

Labor Market Analysis for Program Recommendation:
 0948.00/Automotive Technology
 (Automotive Applied Skills)
 (Automotive Essentials)



Orange County Center of Excellence, June 2023

Summary

Program LMI Endorsement	Endorsed: All LMI Criteria Met <input type="checkbox"/>	Endorsed: Some LMI Criteria Met <input checked="" type="checkbox"/>	Not LMI Endorsed <input type="checkbox"/>
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Program LMI Endorsement Criteria

	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Supply Gap:	<i>Comments:</i> there is projected to be 3,504 annual job openings throughout Los Angeles and Orange counties for <i>automotive service technicians and mechanics</i> , which is more than the 1,665 awards conferred by educational institutions .	
Living Wage: (Entry-Level, 25 th)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	<i>Comments:</i> Entry-level wages for automotive service technicians and mechanics are \$19.19, which is below the OC living wage of \$20.63.	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<i>Comments:</i> The typical entry-level education for <i>automotive service technicians and mechanics</i> is a postsecondary nondegree award. Additionally, over 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 <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<i>Comments:</i> 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 to be a supply gap for *automotive service technicians and mechanics* and typical education requirements for this occupation align with a community college education. However, entry-level wages are 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: Occupational Demand and Supply in Los Angeles/Orange Counties

Occupation (SOC)	Demand (Annual Openings)	Supply (CC and Non-CC)	Entry-Level Hourly Earnings (25 th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Automotive Service Technicians and Mechanics (49-3023)	LA: 2,908 OC: 597	LA: 1,180 OC: 485	OC: \$19.19	Postsecondary nondegree award	36%
LA/OC Total	3,504	1,665	N/A	N/A	N/A

Demand:

- The number of jobs related to *automotive service technicians and mechanics* is projected to increase 1% through 2026, equating to 3,504 annual job openings.
- Hourly entry-level wages for *automotive service technicians and mechanics* are \$19.19 in Orange County, which is significantly below the living wage of \$20.63.
- There were 9,493 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 automotive technicians/mechanics.
- The typical entry-level education for *automotive service technicians and mechanics* is a postsecondary nondegree award.
- Approximately 36% of workers in the field have completed some college or an associate degree as their highest level of educational attainment.

Supply:

- There was an average of 1,156 awards conferred by 16 community colleges in Los Angeles and Orange Counties from 2018 to 2021.
- Non-community college institutions conferred an average of 509 awards from 2017-2020.
- Orange County community college students that exited automotive technology programs in the 2019-2020 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 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 2016 through 2026. Employment for *automotive service technicians and mechanics* in Orange County decreased 8% from 2019 to 2020 due to the COVID-19 pandemic, which is slightly higher than the 6% decline across all occupations during the same period. Employment for *automotive service technicians and mechanics* is projected to grow at a similar rate to all occupations through 2026.

Exhibit 2: Annual Percent Change in Jobs for Automotive Service Technicians and Mechanics, 2016-2026

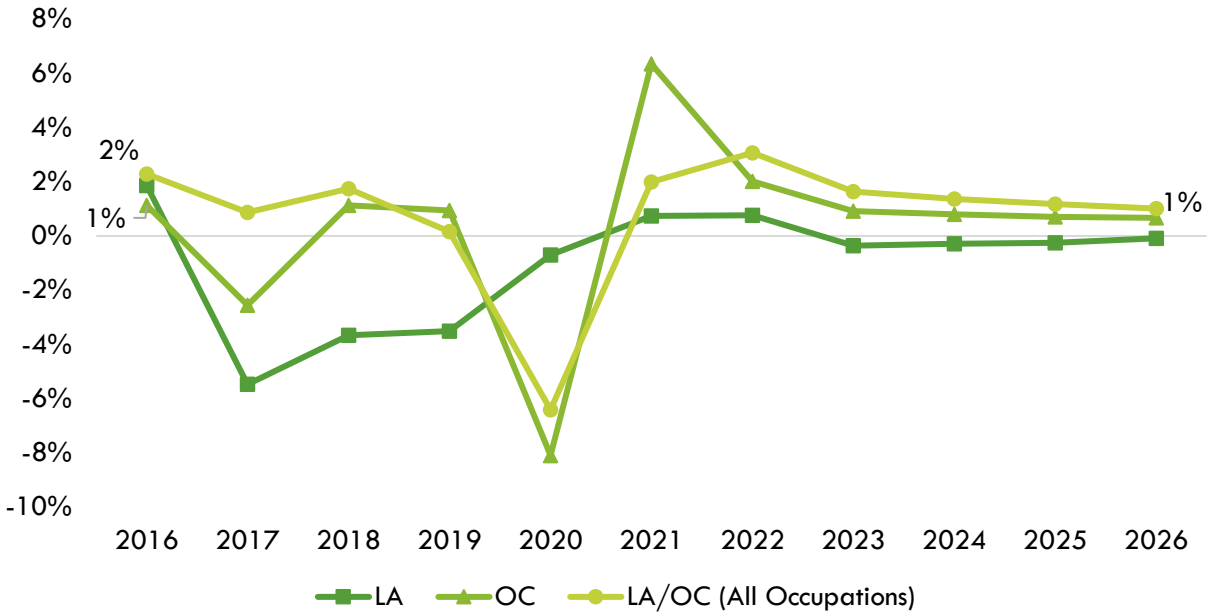


Exhibit 3 shows the five-year occupational demand projections for *automotive service technicians and mechanics*. In Los Angeles/Orange County, the number of jobs for *automotive service technicians and mechanics* is projected to increase by 7% through 2026. There is projected to be 6,348 jobs available annually.

Exhibit 3: Occupational Demand in Los Angeles and Orange Counties¹

Geography	2021 Jobs	2026 Jobs	2021-2026 Change	2021-2026 % Change	Annual Openings
Los Angeles	28,338	28,274	(64)	(0.2%)	2,908
Orange	5,343	5,621	278	5%	597
Total	33,681	33,896	215	1%	3,504

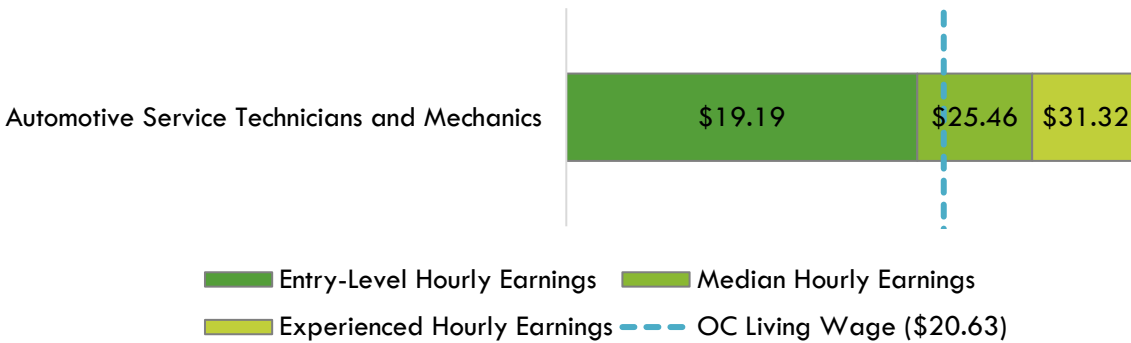
Wages:

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.

The typical entry-level hourly wages for *automotive service technicians and mechanics* are \$19.19, which is below the living wage for one adult (\$20.63 in Orange County). Median wages are \$25.46, which is above the living wage. Orange County's average wages are higher than the average statewide wage of \$22.60 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.

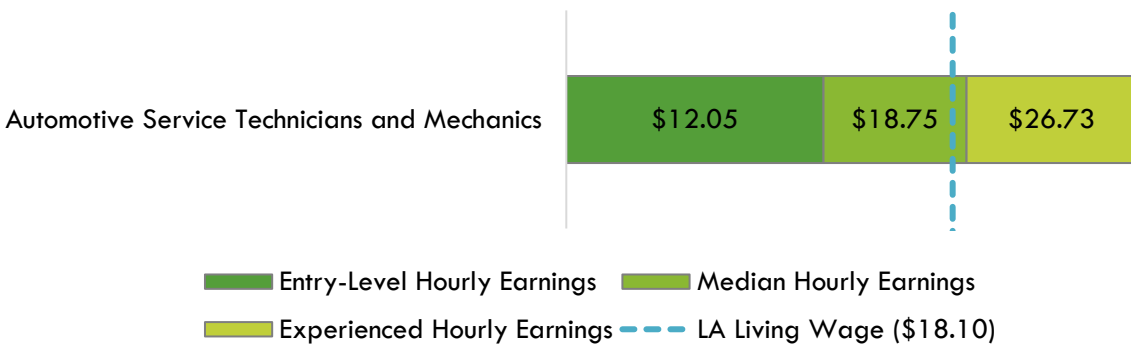
¹ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Exhibit 4: Wages by Occupation in Orange County



The typical entry-level hourly wages for *automotive service technicians and mechanics* are \$12.05, which is significantly below the living wage for one adult (\$18.10 in Los Angeles County). Median (\$18.75) and experienced (\$26.73) wages are above the living wage. Los Angeles County's average wages are below the average statewide wage of \$22.60 for *automotive service technicians and mechanics*. 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.

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

There were 9,493 online job postings related to *automotive service technicians and mechanics* listed in the past 12 months.

Exhibit 6: Number of Job Postings by Occupation (n=9,493)

Occupation	Job Postings	Percentage of Job Postings
Automotive Service Technicians and Mechanics	9,493	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=9,493)

Employer	Job Postings	Percentage of Job Postings
AutoNation	416	4%
Mv Transportation	389	4%
Pep Boys	349	4%
CarMax	200	2%
Valvoline	195	2%
Walmart	166	2%
Monro Auto Service and Tire Centers	149	2%
Honda	118	1%
Bridgestone Corporation	100	1%
Goodyear	87	1%

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

Exhibit 8: Top Skills by Number of Job Postings (n=9,493)

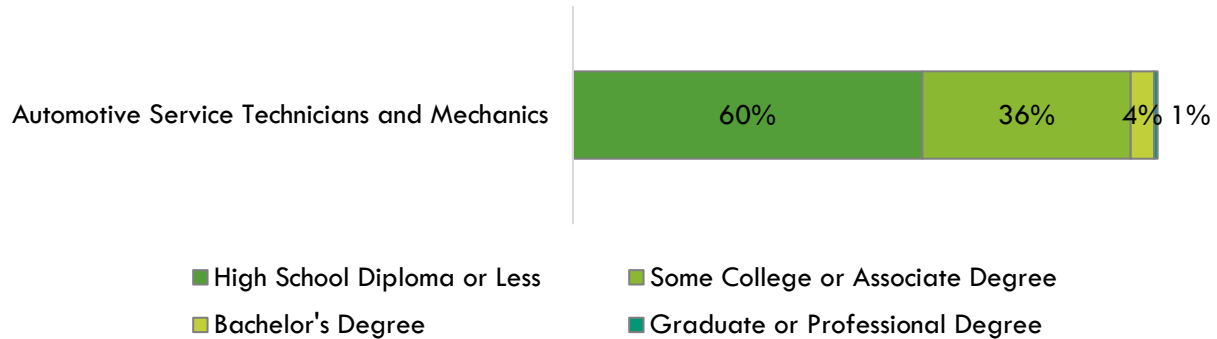
Top Specialized Skills	Top Soft Skills	Top Computer Skills
Automotive Services (2,708)	Customer Service (3,318)	Microsoft Office (270)
Brakes (1,835)	Communications (3,039)	Microsoft Excel (247)
Suspension (Vehicle) (1,755)	Management (1,585)	Microsoft Outlook (145)
Mechanics (1,333)	Detail Oriented (1,575)	Disassembler (92)
Changing Oil (1,169)	Sales (1,532)	Microsoft PowerPoint (84)
HVAC (1,058)	Good Driving Record (1,514)	Microsoft Word (84)
Vehicle Inspection (916)	Problem Solving (1,167)	MVS (OS) (56)
Hand Tools (915)	Troubleshooting (Problem Solving) (1,097)	Web Browsers (51)
Transmission (780)	Lifting Ability (1,038)	Apache Struts (49)
Automotive Technologies (659)	Fine Motor Skills (964)	Inventory Control Systems (48)

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*. Additionally, the national-level educational attainment data indicates 36% 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 53% of the cumulative job postings for *automotive service technicians and mechanics* that listed a minimum education requirement in Los Angeles/Orange County, 93% (4,653) requested a high school diploma or an associate degree and % (373) requested a bachelor's, master's, or doctoral 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 code: Diesel Technology (0947.00), Automotive Technology (0948.00), and Alternative Fuels and Advanced Transportation (0948.40). The colleges with the most completions in the region are Cypress, LA Trade, and Santa Ana. Over the past 12 months, there were two other related program recommendation requests from regional community colleges.

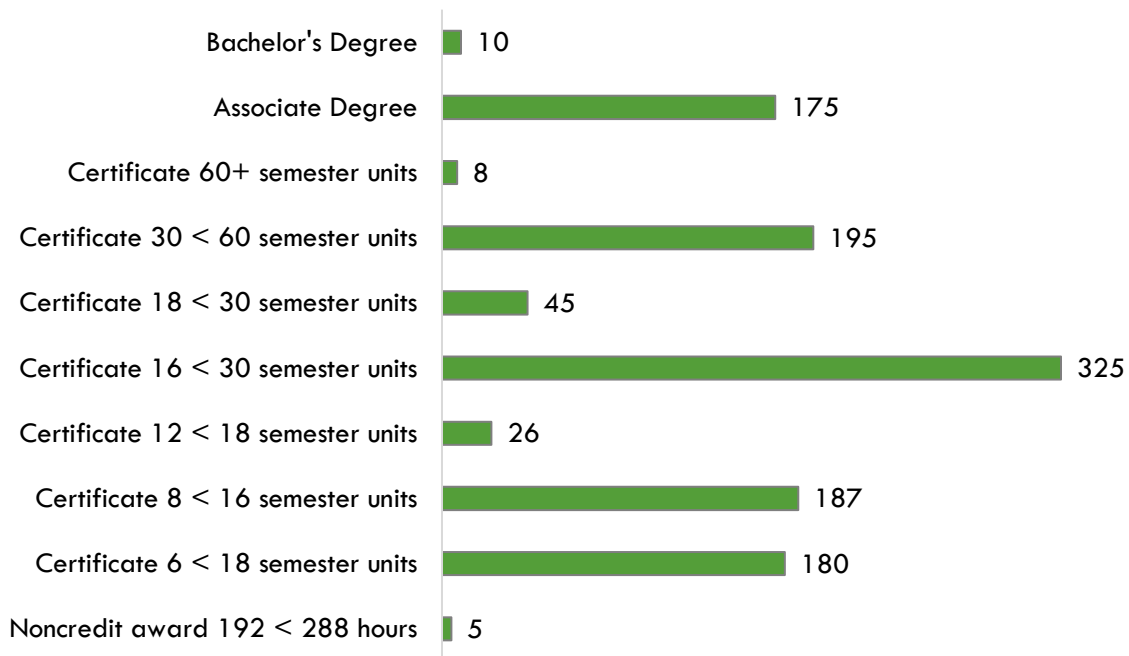
Exhibit 10: Regional Community College Awards (Certificates and Degrees), 2018-2021

TOP Code	Program	College	2018-2019 Awards	2019-2020 Awards	2020-2021 Awards	3-Year Award Average
0947.00	Diesel Technology	Citrus	24	9	43	25
		LA Trade	35	31	20	29
		LA Subtotal	59	40	63	54
		Santa Ana	10	4	10	8
		OC Subtotal	10	4	10	8
Supply Subtotal/Average			69	44	73	62
0948.00	Automotive Technology	Cerritos	58	71	22	50
		Citrus	114	13	10	46
		Compton	15	1	1	5
		East LA	70	35	18	41
		El Camino	70	77	35	61

TOP Code	Program	College	2018-2019 Awards	2019-2020 Awards	2020-2021 Awards	3-Year Award Average		
		LA Pierce	86	110	44	80		
		LA Trade	157	67	81	101		
		Long Beach	0	24	42	23		
		Pasadena	107	125	36	90		
		Rio Hondo	92	86	55	77		
		Santa Monica	2	0	0	1		
		LA Subtotal	771	609	344	575		
		Cypress	362	262	140	254		
		Fullerton	26	24	25	25		
		Golden West	51	55	21	42		
		Saddleback	48	26	15	29		
		OC Subtotal	606	549	258	469		
		Supply Subtotal/Average			1,377	1,158	602	1,044
		0948.40	Alternative Fuels and Advanced Transportation Technology	Cerritos	1	0	0	0
LA Trade	10			4	3	6		
Long Beach	7			8	15	10		
Rio Hondo	8			53	30	30		
LA Subtotal	26			65	48	46		
Saddleback	8			2	2	4		
OC Subtotal	8			2	2	4		
Supply Subtotal/Average			34	67	50	50		
Supply Subtotal/Average			1,480	1,269	725	1,156		

Exhibit 11 shows the annual average community college awards by type from 2018-19 through 2020-21. The plurality of the awards are for certificates between 16 and less than 30 semester units, followed by certificates between 30 and less than 60 semester units.

Exhibit 11: Annual Average Community College Awards by Type, 2018-2021



Community College Student Outcomes:

Exhibit 12 shows the Strong Workforce Program (SWP) metrics for automotive technology programs at Rancho Santiago Community College District (RSCCD) the Orange County Region, and California. Of the 1,345 automotive technology students in the 2020-21 academic year, 24% (324) attended a RSCCD college.

RSCCD students that exited automotive technology programs in the 2019-20 academic year had similar median annual earnings (\$30,958) 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 (0948.00) Strong Workforce Program Metrics, 2020-21³

SWP Metric	RSCCD	OC Region	California
SWP Students	324	1,345	12,684
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	24%	34%	31%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	49%	49%	78%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	24	119	1,260
SWP Students Who Transferred to a Four-Year Postsecondary Institution (2019-20)	0	17	175

³ All SWP metrics are for 2019-20 unless otherwise noted.

SWP Metric	RSCCD	OC Region	California
SWP Students with a Job Closely Related to Their Field of Study (2018-19)	80%	73%	71%
Median Annual Earnings for SWP Exiting Students (2019-20)	\$30,958 (\$14.88)	\$30,098 (\$14.47)	\$31,296 (\$15.05)
Median Change in Earnings for SWP Exiting Students (2019-20)	45%	55%	49%
SWP Exiting Students Who Attained the Living Wage (2019-20)	17%	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 three-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 (19.0706). Due to different data collection periods, the most recent three-year period of available data is from 2017 to 2020. Between 2017 and 2020, non-community college institutions in the region conferred an average of 509 awards annually in related training programs.

Exhibit 13: Regional Non-Community College Awards, 2017-2020

CIP Code	Program	College	2017-2018 Awards	2018-2019 Awards	2019-2020 Awards	3-Year Award Average
15.0803	Automotive Engineering Technology/Technician	Art Center College of Design	51	51	38	47
		Hacienda La Puente Adult Education	0	0	25	8
Supply Total/Average			51	51	63	55
47.0604	Automobile/Automotive Mechanics Technology/Technician	Baldwin Park Adult & Community Education	9	13	10	11
		Hacienda La Puente Adult Education	21	9	0	10
		UEI College-Gardena	46	72	127	82
		United Education Institute-West Covina	0	32	98	43
		Universal Technical Institute-Southern California	329	277	306	304
Supply Total/Average			405	403	541	450
19.0706	Vehicle Emissions Inspection and Maintenance Technology/Technician	California Career School	0	7	7	4
		Supply Total/Average	0	7	7	4
Supply Total/Average			456	461	611	509

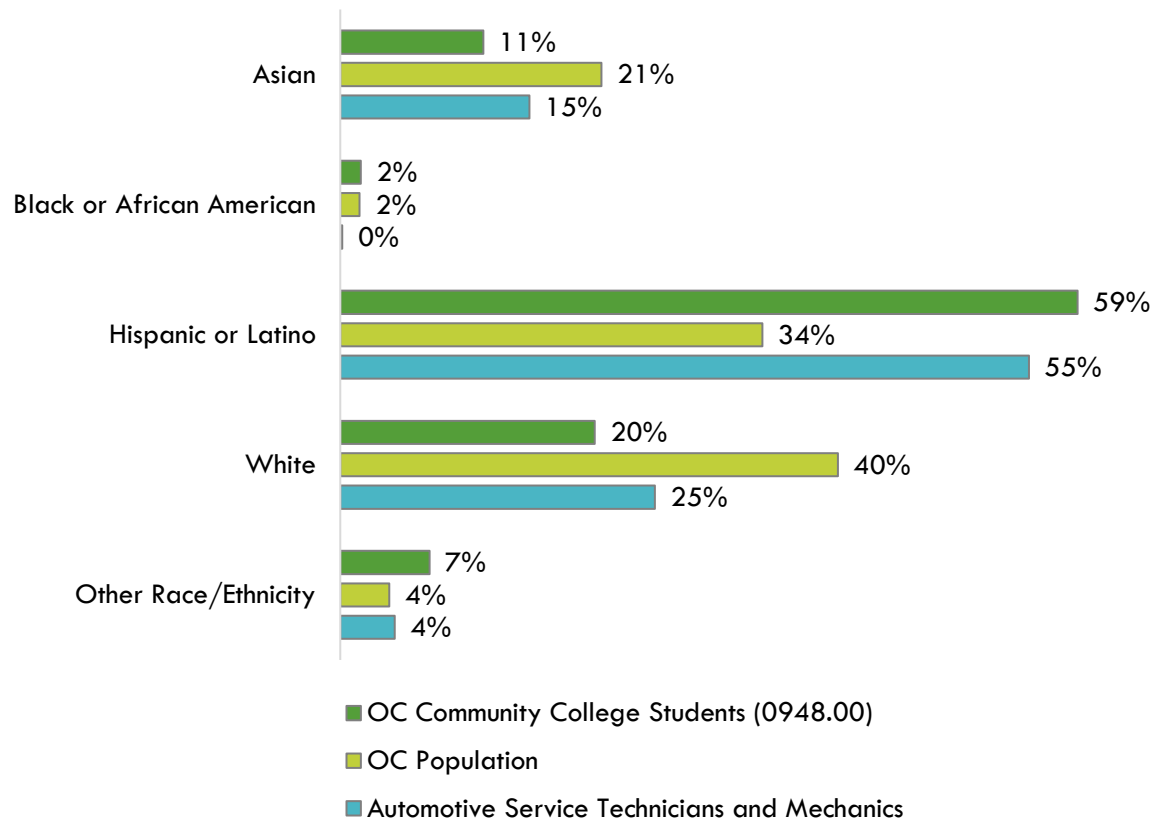
Regional Demographics

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%).

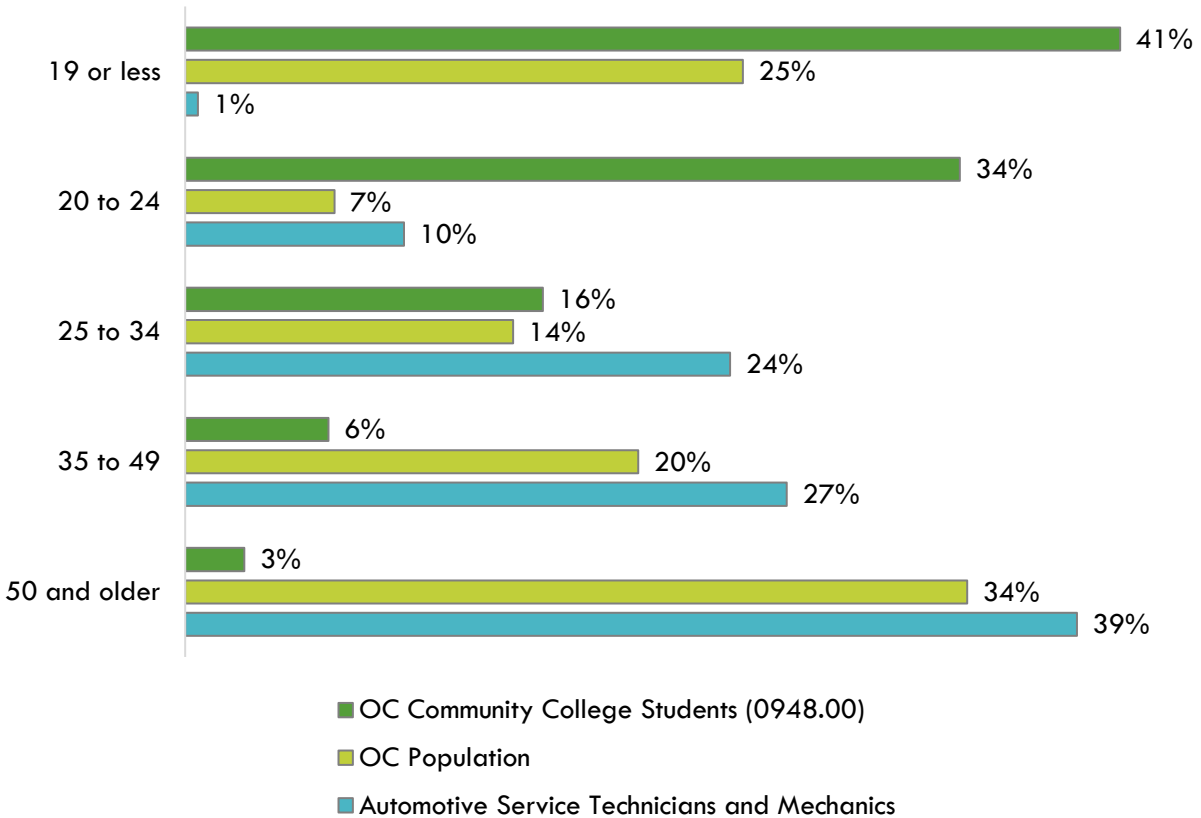
Exhibit 14: Program and County Demographics by Ethnicity



Age:

Exhibit 14 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 14: Program and County Demographics by Age

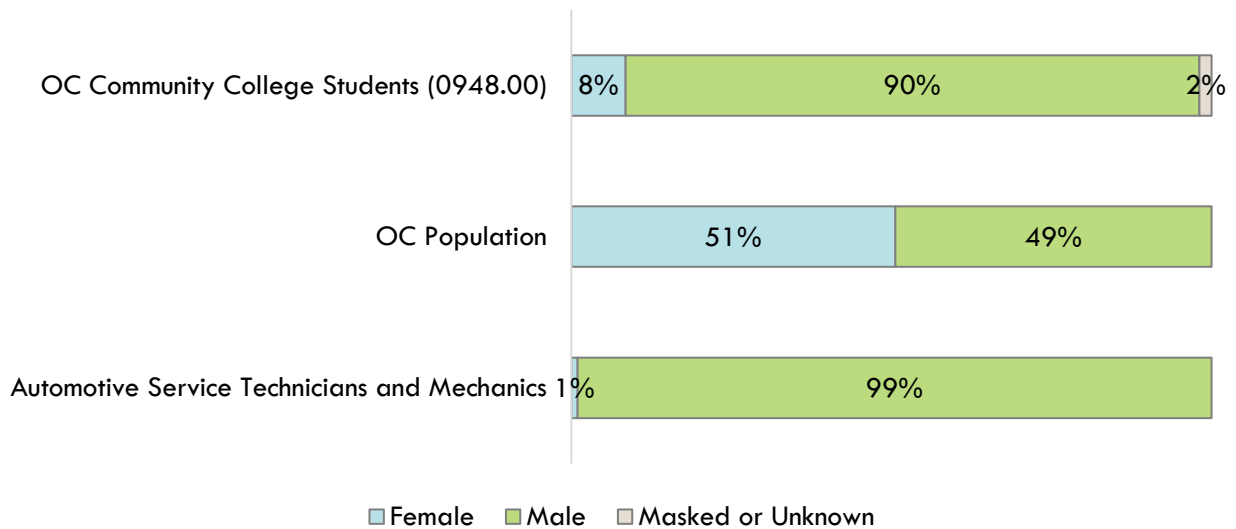


Sex:

Exhibit 15 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 15: Program and County Demographics by Sex



Appendix A: Methodology A

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	<p>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/</p>
Living Wage	<p>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://insightccd.org/family-needs-calculator/</p> <p>The living wage for one adult in Orange County is \$20.63 per hour (\$42,910.40 annually). This figure is used by the CCCCCO to calculate the percentage of students that attained the regional living wage.</p>
Typical Education and Training Requirements, and Educational Attainment	<p>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</p>
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	<p>The O*NET database includes information on skills, abilities, knowledge, work activities, and interests associated with occupations. For more information, see https://www.onetonline.org/help/online/</p>
Educational Supply	<p>The CCCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu</p> <p>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</p>
Student Metrics and Demographics	<p>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</p>

Data Type	Source
Population and Occupation Demographics	<p>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</p> <p>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</p>

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