Labor Market Analysis for Program Recommendation: 0948.00/Automotive Technology

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(Chassis Specialist Certificate of Achievement)
(Electrical Specialist Certificate of Achievement)
(Engine Performance Associate of Science)
(Engine Performance & Emissions Specialist Certificate of Achievement)
(Engine Specialist Certificate of Achievement)
(HVAC Specialist Certificate of Achievement)
(Hybrid Electric Vehicle Diagnostic Technician Associate of Science)
(Hybrid Electric Vehicle Maintenance Specialist Certificate of Achievement)
(Hybrid Electric Vehicle Maintenance Technician Certificate of Achievement)
(Maintenance Specialist Certificate of Achievement)
(Powertrain Specialist Associate of Science)
(Powertrain Specialist Certificate of Achievement)
(Transmission Specialist Certificate of Achievement)
(Smog Technician Associate of Science)
(Smog Technician Certificate of Achievement)

Orange County Center of Excellence, October 2023

Summary

Program LMI Endorsement	Endorsed: All LMI Criteria Met ☐	Endorsed: Some LMI Criteria Met ☒	Not LMI Endorsed ☐

Program LMI Endorsement Criteria		
	Yes ☑	No ☐
Supply Gap:	*Comments:* there is projected to be **2,515 annual job openings** throughout Los Angeles and Orange counties for *automotive service technicians and mechanics*, which **is more than the 1,594 awards conferred by educational institutions.**	
	Yes ☐	No ☑
Living Wage: (Entry-Level, 25th)	*Comments:* **All annual job openings** for *automotive service technicians and mechanics* **have entry-level hourly wages below the OC living wage of $20.63.**	
	Yes ☑	No ☐
Education:	*Comments:* The typical entry-level education for *automotive service technicians and mechanics* is a postsecondary nondegree award and **more than one-third of workers in the field have completed some college or an associate degree as their highest level of education.**	

Emerging Occupation(s)	
Yes ☐	*No* ☑
Comments: N/A	

The Orange County Center of Excellence for Labor Market Research (OC COE) prepared this report to determine whether there is a supply gap in the Los Angeles/Orange County regional labor market related to one middle-skill occupation:

- Automotive Service Technicians and Mechanics (49-3023)

Based on the available data there appears be a supply gap for *automotive service technicians and mechanics* and typical education requirements align with a community college education. However, all annual job openings have entry-level wages below the living wage. **Therefore, due to some of the regional labor market criteria being met, the COE endorses this proposed program.**

Exhibit 1 lists the occupational demand, supply, typical entry-level education, and educational attainment for the occupations included in this report.

Exhibit 1: Labor Market Endorsement Summary

Occupation (SOC)	Demand (Annual Openings)	Supply (CC and Non-CC)	Entry-Level Hourly Earnings (25th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Automotive Service Technicians and Mechanics (49-3023)	LA: 1,830	LA: 1,178	OC: $17.48	Postsecondary nondegree award	40%
	OC: 685	OC: 416			
	TTL: 2,515	*TTL: 1,594*			
Total	**2,515**	**1,594**	**N/A**	**N/A**	**N/A**

Demand:

- The number of jobs related to *automotive service technicians and mechanics* is projected to increase 2% through 2027, equating to 2,515 annual job openings.
- Typical hourly entry-level wages for *automotive service technicians and mechanics* are $17.48 in Orange County, which is below the living wage of $20.63.
- There were 8,580 online job postings for *automotive service technicians and mechanics* over the past 12 months. The highest number of postings were for automotive technicians, automotive mechanics, and lube technicians.
- The typical entry-level education for *automotive service technicians and mechanics* is a postsecondary nondegree award.
- Approximately 40% of workers in the field have completed some college or an associate degree as their highest level of education.

Supply:

- There was an average of 1,061 awards conferred by 15 community colleges in Los Angeles and Orange Counties from 2019 to 2022.
- Non-community college institutions conferred an average of 533 awards from 2019 to 2021.
- Orange County community college students that exited automotive technology programs in the 2019-20 academic year had a median annual wage of $30,098 after exiting the program and 19% attained the regional living wage.
- Throughout Orange County, 73% of automotive technology students that exited their program in 2018-19 reported that they are working in a job closely related to their field of study.

Demand

Occupational Projections:

Exhibit 2 shows the annual percent change in jobs for *automotive service technicians and mechanics* from 2017 through 2027. Though there was a 7% decline across all occupations from 2019 to 2020 due to the COVID-19 pandemic, employment for *automotive service technicians and mechanics* declined only 4% during the same period. Employment for *automotive service technicians and mechanics* is projected to grow at a similar rate for all occupations through 2027.

Exhibit 2: Annual Percent Change in Jobs for Automotive Service Technicians and Mechanics, 2017-2027

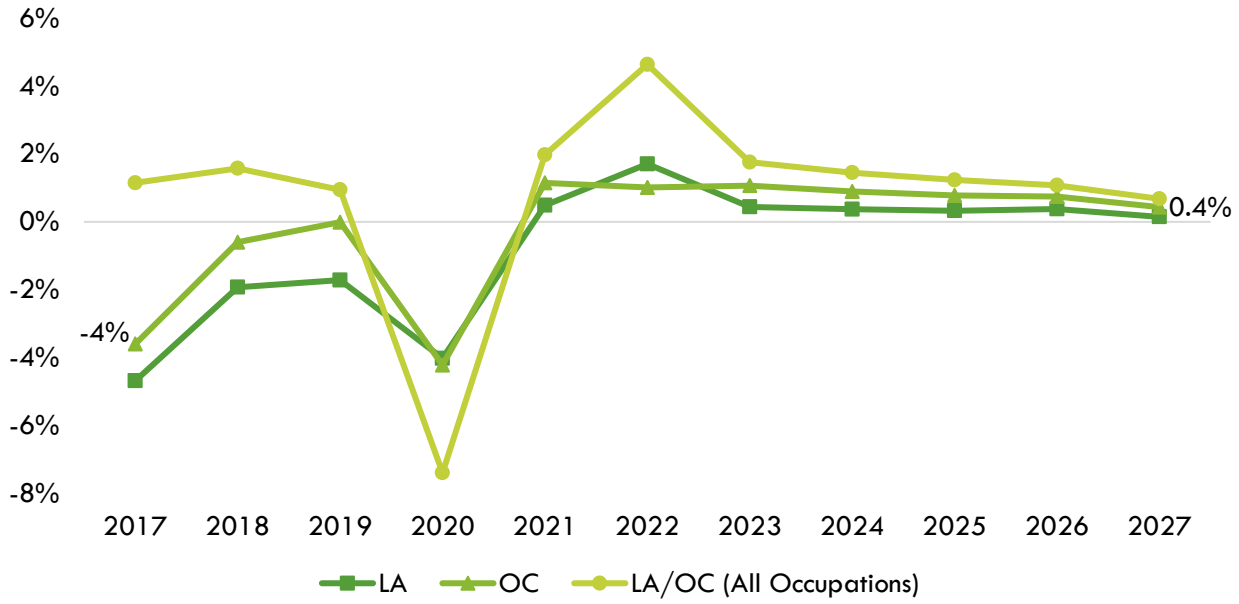


Exhibit 3 shows the five-year occupational demand projections for *automotive service technicians and mechanics*. In Los Angeles/Orange County, the number of jobs related to *automotive service technicians and mechanics* is projected to increase by 2% through 2027. There is projected to be 2,515 jobs available annually.

Exhibit 3: Occupational Demand in Los Angeles and Orange Counties[1]

Geography	2022 Jobs	2027 Jobs	2022-2027 Change	2022-2027 % Change	Annual Openings
Los Angeles	17,434	17,726	292	2%	1,830
Orange	6,261	6,510	249	4%	685
Total	**23,695**	**24,237**	**541**	**2%**	**2,515**

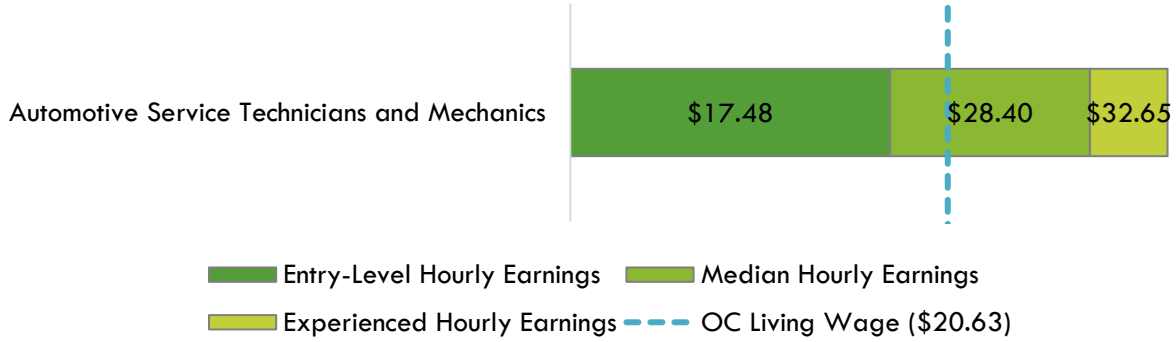
[1] Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for *automotive service technicians and mechanics* in Orange County as they relate to the county's living wage. Los Angeles County wages are included below in order to provide a complete analysis of the LA/OC region.

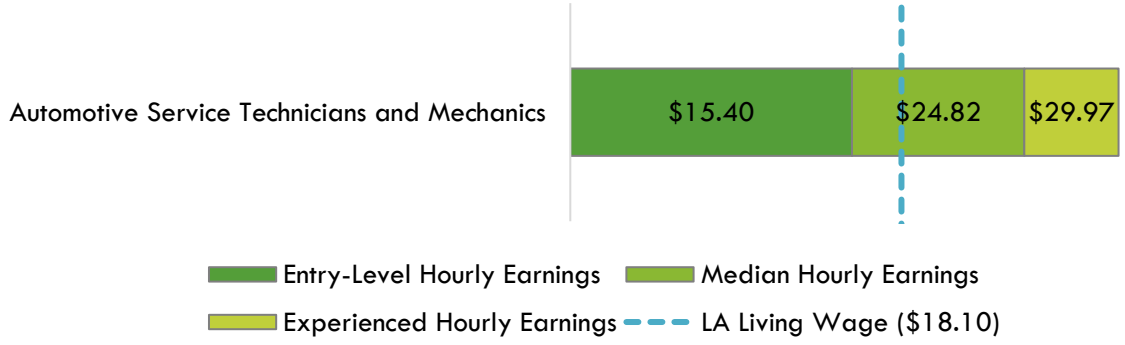
Typical entry-level hourly wages for *automotive service technicians and mechanics* are $17.48, which is below the living wage for one adult ($20.63 in Orange County). Orange County's average wages are nearly identical to the average statewide wage of $26.55 for *automotive service technicians and mechanics*. Exhibit 4 shows the wage range for *automotive service technicians and mechanics* in Orange County and how it compares to the regional living wage.

Exhibit 4: Wages by Occupation in Orange County



Typical entry-level hourly wages for *automotive service technicians and mechanics* are $15.40, which is below the living wage for one adult ($18.10 in Los Angeles County). Los Angeles County's average wages are below the average statewide wage of $26.55 for these occupations. Exhibit 5 shows the wage range for *automotive service technicians and mechanics* in Los Angeles County and how it compares to the regional living wage.

Exhibit 5: Wages by Occupation in Los Angeles County



Job Postings:

Important Online Job Postings Data Note: *Online job postings data is sourced from Lightcast, a labor market analytics firm that scrapes, collects, and organizes data from online job boards such as LinkedIn, Indeed, Glassdoor, Monster, GovernmentJobs.com, and thousands more. Lightcast uses natural language processing (NLP) to determine the related company, industry, occupation, and other information for each job posting. However, NLP has limitations that include understanding contextual words of phrases; determining differences in words that can be used as nouns, verbs, and/or adjectives; and misspellings or grammatical errors.*[2] *For these reasons, job postings could be assigned to the wrong employer, industry, or occupation within Lightcast's database.*

Additionally, there are several limitations when analyzing job postings. A single job posting may not represent a single job opening, as employers may be creating a pool of candidates for future openings or hiring for multiple positions with a single posting. Additionally, not all jobs are posted online, and jobs may be filled through other methods such as internal promotion, word-of-mouth advertising, physical job boards, or a variety of other channels.

There were 8,580 online job postings related to *automotive service technicians and mechanics* listed in the past 12 months, as shown in Exhibit 6.

Exhibit 6: Number of Job Postings by Occupation (n=8,580)

Occupation	Job Postings	Percentage of Job Postings
Automotive Service Technicians and Mechanics	8,580	100%

The top employers in the region, by number of job postings, are shown in Exhibit 7.

Exhibit 7: Top Employers by Number of Job Postings (n=8,580)

Employer	Job Postings	Percentage of Job Postings
Mv Transportation	375	4%
Pep Boys	336	4%
AutoNation	311	4%
Valvoline	206	2%
Monro Auto Service and Tire Centers	133	2%
Walmart	123	1%
CarMax	121	1%
Bridgestone Corporation	88	1%
Honda	86	1%
Goodyear	85	1%

The top specialized, soft, and computer skills listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 8.

[2] K. R. Chowdhary, Fundamentals of Artificial Intelligence (Basingstoke: Springer Nature, 2020), https://link.springer.com/book/10.1007/978-81-322-3972-7.

Exhibit 8: Top Skills by Number of Job Postings (n=8,580)

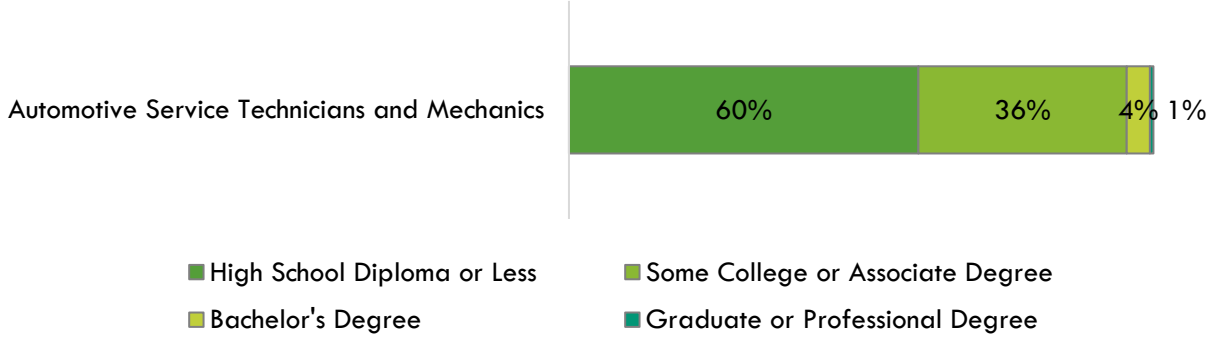
Top Specialized Skills	Top Soft Skills	Top Computer Skills
Automotive Services (2,330)	Customer Service (3,029)	Microsoft Office (253)
Brakes (1,630)	Communications (2,757)	Microsoft Excel (224)
Suspension (Vehicle) (1,537)	Management (1,510)	Microsoft Outlook (138)
Mechanics (1,175)	Good Driving Record (1,459)	Microsoft Word (79)
Changing Oil (1,085)	Sales (1,331)	Microsoft PowerPoint (77)
HVAC (1,008)	Detail Oriented (1,313)	Disassembler (73)
Vehicle Inspection (777)	Problem Solving (1,079)	MVS (OS) (58)
Hand Tools (729)	Troubleshooting (Problem Solving) (1,059)	Inventory Control Systems (48)
Transmission (691)	Lifting Ability (1,048)	Apache Struts (42)
Automotive Technologies (626)	Operations (799)	Spreadsheets (40)

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a postsecondary nondegree award as the typical entry-level education for *automotive service technicians and mechanics*. The national-level educational attainment data indicates approximately 40% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 9 shows the educational attainment for *automotive service technicians and mechanics*.

Of the 54% of the cumulative job postings for *automotive service technicians and mechanics* that listed a minimum education requirement in Los Angeles/Orange County, 92% (4,248) requested a high school diploma or an associate degree and 8% (375) requested a bachelor's degree.

Exhibit 9: National-level Educational Attainment for Occupations



Educational Supply

Community College Supply:

Exhibit 10 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Diesel Technology (0947.00), Automotive Technology (0948.00), and Alternative Fuels and Advanced Transportation Technology (0948.40). The colleges with the most completions in the region are Cypress, LA Trade, and Rio Hondo. Over the past 12 months, there were three other related program recommendation requests from regional community colleges.

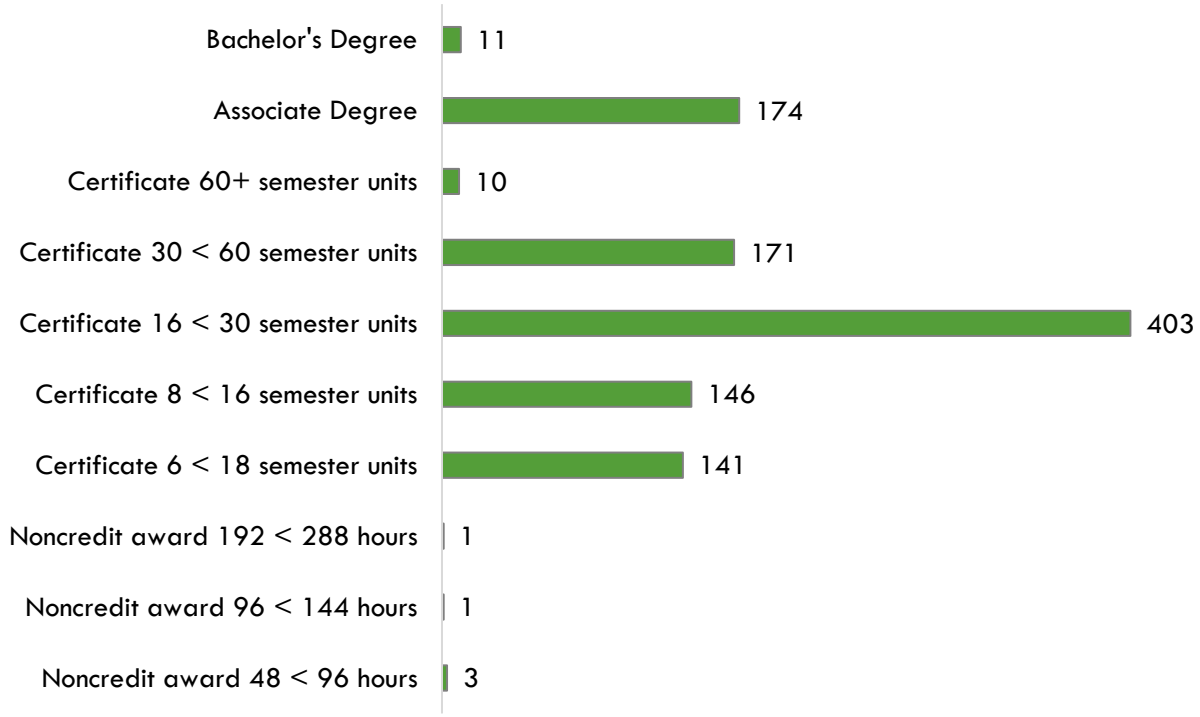
Exhibit 10: Regional Community College Awards (Certificates and Degrees), 2019-2022

TOP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2021-2022 Awards	3-Year Award Average
0947.00	Diesel Technology	Citrus	9	43	30	27
		LA Trade	31	20	41	31
		LA Subtotal	**40**	**63**	**71**	**58**
		Santa Ana	4	10	0	5
		OC Subtotal	**4**	**10**	**0**	**5**
		Supply Subtotal/Average	**44**	**73**	**71**	**63**
0948.00	Automotive Technology	Cerritos	71	22	45	46
		Citrus	13	10	35	19
		Compton	1	1	24	8
		East LA	35	18	43	32
		El Camino	77	35	35	48
		LA Pierce	110	44	49	68
		LA Trade	67	81	108	86
		Long Beach	24	42	66	45
		Pasadena	125	36	166	109
		Rio Hondo	86	55	92	78
		LA Subtotal	**609**	**344**	**663**	**539**
		Cypress	262	140	219	207
		Fullerton	24	25	26	25
		Golden West	55	21	69	49
		Saddleback	26	15	26	22
		Santa Ana	182	57	52	97
		OC Subtotal	**549**	**258**	**392**	**400**
		Supply Subtotal/Average	**1,158**	**602**	**1,055**	**939**
0948.40	Alternative Fuels and Advanced Transportation Technology	LA Trade	4	3	6	4
		Long Beach	8	15	9	10
		Rio Hondo	53	30	44	42
		LA Subtotal	**65**	**48**	**59**	**56**

TOP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2021-2022 Awards	3-Year Award Average
		Saddleback	2	2	6	3
		OC Subtotal	**2**	**2**	**6**	**3**
		Supply Subtotal/Average	**67**	**50**	**65**	**59**
		Supply Total/Average	**1,269**	**725**	**1,191**	**1,061**

Exhibit 11 shows the annual average community college awards by type from 2019-20 to 2021-22 The plurality of the awards are for certificates between 16 and less than 30 semester units (403), followed by associate degrees (174) and certificates between 30 and less than 60 semester units (171).

Exhibit 11: Annual Average Community College Awards by Type, 2019-2022



Community College Student Outcomes:

Exhibit 12 shows the Strong Workforce Program (SWP) metrics for automotive technology programs at Coast Community College District (CCCD) the Orange County Region, and California. Of the 1,345 automotive technology students in the 2020-21 academic year, 17% (230) attended a CCCD college.

CCCD students that exited automotive technology programs in the 2020-21 academic year had slightly higher median annual earnings ($32,564) compared to all automotive technology students in Orange County ($30,098) and the state ($31,296). However, all figures are significantly below the living wage.

Exhibit 12: Automotive Technology Strong Workforce Program Metrics, 2020-21[3]

SWP Metric	CCCD	OC Region	California
SWP Students	230	1,345	12,684
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	43%	34%	31%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	Insufficient data	49%	78%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	33	119	1,260
SWP Students Who Transferred to a Four-Year Postsecondary Institution	Insufficient data	17	175
SWP Students with a Job Closely Related to Their Field of Study (2019-20)	79%	73%	71%
Median Annual Earnings for SWP Exiting Students	$32,564 ($15.66)	$30,098 ($14.47)	$31,296 ($15.05)
Median Change in Earnings for SWP Exiting Students	66%	55%	49%
SWP Exiting Students Who Attained the Living Wage	24%	19%	37%

Non-Community College Supply:

For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs for *automotive service technicians and mechanics*. Exhibit 13 shows the annual and two-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Codes: Automotive Engineering Technology/Technician (15.0803), Automobile/Automotive Mechanics Technology/Technician (47.0604), and Vehicle Emissions Inspection and Maintenance Technology/Technician (47.0612). Due to different data collection periods, the most recent three-year period of available data is from 2019 to 20219. Between 2019 and 2021, non-community colleges in the region conferred an average of 491 awards annually in related training programs.

Exhibit 13: Regional Non-Community College Awards, 2019-2021

CIP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2-Year Award Average
15.0803	Automotive Engineering Technology/	Art Center College of Design	*5*	*5*	*5*

[3] All SWP metrics are for 2020-21 unless otherwise noted.

CIP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2-Year Award Average
	Technician	Hacienda La Puente Adult Education	25	31	28
		Supply Total/Average	**30**	**36**	**33**
47.0604	Automobile/ Automotive Mechanics Technology/ Technician	Baldwin Park Adult & Community Education	10	3	6
		UEI College-Gardena	127	73	100
		United Education Institute-Garden Grove	0	7	4
		United Education Institute-West Covina	98	78	88
		Universal Technical Institute-Southern California	306	206	256
		Supply Total/Average	**514**	**367**	**454**
47.0612	Vehicle Emissions Inspection and Maintenance Technology/ Technician	California Career School	7	0	4
		Supply Total/Average	**7**	**0**	**4**
		Supply Total/Average	**578**	**403**	**491**

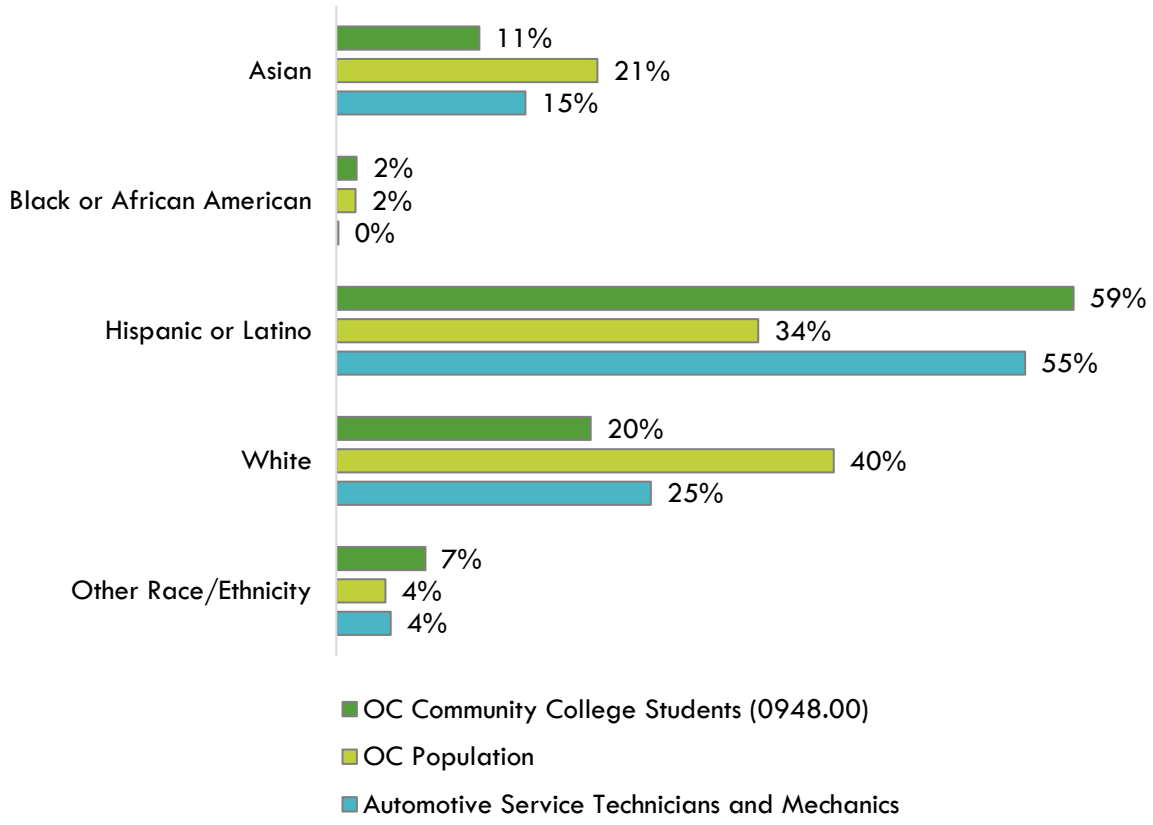
Regional Demographics

This section analyzes demographic data for Orange County community college students enrolled in automotive technology compared to the OC population, as well occupational data, for the purpose of identifying potential diversity and equity issues that can be addressed by community college programs.

Ethnicity:

Exhibit 14 shows the ethnicity of Orange County community college students enrolled in automotive technology programs compared to the overall Orange County population, as well as *automotive service technicians and mechanics*. Notably, 59% of automotive technology students are Hispanic or Latino, which is similar to *automotive service technicians and mechanics* (55%), but significantly higher than the population (34%). Conversely, 20% of automotive technology students and 25% of *automotive service technicians and mechanics* are white, which is significantly lower than the population (40%).

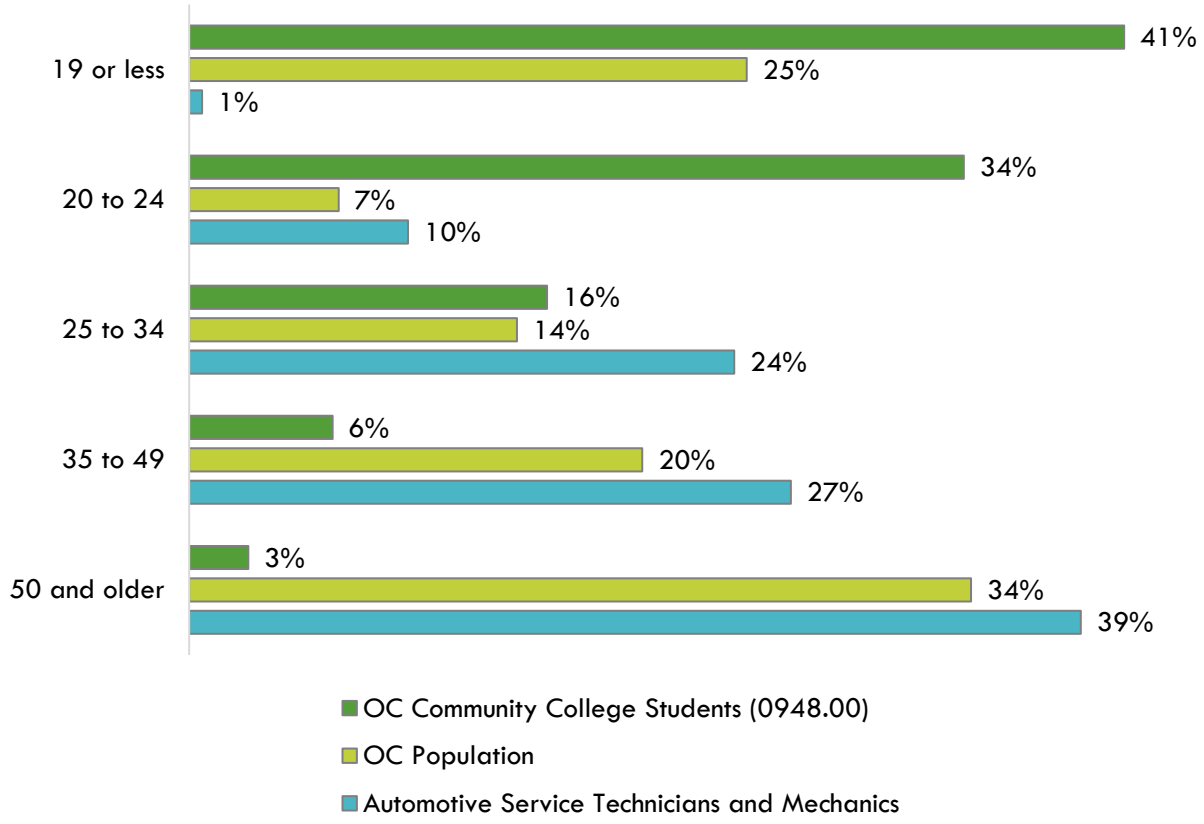
Exhibit 14: Program and County Demographics by Ethnicity



Age:

Exhibit 15 shows the age of Orange County community college students enrolled in automotive technology programs compared to the overall Orange County population, as well as *automotive service technicians and mechanics*. Notably, 75% of community college automotive technology students are 24 or less, which is significantly higher than the population (32%), and *automotive service technicians and mechanics* (11%). Additionally, though the plurality of *automotive service technicians and mechanics* are 50 and older, only 3% of automotive technology students are in the same age group.

Exhibit 15: Program and County Demographics by Age

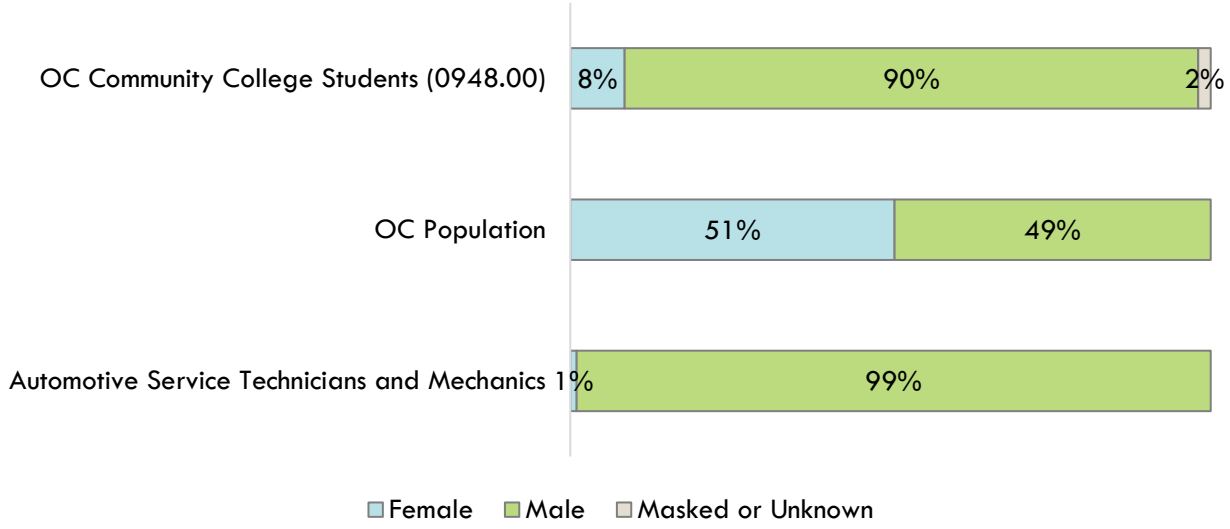


Sex:

Exhibit 16 shows the sex of Orange County community college students enrolled in automotive technology programs compared to the overall Orange County population as well as *automotive service technicians and mechanics*.

Though the Orange County population is split nearly evenly between men and women, the overwhelming majority of automotive technology students (90%) and *automotive service technicians and mechanics* (99%) are men.

Exhibit 16: Program and County Demographics by Sex



Appendix A: Methodology

The OC COE prepared this report by analyzing data from occupations and education programs. Occupational data is derived from Lightcast, a labor market analytics firm 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).

Using a TOP-SOC crosswalk, the OC COE identified middle-skill jobs for which programs within these TOP codes train. 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.

The OC 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 code data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP code 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.

Data included in this analysis represent the labor market demand for relevant positions most closely related to the proposed program as expressed by the requesting college in consultation with the OC COE. Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study which can signal demand and show what employers are looking for in potential employees, but is not a perfect measure of the quantity of open positions.

All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; 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 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.

Appendix B: Data Sources

Data Type	Source
Occupational Projections, Wages, and Job Postings	Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics and the American Community Survey. For more information, see https://lightcast.io/
Living Wage	The living wage is derived from the Insight Center's California Family Needs Calculator, which measures the income necessary for an individual of family to afford basic expenses. The data assesses the cost of housing, food, child care, health care, transportation, and taxes. For more information, see: https://insightcced.org/family-needs-calculator/ The living wage for one adult in Orange County is $20.63 per hour ($42,910.40 annually). This figure is used by the CCCCO to calculate the percentage of students that attained the regional living wage.
Typical Education and Training Requirements, and Educational Attainment	The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, see https://www.bls.gov/emp/documentation/education/tech.htm
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	The O*NET database includes information on skills, abilities, knowledges, work activities, and interests associated with occupations. For more information, see https://www.onetonline.org/help/online/
Educational Supply	The CCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions). For more information, see https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions
Student Metrics and Demographics	LaunchBoard, a statewide data system supported by the California Community Colleges Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: https://www.calpassplus.org/LaunchBoard/Home.aspx

Data Type	Source
Population and Occupation Demographics	The Census Bureau's American Community Survey (ACS) is the premier source for detailed population and housing information. For more information, see: https://www.census.gov/programs-surveys/acs Data is sourced from IPUMS USA, a database providing access to ACS and other Census Bureau data products. For more information, see: https://usa.ipums.org/usa/about.shtml

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