










Fermentation Occupations

Labor Market Analysis: San Diego County

March 2026

Summary

NEW PROGRAM RECOMMENDATION?	EVIDENCE OF A SUPPLY GAP?	AT OR ABOVE THE LIVING WAGE?	EXPECTED LEVEL(S) OF EDUCATION
 Proceed with Caution	 	 	<input type="checkbox"/> Doctorate Degree <input type="checkbox"/> Master's Degree <input checked="" type="checkbox"/> Bachelor's Degree <input checked="" type="checkbox"/> Associate Degree
SUPPORT FOR PROGRAM MODIFICATION?	NUMBER OF INSTITUTIONS THAT PROVIDE TRAINING	NUMBER OF ANNUAL JOB OPENINGS	<input type="checkbox"/> Some College or Certificate <input type="checkbox"/> HS Diploma or Equivalent <input type="checkbox"/> Less Than a HS Diploma <input type="checkbox"/> Apprenticeship
 	<p>LOW</p> 	<p>LOW</p> 	

The San Diego & Imperial Center of Excellence (COE) developed this brief to assist the region’s community colleges with strategic planning and program development. *Fermentation Occupations* include “Food Scientists and Technologists” and “Food Science Technicians.” According to available data, *Fermentation Occupations* in San Diego County have a labor market demand of 33 annual job openings (while average demand for a single occupation in San Diego County is 289 annual job openings), and two institutions in San Diego County supply one award for these occupations. Entry-level wages are above the living wage. This brief recommends that the colleges proceed with caution when developing a new program for these occupations and supports a program modification because 1) there is a supply gap in San Diego County and 2) entry-level wages are above the living wage. However, there is a low number of annual openings for these occupations.

Introduction

This report provides labor market information in San Diego County for the following occupational codes in the Standard Occupational Classification (SOC)¹ system:

- **Food Scientists and Technologists** (SOC 19-1012): Use chemistry, microbiology, engineering, and other sciences to study the principles underlying the processing and deterioration of foods; analyze food content to determine levels of vitamins, fat, sugar, and protein; discover new food sources; research ways to make processed foods safe, palatable, and healthful; and apply food science knowledge to determine best ways to process, package, preserve, store, and distribute food.
- **Food Science Technicians** (SOC 19-4013): Work with food scientists or technologists to perform standardized qualitative and quantitative tests to determine physical or chemical properties of food or beverage products. Includes technicians who assist in research and development of production technology, quality control, packaging, processing, and use of foods.

For the purpose of this report, these occupations are referred to as *Fermentation Occupations*.

Projected Occupational Demand

Between 2024 and 2029, businesses in San Diego County will need to hire 33 employees annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example (Exhibit 1). Most of this labor market demand comes from Food Science Technicians, which are projected to have the most annual job openings with 26 openings each year between 2024 and 2029.

Exhibit 1: Number of Jobs for *Fermentation Occupations* (2024-2029)²

Occupational Title	2024 Jobs	2029 Jobs	2024 - 2029 Net Jobs Change	2024 - 2029 % Net Jobs Change	Annual Job Openings (Demand)
Food Science Technicians	174	171	-3	-2%	26
Food Scientists and Technologists	97	98	2	2%	8
Total	271	269	-2	-1%	33

¹ The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. <https://www.bls.gov/soc/>.

² Lightcast 2025.04; QCEW, Non-QCEW, Self-Employed.

Earnings

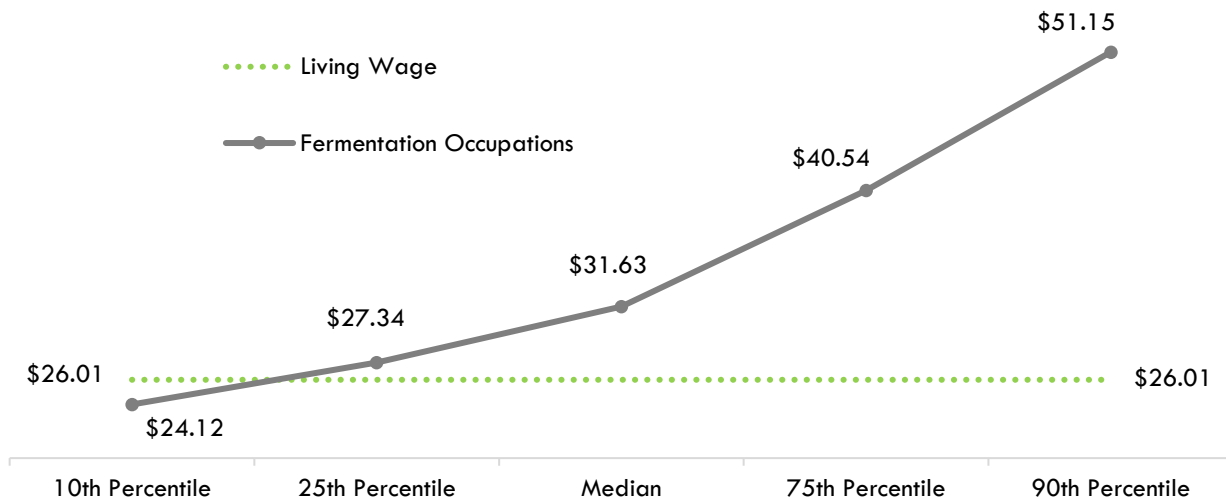
According to traditional³ labor market information (LMI), entry-level hourly earnings for *Fermentation Occupations* range from \$22.03 to \$32.66 (Exhibit 2).

Exhibit 2: Hourly Earnings for Fermentation Occupations in San Diego County⁴

Occupational Title	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Food Scientists and Technologists	\$32.66	\$39.50	\$51.05
Food Science Technicians	\$22.03	\$23.76	\$30.03

On average, the entry-level hourly earnings for employed *Fermentation Occupations* are \$27.34—or \$56,867.20 annual salary⁵; this is more than the living wage for a single adult in San Diego County, which is \$26.01 per hour (Exhibit 3).⁶

Exhibit 3: Hourly Earnings⁷ for Fermentation Occupations in San Diego County⁸



³ Traditional LMI is generally historical data captured by the U.S. Bureau of Labor Statistics (BLS) or the California Employment Development Department (EDD). It does not account for recent technological, economic, or legislative changes that may affect labor market demand and wages.

⁴ Lightcast 2025.04; QCEW, Non-QCEW, Self-Employed.

⁵ Annualized salaries assume a full-time position with 2,080 hours. Multiplying the hourly wage with 2,080 yields the annual salary.

⁶ Center for Women's Welfare, University of Washington. (2024). The self-sufficiency standard for California 2024.

selfsufficiencystandard.org/California.

⁷ 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

⁸ Lightcast 2025.04; QCEW, Non-QCEW, Self-Employed.

This suggests that there were insufficient online job postings reporting wage information for *Fermentation Occupations* between January 1, 2023 and December 30, 2025 in San Diego County (Exhibit 4).⁹

**Exhibit 4: Entry-Level Advertised Salaries in Online Job Postings for
Fermentation Occupations in San Diego County (2023-2025)**

N/A	N/A	N/A
2023	2024	2025

Expected Level of Education

According to traditional LMI (data reported to EDD and BLS), *Fermentation Occupations* have a national educational attainment ranging from an *associate degree* to a *bachelor’s degree* (Exhibit 5).¹⁰

Exhibit 5: National Educational Attainment for *Fermentation Occupations*¹¹

Occupational Title	Typical Entry-Level Education
Food Science Technicians	Bachelor’s degree
Food Scientists and Technologists	Associate degree

⁹ Lightcast 2025.04; “Job Posting Analytics.” 2023-2025.
¹⁰ Lightcast 2025.04; QCEW, Non-QCEW, Self-Employed.
¹¹ Lightcast 2025.04; QCEW, Non-QCEW, Self-Employed.

Similarly, online job postings between January 1, 2023 and December 31, 2025 in San Diego County had a [bachelor's degree](#) as the most requested educational requirement for *Fermentation Occupations*; however, employers also expected the following certifications (Exhibit 6).¹²

**Exhibit 6: Top Certifications for *Fermentation Occupations*
in San Diego County in Online Job Postings (2023-2025)**¹³

1. Driver's License
2. ServSafe Certification

Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes. There are [two](#) TOP codes and [five](#) CIP codes related to *Fermentation Occupations* (Exhibit 7).

Exhibit 7: Related TOP and CIP Codes for *Fermentation Occupations*¹⁴

TOP or CIP Code	TOP or CIP Program Title
TOP 0104.00	Viticulture, Enology, and Wine Business
TOP 0113.00	Food Processing and Related Technologies
CIP 01.0309	Viticulture and Enology
CIP 01.0401	Agricultural and Food Products Processing
CIP 01.1002	Food Technology and Processing
CIP 01.1003	Brewing Science
CIP 01.1005	Zymology/Fermentation Science

According to TOP data, [two](#) community colleges supply the region with awards for these occupations, [MiraCosta College](#) and [San Diego Mesa College](#). According to CIP data, [no](#) non-community-college institution supplies the region with awards (Exhibit 8).

¹² Lightcast 2025.04; "Job Posting Analytics." 2023-2025.

¹³ Lightcast 2025.04; "Job Posting Analytics." 2023-2025.

¹⁴ This brief uses a conservative estimate of program supply and only calculates awards from the TOP code listed in Exhibit 7.

**Exhibit 8: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions
(Program Year 2020-21 Through Program Year 2023-24 Average)**

TOP6 or CIP Code	TOP6 or CIP Program Title	3-Yr Annual Average CC Awards (PY21-22 to PY23-24)	Other Educational Institutions 3-Yr Annual Average Awards (PY20-21 to PY22-23)	Total Average Supply (PY20-21 to PY23-24)
0104.00	Viticulture, Enology, and Wine Business	1	0	1
	MiraCosta	1	0	
	<ul style="list-style-type: none"> • Associate degree 	0	0	
	<ul style="list-style-type: none"> • Cert 16 < 30 units 	1	0	
0113.00	Food Processing and Related Technologies	0	0	0
	San Diego Mesa	1	0	
	<ul style="list-style-type: none"> • Cert 16 < 30 units 	0	0	
			Total	1

Demand vs. Supply

Comparing labor demand with labor supply¹⁵ suggests that there is a **supply gap** for these occupations in San Diego County, with **33** annual openings and **one** award. Comparatively, there are **844** annual openings in California and **79** awards, suggesting that there is a **supply gap** across the state (Exhibit 9).¹⁶

Exhibit 9: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

	Demand (Annual Openings)	Supply (Annual Awards)	Supply Gap or Oversupply
San Diego	33	1	32
California	844	79	765

Please note: This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

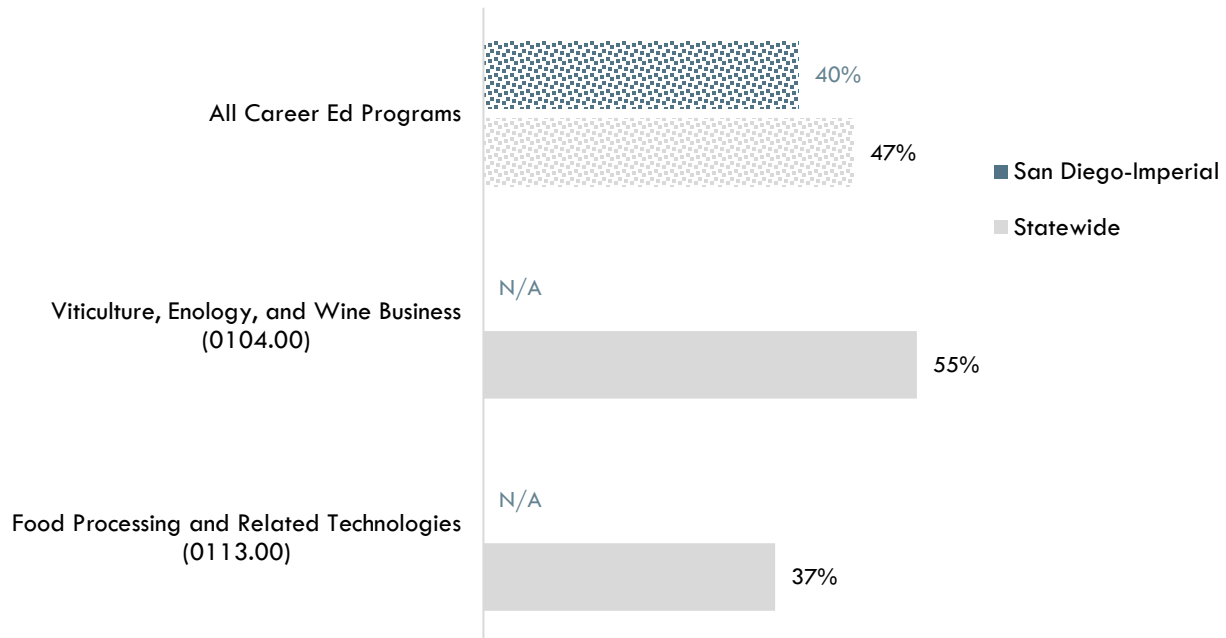
¹⁵ Labor supply can be found from two different sources: Lightcast or the California Community Colleges Chancellor's Office MIS Data Mart. Lightcast uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

¹⁶ "Supply and Demand," Centers of Excellence Student Outcomes, coecc.net/our-resources.

Student Outcomes and Regional Comparisons

According to the California Community Colleges DataVista, 37 to 55% of students statewide earned a living wage after completing a program related to *Fermentation Occupations*, compared to 57% of students in Career Education programs in general across the state (Exhibit 10).¹⁷

Exhibit 10: Percentage of Students Who Earned a Living Wage by Program, PY2022-23¹⁸



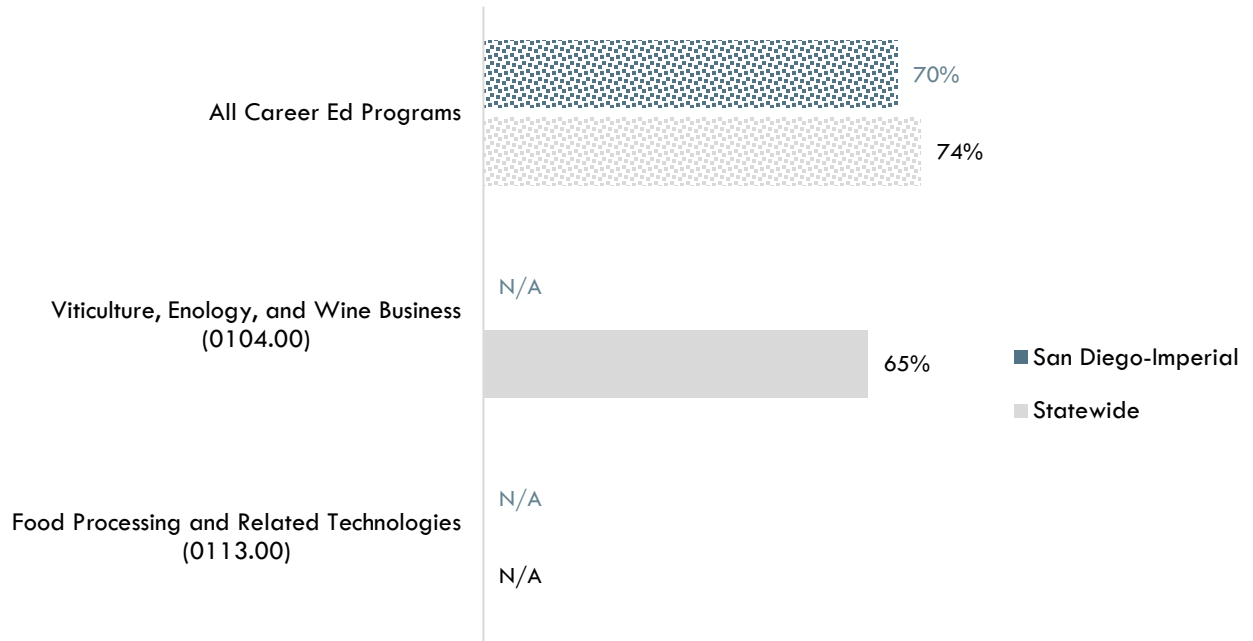
"N/A" indicates insufficient data

¹⁷ DataVista, California Community Colleges, datavista.cccco.edu/.

¹⁸ Most recent year with available data is Program Year 2022-23. Among completers and skills builders who exited, the percentage of students who attained a living wage.

According to the California Community Colleges DataVista, 65% of students statewide obtained a job closely related to their field of study after completing a program related to *Fermentation Occupations*, compared to 69% of students in Career Education programs in general across the state (Exhibit 11).¹⁹

Exhibit 11: Percentage of Students in a Job Closely Related to Field of Study by Program, PY2021-22²⁰



"N/A" indicates insufficient data

¹⁹ DataVista, California Community Colleges, datavista.cccco.edu/.

²⁰ Most recent year with available data is Program Year 2021-22. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

Employers

Between January 1, 2023 and December 31, 2025, the top employers in San Diego County for *Fermentation Occupations* were University of California San Diego, County of San Diego, BP, Pete's Real Food, and Target based on online job postings (Exhibit 12).

Exhibit 12: Top Employers for *Fermentation Occupations* in San Diego County²¹

Top Employers	
<ul style="list-style-type: none"> University of California San Diego County of San Diego BP Pete's Real Food Target 	<ul style="list-style-type: none"> Thermo Fisher Scientific Food Safety Systems Gate Gourmet V&P Scientific M2 Ingredients

Skills

Exhibit 13 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2023 and December 31, 2025.

Exhibit 13: Top Skills for *Fermentation Occupations* in San Diego County²²

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> Food Safety And Sanitation Food Science Biology Agriculture Chemistry New Product Development Packaging And Labeling Hazard Analysis And Critical Control Points Laboratory Equipment Applied Research Standard Operating Procedure Marketing Auditing Sanitation Product Quality 	<ul style="list-style-type: none"> Communication Research Innovation Problem Solving Sales Management Safety Assurance Detail Oriented Mathematics Computer Literacy Quality Assurance Customer Service Leadership Operations Verbal Communication Skills 	<ul style="list-style-type: none"> Microsoft Excel Microsoft Office Microsoft PowerPoint

²¹ Lightcast 2025.04; "Job Posting Analytics." 2023-2025.

²² Lightcast 2025.04; "Job Posting Analytics." 2023-2025.

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