

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 are projected to be 816 annual job openings throughout Los Angeles and Orange counties for these horticulture occupations, which is more than the 158 awards conferred by educational institutions.	
Living Wage: (Entry-Level, 25 th)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	<i>Comments:</i> All annual job openings for these horticulture occupations have entry-level hourly wages significantly below the OC living wage of \$20.63.	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<i>Comments:</i> Though all annual openings for these occupations typically require a high school diploma or equivalent, 27% and 30% 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 two middle skill occupations:

- *First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers (37-1012)*
- *Pesticide Handlers, Sprayers, and Applicators, Vegetation (37-3012)*

Based on the available data, there appears to be a supply gap for these horticulture occupations, all annual openings for these horticulture occupations have entry-level wages significantly below the living wage, and typical education requirements for these occupations generally align with a community college education. **Therefore, due to some 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 (25 th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers (37-1012)	LA: 491	LA: 65			
	OC: 235	OC: 93	OC: \$18.27	High school diploma or equivalent	30%
	TTL: 726	TTL: 158			
Pesticide Handlers, Sprayers, and Applicators, Vegetation (37-3012)	LA: 58				
	OC: 31	<i>Accounted for Below</i>	OC: \$18.26	High school diploma or equivalent	27%
	TTL: 90				
Total	816	158	N/A	N/A	N/A

Demand:

- The number of jobs related to these horticulture occupations are projected to increase 1% through 2027, resulting in 816 projected annual job openings.
- Hourly entry-level wages for these horticulture occupations range from \$18.26 to \$18.27 in Orange County; all annual job openings have entry-level wages below the living wage.
- There were 1,261 online job postings for these horticulture occupations over the past 12 months. The majority of postings were for landscape managers, landscape foremen, and landscape account managers.
- The typical entry-level education for these horticulture occupations is a high school diploma or equivalent.
- Between 27% and 30% of workers in these occupations have completed some college or an associate degree as their highest level of educational attainment.

Supply:

- There was an average of 158 awards conferred by 7 community colleges in Los Angeles and Orange Counties from 2019 to 2022.
- Non-community college institutions did not confer any awards from 2019 to 2021 under the related CIP code.
- Orange County community college students that exited horticulture programs in the 2020-21 academic year had a median annual wage of \$35,640 (\$17.13 per hour) after exiting the program and 39% attained the regional living wage.
- Throughout Orange County, 57% of horticulture students that exited their program in 2019-20 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 the two horticulture occupations from 2017 through 2027. Though there was a 7% decline across all occupations from 2019 to 2020 in Los Angeles and Orange counties due to the COVID-19 pandemic, employment for these two occupations decreased 4% in Orange County during the same period but experienced significant increases through 2022.

Employment for these occupations fluctuated in the three years preceding the pandemic, followed by a strong recovery. However, these occupations are now projected to remain flat, albeit below all occupations, through 2027 in Orange County.

Exhibit 2: Annual Percent Change in Jobs for Horticulture Occupations, 2017-2027

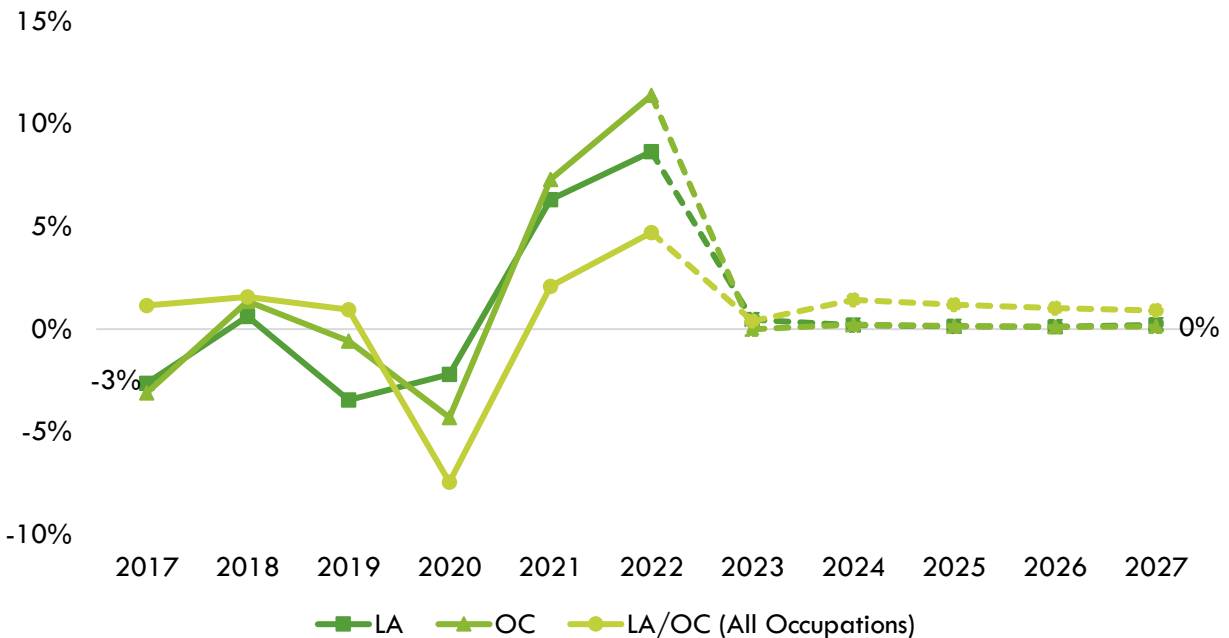


Exhibit 3 shows the five-year occupational demand projections for these horticulture occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is expected to increase 1% through 2027. There is projected to be 816 annual openings.

Exhibit 3: Middle-Skill Occupational Demand in Los Angeles and Orange Counties¹

Geography	2022 Jobs	2027 Jobs	2022-2027 Change	2022-2027 % Change	Annual Openings
Los Angeles	4,975	5,030	55	1%	550
Orange	2,488	2,503	15	1%	266
Total	7,463	7,534	71	1%	816

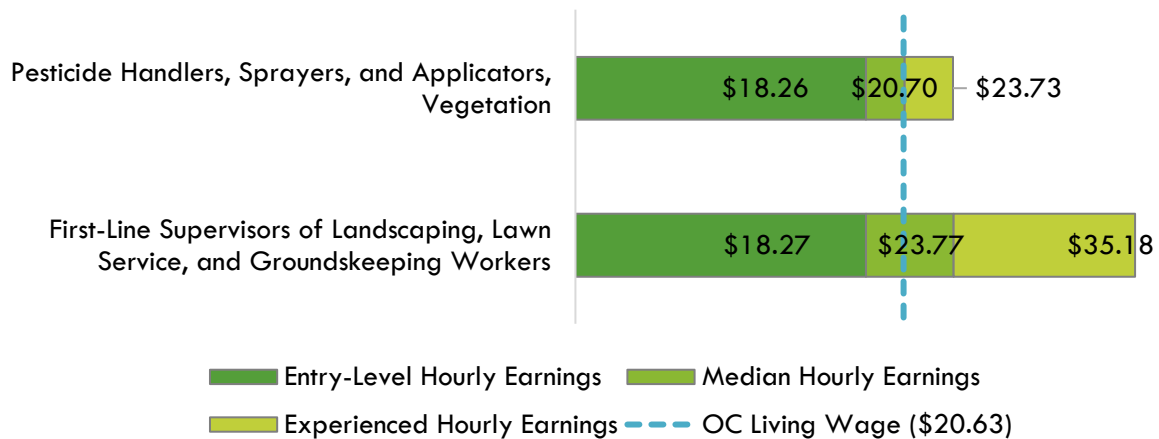
¹ Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for these horticulture occupations 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.

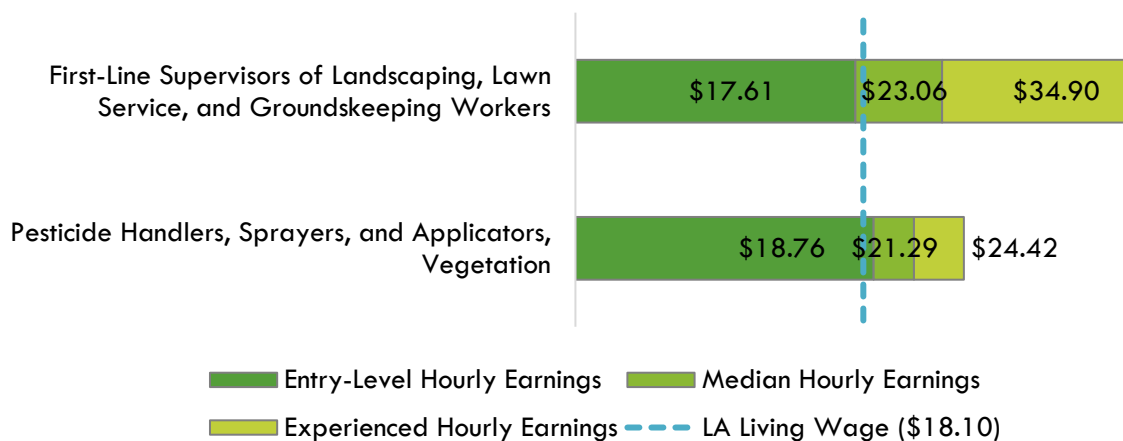
All annual openings for these horticulture occupations have entry-level wages significantly below the living wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages range between \$18.26 and \$18.27. Orange County's average wages of \$27.53 are below the average statewide wage of \$28.46 for these occupations. Exhibit 4 shows the wage range for each of the two horticulture occupations in Orange County and how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

Exhibit 4: Wages by Occupation in Orange County



Nearly 89% of all annual openings for these horticulture occupations have entry-level wages below the living wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$17.61 and \$18.76. Los Angeles County's average wages of \$27.82 are below the average statewide wage of \$28.46 for these occupations. Exhibit 5 shows the wage range for each of the two horticulture occupations in Los Angeles County how they compare to the regional living wage, sorted from lowest to highest entry-level 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 1,261 online job postings related to the two horticulture occupations listed in the past 12 months. Of those, a large majority (92%) were for first-line supervisors of landscaping, lawn service, and groundskeeping workers, followed by pesticide handlers, sprayers, and applicators, vegetation, which accounted for only 8% of postings. Exhibit 6 shows the number of job postings by occupation.

Exhibit 6: Number of Job Postings by Occupation (n=1,261)

Occupation	Job Postings	Percentage of Job Postings
First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	1,162	92%
Pesticide Handlers, Sprayers, and Applicators, Vegetation	99	8%
Total Postings	1,261	100%

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

Exhibit 3: Top Employers by Number of Job Postings (n=1,261)

Employer	Job Postings	Percentage of Job Postings
Landsystems	224	18%
Brightview	48	4%
TruGreen	32	3%
Bemus Landscape	19	2%
Starbucks	19	2%
Gothic Landscape	16	1%
Botanic Gardens Conservation International (Bgci)	15	1%
Stay Green	13	1%
VF	13	1%
Vans	10	1%

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

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

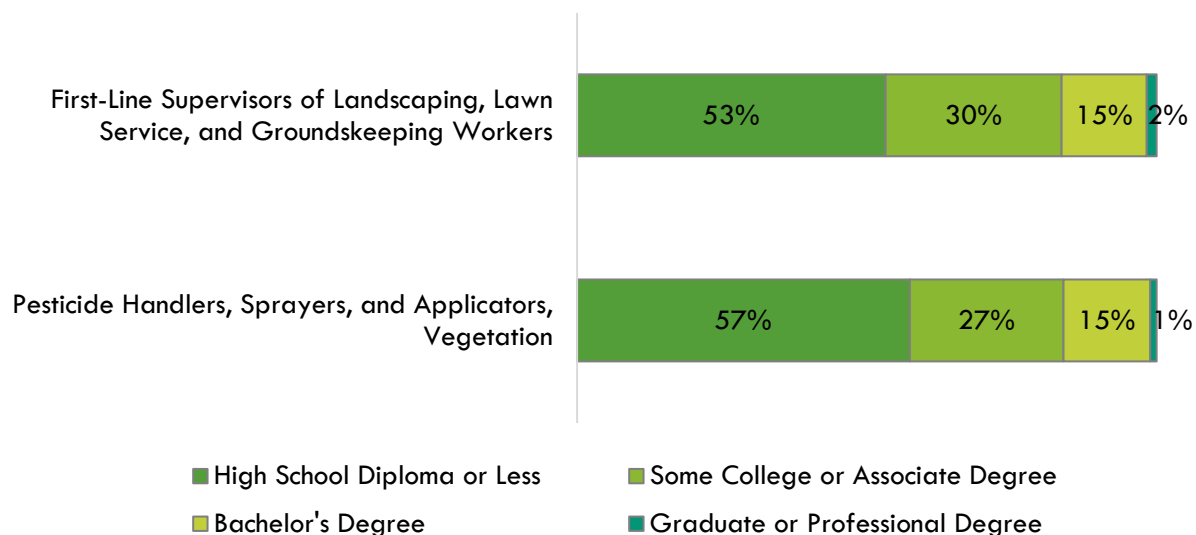
Exhibit 4: Top Skills by Number of Job Postings (n=1,261)

Top Specialized Skills	Top Soft Skills	Top Computer Skills
Landscaping (303)	Management (582)	Microsoft Excel (282)
Marketing (263)	Customer Service (536)	Microsoft Outlook (265)
Irrigation (Landscaping And Agriculture) (223)	Operations (518)	Salesforce (221)
Data Collection (221)	Sales (431)	Customer Relationship Management (CRM) Software (218)
Salesforce (221)	Communication (364)	Microsoft Office (97)
Sales Prospecting (220)	English Language (350)	Microsoft Word (38)
Business Development (218)	Writing (343)	Microsoft PowerPoint (34)
Customer Relationship Management (CRM) Software (218)	Organizational Skills (294)	AutoCAD (14)
Request For Proposal (216)	Prioritization (290)	Project Management Software (14)
Business To Business (214)	Microsoft Excel (282)	Spreadsheets (13)

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a high school diploma or equivalent as the typical entry-level education for both horticulture occupations. The national-level educational attainment shows between 53% to 57% have a high school diploma or less as their highest level of education corroborating the BLS designation; yet it also indicates between 27% to 30% of workers in these middle-skill occupations have completed some college or an associate degree. Exhibit 9 shows the educational attainment for each occupation, sorted by highest community college educational attainment to lowest.

Exhibit 9: National-level Educational Attainment for Occupations



Of the 48% of the cumulative job postings for these horticulture occupations that listed a minimum education requirement in Los Angeles/Orange County, 57% (343) requested a bachelor's degree and 38% (227) requested a high school diploma or an associate degree.

Educational Supply

Community College Supply:

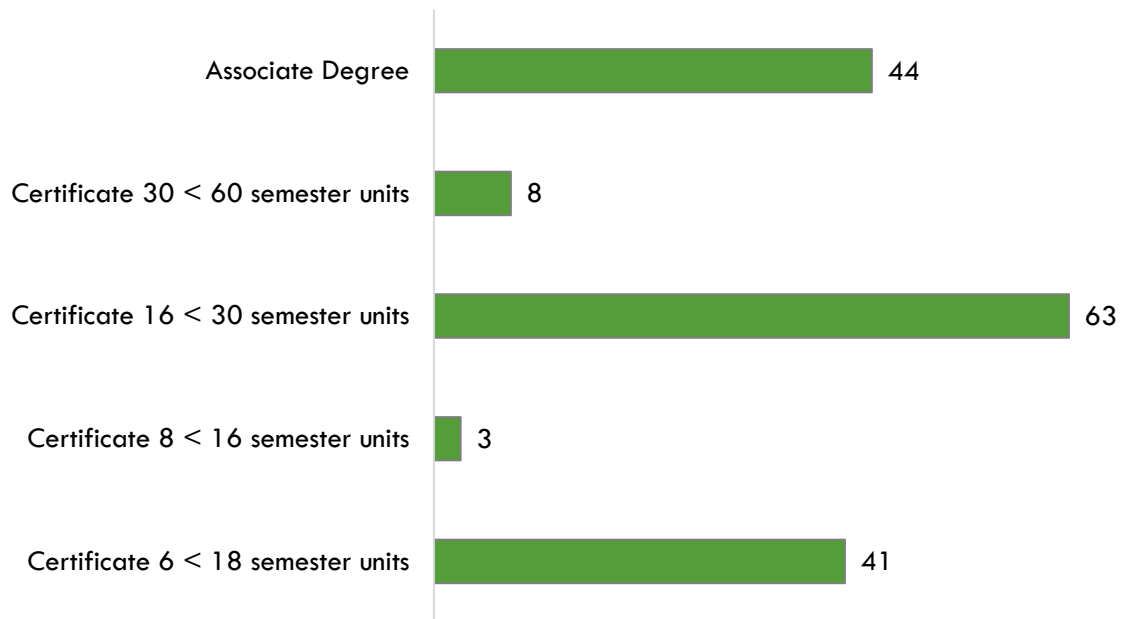
Exhibit 10 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Horticulture (0109.00), Landscape Design and Maintenance (0109.10), Nursery Technology (0109.30), and Turfgrass Technology (0109.40). The colleges with the most completions in the region are: Saddleback, Mt. San Antonio, and Orange Coast. Over the past 12 months, there were no other related program recommendation requests from regional community colleges.

Exhibit 50: 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
0109.00	Horticulture	El Camino	10	6	8	8
		LA Pierce	6	3	1	3
		Long Beach	8	7	20	12
		Mt San Antonio	3	5	19	9
		LA Subtotal	27	21	48	32
		Fullerton	2	1	1	1
		Orange Coast	23	10	15	16
		Saddleback	17	47	40	35
		OC Subtotal	42	58	56	52
Supply Subtotal/Average			69	79	104	84
0109.10	Landscape Design and Maintenance	LA Pierce	0	1	0	0
		Mt San Antonio	11	26	41	26
		LA Subtotal	11	27	41	26
		Fullerton	5	2	4	4
		Orange Coast	3	1	6	3
		Saddleback	37	23	35	32
		OC Subtotal	45	26	45	39
Supply Subtotal/Average			56	53	86	65
0109.30	Nursery Technology	Mt San Antonio	1	5	4	3
		LA Subtotal	1	5	4	3
		Fullerton	4	1	2	2
		OC Subtotal	4	1	2	2
Supply Subtotal/Average			5	6	6	6
0109.40	Turfgrass Technology	Mt San Antonio	3	3	5	4
		LA Subtotal	3	3	5	4
		-	-	-	-	
		OC Subtotal	-	-	-	-
Supply Subtotal/Average			3	3	5	4
Supply Total/Average			133	141	201	158

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, followed by associate degrees and certificates between 6 and less than 18 semester units.

Exhibit 6: Annual Average Community College Awards by Type, 2019-2022



Community College Student Outcomes:

Exhibit 12 shows the Strong Workforce Program (SWP) metrics for horticulture programs in North Orange County Community College District (NOCCCD), the Orange County Region, and California. Of the 1,342 horticulture students in Orange County, 6% (80) attended an NOCCCD program.

Orange County students that exited horticulture programs in the 2020-21 academic year had lower median annual earnings (\$35,640 or \$17.51 per hour) compared to all horticulture students in the state (\$40,890 or \$19.66 per hour). A lower percentage of Orange County horticulture students attained the living wage (39%) when compared to all horticulture students in California (21%).

Exhibit 72: Horticulture (0109.00) Strong Workforce Program Metrics, 2020-21³

SWP Metric	NOCCCD	OC Region	California
SWP Students	80	1,342	5,368
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	19%	35%	32%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	Insufficient Data	Insufficient Data	63%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	Insufficient Data	22	116
SWP Students Who Transferred to a Four-Year Postsecondary Institution (2019-20)	Insufficient Data	191	333
SWP Students with a Job Closely Related to Their Field of Study (2019-20)	Insufficient Data	57%	67%

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

SWP Metric	NOCCCD	OC Region	California
Median Annual Earnings for SWP Exiting Students	\$36,420 (\$17.51)	\$35,640 (\$17.13)	\$40,890 (\$19.66)
Median Change in Earnings for SWP Exiting Students	21%	38%	20%
SWP Exiting Students Who Attained the Living Wage	Insufficient Data	39%	51%

Non-Community College Supply:

To comprehensively analyze the regional supply, it is crucial to include data from other institutions offering fashion training programs. However, from 2019 to 2021, regional, non-community college institutions have not conferred awards under the related Classification of Instructional Programs (CIP) codes: Applied Horticulture/Horticulture Operations, General (01.0601), Landscaping and Groundskeeping (01.0605), Plant Nursery Operations and Management (01.0606), Turf and Turfgrass Management (01.0607), and Golf Course Operation (31.0302).

Regional Demographics

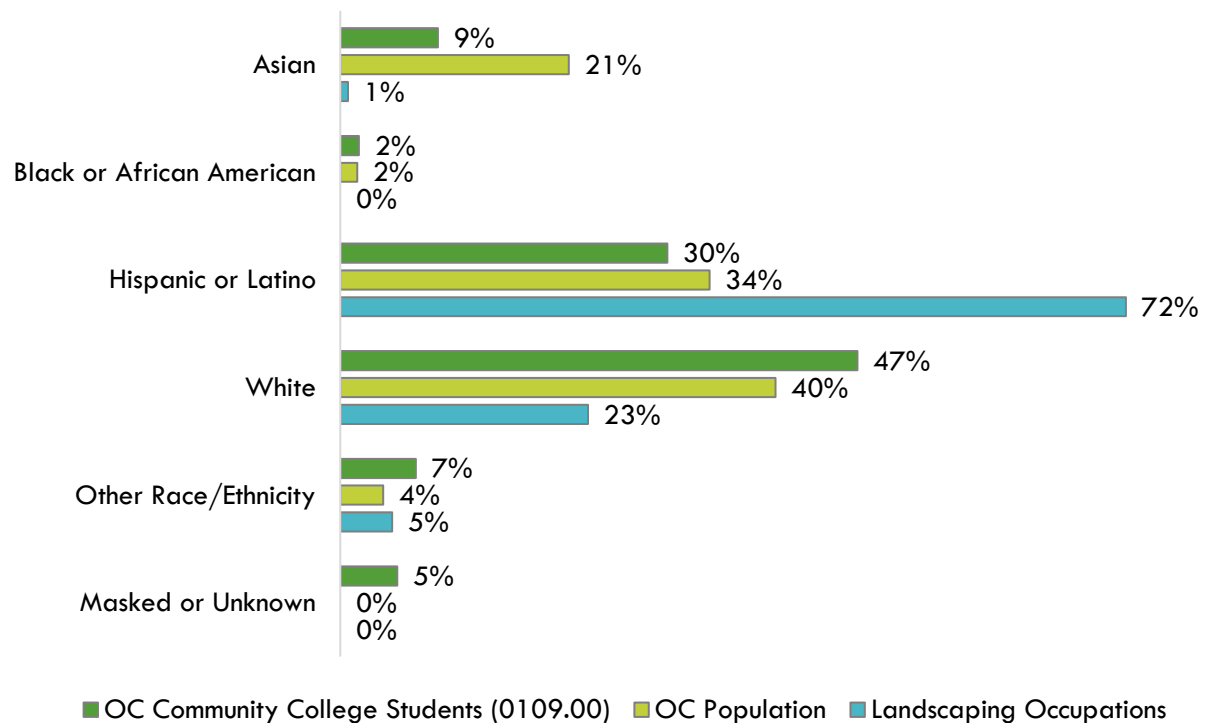
This section examines demographic data for Orange County community college students in horticulture programs compared to the OC population, along with occupational data, to identify potential diversity and equity issues addressable by community college programs.

Ethnicity:

Exhibit 13 compares the ethnicity of Orange County community college students enrolled in horticulture programs compared to the overall Orange County population, and occupation-specific data for the two horticulture occupations included in this report. A large majority (72%) of workers employed in these horticulture occupations are Hispanic or Latino, which is more than double the population (34%) and community college horticulture students (30%). Conversely, the plurality (47%) of community college horticulture students are white, which is higher than the population (40%) and more than double workers in the field (23%). Furthermore, though Asian individuals account for 21% of the county population, they account for only 9% of community college horticulture students and 1% of workers in these horticulture occupations.

Examining disaggregated data for each occupation (not shown), Hispanic or Latino individuals account for the majority of *first-line supervisors of landscaping, lawn service, and groundskeeping workers* (73%) and *pesticide handlers, sprayers, and applicators, vegetation* (69%). *First-line supervisors of landscaping, lawn service, and groundskeeping workers* has the highest percentage of white workers (25%).

Exhibit 83: Program and County Demographics by Ethnicity



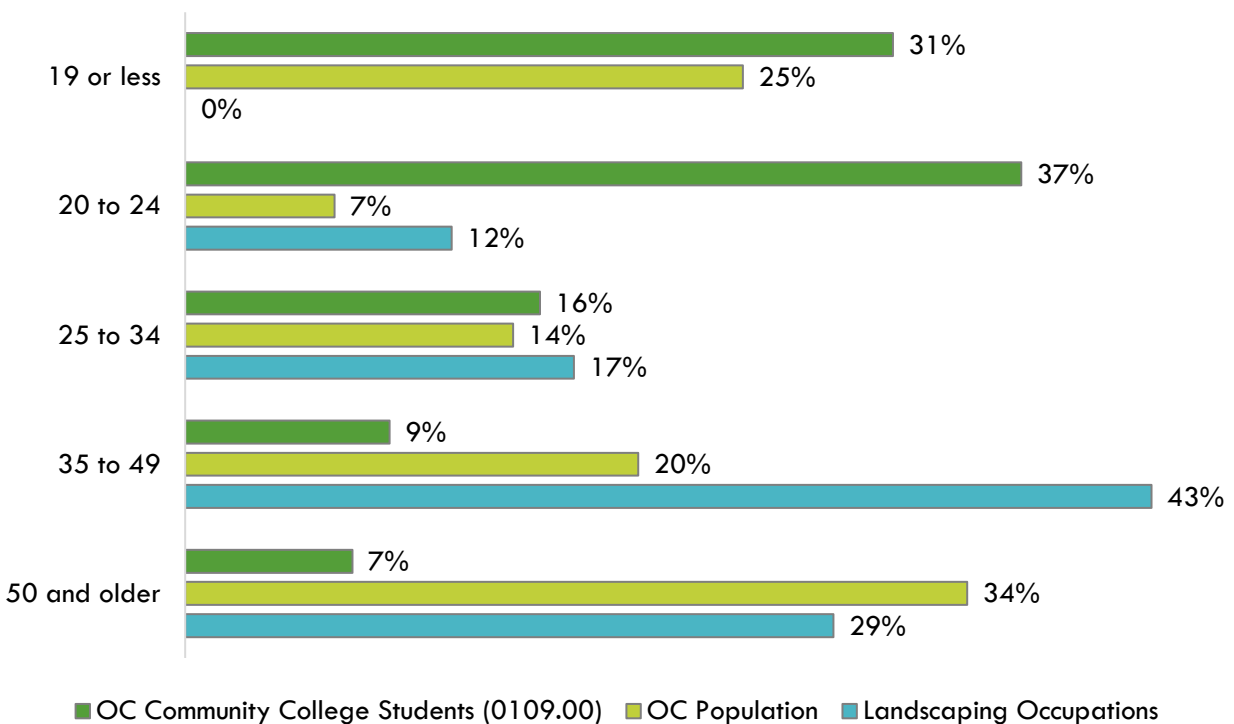
Age:

Exhibit 14 compares the age of Orange County community college students enrolled in horticulture programs compared to the overall Orange County population, and occupation-specific data for the two horticulture occupations included in this report.

The large majority of workers in these horticulture occupations are age 35 and older (72%), which is above the population (54%) and significantly higher than community college horticulture students (16%). Alternatively, though only 29% of workers in these occupations are 34 or less, this age group accounts for the majority of community college horticulture students (84%) and almost half the county population (46%).

Examining disaggregated data for each occupation (not shown), individuals 20 to 34 and individuals 35 and older each account for half of all *pesticide handlers, sprayers, and applicators, vegetation*. Age group 35 to 49 composes almost half (48%) of all *first-line supervisors of landscaping, lawn service, and groundskeeping worker*, followed by the 50 and older age group (31%).

Exhibit 94: Program and County Demographics by Age

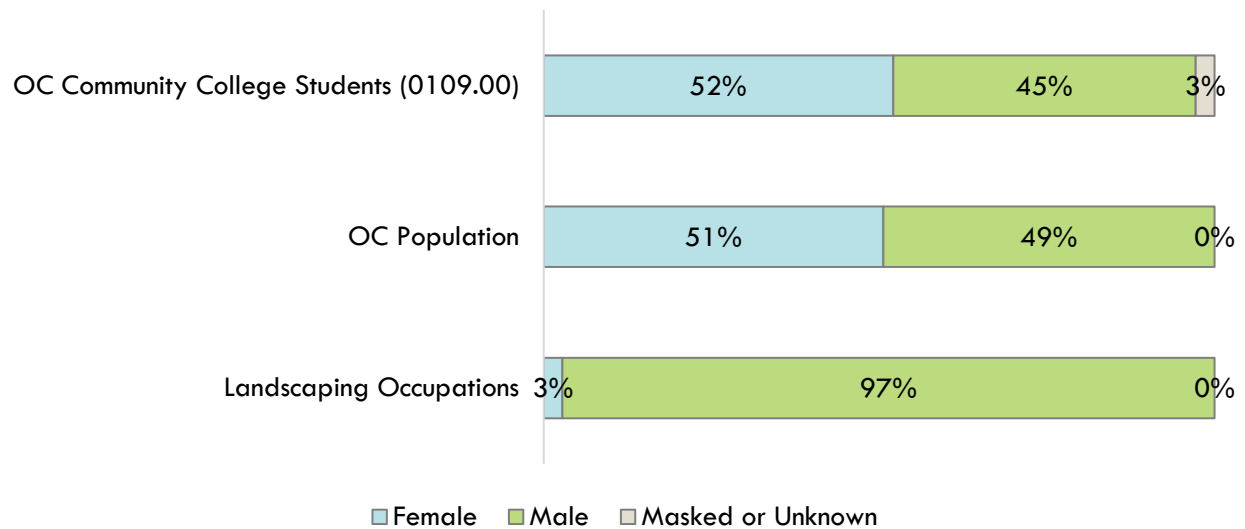


Sex:

Exhibit 15 compares the sex of Orange County community college students enrolled in horticulture programs compared to the overall Orange County population and occupation-specific data for the two horticulture occupations included in this report.

Though the population is nearly split evenly between men and women and women account for the majority (52%) of community college horticulture students, only 3% of workers in the field are women. Examining disaggregated data for each occupation (not shown), men account for all *pesticide handlers, sprayers, and applicators, vegetation* and a large majority (96%) of *first-line supervisors of landscaping, lawn service, and groundskeeping workers*. Women account for only 4% of *first-line supervisors of landscaping, lawn service, and groundskeeping workers*.

Exhibit 105: 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	<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, knowledges, 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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