY MET/ OVERSUPPLY	AVERAGE ANNUAL AWARDS (2017-2020)	TOP6 TITLE	TOP6 OR CIP	COLLEGE	COLLEGE SUPPLY (3-YR AVG)
First-Line Supervisors of Mechanics, Installers, and Repairers	307	Supply Gap	135	Electrical Systems and Power Transmission	0934.40	Santiago Canyon	75
				Energy Systems Technology	0946.10	Golden West	2
				Automotive Technology	0948.00	Already Accounted For	0
				Electrical	0952.20	Irvine	10
						North Orange Adult	18
						Orange Coast	3
Santiago Canyon	27						
Logisticians	190	Supply Gap	114	Logistics and Materials Transportation	0510.00	Coastline	114
Bus and Truck Mechanics and Diesel Engine Specialists	128	Supply Gap	17	Diesel Technology	0947.00	Santa Ana	8
Transportation, Storage, and Distribution Managers	105	Supply Gap	37	Aviation and Airport Management and Services	3020.00	Orange Coast	13
				Aviation and Airport Management	3020.10	Cypress	38
Mobile Heavy Equipment Mechanics, Except Engines	101	Supply Gap	17	Diesel Technology	0947.00	Already Accounted For	0
				Heavy Equipment Maintenance	0947.20	Santa Ana	17
						Santiago Canyon	0
Aircraft Mechanics and Service Technicians	60	Oversupply	98	Aeronautical and Aviation Technology	0950.00	Orange Coast	37
				Aviation Airframe Mechanics	0950.10	Orange Coast	31
				Aviation Powerplant Mechanics	0950.20	Orange Coast	30

DEMAND AND SUPPLY DATA FOR ADVANCED TRANSPORTATION AND LOGISTICS MIDDLE-SKILL JOBS WITH ENTRY-LEVEL WAGES BELOW CALIFORNIA FAMILY NEEDS CALCULATOR IN ORANGE COUNTY

OCCUPATIONAL TITLE	AVERAGE ANNUAL OPENINGS (2020-2025)	SUPPLY GAP/ SUPPLY MET/ OVERSUPPLY	AVERAGE ANNUAL AWARDS (2017-2020)	TOP6 TITLE	TOP6 OR CIP	COLLEGE	COLLEGE SUPPLY (3-YR AVG)
Automotive Body and Related Repairers	106	Supply Gap	0	Automotive Collision Repair	0949.00	Cypress	30
Automotive Service Technicians and Mechanics	515	Oversupply	915	Diesel Technology	0947.00	Already Accounted For	0
				Automotive Technology	0948.00	Cypress	266
						Fullerton	33
						Golden West	47
						Saddleback	33
Alternative Fuels Technology	0948.40	Saddleback	6				
Bus Drivers, Transit and Intercity	177	Supply Gap	13	Truck and Bus Driving	CIP 49.0505	Already Accounted For	0
Cargo and Freight Agents	53	Supply Gap	0	No Programs	No Programs	No Programs	0
First-Line Supervisors of Transportation and Material Moving Workers, Except Aircraft Cargo Handling Supervisors	366	Supply Gap	0	No Programs	No Programs	No Programs	0
Heavy and Tractor-Trailer Truck Drivers	1119	Supply Gap	156	Truck and Truck Driving	CIP 49.0505	California Career School	156
Passenger Vehicle Drivers, Except Bus Drivers, Transit and Intercity	925	Supply Gap	0	Truck and Bus Driving	0947.50	Already Accounted For	0
Production, Planning, and Expediting Clerks	538	Supply Gap	0	No Programs	No Programs	No Programs	0