










Fermentation or Brewing Occupations

Labor Market Analysis: San Diego County

October 2023

Summary

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

This brief provides labor market information about *Fermentation or Brewing Occupations* to assist the San Diego and Imperial Counties Community Colleges with program development and strategic planning. According to available labor market information, there is no single occupation for “fermentation” or “brewing.” However, the top occupations with online job postings for this skills are “First-Line Supervisors of Production and Operating Workers,” “Food Batchmakers,” “Food Science Technicians,” and “Industrial Production Managers.” Approximately one percent of online job postings for these occupations specifically requested “fermentation,” “brewery,” or “brewing.” This brief recommends that the San Diego & Imperial Counties Community Colleges proceed with caution in developing a new program because 1) the estimated number of annual job openings (or supply gap) is low and 2) existing programs could meet labor market demand, but few awards have been supplied in the past three years. Colleges should also note that employers require a minimum of a high school diploma for these occupations. The entry-level wages for three out of the four occupations are above the living wage, however.

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 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.
- **Food Batchmakers** (SOC 51-3092): Set up and operate equipment that mixes or blends ingredients used in the manufacturing of food products. Includes candy makers and cheese makers.
- **Industrial Production Managers** (SOC 11-3051) Plan, direct, or coordinate the work activities and resources necessary for manufacturing products in accordance with cost, quality, and quantity specifications.
- **First-Line Supervisors of Production and Operating Workers** (SOC 51-1011): Directly supervise and coordinate the activities of production and operating workers, such as inspectors, precision workers, machine setters and operators, assemblers, fabricators, and plant and system operators. Excludes team or work leaders.

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

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. [bls.gov/soc/](https://www.bls.gov/soc/).

Projected Occupational Demand

Between 2022 and 2027, employers in San Diego County will need to hire 918 workers annually to fill new jobs and backfill jobs in *Fermentation or Brewing Occupations* due to attrition caused by turnover and retirement, for example (Exhibit 1). “First-Line Supervisors of Production and Operating Workers” are projected to have the most labor market demand between 2022 and 2027, with 530 annual job openings.

Exhibit 1: Number of Jobs for *Fermentation or Brewing Occupations* in San Diego County (2022-2027)²

Occupational Title	2022 Jobs	2027 Jobs	2022 - 2027 Net Jobs Change	2022-2027 % Net Jobs Change	Annual Job Openings (Demand)
First-Line Supervisors of Production and Operating Workers	4,495	4,744	249	6%	530
Industrial Production Managers	2,430	2,564	134	5%	204
Food Batchmakers	867	1,015	148	17%	160
Food Science Technicians	148	160	12	8%	24
Total	7,940	8,483	543	7%	918

Readers should note, however, that these occupations do not only work specifically in fermentation or brewing. Therefore, the COE examined online job postings for the percentage of these occupations that requested specifically “fermentation,” “brewery,” or “brewing,” and found that approximately one percent of the demand for these occupations requested these skills and expertise. Therefore, the estimated demand for these skills is nine annual job openings in San Diego County. See Exhibit 8 and Exhibit 9 for more information on these estimates.

² Lightcast 2023.03; QCEW, Non-QCEW, Self-Employed.

Earnings

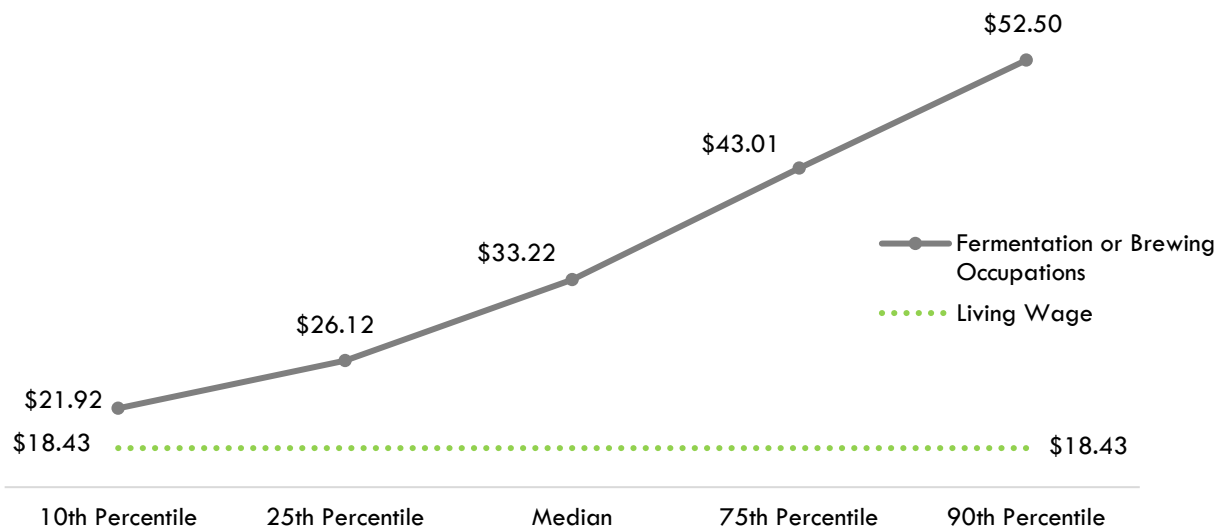
Exhibit 2a disaggregates hourly earnings by occupation. The entry-level hourly earnings for *Fermentation or Brewing Occupations* range from \$15.72 to \$44.65.

Exhibit 2a: Hourly Earnings for *Fermentation or Brewing Occupations* in San Diego County³

Occupational Title	Entry-Level Hourly Earnings (25 th Percentile)	Median Hourly Earnings	Experienced Hourly Earnings (75 th Percentile)
Industrial Production Managers	\$44.65	\$60.26	\$79.60
First-Line Supervisors of Production and Operating Workers	\$24.80	\$32.39	\$43.36
Food Science Technicians	\$19.30	\$23.49	\$29.83
Food Batchmakers	\$15.72	\$16.74	\$19.26

On average, the entry-level hourly earnings for *Fermentation or Brewing Occupations* are \$26.12; this is more than the living wage for a single adult in San Diego County, which is \$18.43 per hour (Exhibit 2b).⁴

Exhibit 2b: Average Hourly Earnings⁵ for *Fermentation or Brewing Occupations* in San Diego County⁶



³ Lightcast 2023.03; QCEW, Non-QCEW, Self-Employed.

⁴ "Family Needs Calculator (formerly the California Family Needs Calculator)," Insight: Center for Community Economic Development, last updated 2021. insightccd.org/family-needs-calculator/.

⁵ 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.

⁶ Lightcast 2023.03; QCEW, Non-QCEW, Self-Employed.

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.⁷ There are **two** TOP codes and **three** CIP codes related to *Fermentation or Brewing Occupations* (Exhibit 3).

Exhibit 3: Related TOP and CIP Codes for Fermentation or Brewing Occupations⁸

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 01.1003	Brewing Science
CIP 01.1004	Viticulture and Enology
CIP 01.1005	Zymology/Fermentation Science

According to TOP data, **two** community colleges supply the region with awards for these occupations: **Cuyamaca College** and **MiraCosta College**. According to CIP data, **no** non-community-college institutions supplies the region with awards (Exhibit 4). However, **San Diego State University⁹** and **University of California San Diego¹⁰** offer courses and certificate programs for brewing.

Exhibit 4: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions (Program Year 2019-20 through Program Year 2020-21 Average)

TOP6 or CIP Code	TOP6 or CIP Program Title	3-Yr Annual Average CC Awards (PY19-20 to PY21-22)	Other Institutions 2-Yr Annual Average Awards (PY19-20 to PY20-21)	Total Average Supply (PY19-20 to PY21-22)
0104.00	Viticulture, Enology, and Wine Business	1	0	1
	<ul style="list-style-type: none"> Cuyamaca 	0	0	
	<ul style="list-style-type: none"> MiraCosta 	1	0	
			Total	1

⁷ TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data).

⁸ This brief uses a conservative estimate of program supply and only calculates awards from the TOP codes in Exhibit 3.

⁹ San Diego State University, "Professional Certificate in the Business of Craft Beer." ces.sdsu.edu/hospitality/professional-certificate-business-craft-beer

¹⁰ University of San Diego Extended Studies, "Brewing Courses" and "Brewing Certificate." extendedstudies.ucsd.edu/courses-and-programs/brewing-courses

Demand vs. Supply

Comparing labor demand (annual openings) with labor supply¹¹ suggests that there is a **supply gap** for these occupations in San Diego County, with **918** annual openings and **one** award. Comparatively, there are **11,092** annual openings in California and **175** awards, suggesting that there is also a **supply gap** across the state¹² (Exhibit 5). As previously mentioned, the demand numbers are overestimated because these occupations do not only work in fermentation and brewing. Approximately one percent is specifically for fermentation and brewing, which suggests a small labor market demand and supply gap for *Fermentation and Brewing Occupations*. For more information about actual estimates, see Exhibit 8 and Exhibit 9.

Exhibit 5: Labor Demand (Annual Openings) Compared with Labor Supply (Average Annual Awards)

	Demand (Annual Openings)	Supply¹³ (Total Annual Average Supply)	Supply Gap or Oversupply
San Diego	918	1	917
California	11,092	175	10,917

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.

¹¹ 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.

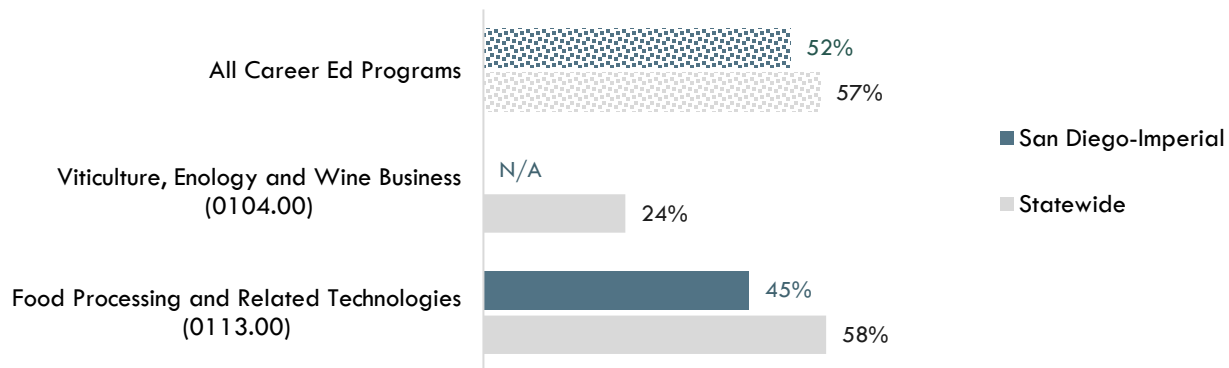
¹² "Supply and Demand," Centers of Excellence Student Outcomes, <https://coecc.net/our-resources/>.

¹³ Awards included: associate degree; award <1 year; award 1<2 years; and postsecondary awards.

Student Outcomes and Regional Comparisons

According to the California Community Colleges LaunchBoard, 45 percent of students in the San Diego-Imperial region earned a living wage after completing a program related to *Fermentation or Brewing Occupations*, compared 24 to 58 percent statewide and 57 percent of students in Career Education programs in general across the state (Exhibit 6a).¹⁴

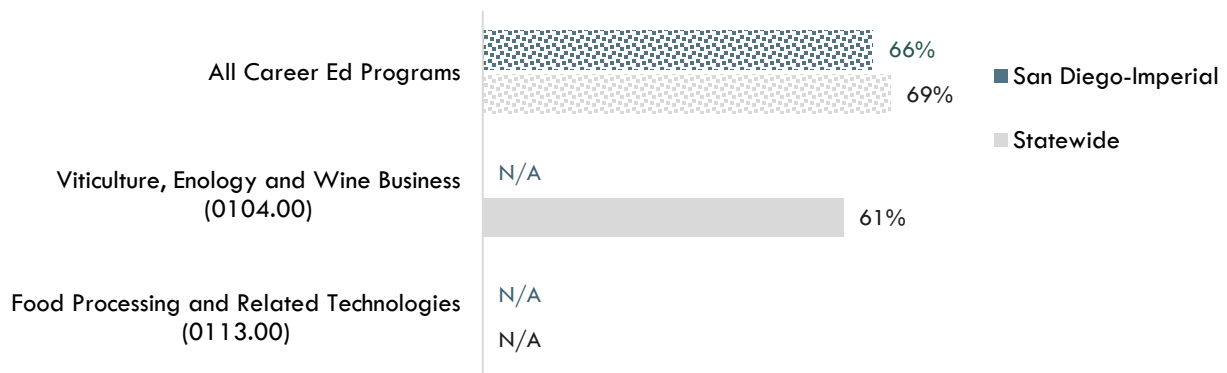
Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, PY2020-21¹⁵



"N/A" indicates insufficient data

According to the California Community Colleges LaunchBoard, 61 percent of statewide obtained a job closely related to their field of study after completing a program related to *Fermentation or Brewing Occupations*, compared 69 percent of students in Career Education programs in general across the state (Exhibit 6b).¹⁶

Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program, PY2019-20¹⁷



"N/A" indicates insufficient data

¹⁴ "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

¹⁵ Most recent year with available data is Program Year 2020-21. Among completers and skills builders who exited, the percentage of students who attained a living wage.

¹⁶ "California Community Colleges Strong Workforce Program," California Community Colleges, calpassplus.org/LaunchBoard/SWP.aspx.

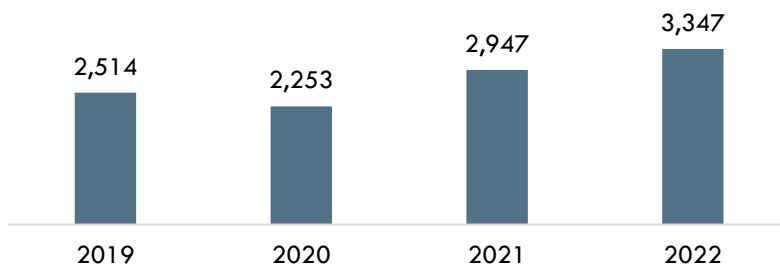
¹⁷ Most recent year with available data is Program Year 2019-20. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. While *Fermentation or Brewing Occupations* include “First-Line Supervisors of Production and Operating Workers,” “Food Batchmakers,” “Food Science Technicians,” and “Industrial Production Managers,” employers do not typically use these formal occupational titles when recruiting for fermentation positions. As a result, this section explores online job postings that include “Brewery” job titles or the skill “Fermentation,” which employers commonly use to hire for these roles.

Between 2019 and 2022, there was an average of 2,765 online job postings per year for *Fermentation or Brewing Occupations* in San Diego County (Exhibit 7). Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 1). While this brief includes online jobs postings data to help with curriculum development, the community colleges should note that this type of data is impacted by several variables: employers may post a position multiple times to increase the pool of applicants; a job posting can remain posted after a business decides not to fill a position; or an employer may use one posting to fill multiple positions, for example.

Exhibit 7: Number of Online Job Postings for Fermentation or Brewing Occupations in San Diego County (2019-2022)¹⁸



While labor market demand cannot be determined for *Fermentation or Brewing Occupations*, the COE estimates that approximately one percent of the occupations in San Diego County and 0.4 percent in California have online job postings that listed “Fermentation,” “Brewery,” or “Brewing” (Exhibit 8).¹⁹ Based on this information, there is an estimated labor market demand of nine and 111 annual job openings for *Fermentation or Brewing Occupations* in San Diego County and California, respectively (Exhibit 9).

¹⁸ Lightcast; “Job Posting Analytics.” 2018-2022.

¹⁹ Lightcast. “Job Posting Analytics.” 2018-2022. “Brewery” job title or “Fermentation” specialized skill examined in online job postings.

Exhibit 8: Online Job Postings for Selected SOC Codes with “Brewery” or “Fermentation” (January 2020 - December 2022)²⁰

	Online Job Postings (San Diego)	Online Job Postings (California)
Occupations listed in Exhibit 5	8,591	85,482
Occupations listed in Exhibit 5 and filtered by "brewery" job titles	25	95
Occupations listed in Exhibit 5 and filtered by "fermentation" skills	45	243
% of online job postings with skills and job titles above	1%	0.4%

Exhibit 9: Number of Annual Job Openings (Labor Market Demand) by SOC Code, 2022-2027²¹

SOC Code	Occupational Title	Average Annual Job Openings		Estimated Annual Job Openings for “Brewery” ²²	
		San Diego	California	San Diego	California
51-1011	First-Line Supervisors of Production and Operating Workers	530	6,278	5	63
11-3051	Industrial Production Managers	204	2,102	2	21
51-3092	Food Batchmakers	160	2,176	2	22
19-4013	Food Science Technicians	24	536	0	5
	Total	918	11,092	9	111

²⁰ Lightcast. 2023.3 – QCEW Employees, Non-QCEW Employees, and Self-Employed data set “Job Postings Analytics” for selected SOC codes. Numbers in the exhibit reflect “unique postings” or de-duplicated online job postings. “Brewery” job titles include “Brew Crews,” “Brewers,” “Brewery Ambassadors,” “Brewery Representatives,” “Brewery Workers,” “Brewing Group Managers,” “Brewmasters,” “Directors of Brewing Operations,” “Fermentation Technicians,” “Head Brewers,” “Lead Brewers,” “Beer Specialists,” “Beertenders,” and “Craft Beer Specialists.” “Fermentation” skills include “Fermentation” and “Malts (Brewing Ingredients).”

²¹ Lightcast. 2023.3 – QCEW Employees, Non-QCEW Employees, and Self-Employed data set. Numbers in the “Estimated Annual Job Openings for ‘Fermentation’” reflect the 1% (% of online job postings with “brewery” job titles or “fermentation” skill) multiplied against the average annual job openings for each occupation.

Top Employers

Between January 1, 2020 and December 31, 2022, the top five employers in San Diego County for “Brewery” or “Fermentation” were [Pizza Port Brewing Company](#), [Kookslams Hard Seltzer](#), [Mujeres Brew House](#), [Karl Strauss Brewing Company](#), and [Ballast Point](#) based on online job postings (Exhibit 10).

Exhibit 10: Top Employers for “Brewery” Job Titles or “Fermentation” Skill in San Diego County²³

Top Employers	
<ul style="list-style-type: none">• Pizza Port Brewing Company• Kookslams Hard Seltzer• Mujeres Brew House• Karl Strauss Brewing Company• Ballast Point	<ul style="list-style-type: none">• Stone Brewing Company• Rough Draft Brewing Company• Golden Coast Mead• Newcomb Associates• Astoria Brewing Co

Education, Skills, and Certifications

Fermentation or Brewing Occupations have a national educational attainment ranging from a [high school diploma or equivalent](#) to a [bachelor’s degree](#) (Exhibit 11a).

Exhibit 11a: National Educational Attainment for *Fermentation or Brewing Occupations*²⁴

Occupational Title	Typical Entry-Level Education
Industrial Production Managers	Bachelor's degree
Food Science Technicians	Associate degree
First-Line Supervisors of Production and Operating Workers	High school diploma or equivalent
Food Batchmakers	High school diploma or equivalent

²³ Lightcast; “Job Posting Analytics.” 2020-2022.

²⁴ Lightcast 2023.03; QCEW, Non-QCEW, Self-Employed.

Based on online job postings between January 1, 2020 and December 31, 2022 in San Diego County, employers posted a **high school diploma or equivalent** as the most requested educational requirement for the “Brewery” or “Fermentation” (Exhibit 11b).²⁵

Exhibit 11b: Educational Requirements in Online Job Postings for “Brewery” or “Fermentation” in San Diego County²⁶

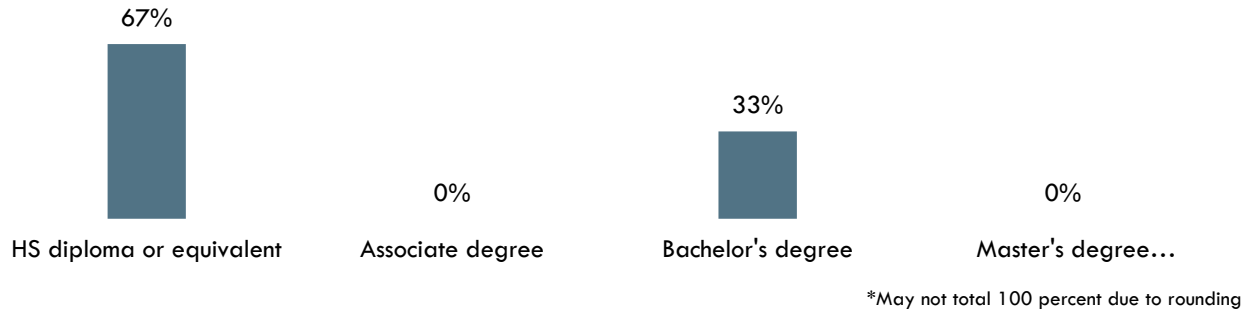


Exhibit 12 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2020 and December 31, 2022.

Exhibit 12: Top Skills in Job Postings Related to “Brewery” or “Fermentation” in San Diego County²⁷

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> • Forklift Truck • Machinery • Fermentation • Standard Operating Procedure • Hand Tools • Milling • Supply Chain • Biology • Financial Management • Warehousing • Marketing • Pallet Jacks • Facility Repair And Maintenance • Cost Control • Equipment Maintenance 	<ul style="list-style-type: none"> • Strong Work Ethic • Self-Motivation • Operations • Communications • Multitasking • Detail Oriented • Troubleshooting • Lifting Ability • Management • Interpersonal Communications • Sales • Packaging And Labeling • Leadership • Sanitation • Quality Assurance 	<ul style="list-style-type: none"> • N/A

²⁵ Lightcast; “Job Posting Analytics.” 2020-2022.

²⁶ “Educational Attainment for Workers 25 Years and Older by Detailed Occupation,” Bureau of Labor Statistics, last modified April 9, 2021. bls.gov/emp/tables/educational-attainment.htm.

²⁷ Lightcast; “Job Posting Analytics.” 2020-2022.

Exhibit 13 lists the top certifications that appeared in online job postings between January 1, 2020 and December 31, 2022.

Exhibit 13: Top Certifications in Job Postings for “Brewery” or “Fermentation” in San Diego County²⁸

Top Certification in Online Job Postings

1. Forklift Certification
 2. Bachelor Of Science In Business
-

²⁸ Lightcast; “Job Posting Analytics.” 2020-2022.

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Important Disclaimers

All representations included in this report have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. This study examines the most recent data available at the time of the analysis; 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 the report 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.