Labor Market Analysis for Program Review: 0702.00/Computer Information Systems (*Data Science, Certificate of Achievement*)
South Central Coast Center of Excellence, March 2025

Summary

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

Program LMI Endorsement Criteria		
	Yes ☐	No ☐
Supply Gap:	*Comments:* The SCC COE does not include a labor market endorsement when considering emerging fields and occupations. **Since this program focuses on data science, a rapidly evolving field, no endorsement criteria are included.**	
Self-Sufficiency Standard Living Wage[1]:	Yes ☐	No ☐
	Comments: See comment above.	
Education:	Yes ☐	No ☐
	Comments: See comment above.	
Additional Considerations		
	Yes ☑	Some ☐	No ☐
Emerging Occupation(s):	*Comments:* Data analytics and data science are rapidly evolving fields that involve the use of descriptive and predictive analytics to inform business decisions. Generally, a data analyst examines and analyzes data sets to identify trends and provide insights for strategic decision making. Data scientists employ predictive analytics through machine learning models and other statistical methods to predict future trends using historical data.[2]	

The South Central Coast Center of Excellence for Labor Market Research (SCC COE) prepared this report to determine whether there is a supply gap in the SCC regional labor market related to four above middle-skill occupations that are closely related to data science and data analytics:

- *Computer Systems Analysts (15-1211)*
- *Information Security Analysts (15-1212)*
- *Operations Research Analysts (15-2031)*
- *Data Scientists (15-2051)*

---

[1] At the direction of the California Community College Chancellor's Office, the living wage endorsement criteria in this report uses the University of Washington's Center for Women's Welfare Self-Sufficiency Standard, which the COE refers to as a living wage, to determine the living wage for Los Angeles, San Luis Obispo, Santa Barbara, and Ventura counties, last updated in March 2024.

[2] https://graduate.northeastern.edu/resources/data-analytics-vs-data-science/

Currently, *Data Scientists (15-2051)* is the only Standard Occupational Classification (SOC) code in the Bureau of Labor Statistics system that is solely for data science jobs. This occupation was added to the SOC system in 2018, making it one of the newest occupations in the federal system. The typical entry-level education for this occupation is a bachelor's degree and the majority of workers in the field hold a bachelor's, master's, or doctoral degree. It is important to note that there are currently no middle-skill occupations that are directly related to data analytics and data science and the typical education requirements for these jobs are high. However, numerous other occupations, such as the other three occupations analyzed in this report, may utilize data analytics or data science skills.

Though data analyst and data science jobs typically require at least a bachelor's degree, community colleges throughout the country have developed data science programs. There is no singular source that includes data on all these programs. However, the SCC COE was able to identify existing programs in numerous states including California, Illinois, Maryland, New Jersey, and North Carolina.[3] Additionally, there are several data analytics and data science certificate programs offered through university extension programs such as those at UCLA[4] and UC Santa Barbara.[5] Additionally, UC Santa Barbara offers a bachelor's degree in statistics and data science.[6]

Online programs such as those offered by Coursera, DataCamp, edX, LinkedIn Learning, and Udemy, provide alternate paths to obtaining data analytics and data science skills. These platforms often partner with businesses to offer online curriculum, such as Google's Data Analytics Certificate or IBM's Data Science Professional Certificate – both of which are offered through Coursera. Additionally, these platforms may work with businesses to provide upskilling opportunities to the current workforce. DataCamp claims that "80% of the Fortune 1,000 use DataCamp."[7]

The remainder of this report analyzes traditional labor market information for four occupations related to data science. An analysis of online job postings for data analytics and science skills across all occupations - including data analysis, R, Python, SQL, and data visualization - is included to better understand the real-time demand for this emerging area.

Due to the rapidly developing nature of emerging fields, the SCC COE does not include a labor market endorsement when considering emerging areas.

---

[3] https://magazine.amstat.org/blog/2022/08/01/new-two-year-programs/
[4] https://www.uclaextension.edu/digital-technology/data-analytics-management/certificate/data-science
[5] https://quickstart.professional.ucsb.edu/bootcamp/data-science-and-analytics/landing/
[6] https://www.pstat.ucsb.edu/undergrad/majors/bs-ss
[7] https://www.datacamp.com/business

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 (25th Percentile)	Typical Entry-Level Education	Community College Educational Attainment
Computer Systems Analysts (15-1211)	125	362	Ventura: $42.56	Bachelor's degree	21%
Information Security Analysts (15-1212)	47	*Accounted for above*	Ventura: $42.73	Bachelor's degree	27%
Operations Research Analysts (15-2031)	35	*Accounted for above*	Ventura: $35.93	Bachelor's degree	20%
Data Scientists (15-2051)	75	*Accounted for above*	Ventura: $44.70	Bachelor's degree	11%
Total	**282**	**272**	**N/A**	**N/A**	**N/A**

Demand:

- The number of jobs related to these data occupations is projected to increase 6% through 2028 in the SCC region. There is projected to be 282 annual job openings due to new job creation and replacements.

- Hourly entry-level wages for these data science occupations in Ventura County range from $35.93 to $44.70; all annual job openings have entry-level wages above the Self-Sufficiency Standard living wage ($24.53 for Ventura County).

- Across all occupations, there were 2,595 online job postings that requested data science skills such as Python, R, and SQL over the past 12 months. The highest number of postings were for software engineers, data scientists, and business analysts.

- The typical entry-level education for these data science occupations is a bachelor's degree.

- Between 11% and 27% of workers in the field have completed some college or an associate degree as their highest level of education.

Supply:

- There was an average of 41 awards conferred by five community colleges in the SCC Region from 2020 to 2023.
  - It is important to note these supply figures reflect awards conferred under the 0702.00 (Computer Information Systems) TOP code. However, community colleges throughout the region offer data analytics and data science programs under three different TOP codes. In many cases, colleges offer other programs that are unrelated to data analytics and data science under these TOP codes. Therefore, the COE is unable to isolate supply solely for data analytics and data science and supply may be overstated.

- UC Santa Barbara was the only non-community college institution that conferred related awards from 2019 to 2022, accounting for 231 awards.
  - However, the supply data for non-community college institutions includes only programs directly related to data analytics or data science such as 27.0501 (Statistics, General). Students may obtain similar skills in other programs and courses such as mathematics, statistics, econometrics, computer science, and more. These figures also do not include certificates awarded by extension or continuing education programs offered at four-year colleges and universities. Therefore, supply is likely understated.
- SCC community college students that exited Computer Information Systems programs in the 2021-22 academic year had a median annual wage of $42,320 ($20.35 per hour) after exiting the program and 54% attained the regional living wage (Self-Sufficiency Standard).
- Throughout the SCC Region, 77% of Computer Information Systems students that exited their program in 2020-21 reported that they are working in a job closely related to their field of study.

Demand

Occupational Projections:

Exhibit 2 compares historical and projected changes in employment for these occupations compared to the number of jobs in 2018. Notably, employment for these data science occupations in Santa Barbara County grew 18% from 2018 to 2023, which is significantly higher when compared to employment for these occupations in all other counites in the SCC region. From 2023 to 2028, employment for these data science occupations is projected to steadily grow in all areas except San Luis Obispo County, where employment is projected to decline.

Exhibit 2: Historical and Projected Employment for Data Science Occupations in the SCC Region, 2018-2028
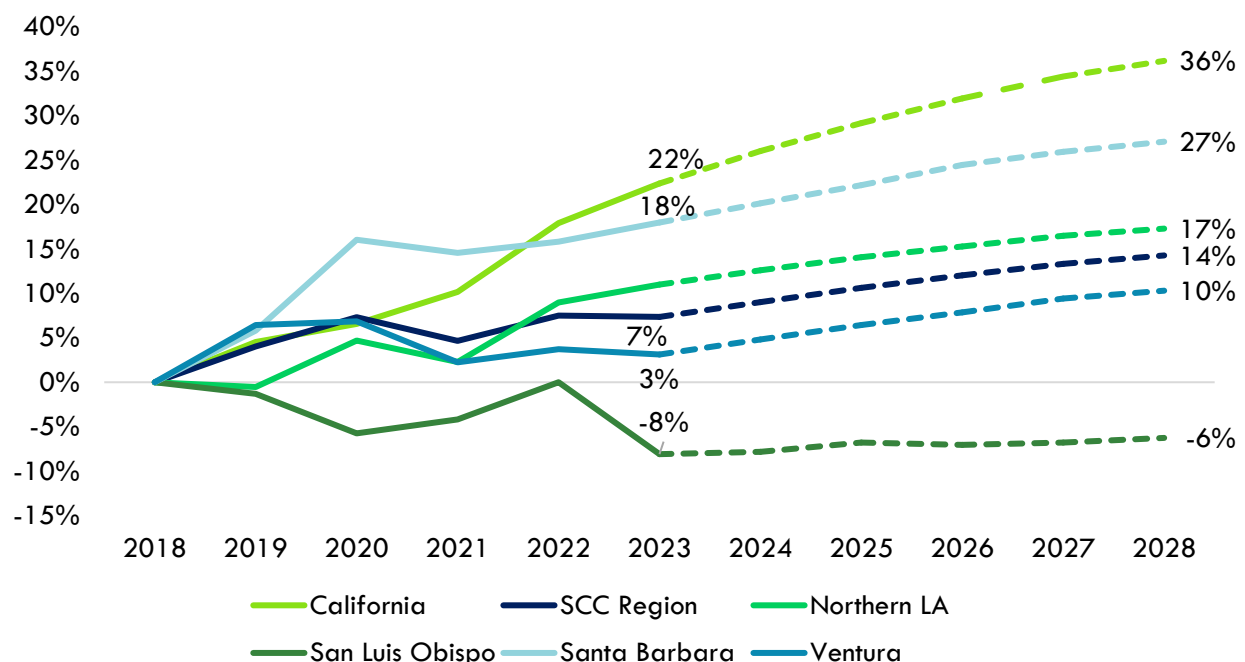
Exhibit 3 shows the five-year occupational demand projections for these data science occupations. In the SCC Region, the number of jobs related to these occupations is projected to increase 6% through 2028. There is projected to be 282 jobs available annually. Ventura County has the highest number of jobs and annual openings and employment is projected to increase 7% through 2028.

Exhibit 3: Occupational Demand in SCC Region[8]

Geography	2023 Jobs	2028 Jobs	2023-2028 Change	2023-2028 % Change	Annual Openings
Northern LA	828	875	47	6%	60
San Luis Obispo	352	359	7	2%	24
Santa Barbara	1,037	1,117	80	8%	80
Ventura	1,520	1,628	108	7%	114
SCC Region	**3,737**	**3,979**	**242**	**6%**	**282**

Wages:

The labor market endorsement in this report considers the entry-level hourly wages for these real estate occupations in relation to the living wage of the county where the requesting community college is located. This report was requested by Moorpark College, which is in Ventura County. Wages for other counties are included below to provide a complete analysis of the SCC Region.
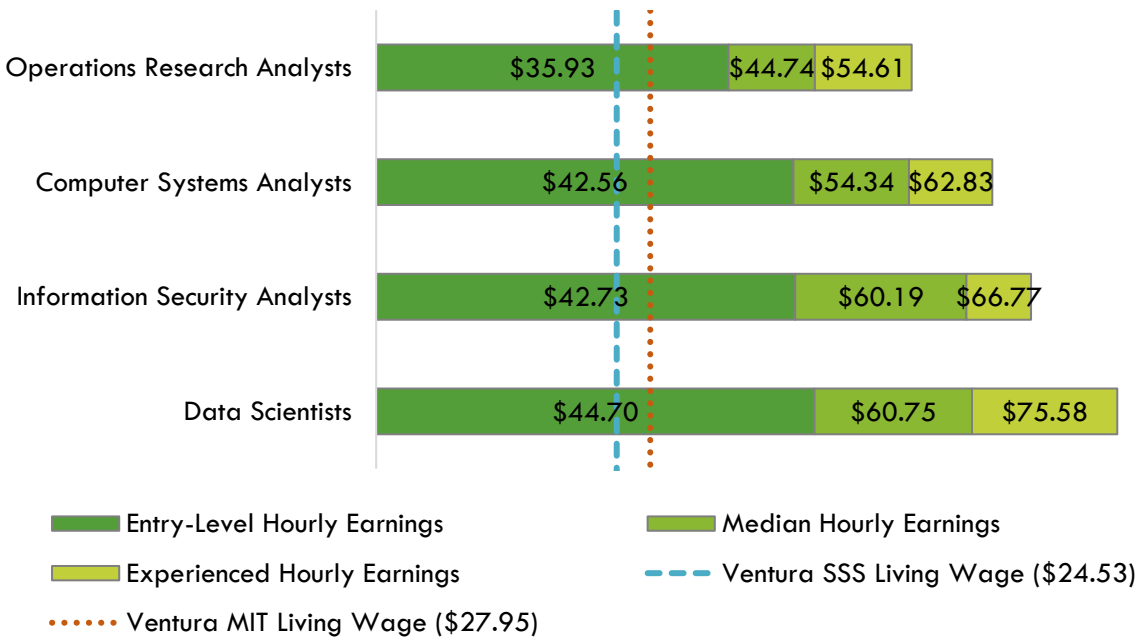
At the direction of the California Community College Chancellor's Office, the living wage endorsement criteria in this report uses the University of Washington's Center for Women's Welfare Self-Sufficiency Standard which the COE refers to as a living wage, to determine each county's living wage (last updated in March 2024). Additionally, data for the MIT Living Wage, updated on February 10, 2025, is provided as a reference. Both figures, which account for geographic-specific costs of necessities such as housing, food, health care, and transportation to assess the cost of living, are included in the exhibits below.

Ventura

All annual openings for these data science occupations have entry-level wages above the Self-Sufficiency Standard living wage for one adult ($24.53 in Ventura County). Typical entry-level hourly wages range between $35.93 and $44.70. Exhibit 4 shows the wage range for each of these data science occupations in Ventura County and how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

---

[8] Five-year change represents new job additions to the workforce. Annual openings include new jobs and replacement jobs that result from retirements and separations. It is important to note that adding jobs, change, and annual openings for each geographic area may not add to the total listed in the SCC Region row. This is due to how data is reported at the county vs. ZIP code level. For more information, see Appendix A: Methodology.
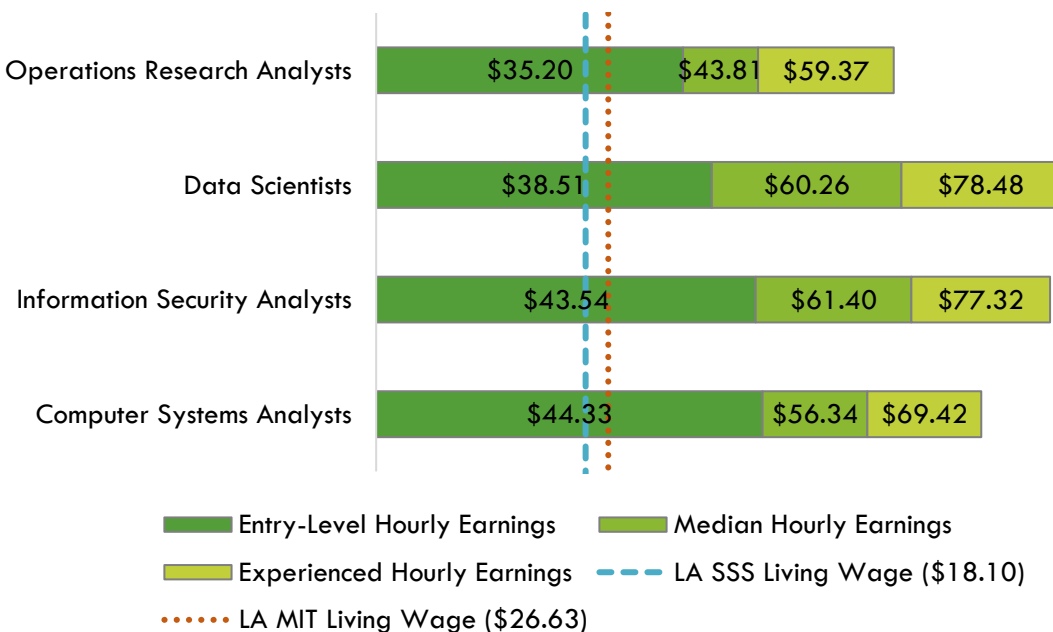
Exhibit 4: Wages by Occupation in Ventura County

Occupation	Entry-Level	Median	Experienced
Operations Research Analysts	$35.93	$44.74	$54.61
Computer Systems Analysts	$42.56	$54.34	$62.83
Information Security Analysts	$42.73	$60.19	$66.77
Data Scientists	$44.70	$60.75	$75.58

Legend:
- Entry-Level Hourly Earnings
- Median Hourly Earnings
- Experienced Hourly Earnings
- Ventura SSS Living Wage ($24.53)
- Ventura MIT Living Wage ($27.95)

Northern Los Angeles

All annual openings for these data science occupations have entry-level wages above the Self-Sufficiency Standard living wage for one adult ($24.03 in Los Angeles County). Typical entry-level hourly wages range between $35.20 and $44.33. Exhibit 5 shows the wage range for each of these data occupations in Northern Los Angeles and how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

Exhibit 5: Wages by Occupation in Northern Los Angeles County

Occupation	Entry-Level	Median	Experienced
Operations Research Analysts	$35.20	$43.81	$59.37
Data Scientists	$38.51	$60.26	$78.48
Information Security Analysts	$43.54	$61.40	$77.32
Computer Systems Analysts	$44.33	$56.34	$69.42

Legend:
- Entry-Level Hourly Earnings
- Median Hourly Earnings
- Experienced Hourly Earnings
- LA SSS Living Wage ($18.10)
- LA MIT Living Wage ($26.63)

San Luis Obispo

All annual openings for these data science occupations have entry-level wages above the Self-Sufficiency Standard living wage for one adult ($22.15 in San Luis Obispo County). Typical entry-level hourly wages range between $27.84 and $51.31. Exhibit 6 shows the wage range for each of these data science occupations in San Luis Obispo County and how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

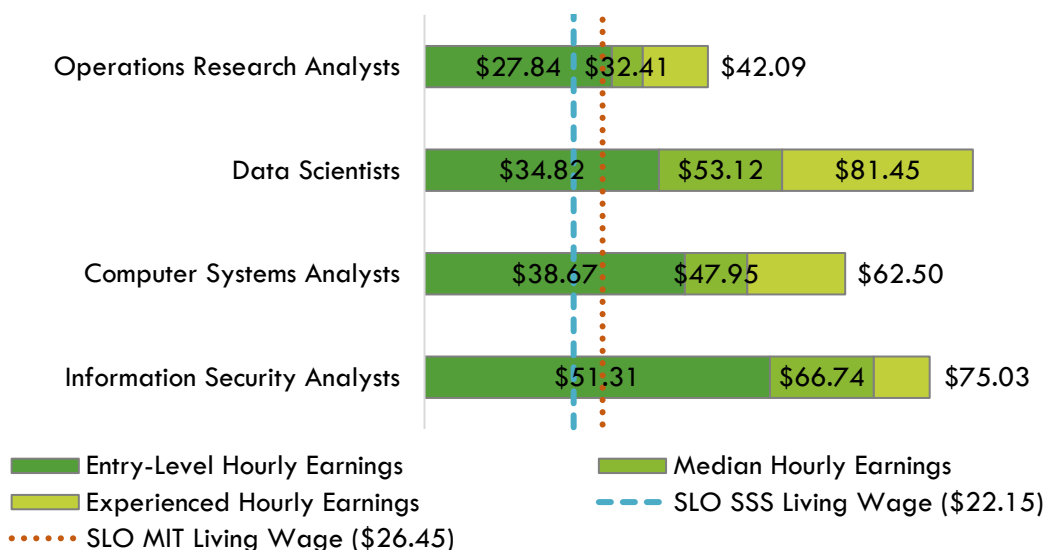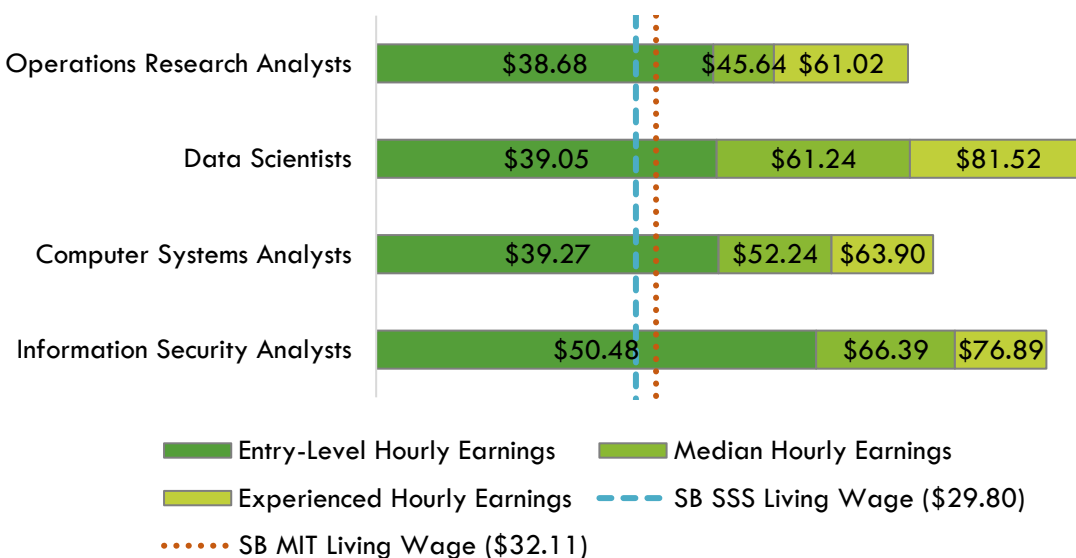### Exhibit 6: Wages by Occupation in San Luis Obispo County

Operations Research Analysts: $27.84 $32.41 $42.09

Data Scientists: $34.82 $53.12 $81.45

Computer Systems Analysts: $38.67 $47.95 $62.50

Information Security Analysts: $51.31 $66.74 $75.03

Legend:
- Entry-Level Hourly Earnings
- Median Hourly Earnings
- Experienced Hourly Earnings
- SLO SSS Living Wage ($22.15)
- SLO MIT Living Wage ($26.45)

Santa Barbara

All annual openings for these data science occupations have entry-level wages above the Self-Sufficiency Standard living wage for one adult ($29.80 in Santa Barbara County). Typical entry-level hourly wages range between $38.68 and $50.48. Exhibit 7 shows the wage range for each of these data science occupations in Santa Barbara County and how they compare to the regional living wage, sorted from lowest to highest entry-level wage.

Exhibit 7: Wages by Occupation in Santa Barbara County

Operations Research Analysts: $38.68 $45.64 $61.02

Data Scientists: $39.05 $61.24 $81.52

Computer Systems Analysts: $39.27 $52.24 $63.90

Information Security Analysts: $50.48 $66.39 $76.89

Legend:
- Entry-Level Hourly Earnings
- Median Hourly Earnings
- Experienced Hourly Earnings
- SB SSS Living Wage ($29.80)
- SB MIT Living Wage ($32.11)

Job Postings:

Over the past 12 months, there were 2,595 online job postings online job postings that requested data analysis and data science skills in the SCC Region. Exhibit 9 shows the number of job postings by county. Approximately 46% of job postings were in Ventura County.

Exhibit 8: Number of Job Postings by Sub-Region (n=2,595)

Sub-Region	Job Postings	Percentage of Job Postings
Ventura	1,196	46%
Santa Barbara	844	33%
Northern Los Angeles	383	15%
San Luis Obispo	172	7%
Total Postings	**2,595**	**100%**

Notably, data science and data analytics skills cut across occupations and are not limited to the occupations analyzed in this report. In addition to traditional data-related roles such as *Data Scientists* and *Database Administrators*, the top occupations include software development, engineering, and finance occupations. Of the 2,595 postings, 18% were for *Software Developers*, 9% were for *Data Scientists* and 8% were for *Computer Occupations, All Other*. Exhibit 9 shows the top 15 occupations that requested data science skills in the SCC Region.

Exhibit 9: Number of Job Postings by Occupation (n=2,595)

Occupation	Job Postings	Percentage of Job Postings
Software Developers	457	18%
Data Scientists	232	9%
Computer Occupations, All Other	198	8%
Database Administrators	92	4%
Industrial Engineers	77	3%
Computer User Support Specialists	62	2%
Software Quality Assurance Analysts and Testers	62	2%
Financial Managers	56	2%
Management Analysts	53	2%
Electrical Engineers	52	2%
Computer Systems Analysts	51	2%
Database Architects	51	2%
Financial and Investment Analysts	47	2%
Mechanical Engineers	44	2%
Computer Network Architects	42	2%

The top employers that requested data science skills in the region, by number of job postings, are shown in Exhibit 10.

Exhibit 10: Top Employers by Number of Job Postings (n=2,595)

Employer	Job Postings	Percentage of Job Postings
Amgen	114	4%
Northrop Grumman	75	3%
University of California-Santa Barbara	70	3%
Appfolio	67	3%
Amazon	49	2%
Google	49	2%
Raytheon Technologies	41	2%
Lockheed Martin	40	2%
Aerovironment	37	1%
Pennymac	37	1%

The top specialized, soft, and computer skills listed by those most frequently mentioned in job postings (denoted in parentheses) are shown in Exhibit 11.

Exhibit 11: Top Skills by Number of Job Postings (n=2,595)

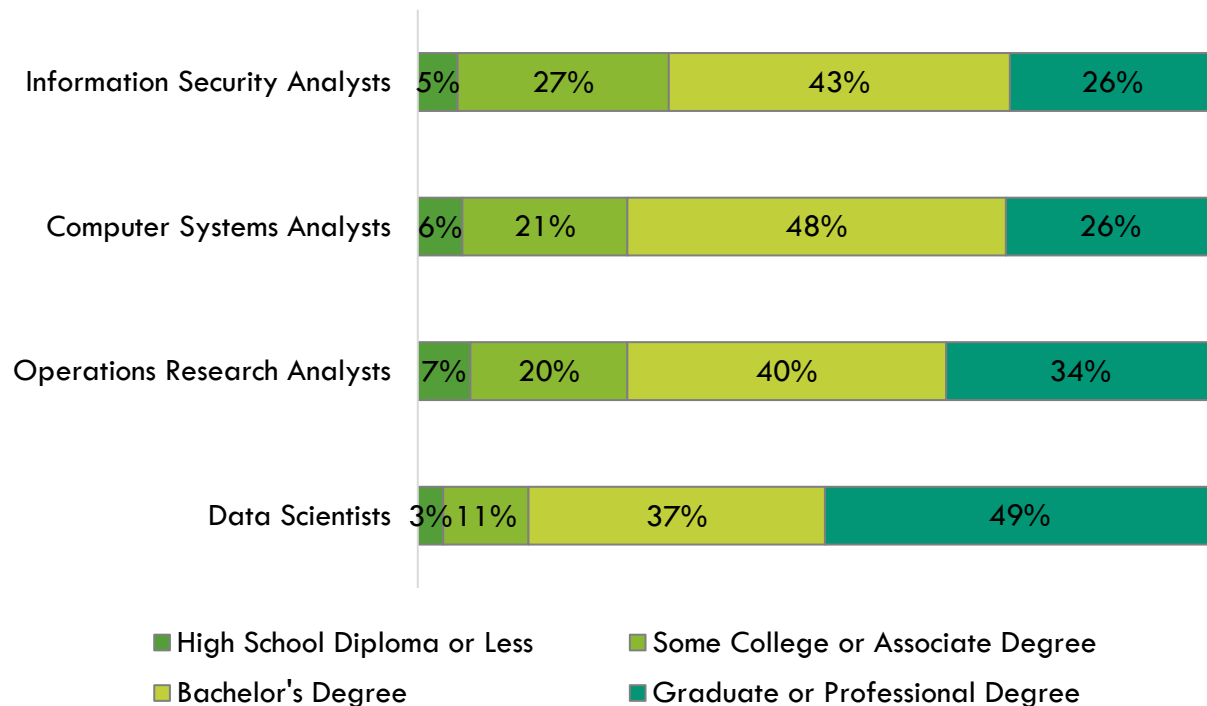| Top Specialized Skills	Top Soft Skills	Top Computer Skills
Python (Programming Language) (1,441)	Communication (1,182)	Python (Programming Language) (1,441)
SQL (Programming Language) (1,144)	Management (772)	SQL (Programming Language) (1,144)
Computer Science (863)	Problem Solving (712)	R (Programming Language) (486)
Data Analysis (545)	Operations (653)	Microsoft Excel (440)
Automation (520)	Troubleshooting (Problem Solving) (579)	C++ (Programming Language) (408)
R (Programming Language) (486)	Research (497)	Java (Programming Language) (337)
Data Science (440)	Leadership (495)	C# (Programming Language) (306)
Project Management (410)	Microsoft Excel (440)	JavaScript (Programming Language) (290)
C++ (Programming Language) (408)	Detail Oriented (427)	Amazon Web Services (283)
Scripting (390)	Mathematics (421)	Linux (274)

Educational Attainment:

The Bureau of Labor Statistics (BLS) lists the following as the typical entry-level education for these data science occupations:

- Bachelor's Degree
    - Computer Systems Analysts (15-1211)
    - Information Security Analysts (15-1212)
    - Operations Research Analysts (15-2031)
    - Data Scientists (15-2051)

The national-level educational attainment data indicates between 11% and 27% of workers in the field have completed some college or an associate degree as their highest level of education. Exhibit 12 shows the educational attainment for each occupation, sorted by highest community college educational attainment to lowest.

Exhibit 12: National-level Educational Attainment for Occupations

Occupation	High School Diploma or Less	Some College or Associate Degree	Bachelor's Degree	Graduate or Professional Degree
Information Security Analysts	5%	27%	43%	26%
Computer Systems Analysts	6%	21%	48%	26%
Operations Research Analysts	7%	20%	40%	34%
Data Scientists	3%	11%	37%	49%

■ High School Diploma or Less ■ Some College or Associate Degree
■ Bachelor's Degree ■ Graduate or Professional Degree

Of the 78% of the cumulative job postings that requested data science skills and listed a minimum education requirement in the SCC Region, 77% (1,573) requested a bachelor's degree, 12% (250) requested a high school diploma or an associate degree, and 10% (208) requested a graduate or professional degree.

Educational Supply

Community College Supply:

Exhibit 13 shows the three-year average number of awards conferred by community colleges in the TOP code used by Moorpark College for this program: Computer Information Systems (0702.00). The colleges with the most completions are Allan Hancock, Cuesta, and Antelope Valley.

It is important to note these supply figures reflect awards conferred under the 0702.00 (Computer Information Systems) TOP code. However, community colleges throughout the SCC Region offer data analytics and data science programs under three different TOP codes. In many cases, colleges offer other programs that are unrelated to data analytics and data science under these TOP codes. Therefore, the COE is unable to isolate supply solely for data analytics and data science.

Exhibit 13: Regional Community College Awards (Certificates and Degrees), 2020-2023

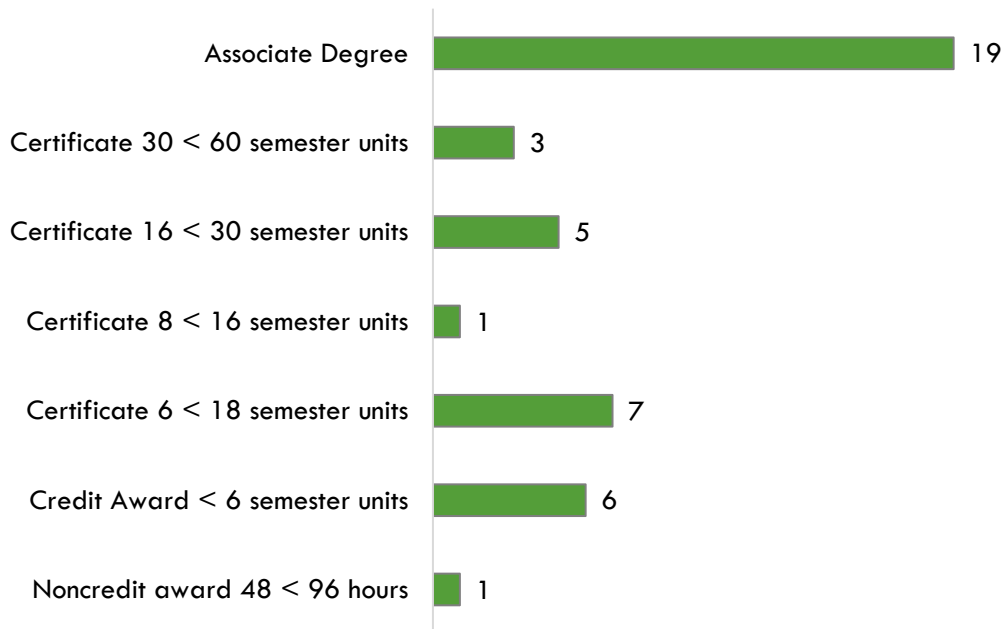| TOP Code	Program	College	2020-2021 Awards	2021-2022 Awards	2022-2023 Awards	3-Year Award Average
0702.00	Computer Information Systems	Antelope Valley	0	16	11	9
		Moorpark	0	0	1	0
		Santa Barbara	5	5	3	4
		Allan Hancock	25	19	4	16
		Cuesta	16	7	10	11
Supply Total/Average			**46**	**47**	**29**	**41**

As noted previously, community colleges throughout the SCC Region offer data analytics and data science programs under three different TOP codes. To better understand the colleges that offer data analytics and data science programs, Exhibit 14 shows each college, as well as the TOP code, program name, award type, and approval date for data analytics and data science programs offered by regional community colleges.

Exhibit 14: Regional Community College Data Analytics and Data Science Programs

TOP Code/Title	College	Program Name	Award Type	CCCCO Approval Date
0702.00/Computer Information Systems	Moorpark	Data Science	Certificate	7/2/2021
1223.00/Health Information Technology	Santa Barbara	Healthcare Data Analytics	Certificate	Not available
1701.00/Mathematics, General	Santa Barbara	Data Science	Certificate	12/6/2022
			A.S. Degree	12/6/2022

Exhibit 15 shows the annual average community college awards by type from 2020-21 to 2022-23 fro TOP code 0702.00 (Computer Information Systems). The plurality of the awards are for associate degrees, followed by certificates between 6 and less than 18 semester units, and credit awards of less than 6 semester units.

Exhibit 15: Annual Average Community College Awards by Type, 2020-2023

Award Type	Count
Associate Degree	19
Certificate 30 < 60 semester units	3
Certificate 16 < 30 semester units	5
Certificate 8 < 16 semester units	1
Certificate 6 < 18 semester units	7
Credit Award < 6 semester units	6
Noncredit award 48 < 96 hours	1

Community College Student Outcomes:

Exhibit 16 shows the Strong Workforce Program (SWP) metrics for Computer Information Systems programs at Ventura County Community College District (VCCCD) the SCC Region, and California. Of the 1,577 Computer Information Systems students throughout the region in the 2022-23 academic year, 26% (404) attended a VCCCD college.

VCCCD students that exited Computer Information Systems programs in the 2021-22 academic year had similar median annual earnings ($42,624 or $20.49 per hour) compared to all Computer Information Systems students in the SCC Region ($42,320 or $20.35 per hour); both figures are slightly higher than statewide ($41,416 or $19.91 per hour). A higher percentage of VCCCD (92%) and SCC (77%) Computer Information Systems students reported that they were employed in their field of study compared to Computer Information Systems statewide (70%).

Exhibit 16: Computer Information Systems (0702.00) Strong Workforce Program Metrics, 2022-23[9][10]

SWP Metric	VCCCD	SCC Region	California
SWP Students	404	1,577	24,268
SWP Students Who Earned 9 or More Career Education Units in the District in a Single Year	57%	34%	35%
SWP Students Who Completed a Noncredit CTE or Workforce Preparation Course	Data unavailable	36%	60%
SWP Students Who Earned a Degree or Certificate or Attained Apprenticeship Journey Status	Data unavailable	1%	3%
SWP Students Who Transferred to a Four-Year Postsecondary Institution (2021-22)	22%	11%	9%
SWP Students with a Job Closely Related to Their Field of Study (2020-21)	92%	77%	70%
Median Annual Earnings for SWP Exiting Students (2021-22)	$42,624 ($20.49)	$42,320 ($20.35)	$41,416 ($19.91)
Median Change in Earnings for SWP Exiting Students (2021-22)	26%	37%	33%
SWP Exiting Students Who Attained the Living Wage (2021-22)	57%	54%	57%

---

[9] All SWP metrics are for 2022-23 unless otherwise noted.
[10] Data that is not available in DataVista is denoted in Exhibit 16 as "data unavailable." Data may not be available for various reasons, including cases where data is masked to protect personally identifiable information.

Non-Community College Supply:

To comprehensively analyze the regional supply, it is crucial to include data from other institutions offering data science programs. Over the past three years (2019-2022), UC Santa Barbara was the only non-community college institution that conferred awards related to data science. UC Santa Barbara uses the following CIP code: Statistics, General (27.0501).

There were no awards conferred by non-community college institutions under the related Classification of Instructional Programs (CIP) codes:

- Data Science, General (30.7001)
- Data Analytics, General (30.7101)
- Data Visualization (30.7103)

It is important to note the supply data for non-community college institutions includes only programs directly related to data analytics or data science such as 30.7101 (Data Analytics, General) and Business Analytics (30.7102). Students may obtain similar skills in other programs and courses such as mathematics, statistics, econometrics, computer science, and more. These figures also do not include certificates awarded by extension or continuing education programs offered at four-year colleges and universities. Therefore, supply is likely understated.

Exhibit 17: Regional Non-Community College Awards, 2019-2022

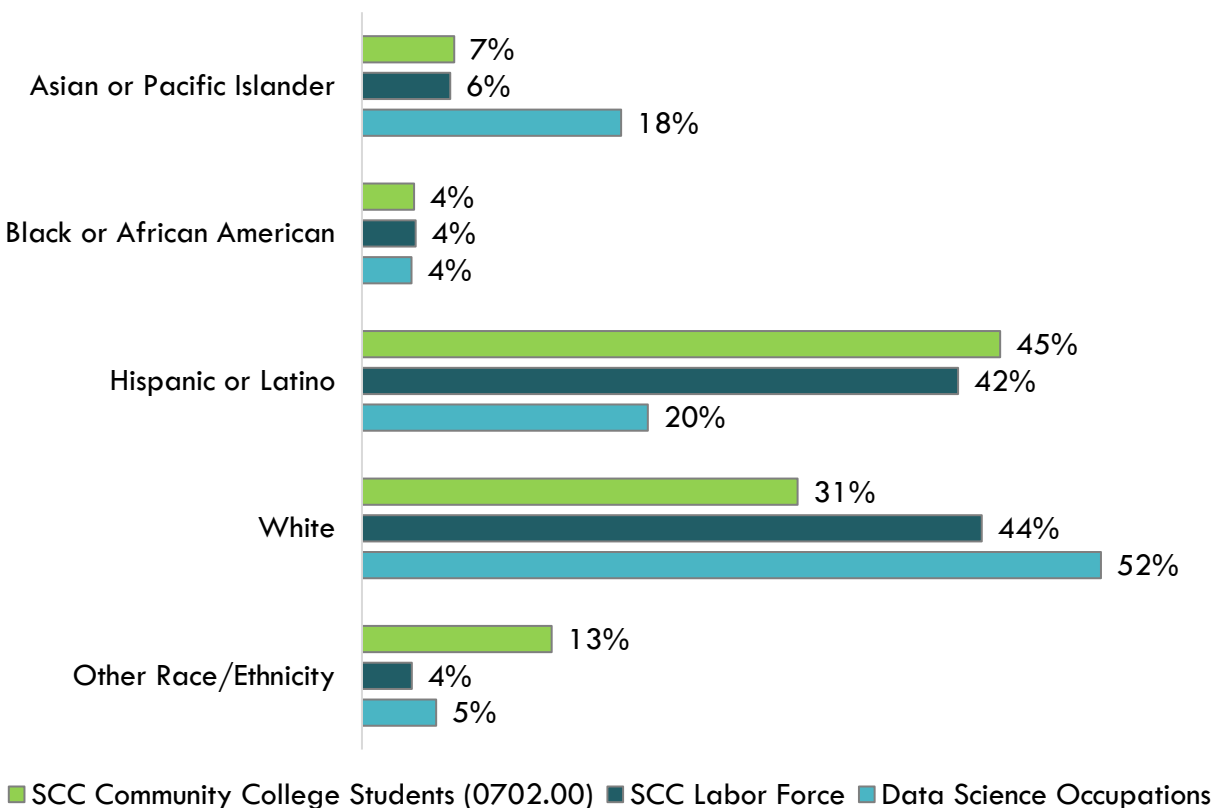| CIP Code	Program	College	2019-2020 Awards	2020-2021 Awards	2021-2022 Awards	3-Year Award Average
27.0501	Statistics, General	UC Santa Barbara	186	242	266	231
		Supply Total/Average	**186**	**242**	**266**	**231**

Regional Demographics

This section examines demographic data for SCC community college students in Computer Information Systems programs compared to the SCC labor force, along with occupational data, to identify potential diversity and equity issues addressable by community college programs.

Ethnicity:

Exhibit 18 compares the ethnicity of SCC community college students enrolled in Computer Information Systems programs, the overall SCC labor force, and occupation-specific data for the four data science occupations included in this report.

Notably, 52% of workers employed in these data science occupations are white, which is slightly higher than the labor force (44%) and significantly higher than community college Computer Information Systems students (31%). Conversely, 45% of community college Computer Information Systems students are Hispanic or Latino, which is similar to the labor force (42%), but more than double these data science occupations (20%).

Exhibit 18: Program and County Demographics by Ethnicity

Asian or Pacific Islander
- SCC Community College Students (0702.00): 7%
- SCC Labor Force: 6%
- Data Science Occupations: 18%

Black or African American
- SCC Community College Students (0702.00): 4%
- SCC Labor Force: 4%
- Data Science Occupations: 4%

Hispanic or Latino
- SCC Community College Students (0702.00): 45%
- SCC Labor Force: 42%
- Data Science Occupations: 20%

White
- SCC Community College Students (0702.00): 31%
- SCC Labor Force: 44%
- Data Science Occupations: 52%

Other Race/Ethnicity
- SCC Community College Students (0702.00): 13%
- SCC Labor Force: 4%
- Data Science Occupations: 5%

■ SCC Community College Students (0702.00) ■ SCC Labor Force ■ Data Science Occupations
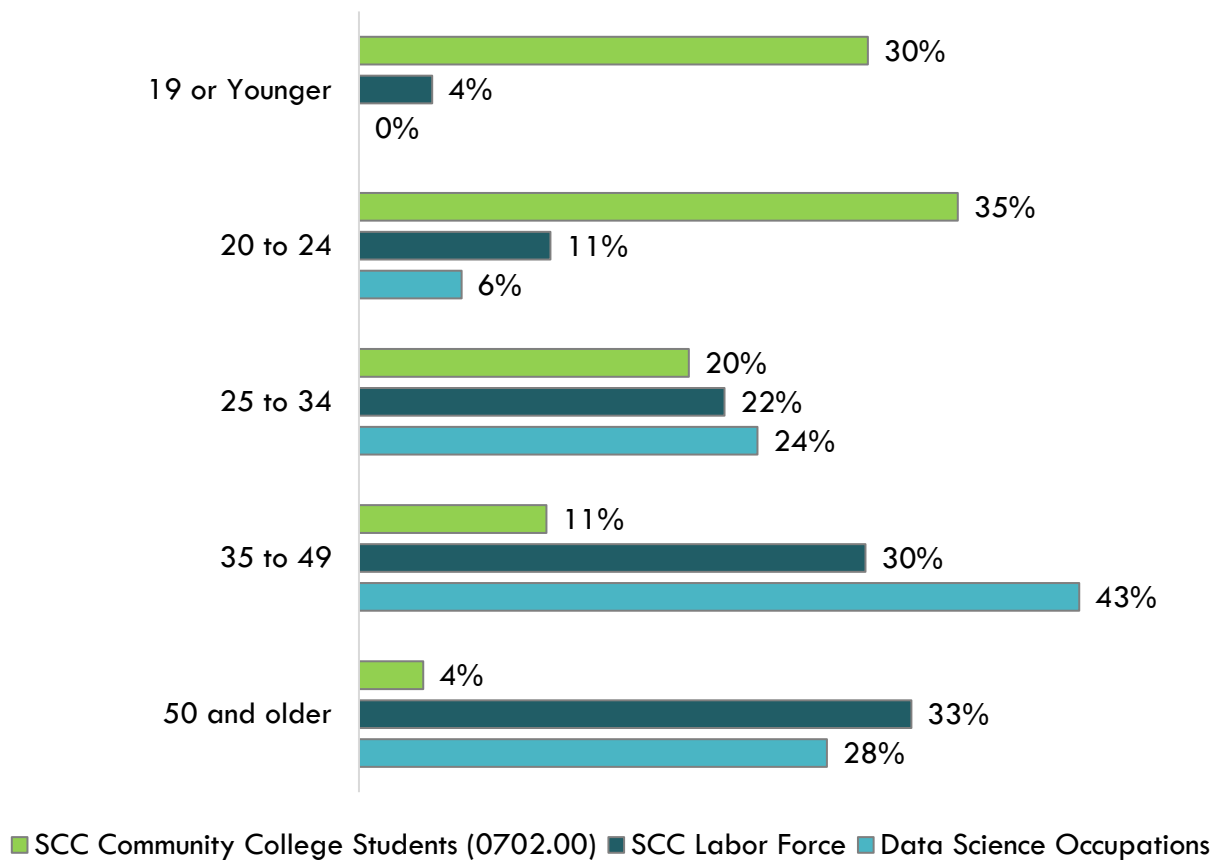
Age:

Exhibit 18 compares the age of SCC community college students enrolled in Computer Information Systems programs, the overall SCC labor force, and occupation-specific data for the four real estate occupations included in this report.

The majority (70%) of workers in these real estate occupations are age 35 and older, which is slightly higher than the labor force (63%) but significantly higher than community college Computer Information Systems students (15%). Conversely, 65% of community college Computer Information Systems students are 24 or younger, which is significantly higher than the labor force (15%), and these data science occupations (6%).

Exhibit 19: Program and County Demographics by Age

19 or Younger
- 30%
- 4%
- 0%

20 to 24
- 35%
- 11%
- 6%

25 to 34
- 20%
- 22%
- 24%

35 to 49
- 11%
- 30%
- 43%

50 and older
- 4%
- 33%
- 28%

■ SCC Community College Students (0702.00) ■ SCC Labor Force ■ Data Science Occupations

Sex:

Exhibit 19 compares the sex of SCC community college students enrolled in Computer Information Systems programs, the overall SCC labor force, and occupation-specific data for these data science occupations.

Men account for the majority of of Computer Information Systems students (61%), the SCC labor force (55%), and these data science occupations (62%).

Examining disaggregated data for each occupation (not shown), *Operations Research Analysts* is split evenly between women and men. This occupation also has the lowest typical entry-level wages of all four occupations.

Exhibit 20: Program and County Demographics by Sex

	Female	Male
SCC Community College Students (0702.00)	39%	61%
SCC Labor Force	45%	55%
Data Science Occupations	38%	62%
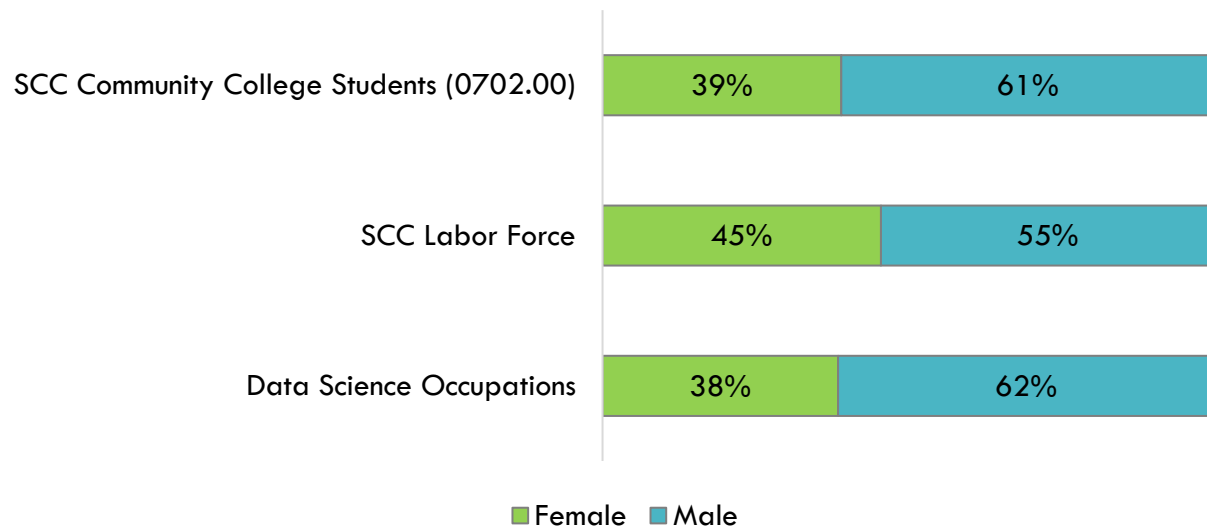
Appendix A: Methodology

Traditional Labor Market Data

The SCC 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.

Data included in this analysis represents the labor market demand for relevant positions most closely related to the proposed program as expressed by the requesting college in consultation with the SCC 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.

Program supply data is drawn from two systems: Taxonomy of Programs (TOP) and Classification of Instructional Programs (CIP).

Using a TOP-SOC crosswalk, the SCC 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 SCC 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.

Online Job Postings Data

Online job postings data, also known as 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. 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.

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.

Additionally, 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.[11] For these reasons, job postings could be assigned to the wrong employer, industry, or occupation within Lightcast's database.

Geography

The South Central Coast region encompasses San Luis Obispo, Santa Barbara, and Ventura counties, as well as parts of Northern Los Angeles County. The following 34 ZIP codes are used to define Northern Los Angeles County:

Exhibit 21: Northern Los Angeles ZIP Codes

ZIP Code	Primary City	ZIP Code	Primary City
91310	Castaic	93532	Lake Hughes
91321	Newhall	93534	Lancaster
91322	Newhall	93535	Lancaster
91350	Santa Clarita	93536	Lancaster
91351	Canyon Country	93539	Lancaster
91354	Valencia	93543	Littlerock
91355	Valencia	93544	Llano
91380	Santa Clarita	93550	Palmdale
91381	Stevenson Ranch	93551	Palmdale
91382	Santa Clarita	93552	Palmdale
91383	Santa Clarita	93553	Pearblossom
91384	Castaic	93563	Valyermo
91385	Valencia	93584	Lancaster
91386	Canyon Country	93586	Lancaster
91387	Canyon Country	93590	Palmdale
91390	Santa Clarita	93591	Palmdale
93510	Acton	93599	Palmdale

Though traditional labor market information is available at the ZIP code level, it does not always add up to data reported at the county level for multiple reasons:

- ZIP codes are not official geographically bounded areas, unlike states and counties.
- ZIP codes may cross county lines, such as ZIP code 93461, which is primarily in San Luis Obispo County, but also crosses into Kern County.

---

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

For these reasons, the number of jobs and average annual openings for each county may not add up to the total for the SCC Region. However, considering jobseekers may cross county lines for opportunities, the traditional labor market data is reflective of opportunities available to jobseekers in the SCC Region.

Additionally, job postings data is available only at the city or county level. To analyze job postings for the entire SCC region, the SCC COE developed a list of cities available in Lightcast for analysis. Additionally, demographic data is not available at the ZIP code level but is available at the Census Bureau's Public Use Microdata Area (PUMA) level. Demographic data was sourced via IPUMS and analyzed by the SCC COE. For more information, contact the SCC COE.

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	"Living Wage" measures the income necessary for an individual or family to afford basic expenses by assessing the costs such as housing, food, childcare, health care, transportation, and taxes. Per the CCCCO, this report's endorsement criteria uses the University of Washington's Center for Women's Welfare Self-Sufficiency Standard for a single adult last updated in March 2024. For more information, see: http://www.selfsufficiencystandard.org/California The MIT Living Wage, updated on February 14, 2024, is a nationally recognized living wage metric and is provided for reference. For more information, see: https://livingwage.mit.edu/counties/06059
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/

Data Type	Source
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	DataVista, a statewide data system supported by the California Community Colleges Chancellor's Office, provides data on progress, success, employment, and earnings outcomes for California community college students. For more information, see: https://datavista.cccco.edu/
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 South Central Coast Center of Excellence:

Jacob Poore, Director
jacob.poore@canyons.edu

March 2025