

# Labor Market Analysis for Program Recommendation: 0115.00/Natural Resources

## (Sustainable Aquaculture Systems Technician)

Orange County Center of Excellence, September 2024



FOR LABOR MARKET RESEARCH

ORANGE COUNTY

### 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 type="checkbox"/>	No <input checked="" type="checkbox"/>
Supply Gap:	<p><i>Comments:</i> there is projected to be <b>166 annual job openings</b> throughout Los Angeles and Orange counties for <i>farmers, ranchers, and other agricultural managers</i>, which is <b>less than the 219 awards conferred by educational institutions. However, it is not possible to determine demand and supply specifically for aquaculture technicians.</b></p> <p>Demand is overstated for aquaculture because <i>farmers, ranchers, and other agricultural managers</i> includes a variety of job titles and not solely those related to aquaculture. Similarly, supply is overstated because none of the related educational programs have a specific emphasis on aquaculture.</p>	

	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
CA Insight Living Wage: (Entry-Level, 25 <sup>th</sup> ) <sup>1</sup>	<p><i>Comments:</i> <b>Entry-level hourly wages for farmers, ranchers, and other agricultural managers are \$15.50, which is significantly below the OC living wage of \$20.63.</b></p>	

	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Education:	<p><i>Comments:</i> though the typical entry-level education for <i>farmers, ranchers, and other agricultural managers</i> is a high school diploma, <b>31% of workers in the field have completed some college or an associate degree as their highest level of education.</b></p>	

### Additional Considerations

	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Emerging Occupation(s):	<p><i>Comments:</i> Currently, there is no Standard Occupational Classification (SOC) code for aquaculture technicians in the Bureau of Labor Statistics system and data is reported under the <i>farmers, ranchers, and other agricultural managers</i> (11-9013) SOC code, which includes a variety of job titles and not those solely related to aquaculture. <b>Therefore, demand is overstated.</b></p>	

	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
OC Resilient Job(s):	<p><i>Comments:</i> See <a href="#">Resilient Jobs and US News &amp; World Report Best Jobs</a></p>	

	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
U.S. News & World Report 2024 Best Jobs List <sup>2</sup> :	<p><i>Comments:</i> See <a href="#">Resilient Jobs and US News &amp; World Report Best Jobs</a></p>	

<sup>1</sup> The living wage endorsement criteria in this report uses the California Insight Center's living wage of \$20.63 for Orange County, last updated in September 2021, as currently employed by the Chancellor's Office for the *Students Who Attained the Living Wage Strong Workforce Program* metric.

<sup>2</sup> "100 Best Jobs of 2024," U.S. News & World Report, accessed May 7, 2024, <https://money.usnews.com/careers/best-jobs/rankings/the-100-best-jobs>.

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:

- *Farmers, Ranchers, and Other Agricultural Managers (11-9013)*

This occupation includes a variety of job titles, including aquaculture technicians. According to the U.S. Department of Agriculture, “aquaculture is the production of aquatic organisms under controlled conditions throughout part or all their lifecycle.”<sup>3</sup> There has been a growing interest to expand aquaculture efforts because “farmed seafood can be a resource-efficient way to meet the growing demand for protein worldwide.”<sup>4</sup> According to the United Nations Food and Agriculture Organization, there are approximately 19 million aquaculture production jobs worldwide as of 2018.<sup>5</sup> According to the California Department of Fish and Wildlife, “commercial aquaculture in California is relatively modest in scale.”<sup>6</sup> The California Aquaculture Association estimates that the economic impact of aquaculture is \$200 million throughout the state.<sup>7</sup>

Currently, there is no Standard Occupational Classification (SOC) code for aquaculture technicians in the Bureau of Labor Statistics (BLS) system. Data for aquaculture-related job titles is collected and reported under the broader *farmers, ranchers, and other agricultural managers (11-9013)* SOC code. Though this occupation is most closely related to aquaculture, it includes other job titles such as farm manager, greenhouse manager, and ranch manager. For these reasons, traditional labor market demand data is overstated for aquaculture. To better understand aquaculture job opportunities, this report includes an analysis of online job postings specifically related to aquaculture in Los Angeles and Orange counties.

Based on the available data there appears to be an oversupply for *farmers, ranchers, and other agricultural managers (11-9013)*. However, supply is overstated because none of the related educational programs have a specific emphasis on aquaculture. Though typical education requirements align with a community college education, entry-level wages are significantly below the California Insight living wage. **Therefore, due to some of the regional labor market criteria being met, the COE endorses this proposed program but notes that it is not possible to quantify a supply gap specifically for aquaculture technicians.**

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 <sup>th</sup> Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Farmers, Ranchers, and Other Agricultural Managers (11-9013)	LA: 129 OC: 37	LA: 160 OC: 59	OC: \$15.50	High school diploma or equivalent	31%
<b>Total</b>	<b>161</b>	<b>219</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

<sup>3</sup> <https://www.usda.gov/topics/farming/aquaculture>

<sup>4</sup> <https://caseagrant.ucsd.edu/our-work/discover-california-seafood/aquaculture-california>

<sup>5</sup> <https://openknowledge.fao.org/server/api/core/bitstreams/6fb91ab9-6cb2-4d43-8a34-a680f65e82bd/content>

<sup>6</sup>

<https://fisheries.legislature.ca.gov/sites/fisheries.legislature.ca.gov/files/7a%20Aquaculture%20Report%20final%202022.pdf>

<sup>7</sup> <https://caaquaculture.org/>

## Demand:

- The number of jobs related to *farmers, ranchers, and other agricultural managers* is projected to decrease 8% through 2028, equating to 166 annual job openings due to retirements and replacements.
- Hourly entry-level wages for *farmers, ranchers, and other agricultural managers* are \$15.50, which is significantly below the California Insight living wage.
- There were 46 online job postings specifically related to aquaculture over the past 12 months in Los Angeles and Orange counties. The highest number of postings were for aquaculture managers, husbandry interns, and aquaculture technicians.
- The typical entry-level education for *farmers, ranchers, and other agricultural managers* is a high school diploma.
- Approximately 31% 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 161 awards conferred by 9 community colleges in Los Angeles and Orange counties from 2020 to 2023.
  - Santa Monica is the only community college in Los Angeles and Orange counties that currently offers an aquaculture program. However, the program was approved in April 2024 and supply data will not be available until students enroll in and complete the program. **Therefore, supply is overstated for aquaculture.**
- Non-community college institutions conferred an average of 58 awards from 2019 to 2022.
  - However, these awards – all conferred by Cal Poly Pomona – are related to plant protection, pest management, and agribusiness programs, none of which have a specific emphasis on aquaculture. **Therefore, supply is overstated.**
- Currently, only one college in Orange County (Saddleback) offers courses under the 0115.00 (Natural Resources) TOP code. Due to a low number of students, median annual wages for exiting students, as well as the percentage of students enrolled in their field of study, are not available.

## Demand

### Occupational Projections:

Exhibit 2 shows the annual percent change in jobs for *farmers, ranchers, and other agricultural managers* from 2018 through 2028. Though there was a 7% decline across all occupations in Orange County from 2019 to 2020 due to the COVID-19 pandemic, employment for this occupation increased 11% during the same period.

In the two years preceding the pandemic, employment for this occupation declined. Following an increase in employment in 2020, employment declined each year through 2023 in Orange County. Employment for this occupation is projected to decline each year through 2028 in Orange County.

## Exhibit 2: Annual Percent Change in Jobs for Farmers, Ranchers, and Other Agricultural Managers, 2018-2028

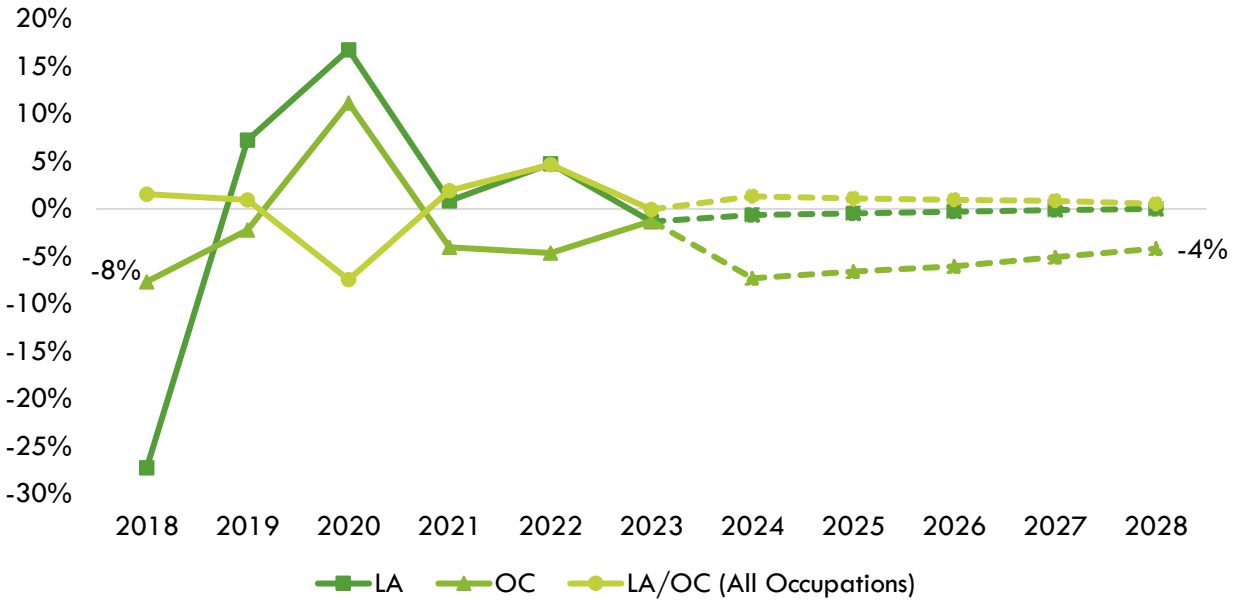


Exhibit 3 shows the five-year occupational demand projections for *farmers, ranchers, and other agricultural managers*. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to decline 8% through 2028. Notably, employment for this occupation is projected to decline 26% in Orange County, but only 2% in Los Angeles County. There is projected to be 166 jobs available annually due to retirements and replacements.

### Exhibit 3: Occupational Demand in Los Angeles and Orange Counties<sup>8</sup>

Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
Los Angeles	1,261	1,242	(19)	(2%)	129
Orange	408	302	(106)	(26%)	37
<b>Total</b>	<b>1,669</b>	<b>1,544</b>	<b>(125)</b>	<b>(8%)</b>	<b>166</b>

## Wages:

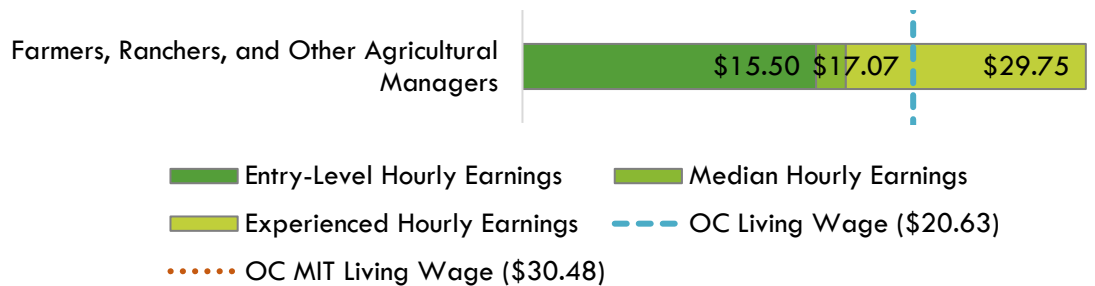
The labor market endorsement in this report considers the entry-level hourly wages for *farmers, ranchers, and other agricultural managers* in Orange County as they relate to the county's living wage. Los Angeles County wages are included below to provide a complete analysis of the LA/OC region.

It is important to note that the living wage endorsement criteria in this report uses the California Insight Center's living wage of \$20.63 for Orange County, last updated in September 2021, as currently employed by the Chancellor's Office for the *Students Who Attained the Living Wage Strong Workforce Program* metric. However, this figure is outdated and does not reflect recent increases in the cost of living. The MIT Living Wage, updated on February 14, 2024, better accounts for existing economic conditions, with the current MIT Living Wage in Orange County being \$30.48. Both figures are notated in the exhibits below.

<sup>8</sup> Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

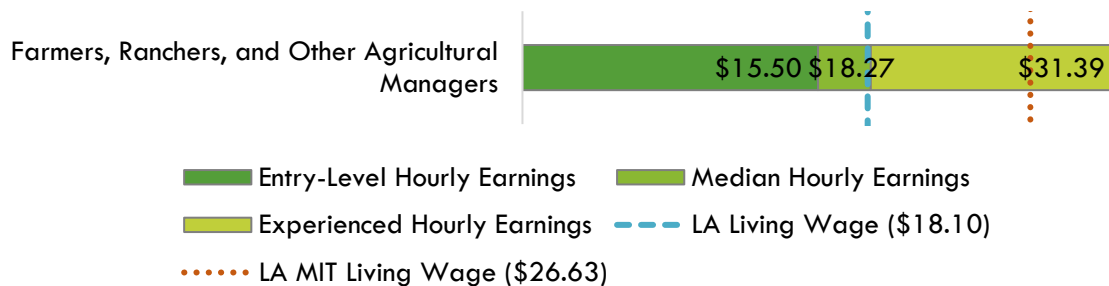
Entry-level hourly wages for *farmers, ranchers, and other agricultural managers* are \$15.50, which is significantly below California Insight living wage for one adult (\$20.63 in Orange County). Experienced level wages are \$29.75. Orange County's average wages (\$27.41) are lower compared to the average statewide wage of \$28.44 for *farmers, ranchers, and other agricultural managers*. Exhibit 4 shows the wage range for *farmers, ranchers, and other agricultural managers* in Orange County and how it compares to the regional living wage, sorted from lowest to highest entry-level wage.

### Exhibit 4: Wages by Occupation in Orange County



Entry-level hourly wages for *farmers, ranchers, and other agricultural managers* are \$15.50, which is significantly below California Insight living wage for one adult (\$18.10 in Los Angeles County). Experience level wages are \$31.39. Los Angeles County's average wages (\$28.75) are slightly higher compared to the average statewide wage of \$28.44 for *farmers, ranchers, and other agricultural managers*. Exhibit 5 shows the wage range for *farmers, ranchers, and other agricultural managers* in Los Angeles County and how it compares to the regional living wage, sorted from lowest to highest entry-level wage.

### Exhibit 5: Wages by Occupation in Los Angeles County



## Resilient Jobs and US News & World Report Best Jobs:

Exhibit 6 shows if *farmers, ranchers, and other agricultural managers* is considered an Orange County Great Recession-Resilient, COVID-19 Pandemic Recession-Resilient Job, or a 2024 U.S. News & World Report (USN&WR) Best Job. This occupation did not meet the criteria to be considered a Resilient Job or a USN&WR Best Job.

### Exhibit 6: Resilient Jobs and USN&WR Best Jobs Designations

Occupation	Great Recession-Resilient Job	COVID-19 Pandemic Recession-Resilient Job	2024 USN&WR Best Job
Farmers, Ranchers, and Other Agricultural Managers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

## 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.<sup>9</sup> 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.

To better understand job opportunities related to aquaculture, this section analyzes online job postings that included the keyword “aquaculture” in the job posting. It is important to note that a significant number of job postings for job titles such as hostesses, waiters and waitresses, and other food service jobs were removed from this analysis. These job titles were found in job postings from Red Lobster, a seafood chain restaurant that is part of the Global Aquaculture Group. However, none of the postings were related to aquaculture technicians.

There were only 46 online job postings that mentioned “aquaculture” in the job description listed in the past 12 months in Los Angeles and Orange counties. Exhibit 7 shows the top job titles.

**Exhibit 7: Number of Job Postings by Job Title (n=46)**

Occupation	Job Postings	Percentage of Job Postings
Aquaculture Managers	8	17%
Husbandry Interns	4	9%
Aquaculture Technicians	3	7%
Animal Care Technicians	2	4%
Horticulture Managers	2	4%
Quality Technicians	2	4%
Animal Husbandry Technicians	1	2%
Biology Interns	1	2%
Chief Operating Officers	1	2%
Directors of Sustainability	1	2%

The top employers in the region, by number of job postings, are shown in Exhibit 8.

**Exhibit 8: Top Employers by Number of Job Postings (n=46)**

Employer	Job Postings	Percentage of Job Postings
Santa Monica College	9	1%
Cis International Holdings	4	0.3%
Quality Marine	3	0.2%

<sup>9</sup> K. R. Chowdhary, Fundamentals of Artificial Intelligence (Basingstoke: Springer Nature, 2020), <https://link.springer.com/book/10.1007/978-81-322-3972-7>.

Employer	Job Postings	Percentage of Job Postings
Childrens Hospital Los Angeles	2	0.2%
Coast Community College District	2	0.2%
Elwood Staffing	2	0.2%
Exponent	2	0.2%
Jobot	2	0.2%
University of Southern California	2	0.2%

The top specialized, soft, and computer skills listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 9.

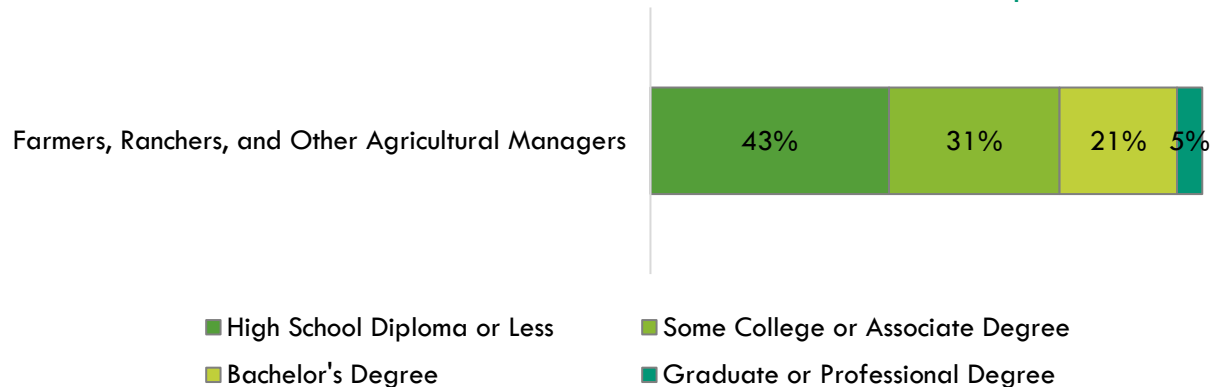
### Exhibit 9: Top Skills by Number of Job Postings (n=46)

Top Specialized Skills	Top Soft Skills	Top Computer Skills
Aquaculture (29)	Communication (21)	Microsoft Outlook (8)
Biology (19)	Management (15)	Microsoft Excel (7)
Animal Husbandry (10)	Operations (14)	Microsoft Office (7)
Disabilities (9)	English Language (11)	Microsoft Word (5)
Life Support (9)	Planning (11)	Microsoft PowerPoint (4)
Project Management (9)	Research (11)	Calendaring Software (3)
Animal Care (8)	Cleanliness (10)	Squid (Proxy Server) (2)
Geology (7)	Detail Oriented (10)	AutoCAD (1)
Data Analysis (6)	Teaching (10)	AutoCAD Civil 3D (1)
Staff Management (1,783)	Writing (2,297)	Adobe Acrobat (153)

### Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a high school diploma or equivalent as the typical entry-level education for *farmers, ranchers, and other agricultural managers*. However, the national-level educational attainment data indicates 31% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 10 shows the educational attainment for *farmers, ranchers, and other agricultural managers*.

### Exhibit 10: National-level Educational Attainment for Occupations



Of the 85% of the cumulative job postings that included “aquaculture” in the posting, listed a minimum education requirement in Los Angeles/Orange County, 46% (18) requested a high school diploma, vocational training, 36% (14) requested a bachelor’s degree, and 18% (7) requested a master’s or doctoral degree.

# Educational Supply

## Community College Supply:

Exhibit 11 shows the three-year average number of awards conferred by community colleges in the related TOP codes:

- Agriculture Technology and Sciences, General
- Animal Science (0102.00)
- Equine Science (0102.40)
- Plant Science (0103.00)
- Horticulture (0109.00)
- Nursery Technology (0109.30)
- Natural Resources (0115.00)

No awards were conferred under the following TOP codes:

- Dairy Science (0102.30)
- Viticulture, Enology and Wine Business (0104.00)
- Agriculture Business, Sales and Service (0112.00)

The colleges with the most completions in the region are Mt. San Antonio and Saddleback. However, none of these programs have a specific emphasis on aquaculture. Only one college in the region (Santa Monica) currently offers an aquaculture program. However, the program was approved in April 2024 and supply data will not be available until students enroll in/complete the program. Therefore, supply is overstated for aquaculture. Over the past 12 months, there were no other related program recommendation requests from regional community colleges.

**Exhibit 11: Regional Community College Awards (Certificates and Degrees), 2020-2023**

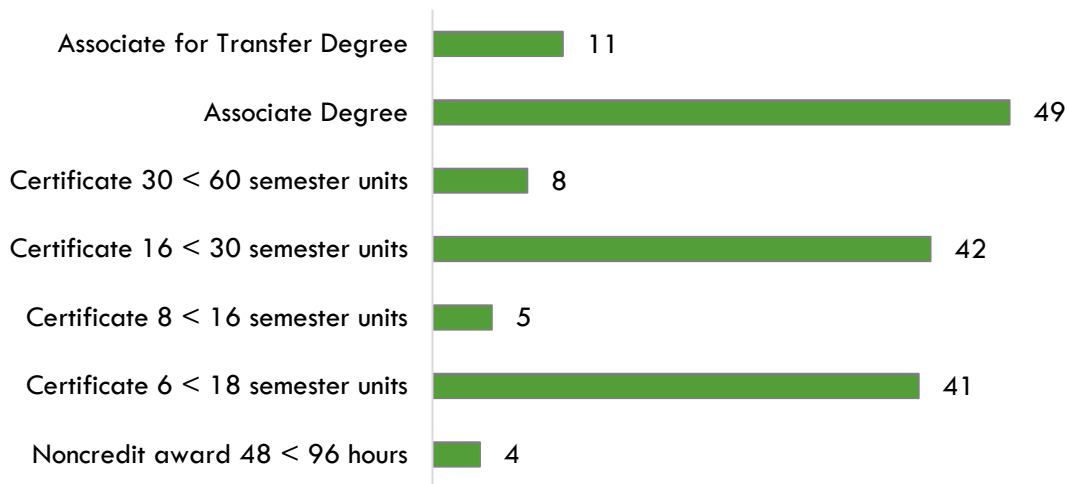
TOP Code	Program	College	2020-2021 Awards	2021-2022 Awards	2022-2023 Awards	3-Year Award Average
0101.00	Agriculture Technology and Sciences, General	Mt San Antonio	0	3	0	1
		<b>LA Subtotal</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>1</b>
		-	-	-	-	-
		<b>OC Subtotal</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Supply Subtotal/Average</b>			<b>0</b>	<b>3</b>	<b>0</b>	<b>1</b>
0102.00	Animal Science	Mt San Antonio	24	33	33	30
		<b>LA Subtotal</b>	<b>24</b>	<b>33</b>	<b>33</b>	<b>30</b>
		-	-	-	-	-
		<b>OC Subtotal</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Supply Subtotal/Average</b>			<b>24</b>	<b>33</b>	<b>33</b>	<b>30</b>
0102.40	Equine Science	LA Pierce	8	6	5	6
		Mt San Antonio	9	10	8	9
		<b>LA Subtotal</b>	<b>17</b>	<b>16</b>	<b>13</b>	<b>15</b>
		-	-	-	-	-
		<b>OC Subtotal</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Supply Subtotal/Average</b>			<b>17</b>	<b>16</b>	<b>13</b>	<b>15</b>
0103.00	Plant Science	LA Pierce	0	2	2	1



TOP Code	Program	College	2020-2021 Awards	2021-2022 Awards	2022-2023 Awards	3-Year Award Average
		Mt San Antonio	5	9	12	9
		Pasadena	1	1	2	1
		<b>LA Subtotal</b>	<b>6</b>	<b>12</b>	<b>16</b>	<b>11</b>
		-	-	-	-	-
		<b>OC Subtotal</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
		<b>Supply Subtotal/Average</b>	<b>6</b>	<b>12</b>	<b>16</b>	<b>11</b>
0109.00	Horticulture	El Camino	6	8	2	5
		LA Pierce	3	1	5	3
		Long Beach	7	20	17	15
		Mt San Antonio	5	19	9	11
		<b>LA Subtotal</b>	<b>21</b>	<b>48</b>	<b>33</b>	<b>34</b>
		Fullerton	1	1	0	1
		Orange Coast	10	15	11	12
		Saddleback	47	40	28	38
		<b>OC Subtotal</b>	<b>58</b>	<b>56</b>	<b>39</b>	<b>51</b>
		<b>Supply Subtotal/Average</b>	<b>79</b>	<b>104</b>	<b>72</b>	<b>85</b>
0109.30	Nursery Technology	Mt San Antonio	5	4	4	4
		<b>LA Subtotal</b>	<b>0</b>	<b>3</b>	<b>0</b>	<b>1</b>
		Fullerton	1	2	3	2
		<b>OC Subtotal</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>2</b>
		<b>Supply Subtotal/Average</b>	<b>6</b>	<b>6</b>	<b>7</b>	<b>6</b>
0115.00	Natural Resources	West LA	0	12	1	4
		<b>LA Subtotal</b>	<b>0</b>	<b>12</b>	<b>1</b>	<b>4</b>
		Saddleback	6	7	6	6
		<b>OC Subtotal</b>	<b>6</b>	<b>7</b>	<b>6</b>	<b>6</b>
		<b>Supply Subtotal/Average</b>	<b>6</b>	<b>19</b>	<b>7</b>	<b>11</b>
		<b>Supply Total/Average</b>	<b>138</b>	<b>193</b>	<b>148</b>	<b>160</b>

Exhibit 12 shows the annual average community college awards by type from 2020-21 to 2022-23. The plurality of the awards are for associate degrees, followed by certificates between 16 and less than 30 semester units and certificates between 6 and less than 18 semester units.

### Exhibit 12: Annual Average Community College Awards by Type, 2020-2023



### Community College Student Outcomes:

Exhibit 13 shows the Strong Workforce Program (SWP) metrics for natural resources programs in North Orange County Community College District (NOCCCD), the Orange County Region, and California. Currently, only one college in Orange County (Saddleback) offers courses and programs under the 0115.00 (Natural Resources) TOP code. Due to a low number of students, nearly all metrics are not available.

Throughout the state, there were 2,765 natural resources students in the 2021-22 academic year. The median annual earnings for exiting students were \$38,548 (or \$18.53 per hour) and 63% of students reported being employed in their field of study.

### Exhibit 13: Natural Resources (0115.00) Strong Workforce Program Metrics, 2021-22<sup>10</sup>

SWP Metric	SOCCCD	OC Region	California
SWP Students	N/A	20	2,765
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	N/A	Insufficient Data	33%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	N/A	Insufficient Data	87%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	N/A	Insufficient Data	130
SWP Students Who Transferred to a Four-Year Postsecondary Institution (2019-20)	N/A	N/A	238
SWP Students with a Job Closely Related to Their Field of Study (2019-20)	N/A	Insufficient Data	64%
Median Annual Earnings for SWP Exiting Students (2020-21)	N/A	Insufficient Data	\$38,548 (\$18.53)

<sup>10</sup> All SWP metrics are for 2021-22 unless otherwise noted.

SWP Metric	SOCCCD	OC Region	California
Median Change in Earnings for SWP Exiting Students (2020-21)	N/A	Insufficient Data	30%
SWP Exiting Students Who Attained the Living Wage (2020-21)	N/A	Insufficient Data	63%

### Non-Community College Supply:

To comprehensively analyze the regional supply, it is crucial to include data from other institutions offering diagnostic medical sonography training programs. Exhibit 14 displays the annual and three-year average awards granted by these institutions under the related Classification of Instructional Programs (CIP) codes:

- Agribusiness/Agricultural Business Operations (01.0102)
- Plant Protection and Integrated Pest Management (01.1105)

No awards were conferred under the following CIP codes:

- Animal/Livestock Husbandry and Production (01.0302)
- Dairy Husbandry and Production (01.0306)
- Horse Husbandry/Equine Science and Management (01.0307)
- Crop Production (01.0304)
- Viticulture and Enology (01.1004)
- Applied Horticulture/Horticulture Operations, General (01.0601)
- Plant Nursery Operations and Management (01.0606)
- Farm/Farm and Ranch Management (01.0104)
- Agroecology and Sustainable Agriculture (01.0308)

The available data covers 2019 to 2022. During this period, non-community college institutions in the region conferred an average of 58 awards annually in related programs. However, none of these awards have a specific emphasis on aquaculture. Therefore, supply is overstated.

**Exhibit 14: Regional Non-Community College Awards, 2019-2022**

CIP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2021-2022 Awards	3-Year Award Average
01.0102	Agribusiness/Agricultural Business Operations	California State Polytechnic University-Pomona	27	24	22	24
<b>Supply Subtotal/Average</b>			<b>27</b>	<b>24</b>	<b>22</b>	<b>24</b>
01.1105	Plant Protection and Integrated Pest Management	California State Polytechnic University-Pomona	45	33	23	34
<b>Supply Subtotal/Average</b>			<b>45</b>	<b>33</b>	<b>23</b>	<b>34</b>
<b>Supply Total/Average</b>			<b>72</b>	<b>57</b>	<b>45</b>	<b>58</b>

## Regional Demographics

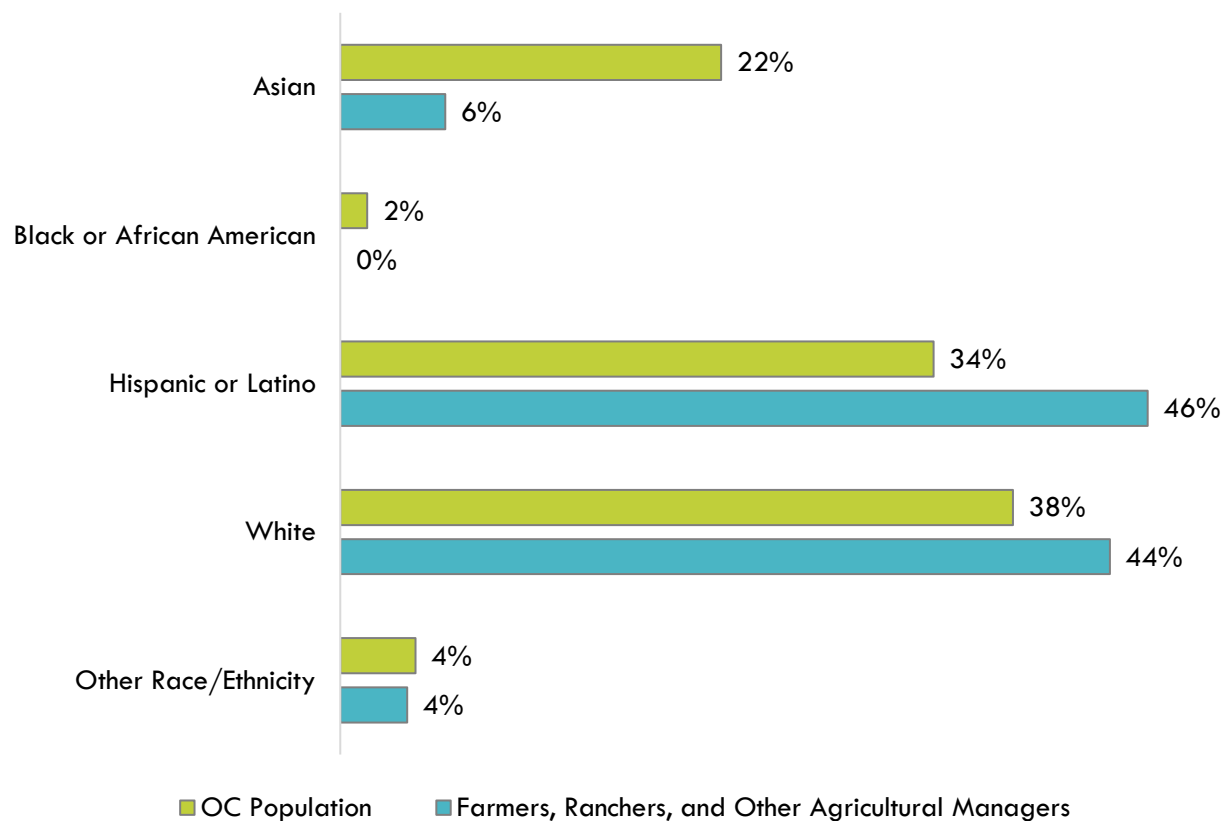
This section analyzes demographic data for the Orange County population as well occupational data for the purpose of identifying potential diversity and equity issues that can be addressed by community college programs. As noted above, only one Orange County community college currently offers a natural resources program. However, due to a low number of students, demographic data is not available.

### Ethnicity:

Exhibit 15 compares the ethnicity of the overall Orange County population and occupation-specific data for *farmers, ranchers, and other agricultural managers*.

Notably, 46% of *farmers, ranchers, and other agricultural managers* are Hispanic or Latino, which is much higher than the population (34%). Additionally, 44% of *farmers, ranchers, and other agricultural managers* are white, which is also higher than the population (38%).

Exhibit 15: Program and County Demographics by Ethnicity

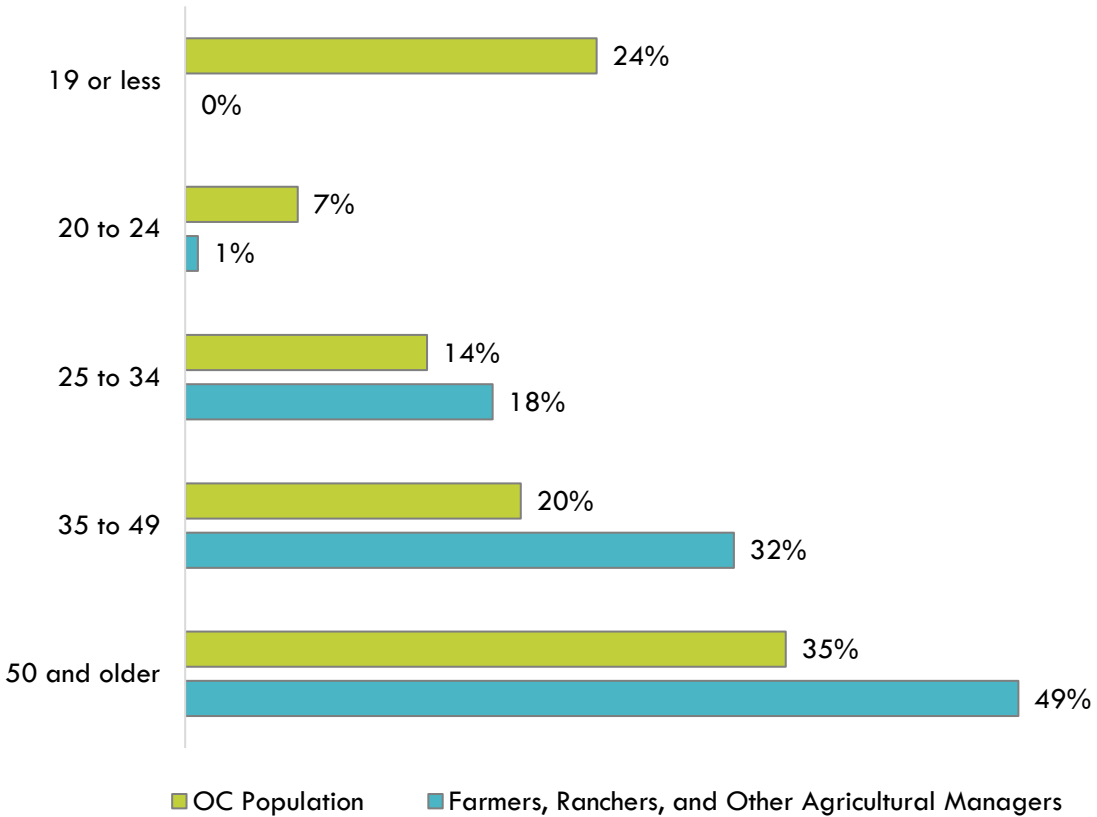


## Age:

Exhibit 16 compares the age of the overall Orange County population, and occupation-specific data for farmers, ranchers, and other agricultural managers.

Nearly 50% of farmers, ranchers, and other agricultural managers are 50 and older which is significantly higher than the population (35%). Only 19% of farmers, ranchers, and other agricultural managers are 34 or younger, which is significantly lower than the population (45%).

Exhibit 16: Program and County Demographics by Age

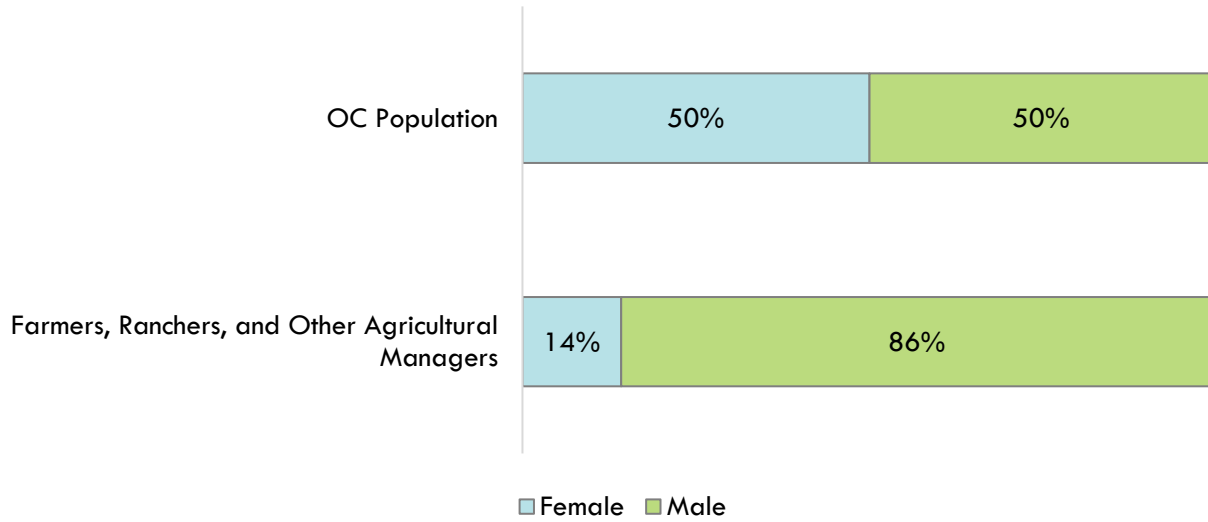


## Sex:

Exhibit 17 compares the sex of overall Orange County population and occupation-specific data for *farmers, ranchers, and other agricultural managers*.

Though the population is split evenly, 86% of *farmers, ranchers, and other agricultural managers* are men.

Exhibit 17: 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](http://datamart.cccco.edu)) and CIP code data comes from the Integrated Postsecondary Education Data System ([nces.ed.gov/ipeds/use-the-data](http://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 <a href="https://lightcast.io/">https://lightcast.io/</a></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, last updated in September 2021, assesses the cost of housing, food, child care, health care, transportation, and taxes. For more information, see: <a href="https://insightccd.org/family-needs-calculator/">https://insightccd.org/family-needs-calculator/</a></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. However, this figure is outdated and does not reflect recent increases in the cost of living.</p> <p>The MIT Living Wage, updated on February 14, 2024, better accounts for existing economic conditions, with the current MIT Living Wage in Orange County being \$30.48. For more information, see: <a href="https://livingwage.mit.edu/counties/06059">https://livingwage.mit.edu/counties/06059</a></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 <a href="https://www.bls.gov/emp/documentation/education/tech.htm">https://www.bls.gov/emp/documentation/education/tech.htm</a></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 <a href="https://www.onetonline.org/help/online/">https://www.onetonline.org/help/online/</a></p>
Educational Supply	<p>The CCCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: <a href="https://datamart.cccco.edu">https://datamart.cccco.edu</a></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 <a href="https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions">https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions</a></p>



Data Type	Source
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: <a href="https://www.calpassplus.org/LaunchBoard/Home.aspx">https://www.calpassplus.org/LaunchBoard/Home.aspx</a></p>
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: <a href="https://www.census.gov/programs-surveys/acs">https://www.census.gov/programs-surveys/acs</a></p> <p>Data is sourced from IPUMS USA, a database providing access to ACS and other Census Bureau data products. For more information, see: <a href="https://usa.ipums.org/usa/about.shtml">https://usa.ipums.org/usa/about.shtml</a></p>

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