Labor Market Analysis for Program Recommendation: 1212.00/Electro-Neurodiagnostic Technology
Electroneurodiagnostic Technologist (NDT)
Orange County Center of Excellence, November 2022

Summary

Program LMI Endorsement	Endorsed: All LMI Criteria Met ☐	Endorsed: Some LMI Criteria Met ☒	Not LMI Endorsed ☐

Program LMI Endorsement Criteria		
Supply Gap:	Yes ☑	No ☐
	Comments: there is projected to be **739 annual job openings** throughout Los Angeles and Orange counties for *health technologists and technicians, all other and technicians*, which **is more than the 7 awards conferred by educational institutions.**	
Living Wage: (Entry-Level, 25th)	Yes ☐	No ☑
	Comments: **Entry-level wages for *health technologists and technicians, all other and technicians* are $17.95, which is significantly below the OC living wage of $20.63.**	
Education:	Yes ☑	No ☐
	Comments: The typical entry-level education for *health technologists and technicians, all other and technicians* is a **postsecondary nondegree award. Furthermore, 46% of workers in the field have completed some college or an associate degree as their highest level of education.**	

Emerging Occupation(s)	
Yes ☑	*No* ☐
Comments: Currently there is no Standard Occupational Classification (SOC) code specifically for electroneurodiagnostic technologists. However, there is one related emerging occupation: Neurodiagnostic Technologists (29-2099.01). Data for this emerging occupation is collected and reported under the broader Health Technologists and Technicians, All Other (29-2099) SOC code. To better understand the knowledge, skills, and abilities for Neurodiagnostic Technologists, this report includes an analysis of online job postings specifically for that emerging occupation.	

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:

- Health Technologists and Technicians, All Other (29-2099)
    - Includes the emerging occupation Neurodiagnostic Technologists (29-2099.01)

Based on the available data there appears be a supply gap for *health technologists and technicians, all other* and typical education requirements for align with a community college education. However, entry-level wages are significantly below the living wage. **Therefore, due to some of the regional labor market criteria being met, the COE endorses this proposed program.**

Exhibit 1 lists the occupational demand, supply, typical entry-level education, and educational attainment for the occupations included in this report.

Exhibit 1: Occupational Demand and Supply in Los Angeles/Orange Counties

Occupation (SOC)	Demand (Annual Openings)	Supply (CC and Non-CC)	Entry-Level Hourly Earnings (25th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Health Technologists and Technicians, All Other (29-2099)	793	7	OC: $17.95	Postsecondary nondegree award	46%

Demand:

- The number of jobs related to *health technologists and technicians, all other and technicians* is projected to increase 12% through 2026, equating to 793 annual job openings.
- Hourly entry-level wages for *health technologists and technicians, all other and technicians* are $17.95 in Orange County, which is significantly below the living wage of $20.63.
- There were 257 online job postings specifically related to the emerging occupation *neurodiagnostic technologists*. The highest number of postings were for neurodiagnostic technicians, EEG technicians, and neurodiagnostic technologists.
- The typical entry-level education for *health technologists and technicians, all other and technicians* is a postsecondary nondegree award.
- Approximately 46% 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 7 awards related to *neurodiagnostic technologists* conferred by one community college (Orange Coast) in Los Angeles and Orange Counties from 2018 to 2021.
- Non-community college institutions did not confer any related awards from 2017 to 2020.
- Due to the small number of students enrolled in electro-neurodiagnostic technology programs throughout Orange County, there is insufficient data to report student outcomes data for median wages after exit and the percentage of students that attained the living wage.
- Throughout Orange County, 100% of electro-neurodiagnostic technology students that exited their program in 2017-18 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 *health technologists and technicians, all other* from 2016 through 2026. Employment for *health technologists and technicians, all other* declined 5% from 2019 to 2020 due to the COVID-19 pandemic, which is slightly less than the 7% decline across all occupations during that period. Employment for *health technologists and technicians, all other* increased from 2020 to 2021 and is projected to increase each year through 2026.

Exhibit 2: Annual Percent Change in Jobs for Health technologists and Technicians, All Other, 2016-2026

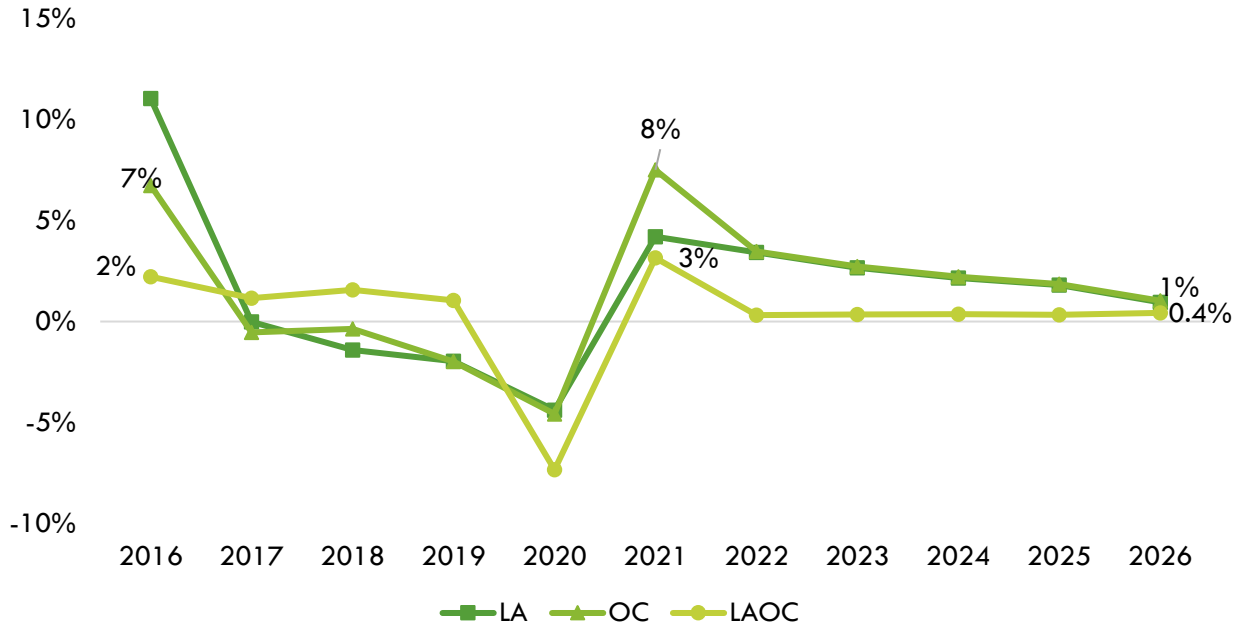


Exhibit 3 shows the five-year occupational demand projections for *health technologists and technicians, all other*. In Los Angeles/Orange County, the number of jobs for *health technologists and technicians, all other* is projected to increase 12% through 2026. There is projected to be 793 jobs available annually.

Exhibit 3: Occupational Demand in Los Angeles and Orange Counties[1]

Geography	2021 Jobs	2026 Jobs	2021-2026 Change	2021-2026 % Change	Annual Openings
Los Angeles	6,319	7,046	727	12%	613
Orange	1,845	2,063	218	12%	180
Total	**8,164**	**9,109**	**945**	**12%**	**793**

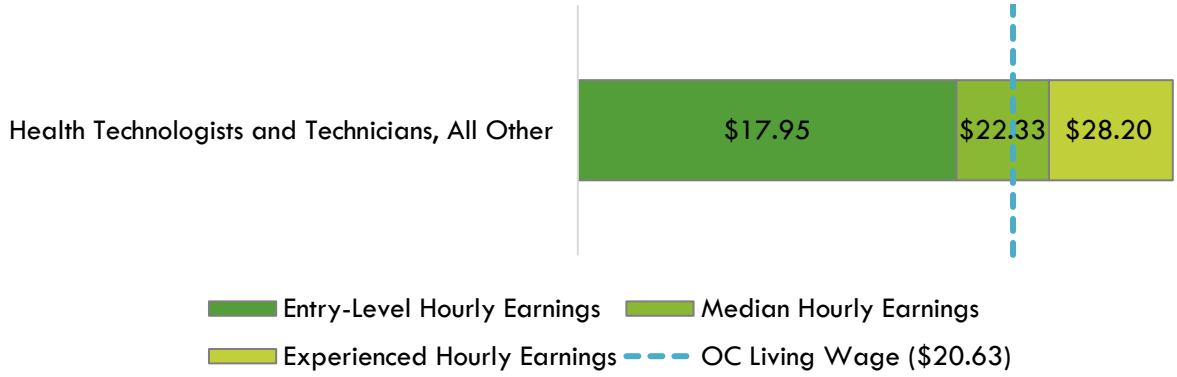
Wages:

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

The typical entry-level hourly wages for *health technologists and technicians, all other* are $17.95, which is significantly below the living wage for one adult ($20.63 in Orange County). Median wages are $22.33, which is above the living wage. Orange County's average wages are below the average statewide wage of $28.19 for *health technologists and technicians, all other*. Exhibit 4 shows the wage range for *health technologists and technicians, all other* in Orange County and how it compares to the regional living wage.

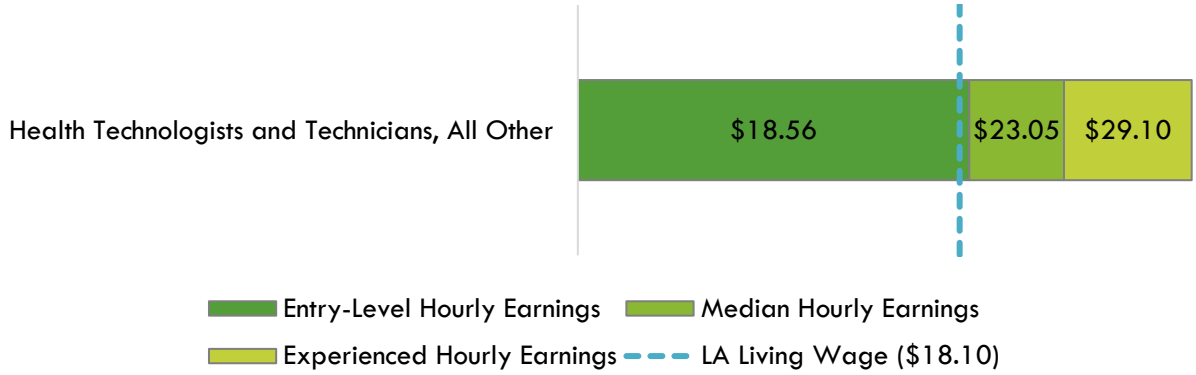
[1] Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

Exhibit 4: Wages by Occupation in Orange County



The typical entry-level hourly wages for *health technologists and technicians, all other* are $18.56, which is above the living wage for one adult ($18.10 in Los Angeles County). Los Angeles County's average wages are below the average statewide wage of $28.19 for *health technologists and technicians, all other*. Exhibit 4 shows the wage range for *health technologists and technicians, all other* in Los Angeles County and how it compares to the regional living wage.

Exhibit 5: Wages by Occupation in Los Angeles County



Job Postings:

There were 257 online job postings specifically related to the emerging occupation *neurodiagnostic technologists* listed in the past 12 months.

Exhibit 6: Number of Job Postings by Occupation (n=257)

Occupation	Job Postings	Percentage of Job Postings
Neurodiagnostic Technologists	257	100%

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

Exhibit 7: Top Employers by Number of Job Postings (n=257)

Employer	Job Postings	Percentage of Job Postings
Aya Healthcare	43	17%
Cedars-Sinai	22	9%
K&A Recruiting	12	5%
University of California	12	5%
Hoag	7	3%
Providence	7	3%
Greif	6	2%
AB Staffing Solutions	5	2%
Focus Staff	5	2%
West Coast Sleep Centers	5	2%

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 8: Top Skills by Number of Job Postings (n=257)

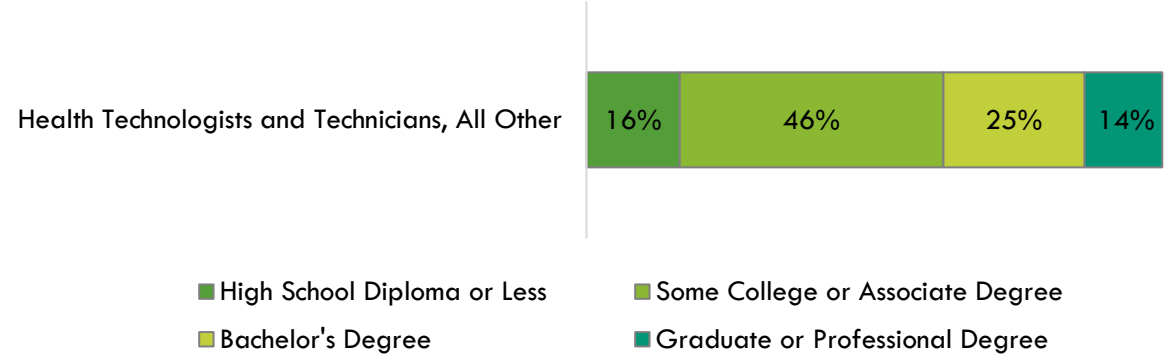
Top Specialized Skills	Top Soft Skills	Top Computer Skills
Electroencephalography (136)	Communications (40)	JavaScript (Programming Language) (4)
Pulmonology (49)	Troubleshooting (Problem Solving) (35)	Zoom (Video Conferencing Tool) (4)
Evoked Potential (48)	Research (24)	Amazon Web Services (3)
Neurology (32)	Customer Service (21)	Apache Cassandra (3)
Polysomnography (27)	Operations (21)	Apache Kafka (3)
Nerve Conduction Studies (26)	Scheduling (21)	Apache Pulsar (3)
Patient Preparation (22)	Interpersonal Communications (17)	Cloud Services (3)
Data Maintenance (20)	Self-Motivation (17)	Custom Software (3)
Patient Safety (20)	Quality Assurance (16)	Docker (Software) (3)
Telemetry (20)	Coordinating (15)	Java (Programming Language) (3)

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a postsecondary nondegree award as the typical entry-level education for *health technologists and technicians, all other*. The national-level educational attainment data indicates 25% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 9 shows the educational attainment for *health technologists and technicians, all other*.

Of the 32% of the cumulative job postings for *neurodiagnostic technologists* that listed a minimum education requirement in Los Angeles/Orange County, 71% (58) requested a high school diploma or an associate degree, and 29% (24) requested a bachelor's degree.

Exhibit 9: National-level Educational Attainment for Occupations



Educational Supply

Community College Supply:

Exhibit 10 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Electro-Neurodiagnostic Technology (1225.00). Orange Coast is the only community college in the region with a Electro-Neurodiagnostic Technology program. Over the past 12 months, there were no other related program recommendation requests from regional community colleges.

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

TOP Code	Program	College	2018-2019 Awards	2019-2020 Awards	2020-2021 Awards	3-Year Award Average
		-	-	-	-	-
		LA Subtotal	**-**	**-**	**-**	**-**
		Orange Coast	0	22	0	7
		OC Subtotal	**0**	**22**	**0**	**7**
		Supply Subtotal/Average	**0**	**22**	**0**	**7**
		Supply Total/Average	**0**	**22**	**0**	**7**

Exhibit 11 shows the annual average community college awards by type from 2018-19 through 2020-21. All awards were associate degrees.

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

Community College Student Outcomes:

Exhibit 12 shows the Strong Workforce Program (SWP) metrics for electro-neurodiagnostic technology programs at Coast Community College District (CCCD) the Orange County Region, and California. As of 2019-2020, Orange Coast was the only community college throughout the state with an electro-neurodiagnostic technology program.

Due to the low number of students enrolled in electro-neurodiagnostic technology programs, there is insufficient data to determine several student outcome metrics. However, 100% of CCCD students that exited electro-neurodiagnostic technology programs in the 2017-18 academic year reported that they were employed in a job closely related to their field of study.

Exhibit 12: Electro-Neurodiagnostic Technology (1212.00) Strong Workforce Program Metrics, 2019-20[2]

SWP Metric	CCCD	OC Region	California
SWP Students	40	Same as CCCD	Same as CCCD
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	0.925	Same as CCCD	Same as CCCD
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	Insufficient Data	Same as CCCD	Same as CCCD
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	22	Same as CCCD	Same as CCCD
SWP Students Who Transferred to a Four-Year Postsecondary Institution (2018-19)	Insufficient Data	Same as CCCD	Same as CCCD
SWP Students with a Job Closely Related to Their Field of Study (2017-18)	100%	Same as CCCD	Same as CCCD
Median Annual Earnings for SWP Exiting Students (2018-19)	Insufficient Data	Same as CCCD	Same as CCCD
Median Change in Earnings for SWP Exiting Students (2018-19)	Insufficient Data	Same as CCCD	Same as CCCD
SWP Exiting Students Who Attained the Living Wage (2018-19)	Insufficient Data	Same as CCCD	Same as CCCD

Non-Community College Supply:

For a comprehensive regional supply analysis, it is also important to consider the supply from other institutions in the region that provide training programs specifically for the emerging occupation *neurodiagnostic technologists*. Due to different data collection periods, the most recent three-year period of available data is from 2017 to 2020. Between 2017 and 2020, no related awards were conferred.

[2] All SWP metrics are for 2019-20 unless otherwise noted.

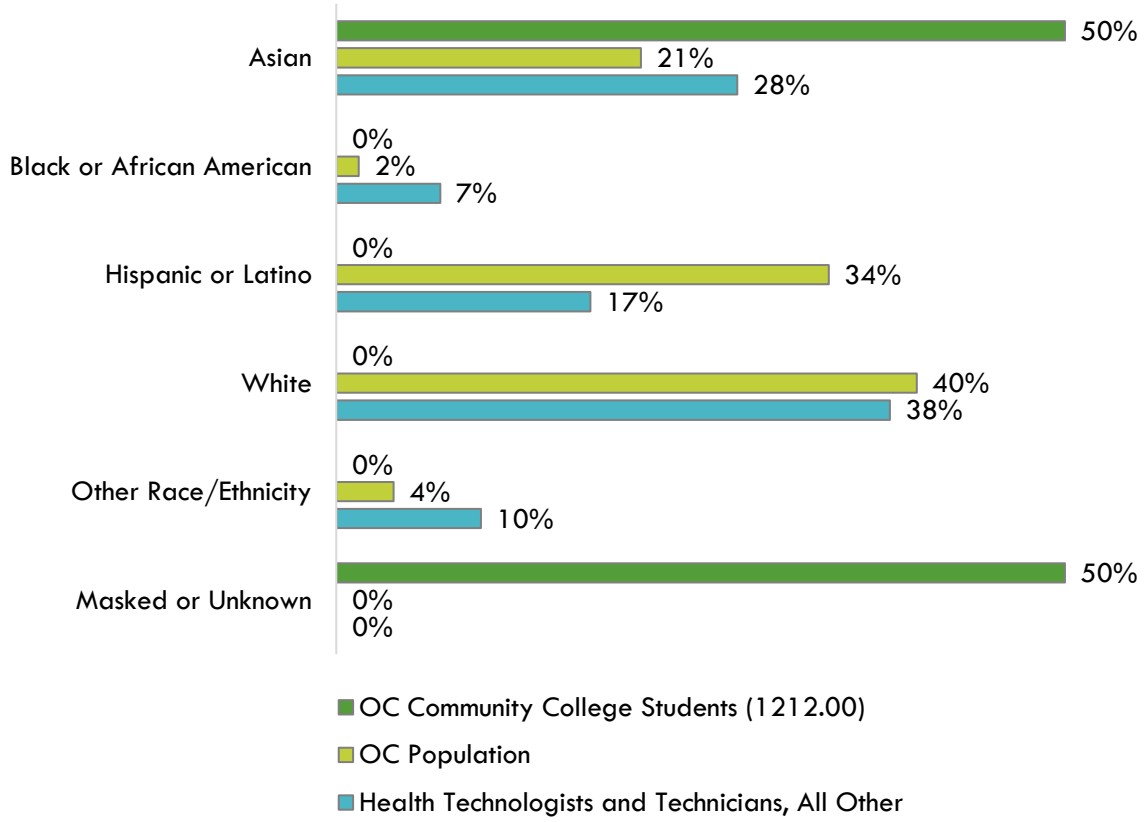
Regional Demographics

This section analyzes demographic data for Orange County community college students enrolled in electro-neurodiagnostic technology compared to the OC population, as well occupational data, for the purpose of identifying potential diversity and equity issues that can be addressed by community college programs.

Ethnicity:

Exhibit 14 shows the ethnicity of Orange County community college students enrolled in electro-neurodiagnostic technology programs compared to the overall Orange County population, as well as *health technologists and technicians, all other*. Notably, the ethnicity of 50% of electro-neurodiagnostic technology students is masked due to the small number of students. However, the other 50% of electro-neurodiagnostic technology students are Asian, which is significantly higher than both the population (21%) and *health technologists and technicians, all other* (28%).

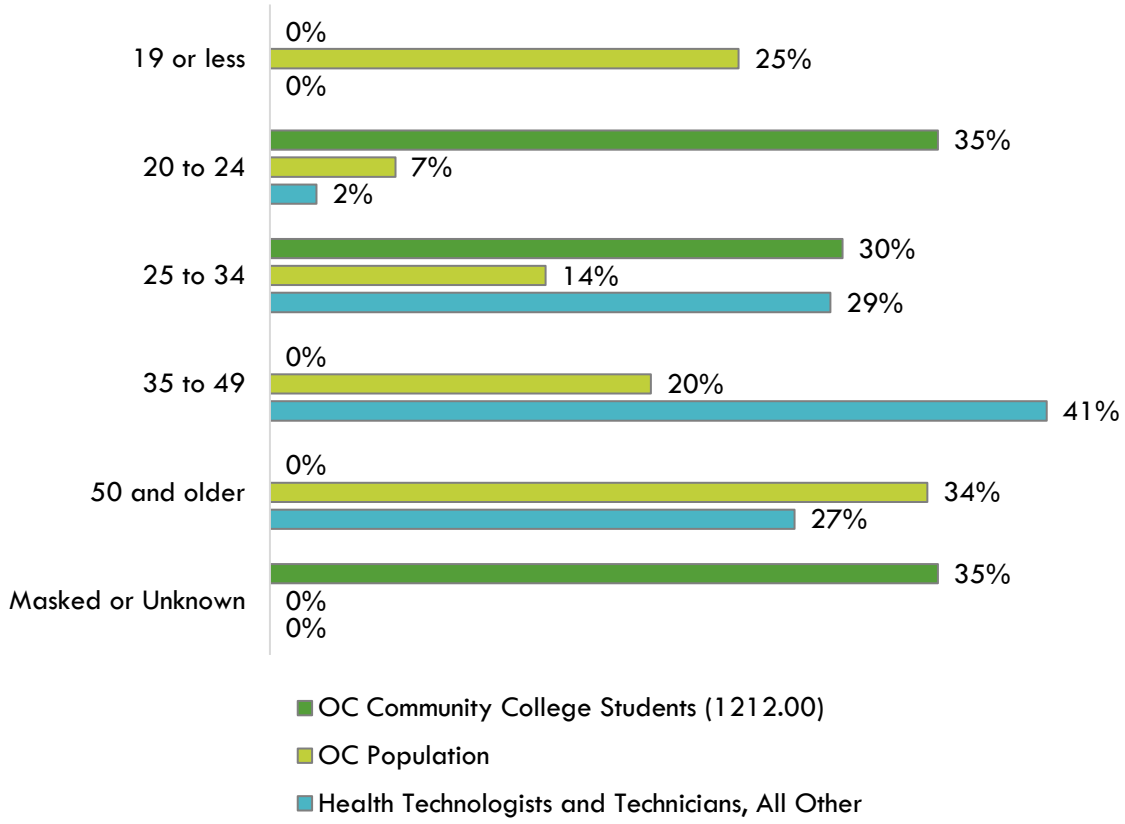
Exhibit 14: Program and County Demographics by Ethnicity



Age:

Exhibit 14 shows the age of Orange County community college students enrolled in electro-neurodiagnostic technology programs compared to the overall Orange County population, as well as *health technologists and technicians, all other*. Notably, the age of 35% of electro-neurodiagnostic technology students is masked due to the small number of students. However, the other 65% of electro-neurodiagnostic technology students are 20 to 34, which is significantly higher than both the population (21%) and *health technologists and technicians, all other* (31%).

Exhibit 14: Program and County Demographics by Age

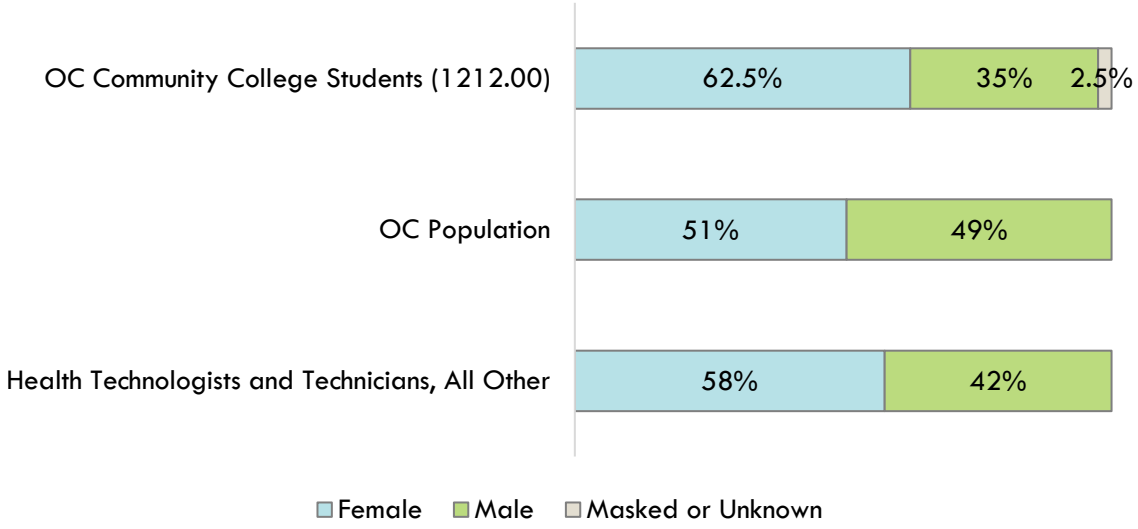


Sex:

Exhibit 15 shows the sex of Orange County community college students enrolled in electro-neurodiagnostic technology programs compared to the overall Orange County population as well as *health technologists and technicians, all other and technicians*.

Though the Orange County population is split nearly evenly between men and women, there is a significantly higher percentage of female students in electro-neurodiagnostic technology programs (62.5%) and female *health technologists and technicians, all other* (58%) when compared to the population.

Exhibit 15: Program and County Demographics by Sex



Appendix A: Methodology A

The OC COE prepared this report by analyzing data from occupations and education programs. Occupational data is derived from Lightcast, a labor market analytics firm that consolidates data from the California Employment Development Department (EDD), U.S. Bureau of Labor Statistics (BLS) and other government agencies. Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

Using a TOP-SOC crosswalk, the OC COE identified middle-skill jobs for which programs within these TOP codes train. Middle-skill jobs include:

- All occupations that require an educational requirement of some college, associate degree or apprenticeship;
- All occupations that require a bachelor's degree, but also have more than one-third of their existing labor force with an educational attainment of some college or associate degree; or
- All occupations that require a high school diploma or equivalent or no formal education, but also require short- to long-term on-the-job training where multiple community colleges have existing programs.

The OC COE determined labor market supply for an occupation or SOC code by analyzing the number of program completers or awards in a related TOP or CIP code. The COE developed a "supply table" with this information, which is the source of the program supply data for this report. TOP code data comes from the California Community Colleges Chancellor's Office MIS Data Mart (datamart.cccco.edu) and CIP code data comes from the Integrated Postsecondary Education Data System (nces.ed.gov/ipeds/use-the-data), also known as IPEDS. TOP is a system of numerical codes used at the state level to collect and report information on California community college programs and courses throughout the state that have similar outcomes. CIP codes are a taxonomy of academic disciplines at institutions of higher education in the United States and Canada. Institutions outside of the California Community College system do not use TOP codes in their reporting systems.

Data included in this analysis represent the labor market demand for relevant positions most closely related to the proposed program as expressed by the requesting college in consultation with the OC COE. Traditional labor market information was used to show current and projected employment based on data trends, as well as annual average awards granted by regional community colleges. Real-time labor market information captures job post advertisements for occupations relevant to the field of study which can signal demand and show what employers are looking for in potential employees, but is not a perfect measure of the quantity of open positions.

All representations have been produced from primary research and/or secondary review of publicly and/or privately available data and/or research reports. The most recent data available at the time of the analysis was examined; however, data sets are updated regularly and may not be consistent with previous reports. Efforts have been made to qualify and validate the accuracy of the data and findings; however, neither the Centers of Excellence for Labor Market Research (COE), COE host district, nor California Community Colleges Chancellor's Office are responsible for the applications or decisions made by individuals and/or organizations based on this study or its recommendations.

Appendix B: Data Sources

Data Type	Source
Occupational Projections, Wages, and Job Postings	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/
Living Wage	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://insightcced.org/family-needs-calculator/ The living wage for one adult in Orange County is $20.63 per hour ($42,910.40 annually). This figure is used by the CCCCO to calculate the percentage of students that attained the regional living wage.
Typical Education and Training Requirements, and Educational Attainment	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
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	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/
Educational Supply	The CCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu 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
Student Metrics and Demographics	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

Data Type	Source
Population and Occupation Demographics	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 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

For more information, please contact the Orange County Center of Excellence:

Jesse Crete, Ed.D., Director
crete_jesse@rsccd.edu

Jacob Poore, Research Analyst
poore_jacob@rsccd.edu

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