

Summary

Program LMI Endorsement	Endorsed: All LMI Criteria Met <input type="checkbox"/>	Endorsed: Some LMI Criteria Met <input checked="" type="checkbox"/>	Not LMI Endorsed <input type="checkbox"/>
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Program LMI Endorsement Criteria

	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
Supply Gap:	<i>Comments:</i> there is projected to be 611 annual job openings throughout Los Angeles and Orange counties for these public health informatics occupations, which is more than the 568 awards conferred by educational institutions . However, the undersupply is within the COE's margin (25% over or under the number of annual job openings) to be considered "supply met" rather than a "supply gap".	
Living Wage: (Entry-Level, 25 th)	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	<i>Comments:</i> the majority (85%) of annual job openings for these public health informatics occupations have entry-level hourly wages below the OC living wage of \$20.63 .	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<i>Comments:</i> The typical entry-level education for these public health informatics occupations is a postsecondary nondegree award and a significant percentage of workers in the field have completed some college or an associate degree as their highest level of education .	

Emerging Occupation(s)

	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<i>Comments:</i> Public health informatics and technology is an emerging field – according to the Centers for Disease Control and Prevention, public health informatics applies information, computer science, and technology to public health practice, research, and learning. ¹ To further develop the public health informatics workforce, the federal Office of the National Coordinator for Health Information Technology has created the Public Health Informatics and Technology Workforce Development Program, "which will train at least 4,000 individuals on public health informatics and technology to improve the nation's public health workforce." ²	

The Orange County Center of Excellence for Labor Market Research (OC COE) prepared this report to determine whether there is a supply gap in the Los Angeles/Orange County regional labor market related to two middle-skill occupations:

- Medical Records Specialists (29-2072)
- Health Information Technologists and Medical Registrars (29-9021)

¹ <https://www.cdc.gov/training/publichealth101/informatics.html>

² <https://www.healthit.gov/topic/onc-funding-opportunities/public-health-informatics-technology-phit-workforce-development>

Public health informatics is an emerging field that combines information, computer science, and technology within a public health context. Currently, the Bureau of Labor Statistics (BLS) Standard Occupational Classification (SOC) system does not have one singular SOC for public health informatics workers. However, the middle-skill occupations included in this report are most closely related to this emerging area. Additionally, the federal government has recognized the need to train and develop public health informatics and technology workers in order to improve public health infrastructure. The Public Health Informatics and Technology Workforce Development Program will train at least 4,000 public health informatics workers and validates the need for workers in this emerging area.

Based on the available data there appears to be a supply gap for these public health informatics occupations. However, the undersupply is within the COE's margin (25% over or under the number of annual job openings) to be considered "supply met" rather than a "supply gap". Though typical education requirements for these occupations align with a community college education, the majority of annual job openings have entry-level wages 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: Labor Market Endorsement Summary

Occupation (SOC)	Demand (Annual Openings)	Supply (CC and Non-CC)	Entry-Level Hourly Earnings (25 th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Medical Records Specialists (29-2072)	516	448	OC: \$18.07	Postsecondary nondegree award	46%
Health Information Technologists and Medical Registrars (29-9021)	95	120	OC: \$22.32	Postsecondary nondegree award	20%
Total	611	568	N/A	N/A	N/A

Demand:

- The number of jobs related to these public health informatics occupations are projected to increase 3% through 2026, equating to 611 annual job openings.
- Hourly entry-level wages for these public health informatics occupations range from \$18.07 to \$22.32 in Orange County; 85% of annual job openings have entry-level wages below the living wage.
- There were 276 online job postings related to public health informatics job titles over the past 12 months. The highest number of postings were for healthcare data analysts, clinical informatics specialists, and directors of clinical informatics.
- The typical entry-level education for these public health informatics occupations is a postsecondary nondegree award.
- Between 20% and 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 136 awards conferred by four community colleges in Los Angeles and Orange Counties from 2018 to 2021.
- Non-community college institutions conferred an average of 432 awards from 2017 to 2020.
- Orange County community college students that exited health information technology programs in the 2018-2019 academic year had a median annual wage of \$41,712 after exiting the program and 53% attained the regional living wage.
- Throughout Orange County, 89% of health information 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 these public health informatics occupations from 2016 through 2026. Though there was a 7% decline across all occupations from 2019 to 2020 due to the COVID-19 pandemic, employment in these public health informatics occupations declined only 1% in Orange County 2019 to 2020. These public health informatics occupations are projected to grow at a similar rate to all occupations through 2026.

Exhibit 2: Annual Percent Change in Jobs for Public Health Informatics Occupations, 2016-2026

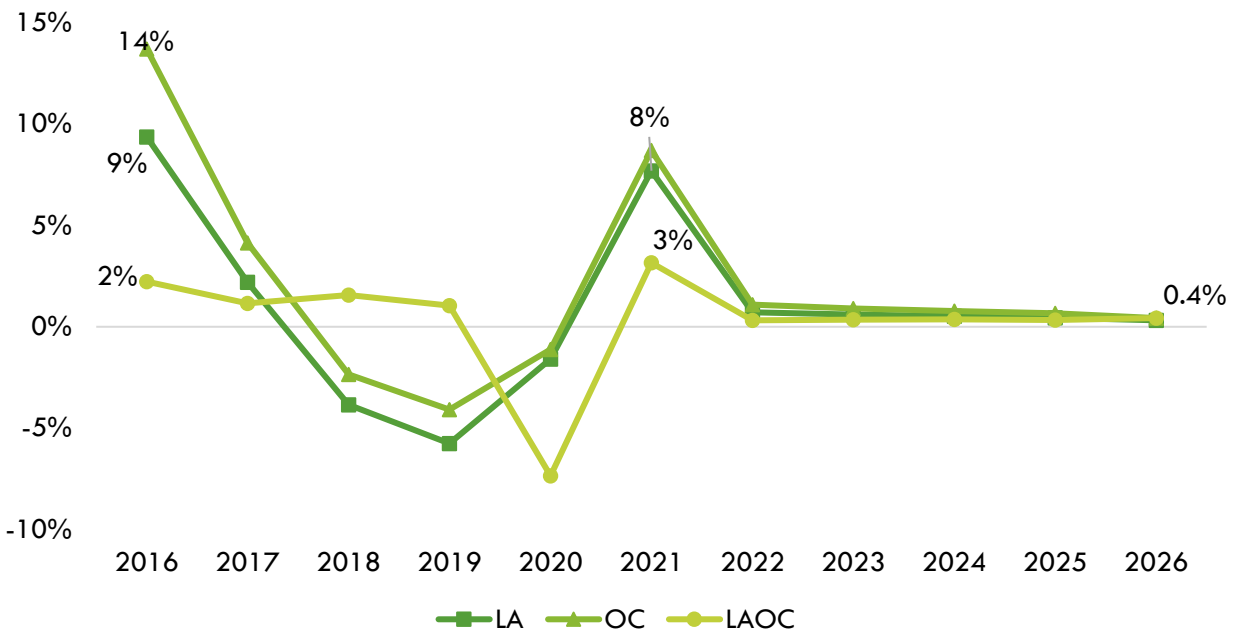


Exhibit 3 shows the five-year occupational demand projections for these public health informatics occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 3% through 2026. There is projected to be 611 jobs available annually.

Exhibit 3: Occupational Demand in Los Angeles and Orange Counties³

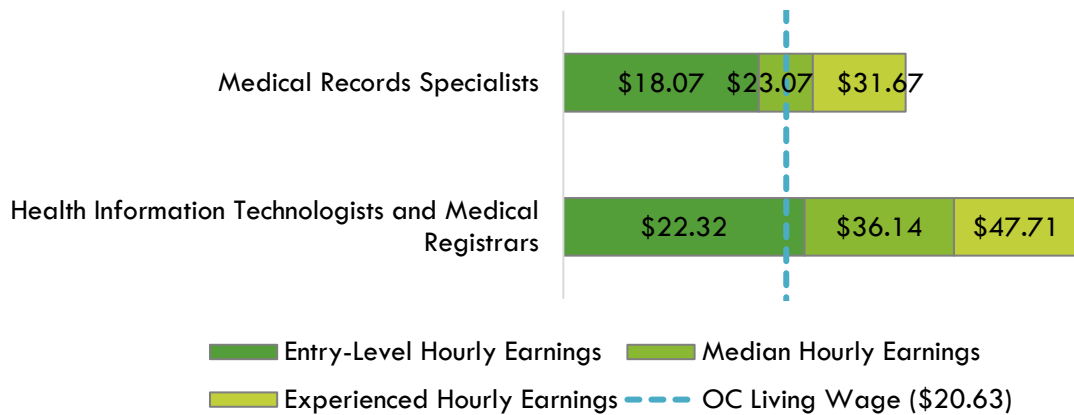
Geography	2021 Jobs	2026 Jobs	2021-2026 Change	2021-2026 % Change	Annual Openings
Los Angeles	5,906	6,060	155	3%	450
Orange	2,033	2,113	80	4%	161
Total	7,939	8,174	234	3%	611

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for these public health informatics occupations in Orange County as they relate to the county’s living wage. Los Angeles County wages are included below in order to provide a complete analysis of the LA/OC region.

The majority (85%) of annual openings for these public health informatics occupations have entry-level wages below the living wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages range between \$18.07 and \$22.32. Orange County’s average wages are below the average statewide wage of \$30.13 for these occupations. Exhibit 4 shows the wage range for each of these public health informatics occupations in Orange County and how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

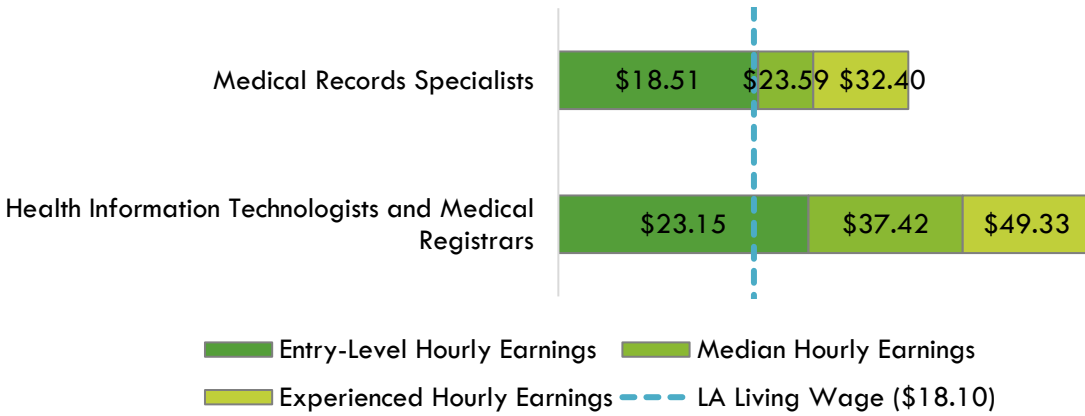
Exhibit 4: Wages by Occupation in Orange County



All annual openings for these public health informatics occupations have entry-level wages above the living wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$18.51 and \$23.15. Los Angeles County’s average wages are slightly below the average statewide wage of \$30.13 for these occupations. Exhibit 5 shows the wage range for each of these public health informatics occupations in Los Angeles County how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

³ 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 5: Wages by Occupation in Los Angeles County



Job Postings:

This section analyzes online job postings specifically related to public health informatics to better understand the job titles, employers, and skills employers request for public health informatics roles. The full list of job titles used for this analysis are included in Appendix C.

There were 276 online job postings related to these public health informatics occupations listed in the past 12 months. Exhibit 6 shows the top 10 job titles listed in online job postings. The most frequently posted job title was healthcare data analysts (67), followed by clinical informatics specialists (48).

Exhibit 6: Number of Job Postings by Job Title (n=276)

Occupation	Job Postings	Percentage of Job Postings
Healthcare Data Analysts	67	24%
Clinical Informatics Specialists	48	17%
Directors of Clinical Informatics	25	9%
Clinical Informatics Managers	24	9%
Health Data Analysts	23	8%
Clinical Informatics Analysts	22	8%
Health Informatics Analysts	16	6%
Nursing Informatics Specialists	12	4%
Medical Informatics Analysts	9	3%
Clinical Informatics Specialist Registered Nurses	7	3%

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=276)

Employer	Job Postings	Percentage of Job Postings
Providence	23	8%
Anthem Blue Cross	21	8%
Blue-Shield	17	6%
University of California	15	5%
Memorialcare Health System	8	3%
Arthur J. Gallagher	6	2%
Molina Healthcare	5	2%
Altamed Health Services	4	1%
Cedars-Sinai	4	1%
Jobot	4	1%

The top specialized, soft, and software/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=276)

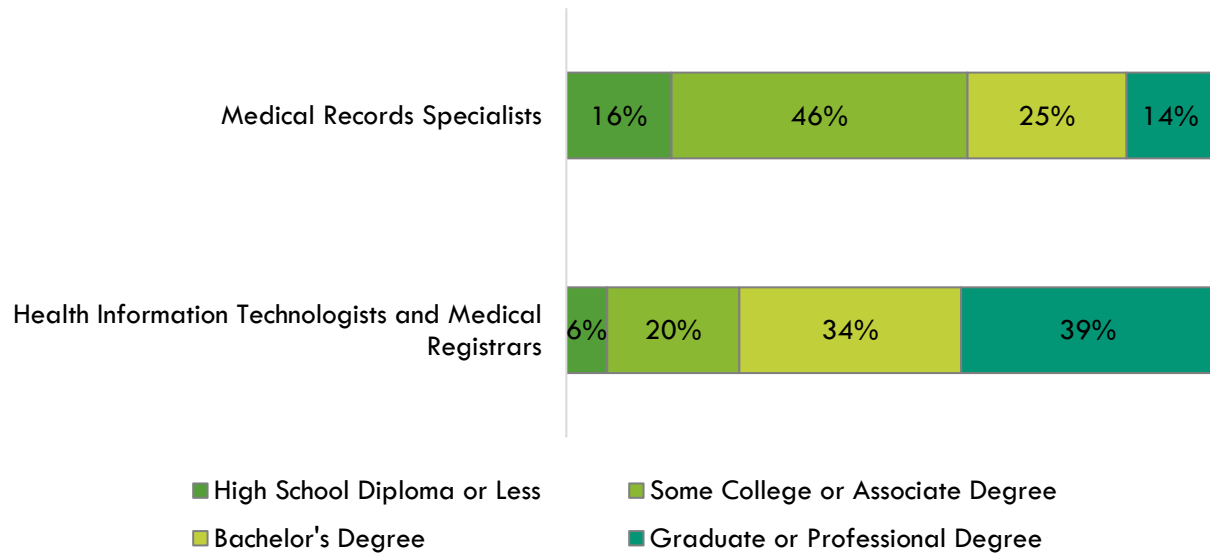
Top Specialized Skills	Top Soft Skills	Top Computer Skills
Clinical Informatics (140)	Communications (119)	SQL (Programming Language) (91)
Data Analysis (123)	Leadership (104)	Tableau (Business Intelligence Software) (54)
Medical Records (96)	Problem Solving (88)	Microsoft Excel (51)
SQL (Programming Language) (90)	Management (85)	SAS (Software) (48)
Workflow Management (88)	Operations (75)	Microsoft Office (31)
Electronic Medical Record (72)	Customer Service (61)	Microsoft Access (25)
Healthcare Industry Knowledge (58)	Planning (58)	Microsoft SQL Servers (24)
Nursing (54)	Information Technology (52)	Python (Programming Language) (24)
Tableau (Business Intelligence Software) (53)	Microsoft Excel (51)	R (Programming Language) (23)
Hospital Information Systems (52)	Research (47)	Microsoft PowerPoint (20)

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a postsecondary nondegree award as the typical entry-level education for these public health informatics occupations. The national-level educational attainment data indicates between 20% and 46% 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 each occupation, sorted by highest community college educational attainment to lowest.

Of the 74% of the cumulative job postings for public health informatics job titles that listed a minimum education requirement in Los Angeles/Orange County, 88% (178) requested a bachelor's degree and 8% (16) requested a high school diploma or an associate degree.

Exhibit 9: National-level Educational Attainment for Occupations



Educational Supply

Community College Supply:

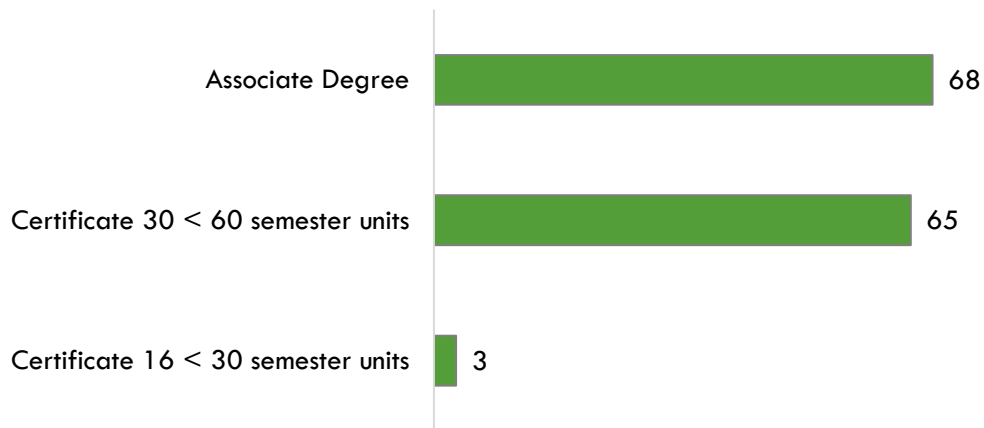
Exhibit 10 shows the three-year average number of awards conferred by community colleges in the related TOP codes: Health Information Technology (1223.00) and Health Information Coding (1223.10). The college with the most completions in the region is East LA. Over the past 12 months, there were no other 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
1223.00	Health Information Technology	East LA	62	46	69	59
		LA Subtotal	62	46	69	59
		Cypress	19	18	25	21
		Saddleback	15	16	13	15
		OC Subtotal	34	34	38	36
Supply Subtotal/Average			96	80	107	95
1223.10	Health Information Coding	East LA	54	28	34	38
		Glendale	4	0	0	1
		LA Subtotal	58	28	34	39
		Saddleback	1	2	3	2
		OC Subtotal	1	2	3	1
Supply Subtotal/Average			59	30	37	41
Supply Total/Average			155	110	144	136

Exhibit 11 shows the annual average community college awards by type from 2018-19 through 2020-21. Half the awards are for associate degrees, followed closely by certificates between 30 and less than 60 units.

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 health information technology programs in South Orange County Community College District (SOCCCD), the Orange County Region, and California. Of the 199 health information technology students in the 2019-20 academic year, 50% (99) attended an SOCCCD college.

Additionally, SOCCCD students that exited health information technology programs in the 2018-19 academic year had identical annual earnings (\$41,712) to all Orange County health information technology students. A slightly higher percentage of SOCCCD health information technology students attained the living wage (56%) when compared to all health information technology students in Orange County (53%).

Exhibit 12: Health Information Technology (1223.00) Strong Workforce Program Metrics, 2019-20⁴

SWP Metric	SOCCCD	OC Region	California
SWP Students	99	199	5,415
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	59%	62%	28%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	Insufficient Data	Insufficient Data	62%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	15	30	251
SWP Students Who Transferred to a Four-Year Postsecondary Institution (2018-19)	Insufficient Data	Insufficient Data	382
SWP Students with a Job Closely Related to Their Field of Study (2017-18)	100%	89%	75%
Median Annual Earnings for SWP Exiting Students (2018-19)	\$41,712 (\$20.05)	\$41,712 (\$20.05)	\$36,656 (\$17.62)

⁴ All SWP metrics are for 2019-20 unless otherwise noted.

SWP Metric	SOCCCD	OC Region	California
Median Change in Earnings for SWP Exiting Students (2018-19)	1%	17%	16%
SWP Exiting Students Who Attained the Living Wage (2018-19)	56%	53%	56%

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 for these public health informatics occupations. Exhibit 13 shows the annual and three-year average number of awards conferred by these institutions in the related Classification of Instructional Programs (CIP) Codes: Health Information/Medical Records Administration (51.0706), Health Information/Medical Records Technology/Technician (51.0707), and Medical Insurance Coding Specialist/Coder (51.0713). Due to different data collection periods, the most recent three-year period of available data is from 2017 to 2020. Between 2017 and 2020, non-community college institutions in the region conferred an average of 432 awards annually in related training programs.

Exhibit 13: Regional Non-Community College Awards, 2017-2020

CIP Code	Program	College	2017-2018 Awards	2018-2019 Awards	2019-2020 Awards	3-Year Award Average
51.0706	Health Information/Medical Records Administration/Administrator	Fremont College	9	5	2	5
		Galaxy Medical College	0	0	0	0
Supply Subtotal/Average			9	5	2	5
51.0707	Health Information/Medical Records Technology/Technician	American Career College-Anaheim	11	0	0	4
		CBD College	0	0	0	0
		National Career College	9	11	8	9
		Palladium Technical Academy Inc	3	0	0	1
		Westchester College of Nursing & Allied Health	14	4	0	6
Supply Subtotal/Average			37	15	8	20
51.0713	Medical Insurance Coding Specialist/Coder	American Career College-Anaheim	80	76	60	72
		American Career College-Los Angeles	69	86	70	75
		California Healing Arts College	5	2	1	2
		Fremont College	11	6	4	7
		High Desert Medical College	0	0	16	5
		InterCoast Colleges-Santa Ana	0	5	2	2

CIP Code	Program	College	2017-2018 Awards	2018-2019 Awards	2019-2020 Awards	3-Year Award Average
		PCI College	4	3	0	2
		Southern California Health Institute	54	65	63	61
		Trident University International	0	3	0	1
		UEI College-Gardena	37	59	38	45
		United Education Institute-Anaheim	41	52	40	44
		United Education Institute-Encino	44	43	40	42
		United Education Institute-West Covina	51	48	35	45
		University of Antelope Valley	13	0	0	4
		Supply Subtotal/Average	409	448	369	407
		Supply Total/Average	455	468	379	432

Regional Demographics

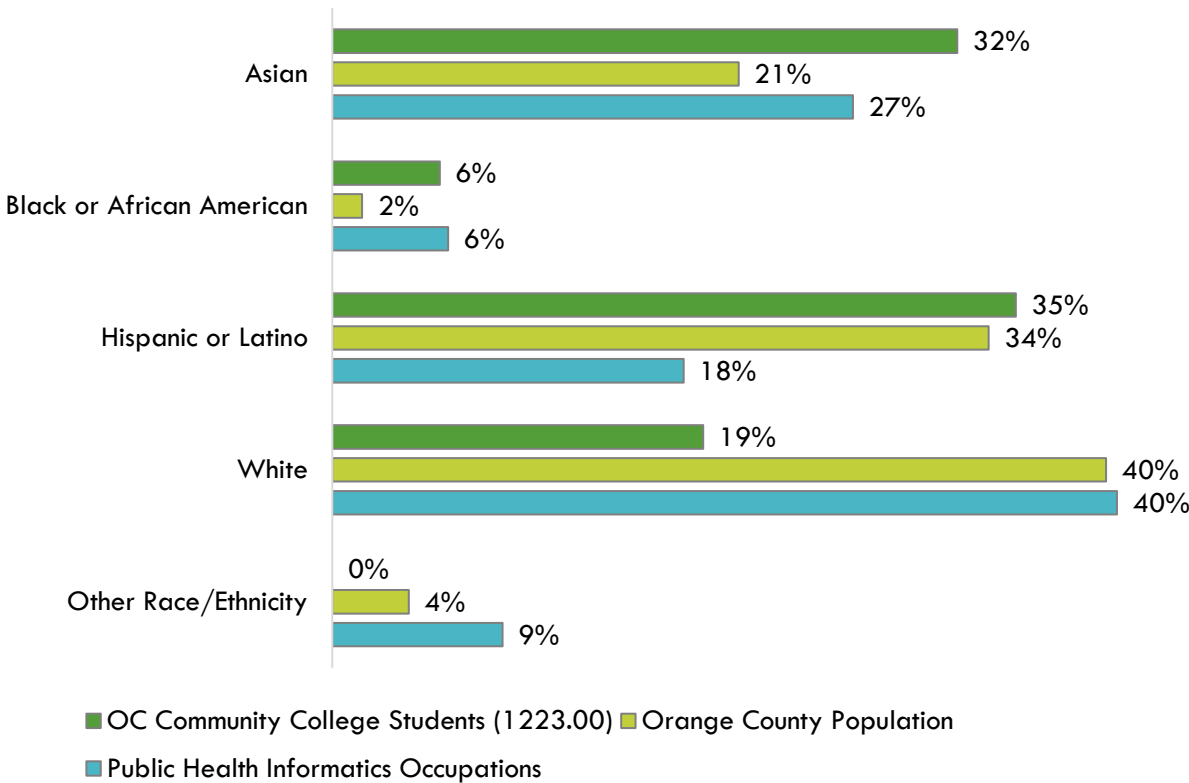
This section analyzes demographic data for Orange County community college students enrolled in health information technology programs compared to the OC population, as well occupational data, for the purpose of identifying potential diversity and equity issues that can be addressed by community college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

Ethnicity:

Exhibit 14 shows the ethnicity of Orange County community college students enrolled in health information technology programs compared to the overall Orange County population, as well as the two public health informatics occupations included in this report. Notably, the 40% of workers employed in these public health informatics occupations are White, which is identical to the population (40%) but much higher than community college health information technology students (19%). Conversely, 35% of community college health information technology students are Hispanic or Latino, which is nearly identical to the population (34%), but much higher than these public health informatics occupations (18%). The percentage of Asian community college health information technology students (32%) is higher than both the population (31%) and these public health informatics occupations (27%).

Examining disaggregated data for each occupation (not shown), the occupation with the highest percentage of White workers is *health information technologists and medical registrars* (53%), which has the highest entry-level wages of both public health informatics occupations. Conversely, *medical records specialists* has a higher percentage of Asian (28%), Black or African American (7%), and Other Race (10%) workers but has entry-level wages below the living wage.

Exhibit 14: Program and County Demographics by Ethnicity

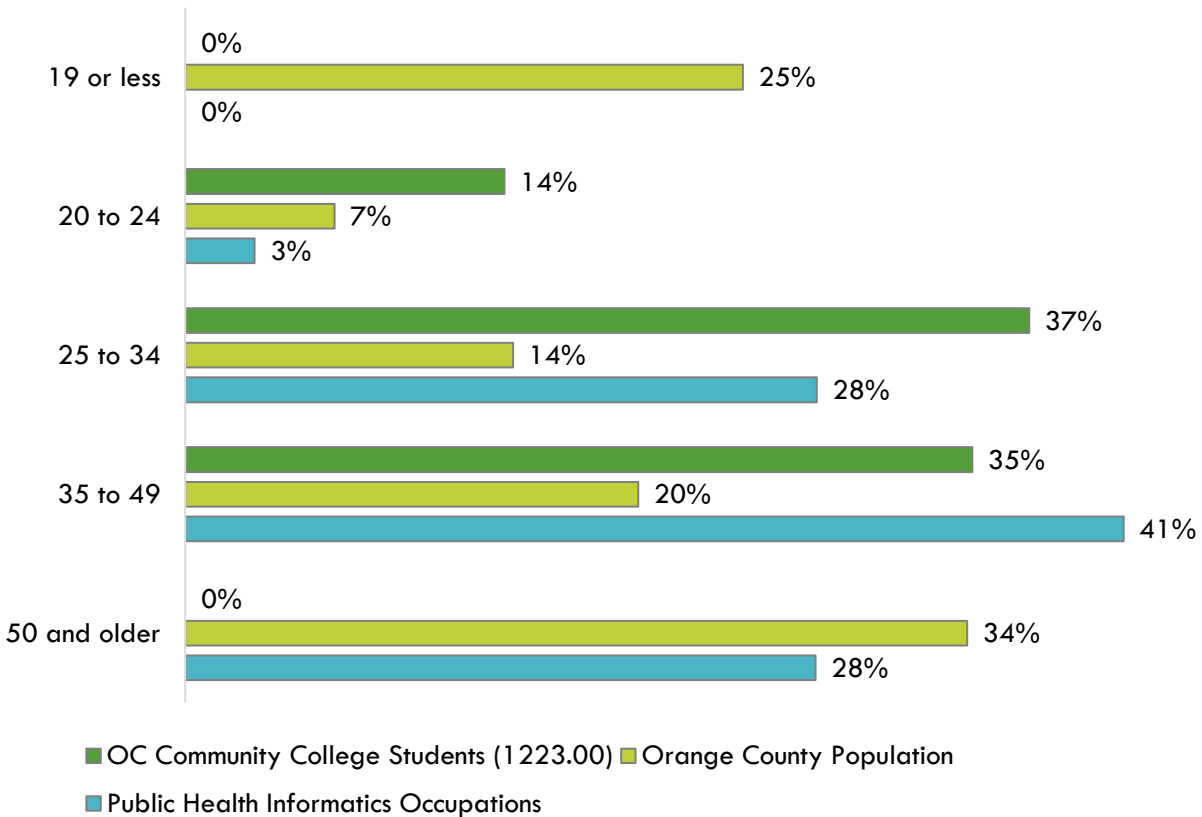


Age:

Exhibit 14 shows the age of Orange County community college students enrolled in health information technology programs compared to the overall Orange County population, as well as the two public health informatics occupations included in this report. Over 40% of workers in these public health informatics occupations are between age 35 and 49, which is slightly higher than community college health information technology students (35%), but significantly higher than the population (20%). A higher percentage of community college health information technology students are between age 25 and 34 (37%) than these public health informatics occupations (28%) – both figures are significantly higher than the population (14%).

Examining disaggregated data for each occupation (not shown), both occupations have similar age demographics.

Exhibit 14: Program and County Demographics by Age

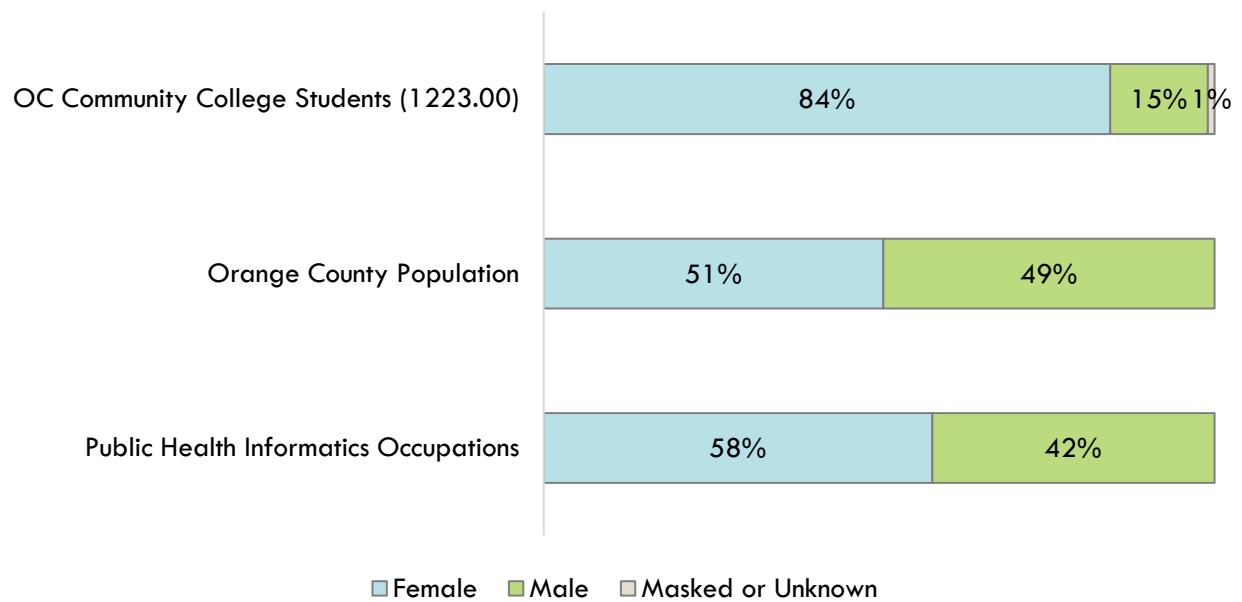


Sex:

Exhibit 15 shows the sex of Orange County community college students enrolled in health information technology programs compared to the overall Orange County population as well as these public health informatics occupations.

Though the population is split nearly evenly, the overwhelming majority (84%) of community college health information technology students as well as a majority (58%) of workers in these public health informatics occupations are women.

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	<p>Traditional labor market information data is sourced from Lightcast, a labor market analytics firm. Lightcast occupational employment data are based on final Lightcast industry data and final Lightcast staffing patterns. Wage estimates are based on Occupational Employment Statistics and the American Community Survey. For more information, see https://lightcast.io/</p>
Living Wage	<p>The living wage is derived from the Insight Center’s California Family Needs Calculator, which measures the income necessary for an individual of family to afford basic expenses. The data assesses the cost of housing, food, child care, health care, transportation, and taxes. For more information, see: https://insightccd.org/family-needs-calculator/</p> <p>The living wage for one adult in Orange County is \$20.63 per hour (\$42,910.40 annually). This figure is used by the CCCCCO to calculate the percentage of students that attained the regional living wage.</p>
Typical Education and Training Requirements, and Educational Attainment	<p>The Bureau of Labor Statistics (BLS) provides information about education and training requirements for hundreds of occupations. BLS uses a system to assign categories for entry-level education, work experience in a related occupation, and typical on-the-job training to each occupation for which BLS publishes projections data. For more information, see https://www.bls.gov/emp/documentation/education/tech.htm</p>
Emerging Occupation Descriptions, Additional Education Requirements, and Employer Preferences	<p>The O*NET database includes information on skills, abilities, knowledges, work activities, and interests associated with occupations. For more information, see https://www.onetonline.org/help/online/</p>
Educational Supply	<p>The CCCCCO Data Mart provides information about students, courses, student services, outcomes and faculty and staff. For more information, see: https://datamart.cccco.edu</p> <p>The National Center for Education Statistics (NCES) Integrated Postsecondary Integrated Data System (IPEDS) collects data on the number of postsecondary awards earned (completions). For more information, see https://nces.ed.gov/ipeds/use-the-data/survey-components/7/completions</p>
Student Metrics and Demographics	<p>LaunchBoard, a statewide data system supported by the California Community Colleges Chancellor's Office and hosted by Cal-PASS Plus, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: https://www.calpassplus.org/LaunchBoard/Home.aspx</p>

Data Type	Source
Population and Occupation Demographics	<p>The Census Bureau's American Community Survey (ACS) is the premier source for detailed population and housing information. For more information, see: https://www.census.gov/programs-surveys/acs</p> <p>Data is sourced from IPUMS USA, a database providing access to ACS and other Census Bureau data products. For more information, see: https://usa.ipums.org/usa/about.shtml</p>

Appendix C: Online Job Postings Analysis Job Titles

- Chief Medical Informatics Officers
- Clinical and Informatics Educators
- Clinical Informatics Analysts
- Clinical Informatics Consultants
- Clinical Informatics Coordinators
- Clinical Informatics Managers
- Clinical Informatics Pharmacists
- Clinical Informatics Specialist Registered Nurses
- Clinical Informatics Specialists
- Directors of Clinical Informatics
- Directors of Medical Informatics
- Health Data Analysts
- Health Informatics Analysts
- Health Informatics Specialists
- Healthcare Data Analysts
- Healthcare Data Scientists
- Healthcare Informatics Analysts
- Informatics Pharmacists
- Medical Informatics Analysts
- Nurse Informatics Specialists
- Nursing Informatics Specialists
- Pharmacy Informatics Specialists

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