

Labor Market Analysis for Noncredit Program Recommendation:  
 1208.20/Administrative Medical Assisting  
 (Medical Billing and Coding)  
 Orange County Center of Excellence, August 2023



## 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 <b>5,865 annual job openings</b> throughout Los Angeles and Orange counties for these medical billing and coding occupations, which is <b>more than the 1,645 awards conferred by educational institutions.</b>	
Living Wage: (Entry-Level, 25 <sup>th</sup> )	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
	<i>Comments:</i> <b>the majority (88%) of annual job openings</b> for these medical billing and coding occupations <b>have entry-level hourly wages below the OC living wage of \$20.63.</b>	
Education:	Yes <input checked="" type="checkbox"/>	No <input type="checkbox"/>
	<i>Comments:</i> The typical entry-level education for these medical billing and coding occupations ranges from a high school diploma to a postsecondary nondegree award. Additionally, <b>more than one-third of workers in the field have completed some college or an associate degree as their highest level of education.</b>	

### Emerging Occupation(s)

Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>
<i>Comments:</i> N/A	

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)
- Medical Secretaries and Administrative Assistants (43-6013)

Based on the available data there appears to be a supply gap for these medical billing and coding occupations and typical education requirements for these occupations align with a community college education. However, 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 <sup>th</sup> Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Medical Records Specialists (29-2072)	LA: 532	LA: 341	OC: \$21.39	Postsecondary nondegree award	46%
	OC: 198	OC: 124			
	TTL: 731	TTL: 465			
Medical Secretaries and Administrative Assistants (43-6013)	LA: 3,697	LA: 783	OC: \$18.07	High school diploma or equivalent	53%
	OC: 1,438	OC: 397			
	TTL: 5,135	TTL: 1,180			
<b>Total</b>	<b>5,865</b>	<b>1,645</b>	<b>N/A</b>	<b>N/A</b>	<b>N/A</b>

### Demand:

- The number of jobs related to these medical billing and coding occupations are projected to increase 7% through 2026, equating to 5,865 annual job openings.
- Hourly entry-level wages for these medical billing and coding occupations range from \$18.07 to \$21.39 in Orange County; 88% of annual job openings have entry-level wages below the living wage.
- There were 17,887 online job postings for these medical billing and coding occupations over the past 12 months. The highest number of postings were for medical receptionists, front desk receptionists, and dental receptionists.
- The typical entry-level education for these medical billing and coding occupations ranges from a high school diploma or equivalent to a postsecondary nondegree award.
- Between 46% and 53% 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 692 awards conferred by 17 community colleges in Los Angeles and Orange Counties from 2019 to 2022.
- Non-community college institutions conferred an average of 953 awards from 2019 to 2021.
- Orange County community college students that exited administrative medical assisting programs in the 2019-20 academic year had a median annual wage of \$30,438 after exiting the program and 19% attained the regional living wage.
- Throughout Orange County, 58% of medical billing and coding students that exited their program in 2018-19 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 medical billing and coding occupations from 2017 through 2027. Though there was a 7% decline across all occupations from 2019 to 2020 due to the COVID-19 pandemic, employment in these medical billing and coding occupations declined only 3% from 2019 to 2020 in Orange County. These medical billing and coding occupations are projected to grow at a similar rate for all occupations through 2026.

**Exhibit 2: Annual Percent Change in Jobs for Medical Billing and Coding Occupations, 2017-2027**

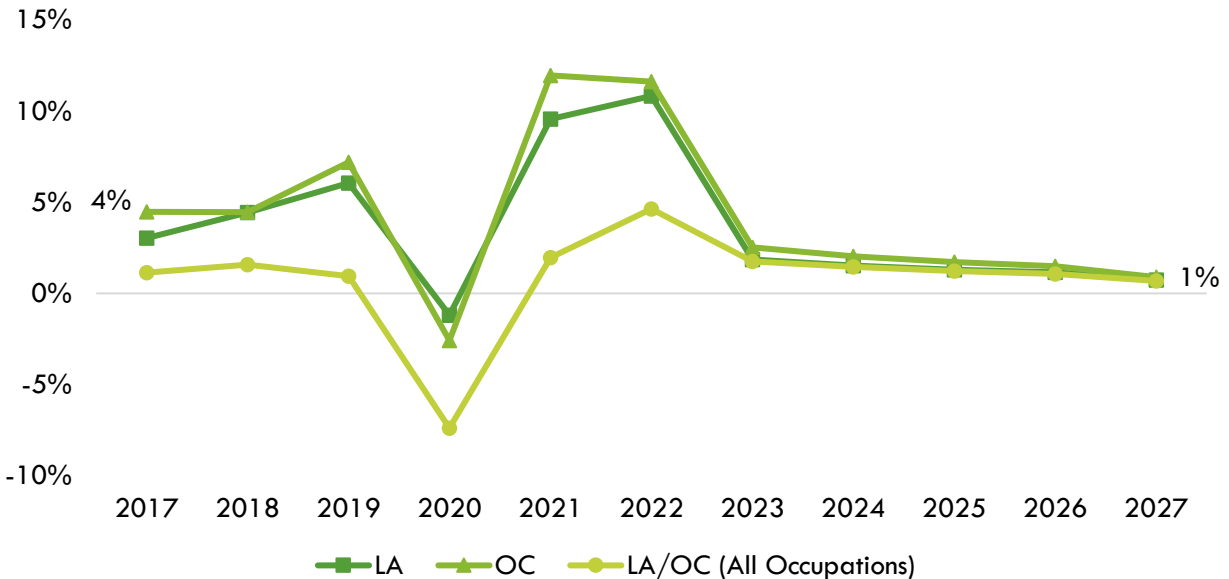


Exhibit 3 shows the five-year occupational demand projections for these medical billing and coding occupations. In Los Angeles/Orange County, the number of jobs related to these occupations is projected to increase by 7% through 2027. There is projected to be 5,865 jobs available annually.

**Exhibit 3: Occupational Demand in Los Angeles and Orange Counties<sup>1</sup>**

Geography	2022 Jobs	2027 Jobs	2022-2027 Change	2022-2027 % Change	Annual Openings
Los Angeles	34,147	36,452	2,306	7%	4,230
Orange	12,609	13,738	1,130	9%	1,636
<b>Total</b>	<b>46,755</b>	<b>50,190</b>	<b>3,435</b>	<b>7%</b>	<b>5,865</b>

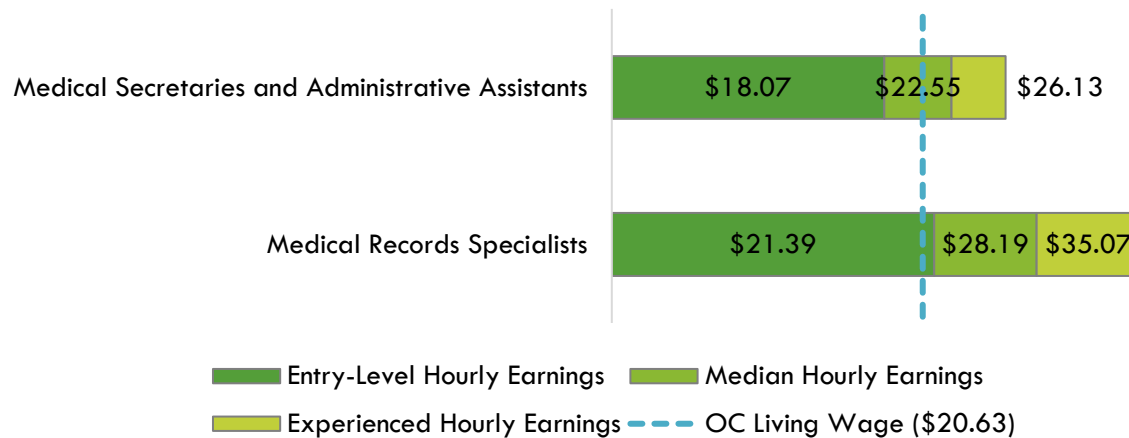
<sup>1</sup> Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations.

## Wages:

The labor market endorsement in this report considers the entry-level hourly wages for these medical billing and coding occupations 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.

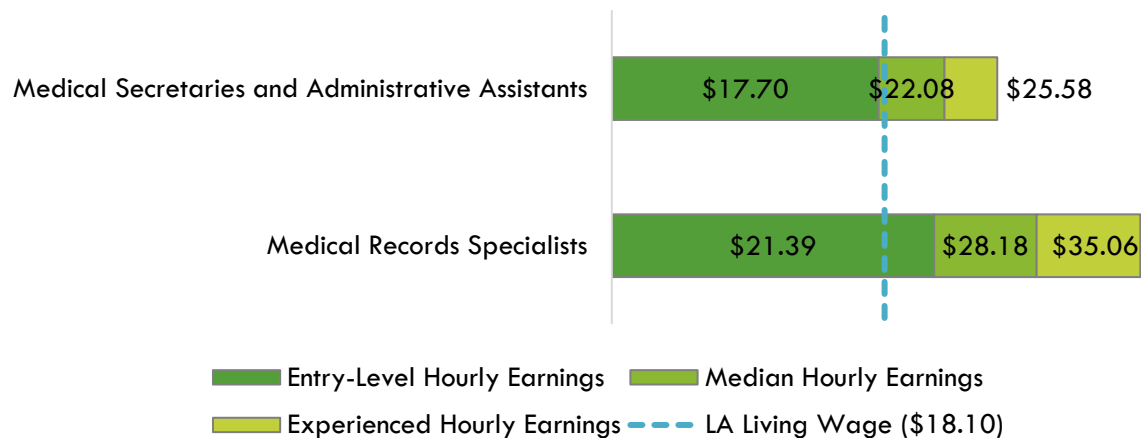
The majority (88%) of annual openings for these medical billing and coding occupations have entry-level wages below the living wage for one adult (\$20.63 in Orange County). Typical entry-level hourly wages range between \$18.07 and \$21.39. Orange County's average wages are nearly identical to the average statewide wage of \$24.39 for these occupations. Exhibit 4 shows the wage range for each of these medical billing and coding 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



The majority (87%) of annual openings for these medical billing and coding occupations have entry-level wages below the living wage for one adult (\$18.10 in Los Angeles County). Typical entry-level hourly wages are in a range between \$17.70 and \$21.39. Los Angeles County's average wages are nearly identical to the average statewide wage of \$24.39 for these occupations. Exhibit 5 shows the wage range for each of these medical billing and coding occupations in Los Angeles County how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

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



## 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>2</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.

There were 17,887 online job postings related to these medical billing and coding occupations listed in the past 12 months. Exhibit 6 shows the number of job postings by occupation. The majority (63%) of job postings were for medical secretaries and administrative assistants.

**Exhibit 6: Number of Job Postings by Occupation (n=17,887)**

Occupation	Job Postings	Percentage of Job Postings
Medical Secretaries and Administrative Assistants	11,330	63%
Medical Records Specialists	6,557	37%
<b>Total Postings</b>	<b>17,887</b>	<b>100%</b>

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=17,887)**

Employer	Job Postings	Percentage of Job Postings
Providence	695	4%
University of California	252	1%
Robert Half	223	1%
Aimbridge Hospitality	220	1%
Aston Carter	218	1%
UnitedHealth Group	210	1%
PIH Health	175	1%
United Medical Imaging Healthcare	167	1%
Kaiser Permanente	166	1%
Randstad	143	1%

The top specialized, soft, and computer skills listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 8.

<sup>2</sup> K. R. Chowdhary, Fundamentals of Artificial Intelligence (Basingstoke: Springer Nature, 2020), <https://link.springer.com/book/10.1007/978-81-322-3972-7>.

### Exhibit 8: Top Skills by Number of Job Postings (n=17,887)

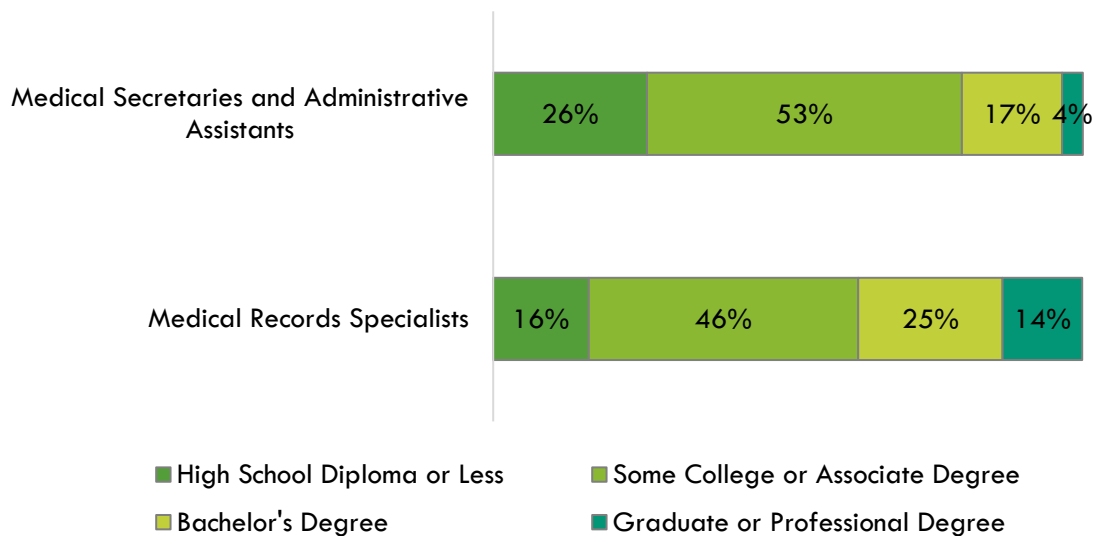
Top Specialized Skills	Top Soft Skills	Top Computer Skills
Medical Records (4,496)	Communications (6,578)	Microsoft Office (1,776)
Front Office (4,131)	Customer Service (5,974)	Microsoft Excel (1,714)
Billing (3,582)	Scheduling (3,976)	Microsoft Outlook (999)
Medical Terminology (2,854)	Detail Oriented (3,180)	Microsoft Word (948)
Electronic Medical Record (2,267)	Multitasking (2,979)	Microsoft PowerPoint (728)
Setting Appointments (1,864)	Management (2,945)	Epic EMR (698)
Data Entry (1,524)	Computer Literacy (2,682)	Dentrix (488)
Auditing (1,363)	Clerical Works (2,370)	Spreadsheets (360)
ICD Coding (ICD-9/ICD-10) (1,359)	Filing (1,913)	Microsoft Access (333)
Medical Billing (1,309)	Operations (1,857)	Patient Management Software (248)

### Educational Attainment:

The Bureau of Labor Statistics (BLS) lists a high school diploma or equivalent as the typical entry-level education for *medical secretaries and administrative assistants* and a postsecondary nondegree award for *medical records specialists*. The national-level educational attainment data indicates between 46% and 53% 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 52% of the cumulative job postings for these medical billing and coding occupations that listed a minimum education requirement in Los Angeles/Orange County, 84% (7,775) requested a high school diploma or an associate degree and 16% (1,509) 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: Medical Office Technology (0514.20), Medical Assisting (1208.00), Administrative Medical Assisting (1208.20), and Health Information Coding (1223.10). The colleges with the most completions in the region are Santa Ana, North Orange Adult (NOCE), and East LA. Over the past 12 months, there was one other related program recommendation request from regional community colleges.

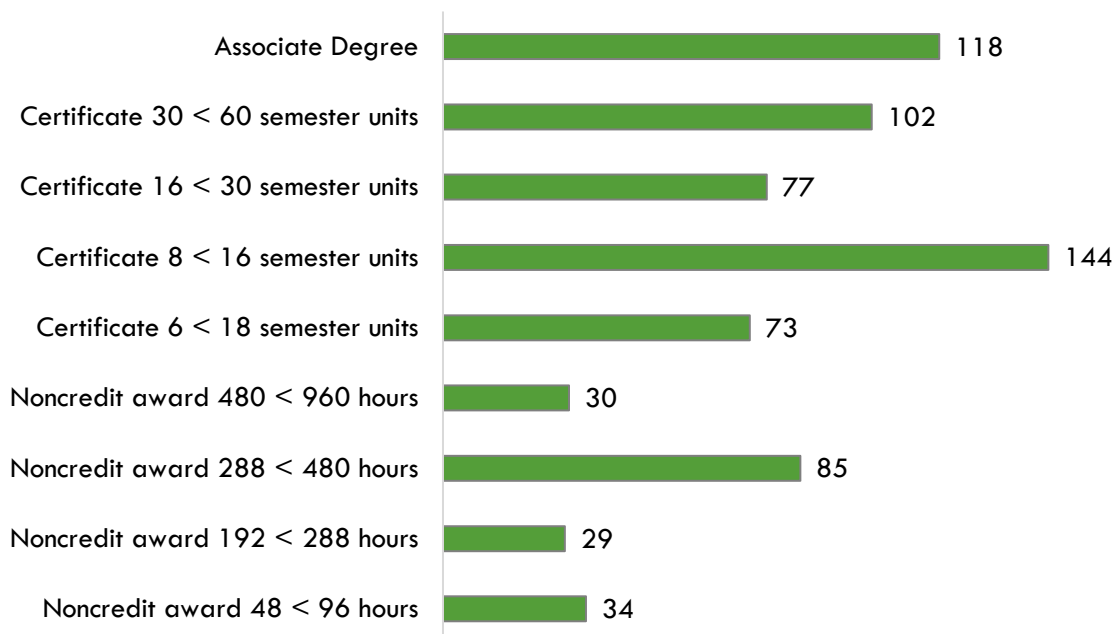
**Exhibit 10: Regional Community College Awards (Certificates and Degrees), 2019-2022**

TOP Code	Program	College	2020-2021 Awards	2020-2021 Awards	2021-2022 Awards	3-Year Award Average
0514.20	Medical Office Technology	East LA	1	1	0	1
		Glendale	21	9	27	19
		LA Harbor	2	1	0	1
		LA Trade	3	0	8	4
		Santa Monica	28	17	25	24
		<b>LA Subtotal</b>	<b>55</b>	<b>28</b>	<b>60</b>	<b>49</b>
		-	-	-	-	-
		<b>OC Subtotal</b>	<b>-</b>	<b>-</b>	<b>-</b>	<b>-</b>
<b>Supply Subtotal/Average</b>			<b>55</b>	<b>28</b>	<b>60</b>	<b>49</b>
1208.00	Medical Assisting	Cerritos	17	42	32	31
		East LA	33	46	52	44
		Glendale	1	0	55	18
		LA Pierce	5	9	11	8
		Long Beach	61	67	54	61
		Mt San Antonio	0	36	0	12
		Pasadena	16	2	31	16
		West LA	19	21	17	19
		<b>LA Subtotal</b>	<b>152</b>	<b>223</b>	<b>252</b>	<b>209</b>
		North Orange Adult	76	100	79	85
		Orange Coast	12	9	38	20
		Saddleback	28	28	18	24
		Santa Ana	174	213	139	175
		<b>OC Subtotal</b>	<b>290</b>	<b>350</b>	<b>274</b>	<b>304</b>
		<b>Supply Subtotal/Average</b>			<b>442</b>	<b>573</b>
1208.20	Administrative Medical Assisting	Glendale	22	18	30	23
		Pasadena	0	0	1	0
		Rio Hondo	0	0	5	2

TOP Code	Program	College	2020-2021 Awards	2020-2021 Awards	2021-2022 Awards	3-Year Award Average
		Santa Monica	13	4	9	9
		West LA	16	9	12	12
		<b>LA Subtotal</b>	<b>51</b>	<b>31</b>	<b>57</b>	<b>46</b>
		Saddleback	11	7	10	9
		Santa Ana	0	0	63	21
		Santiago Canyon	15	18	19	17
		<b>OC Subtotal</b>	<b>26</b>	<b>25</b>	<b>92</b>	<b>47</b>
<b>Supply Subtotal/Average</b>			<b>77</b>	<b>56</b>	<b>149</b>	<b>93</b>
1223.10	Health Information Coding	East LA	28	34	35	32
		<b>LA Subtotal</b>	<b>28</b>	<b>34</b>	<b>35</b>	<b>32</b>
		Saddleback	2	3	9	5
		<b>OC Subtotal</b>	<b>2</b>	<b>3</b>	<b>9</b>	<b>5</b>
<b>Supply Subtotal/Average</b>			<b>30</b>	<b>37</b>	<b>44</b>	<b>37</b>
<b>Supply Total/Average</b>			<b>604</b>	<b>694</b>	<b>779</b>	<b>692</b>

Exhibit 11 shows the annual average community college awards by type from 2019-20 to 2021-22. The plurality of the awards are for certificates between 8 and less than 16 semester units, followed by associate degrees, and certificates between 30 and less than 60 semester units.

### Exhibit 11: Annual Average Community College Awards by Type, 2019-2022





## Community College Student Outcomes:

Exhibit 12 shows the Strong Workforce Program (SWP) metrics for administrative medical assisting programs in the Orange County Region, and California. Of the 1,431 administrative medical assisting students in Orange County, 9% (122) attended a NOCCCD college.

Additionally, NOCCCD administrative medical assisting students had similar median annual earnings (\$31,384) compared to all Orange County students (\$30,438) and students throughout the state (\$30,330) that exited administrative medical assisting students programs in the 2019-20 academic year.

### Exhibit 12: Administrative Medical Assisting (1208.20) Strong Workforce Program Metrics, 2020-21<sup>3</sup>

SWP Metric	NOCCCD	OC Region	California
SWP Students	122	1,431	2,854
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	Insufficient Data	24%	30%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	91%	82%	87%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	Insufficient Data	25	411
SWP Students Who Transferred to a Four-Year Postsecondary Institution (2019-20)	Insufficient Data	19	29
SWP Students with a Job Closely Related to Their Field of Study (2018-19)	76%	58%	60%
Median Annual Earnings for SWP Exiting Students (2019-20)	\$31,384 (\$15.09)	\$30,438 (\$14.63)	\$30,330 (\$14.58)
Median Change in Earnings for SWP Exiting Students (2019-20)	15%	19%	21%
SWP Exiting Students Who Attained the Living Wage (2019-20)	23%	19%	25%

<sup>3</sup> All SWP metrics are for 2020-21 unless otherwise noted.

## 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 medical billing and coding 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 Technology/Technician (51.0707)
- Medical Office Assistant/Specialist (51.0710)
- Medical/Health Management and Clinical Assistant/Specialist (51.0711)
- Medical Insurance Coding Specialist/Coder (51.0713)
- Medical Insurance Specialist/Medical Biller (51.0714)
- Medical Administrative/Executive Assistant and Medical Secretary (51.0716)

Due to different data collection periods, the most recent two-year period of available data is from 2019 to 2021. Between 2019 and 2021, non-community colleges in the region conferred an average of 953 awards annually in related training programs.

**Exhibit 13: Regional Non-Community College Awards, 2019-2021**

CIP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2-Year Award Average
51.0707	Health Information/Medical Records Technology/Technician	CBD College	0	0	0
		National Career College	8	17	12
		Palladium Technical Academy Inc	0	0	0
		Westchester College of Nursing & Allied Health	0	3	2
<b>Supply Subtotal/Average</b>			<b>8</b>	<b>20</b>	<b>14</b>
51.0710	Medical Office Assistant/Specialist	Advanced College	0	0	0
		American Medical Sciences Center	0	0	0
		Concorde Career College-Garden Grove	16	16	16
		Concorde Career College-North Hollywood	14	23	18
		Hacienda La Puente Adult Education	18	14	16
		Platt College-Anaheim	16	9	12
		Platt College-Los Angeles	14	27	20
		Pomona Unified School District Adult and Career Education	21	0	10
		San Joaquin Valley College-Lancaster	12	10	10

CIP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2-Year Award Average
		United Education Institute-Huntington Park Campus	44	56	50
<b>Supply Subtotal/Average</b>			<b>155</b>	<b>155</b>	<b>155</b>
51.0711	Medical/Health Management and Clinical Assistant/Specialist	American College of Healthcare and Technology	39	47	43
		Casa Loma College-Van Nuys	0	10	5
		PCI College	0	1	0
<b>Supply Subtotal/Average</b>			<b>39</b>	<b>58</b>	<b>48</b>
51.0713	Medical Insurance Coding Specialist/Coder	American Career College-Anaheim	60	89	74
		American Career College-Los Angeles	70	100	85
		California Healing Arts College	1	7	4
		Fremont College	4	8	6
		High Desert Medical College	16	23	20
		InterCoast Colleges-Santa Ana	2	0	1
		InterCoast Colleges-West Covina	0	2	1
		Southern California Health Institute	63	30	46
		UEI College-Gardena	38	66	52
		United Education Institute-Encino	40	47	44
		United Education Institute-Garden Grove	40	48	44
United Education Institute-West Covina	35	39	37		
<b>Supply Subtotal/Average</b>			<b>369</b>	<b>459</b>	<b>414</b>
51.0714	Computer/Computer Systems Technology/Technician	ABC Adult School	4	9	6
		American College of Healthcare and Technology	9	19	14
		Diversified Vocational College	36	32	34
		Downey Adult School	93	60	76
		Glendale Career College	6	12	9
		Hacienda La Puente Adult Education	0	0	0

CIP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2-Year Award Average
		Healthcare Career College	11	14	12
		Integrity College of Health	0	0	0
		North-West College-Anaheim	14	18	16
		North-West College-Glendale	5	7	6
		North-West College-Long Beach	26	21	24
		North-West College-Pomona	4	7	6
		North-West College-Van Nuys	19	19	19
		North-West College-West Covina	49	65	57
		Palladium Technical Academy Inc	5	6	6
		PCI College	1	0	0
		Pomona Unified School District Adult and Career Education	5	0	2
		University of Antelope Valley	11	9	10
		Valley College of Medical Careers	4	4	4
<b>Supply Subtotal/Average</b>			<b>302</b>	<b>302</b>	<b>302</b>
51.0716	Medical Administrative/ Executive Assistant and Medical Secretary	Galaxy Medical College	19	11	15
		High Desert Medical College	3	1	2
		North-West College-Anaheim	5	0	2
		North-West College-Glendale	0	0	0
		North-West College-Long Beach	0	0	0
		North-West College-Pomona	3	0	2
		North-West College-Van Nuys	0	0	0
		North-West College-West Covina	6	0	3
		Premiere Career College	0	0	0
<b>Supply Subtotal/Average</b>			<b>36</b>	<b>12</b>	<b>24</b>
<b>Supply Subtotal/Average</b>			<b>909</b>	<b>1,006</b>	<b>953</b>

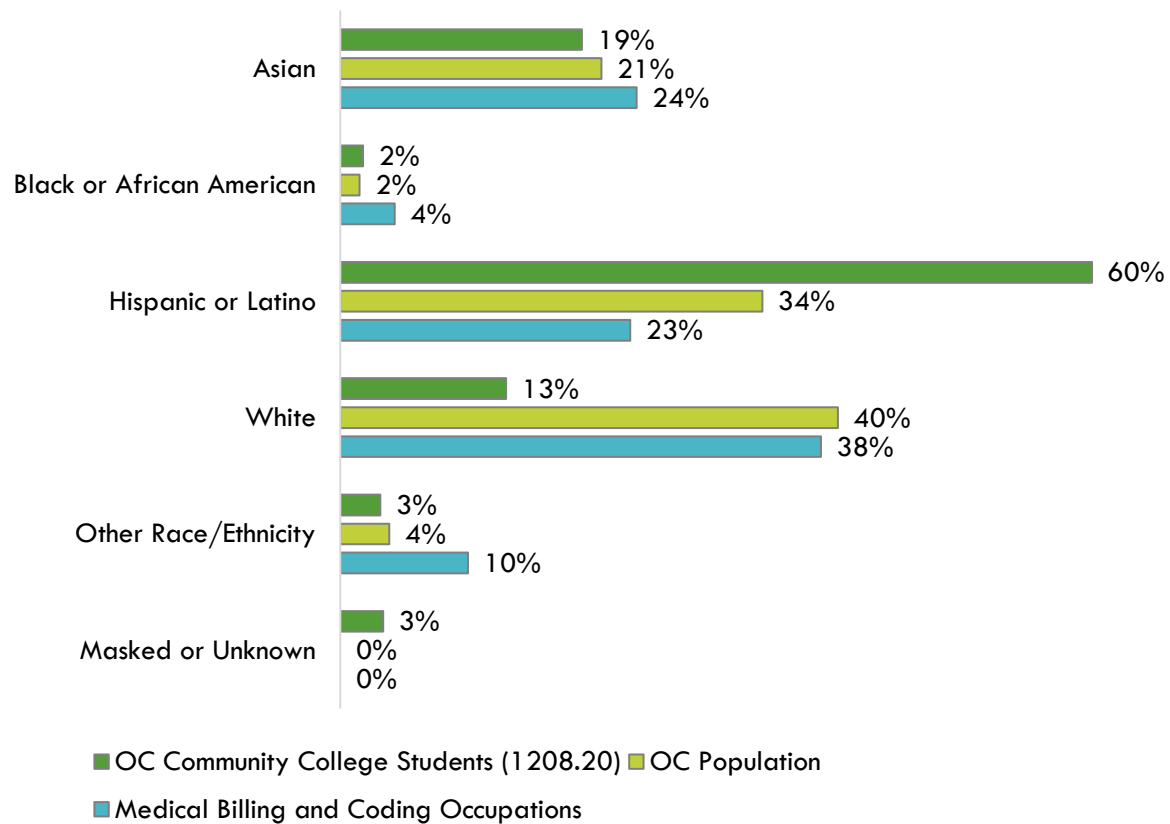
## Regional Demographics

This section analyzes demographic data for Orange County community college students enrolled in administrative medical assisting 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 administrative medical assisting programs compared to the overall Orange County population, as well as the two medical billing and coding occupations included in this report. Notably, 60% of administrative medical assisting students are Hispanic or Latino, which is significantly higher than the population (34%), and these medical billing and coding occupations. Conversely, 38% of workers in these medical billing and coding occupations are White, which is similar to the population (40%), but significantly higher than community college administrative medical assisting students (13%).

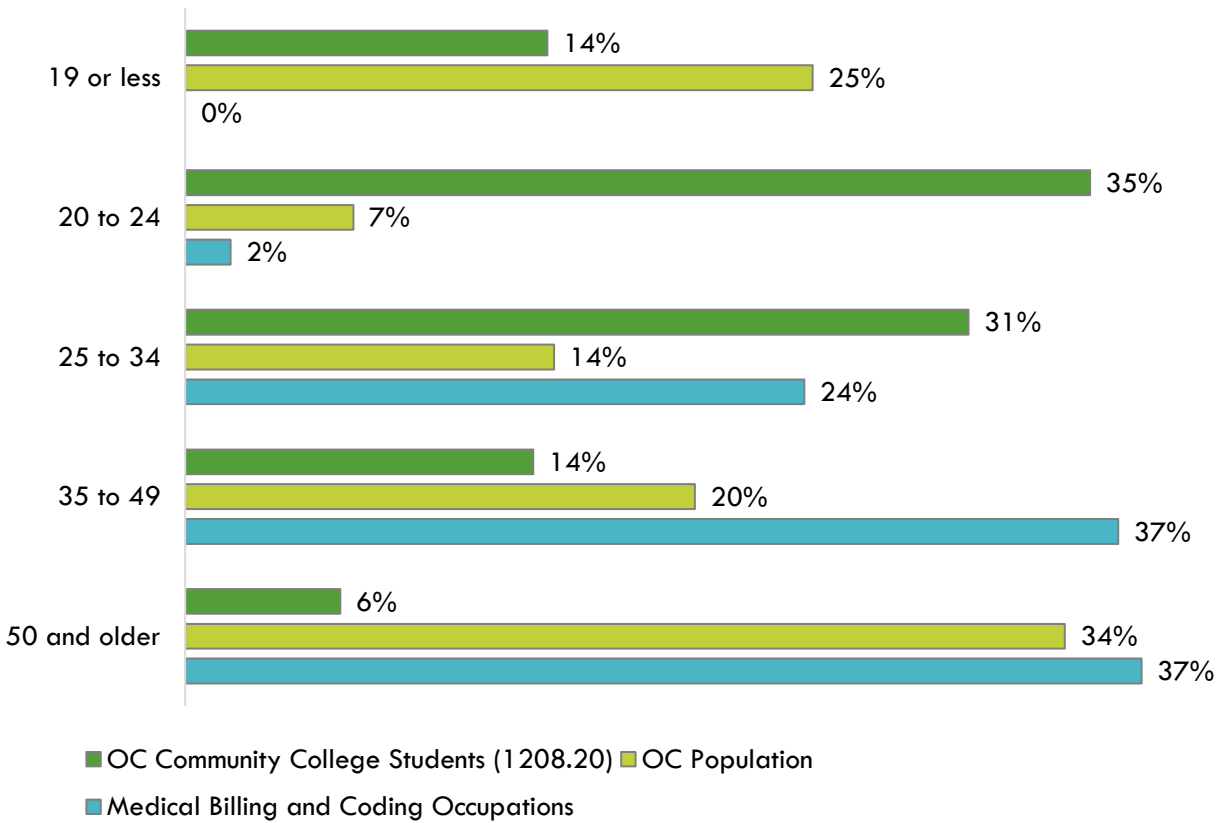
Exhibit 14: Program and County Demographics by Ethnicity



## Age:

Exhibit 14 shows the age of Orange County community college students enrolled in administrative medical assisting programs compared to the overall Orange County population, as well as the two medical billing and coding occupations included in this report. Nearly 75% of workers in these medical billing and coding occupations are 35 and older, which is significantly higher than the population (54%) and community college administrative medical assisting students (20%). Conversely, 50% of community college administrative medical assisting students are 24 or less, which is significantly higher than the population (32%) and these medical billing and coding occupations.

Exhibit 14: Program and County Demographics by Age

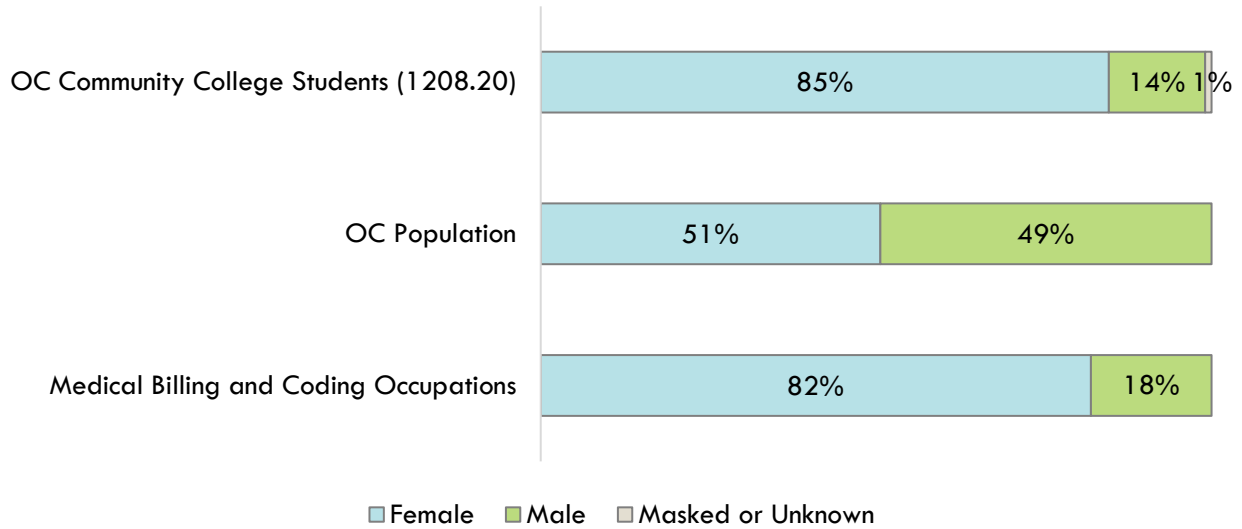


## Sex:

Exhibit 15 shows the sex of Orange County community college students enrolled in administrative medical assisting programs compared to the overall Orange County population as well as these medical billing and coding occupations.

Though the population is split nearly evenly, 85% of administrative medical assisting students and 82% of workers in these medical and billing occupations are women.

**Exhibit 15: 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 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.</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>
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>

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: <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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