










# Data Scientists

## Labor Market Analysis: San Diego County

January 2023

### Summary

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

The Center of Excellence (COE) for the San Diego and Imperial Counties Community Colleges developed this brief to assist the region's community colleges with strategic planning and program development. According to available labor market information, *Data Scientists* in San Diego County have a labor market demand of 149 annual job openings (while average demand for a single occupation in San Diego County is 242 annual job openings), and two educational institutions in San Diego County supply 100 awards for this occupation, suggesting that there is a supply gap in the labor market. Entry-level and median wages for this occupation are above the living wage. This brief recommends that the colleges proceed with caution when developing a new program but supports a program modification because despite having earnings above the living wage and a supply gap, the typical entry-level education is a bachelor's degree. Colleges should also note that the typical educational attainment of workers employed nationally in this occupation a master's degree or higher.

## Introduction

This report provides labor market information in San Diego County for the following occupational code in the Standard Occupational Classification (SOC)<sup>1</sup> system:

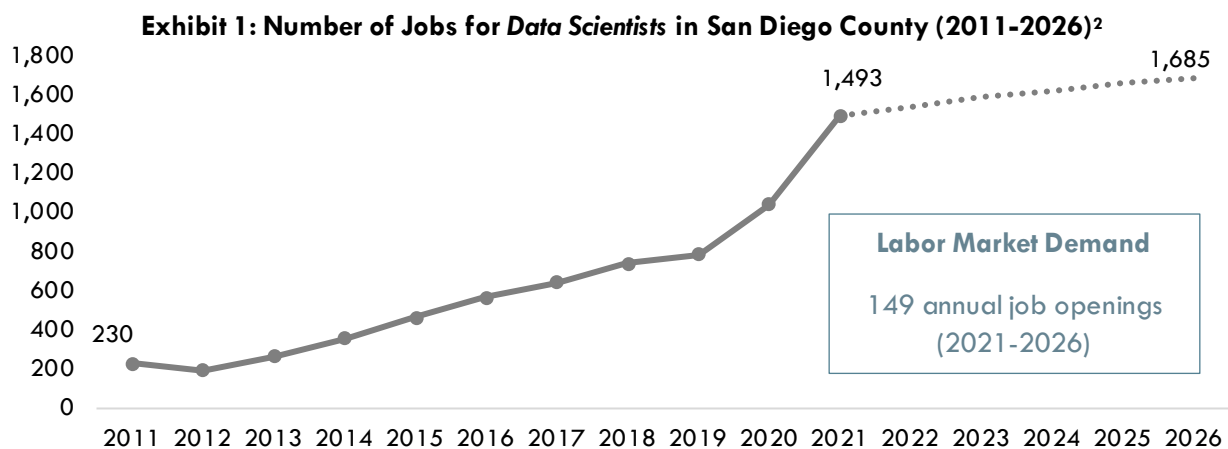
**Data Scientists (SOC 15-2051):** Develop and implement a set of techniques or analytics applications to transform raw data into meaningful information using data-oriented programming languages and visualization software. Apply data mining, data modeling, natural language processing, and machine learning to extract and analyze information from large structured and unstructured datasets. Visualize, interpret, and report data findings. May create dynamic data reports. Sample reported job titles include:

- Data Visualization Developer
- Data Mining Analyst
- Data Analytics Specialist
- Data Analyst
- Business Intelligence Analyst
- Competitive Intelligence Analyst
- Clinical Data Manager
- Data Management Manager
- Data Deliverables Manager

As shown above, “Data Scientists” may include occupations such as “Data Analysts.” However, the COE is aware that companies may segregate “Data Scientists” and “Data Analysts” into two positions. As a result, additional information about “Data Analysts” in online job postings is also provided in Appendix A.

## Projected Occupational Demand

Between 2021 and 2026, *Data Scientists* are projected to increase by 192 net jobs or 13 percent (Exhibit 1). Employers in San Diego County will need to hire 149 workers annually to fill new jobs and backfill jobs due to attrition caused by turnover and retirement, for example.



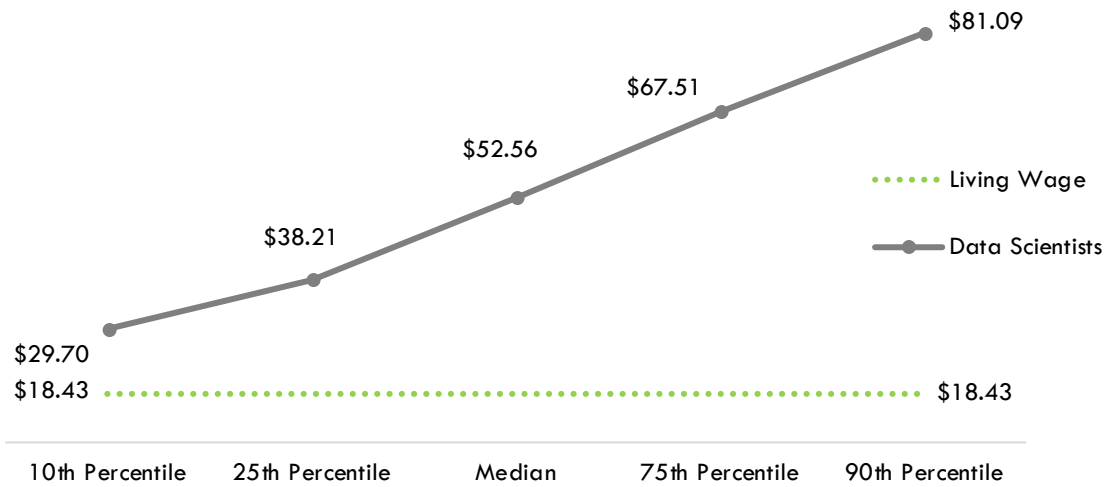
<sup>1</sup> The Standard Occupational Classification (SOC) system is used by federal statistical agencies to classify workers into occupational categories for the purpose of collecting, calculating or disseminating data. [bls.gov/soc](https://www.bls.gov/soc).

<sup>2</sup> EMSI 2022.03; QCEW, Non-QCEW, Self-Employed.

## Earnings

Data Scientists receive entry-level hourly earnings of \$38.21; this is more than the living wage for a single adult in San Diego County, which is \$18.43 per hour (Exhibit 2).<sup>3</sup>

**Exhibit 2: Hourly Earnings<sup>4</sup> for Data Scientists in San Diego County<sup>5</sup>**



<sup>3</sup> "Family Needs Calculator (formerly the California Family Needs Calculator)," Insight: Center for Community Economic Development, last updated 2021. [insightccd.org/family-needs-calculator/](https://insightccd.org/family-needs-calculator/).

<sup>4</sup> 10th and 25th percentiles could be considered entry-level wages, and 75th and 90th percentiles could be considered experienced wages for individuals who may have been in the occupation longer, received more training than others, etc.

<sup>5</sup> EMSI 2022.03; QCEW, Non-QCEW, Self-Employed.

## Educational Supply

Educational supply for an occupation can be estimated by analyzing the number of awards in related Taxonomy of Programs (TOP) or Classification of Instructional Programs (CIP) codes.<sup>6</sup> There is **one** TOP code and **five** CIP codes related to *Data Scientists* (Exhibit 3).

**Exhibit 3: Related TOP and CIP Codes for *Data Scientists***

TOP or CIP Code	TOP or CIP Program Title
TOP 0707.30	Computer Systems Analysis
CIP 11.0802	Data Modeling/Warehousing and Database Administration
CIP 30.7001	Data Science, General
CIP 30.7101	Data Analytics, General
CIP 30.7102	Business Analytics
CIP 30.7103	Data Visualization

According to TOP data, **one** community college supplies the region with awards for this occupation: [San Diego College of Continuing Education](#). According to CIP data, **one** non-community-college institution supplies the region with awards: [University of San Diego](#) (Exhibit 4).

**Exhibit 4: Number of Awards (Certificates and Degrees) Conferred by Postsecondary Institutions  
(Program Year 2017-18 through Program Year 2020-21 Average)**

TOP <sup>6</sup> or CIP Code	TOP <sup>6</sup> or CIP Program Title	3-Yr Annual Average CC Awards (PY18-19 to PY20-21)	Other Educational Institutions 3-Yr Annual Average Awards (PY17-18 to PY19-20)	3-Yr Total Average Supply (PY17-18 to PY20-21)
0707.30	Computer Systems Analysis	<b>90</b>	<b>0</b>	<b>95</b>
	<ul style="list-style-type: none"> <li>San Diego Cont. Ed.</li> </ul>	90	0	
30.7102	Business Analytics	<b>0</b>	<b>5</b>	<b>5</b>
	<ul style="list-style-type: none"> <li>University of San Diego</li> </ul>	0	5*	
<b>Total</b>				<b>100</b>

\* degrees awarded are master's degrees

<sup>6</sup> TOP data comes from the California Community Colleges Chancellor's Office MIS Data Mart ([datamart.cccco.edu](http://datamart.cccco.edu)) and CIP data comes from the Integrated Postsecondary Education Data System ([nces.ed.gov/ipeds/use-the-data](http://nces.ed.gov/ipeds/use-the-data)).

## Demand vs. Supply

Comparing labor demand (annual openings) with labor supply<sup>7</sup> suggests that there is a supply gap for this occupation in San Diego County, with 149 annual openings and 100 awards. Comparatively, there are 1,929 annual openings in California and 187 awards, suggesting that there is also a supply gap across the state<sup>8</sup> (Exhibit 5).

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

	Demand (Annual Openings)	Supply (Total Annual Average Supply)	Supply Gap or Oversupply
San Diego	149	100	49
California	1,929	187	1,742

**Please note:** This is a basic analysis of supply and demand of labor. The data does not include workers currently in the labor force who could fill these positions or workers who are not captured by publicly available data. This data should be used to discuss the potential gaps or oversupply of workers; however, it should not be the only basis for determining whether or not a program should be developed.

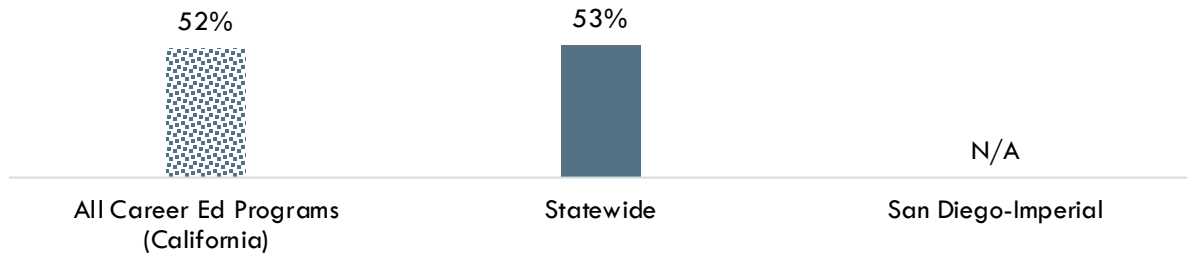
<sup>7</sup> Labor supply can be found from two different sources: EMSI or the California Community Colleges Chancellor's Office MIS Data Mart. EMSI uses CIP codes while MIS uses TOP codes. Different coding systems result in differences in the supply numbers.

<sup>8</sup> "Supply and Demand," Centers of Excellence Student Outcomes, [coecc.net/our-resources](http://coecc.net/our-resources).

## Student Outcomes and Regional Comparisons

According to the California Community Colleges LaunchBoard, 53 percent of students statewide earned a living wage after completing a Computer Systems Analysis (TOP 0707.30) program, compared to 52 percent of students in Career Education programs in general across the state (Exhibit 6a).<sup>9</sup>

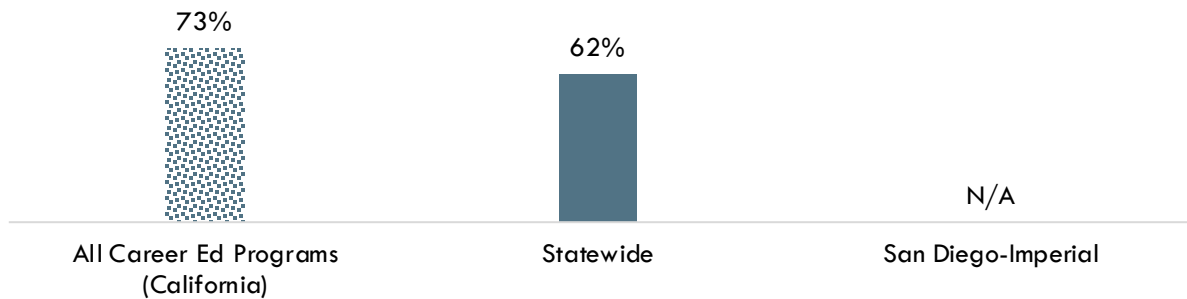
**Exhibit 6a: Percentage of Students Who Earned a Living Wage by Program, (Computer Systems Analysis, PY2019-20)<sup>10</sup>**



"N/A" indicates insufficient data

According to the California Community Colleges LaunchBoard, 62 percent of students statewide obtained a job closely related to their field of study after completing a Computer Systems Analysis (TOP 0707.30) program, compared to 73 percent of students in Career Education programs in general across the state (Exhibit 6b).<sup>11</sup>

**Exhibit 6b: Percentage of Students in a Job Closely Related to Field of Study by Program (Computer Systems Analysis, PY2018-19)<sup>12</sup>**



"N/A" indicates insufficient data

<sup>9</sup> "California Community Colleges Strong Workforce Program," California Community Colleges, [calpassplus.org/LaunchBoard/SWP.aspx](http://calpassplus.org/LaunchBoard/SWP.aspx).

<sup>10</sup> Most recent year with available data is Program Year 2019-20. Among completers and skills builders who exited, the percentage of students who attained a living wage.

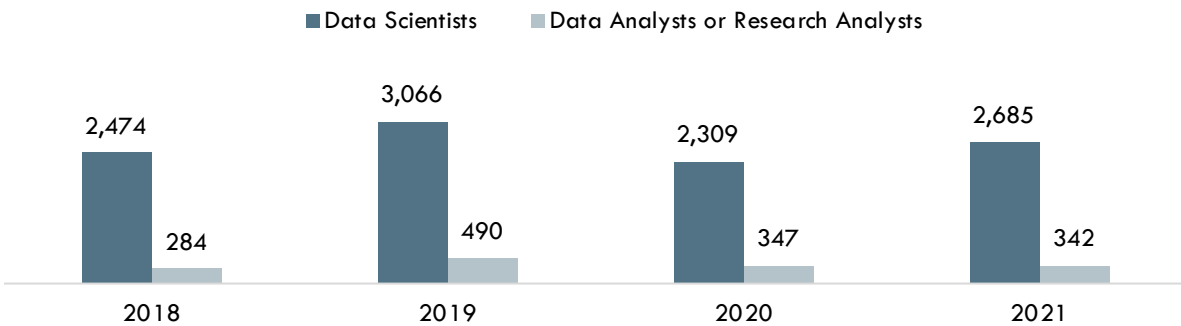
<sup>11</sup> "California Community Colleges Strong Workforce Program," California Community Colleges, [calpassplus.org/LaunchBoard/SWP.aspx](http://calpassplus.org/LaunchBoard/SWP.aspx).

<sup>12</sup> Most recent year with available data is Program Year 2018-19. Percentage of Students in a Job Closely Related to Field of Study: Among students who responded to the CTEOS, the percentage reporting employment in the same or similar field as their program of study.

## Online Job Postings

This report analyzes not only historical and projected (traditional LMI) data, but also recent data from online job postings (real-time LMI). Online job postings may provide additional insight about recent changes in the labor market that are not captured by historical data. Between 2017 and 2021, there was an average of 2,156 online job posting per year for *Data Scientists* in San Diego County (Exhibit 7). Of those job postings, there was an average of 366 job postings per year for the job titles “Data Analyst” or “Research Analyst” (Exhibit 7). More information about “Data Analysts” and “Research Analysts” in online job postings is provided in Appendix A. Please note that online job postings do **not** equal labor market demand; demand is represented by annual job openings (see Exhibit 1). While this brief includes online jobs postings data to help with curriculum development, the community colleges should note that this type of data is impacted by several variables: employers may post a position multiple times to increase the pool of applicants; a job posting can remain posted after a business decides not to fill a position; or an employer may use one posting to fill multiple positions, for example.

**Exhibit 7: Number of Online Job Postings for *Data Scientists* in San Diego County (2017-2021)<sup>13</sup>**



<sup>13</sup> EMSI 2022.03; 2017-2021.

## Top Employers

Between January 1, 2019 and December 31, 2021, the top five employers in San Diego County for *Data Scientists* were University of California San Diego, Elevance Health, Intuit, Qualcomm, and Kforce based on online job postings (Exhibit 8).

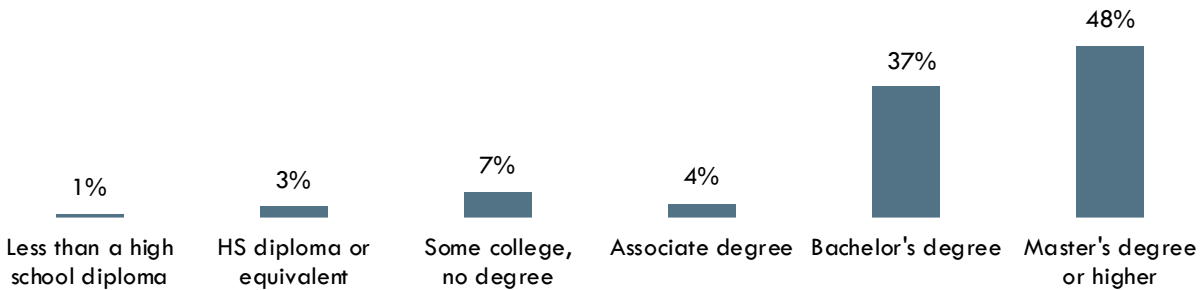
**Exhibit 8: Top Employers for *Data Scientists* in San Diego County<sup>14</sup>**

Top Employers	
<ul style="list-style-type: none"> <li>University of California San Diego</li> <li>Elevance Health</li> <li>Intuit</li> <li>Qualcomm</li> <li>Kforce</li> </ul>	<ul style="list-style-type: none"> <li>Booz Allen Hamilton</li> <li>Thermo Fisher Scientific</li> <li>Scripps Health</li> <li>CyberCoders</li> <li>CTG</li> </ul>

## Education, Skills, and Certifications

Exhibit 9 indicates that the typical educational attainment for the occupation found currently in the national labor force is a *master's degree or higher*. The typical entry-level education is a *bachelor's degree*.<sup>15</sup>

**Exhibit 9: National Educational Attainment of *Data Scientists*<sup>16</sup>**



<sup>14</sup> EMSI 2022.03; 2019-2021.

<sup>15</sup> EMSI 2022.03; QCEW, Non-QCEW, Self-Employed.

<sup>16</sup> "Educational Attainment for Workers 25 Years and Older by Detailed Occupation," Bureau of Labor Statistics, last modified September 8, 2021. [bls.gov/emp/tables/educational-attainment.htm](https://bls.gov/emp/tables/educational-attainment.htm).



Exhibit 10 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2019 and December 31, 2021.

**Exhibit 10: Top Skills for *Data Scientists* in San Diego County<sup>17</sup>**

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> <li>• Data Analysis</li> <li>• Computer Science</li> <li>• Data Science</li> <li>• Machine Learning</li> <li>• Business Intelligence</li> <li>• Dashboard</li> <li>• Statistics</li> <li>• Data Management</li> <li>• Algorithms</li> <li>• Finance</li> <li>• Data Visualization</li> <li>• Data Modeling</li> <li>• Workflow Management</li> <li>• Data Mining</li> <li>• Business Requirements</li> </ul>	<ul style="list-style-type: none"> <li>• Communications</li> <li>• Management</li> <li>• Problem Solving</li> <li>• Operations</li> <li>• Research</li> <li>• Detail Oriented</li> <li>• Leadership</li> <li>• Writing</li> <li>• Mathematics</li> <li>• Presentations</li> <li>• Customer Service</li> <li>• Planning</li> <li>• Sales</li> <li>• Decision Making</li> <li>• Verbal Communication Skills</li> </ul>	<ul style="list-style-type: none"> <li>• SQL</li> <li>• Python</li> <li>• Tableau</li> <li>• Microsoft Excel</li> <li>• R</li> <li>• Microsoft PowerPoint</li> <li>• SAS</li> <li>• Java</li> <li>• Amazon Web Services</li> <li>• Apache Spark</li> <li>• Microsoft Access</li> <li>• Apache Hadoop</li> <li>• C++</li> <li>• TensorFlow</li> <li>• Microsoft SQL Servers</li> </ul>

<sup>17</sup> EMSI 2022.03; 2019-2021.

Exhibit 11 lists the top certifications that appeared in online job postings between January 1, 2019 and December 31, 2021.

**Exhibit 11: Top Certifications for *Data Scientists* in San Diego County<sup>18</sup>**

Top Certifications in Online Job Postings

1. American Society For Clinical Pathology (ASCP) Certification
2. Certified Financial Planner
3. Certified Hemodialysis Nurse
4. Certified Information Privacy Professional
5. Certified Information Systems Security Professional
6. Certified In Production And Inventory Management
7. Certified Internal Auditor
8. Certified Power Quality Professional
9. Certified Public Accountant
10. Certified Scrum Master
11. Certified Scrum Product Owner
12. Chartered Financial Consultant
13. Cisco Certified Network Associate Security (CCNA Security)
14. CompTIA Security+
15. CompTIA Security+ CE

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<sup>18</sup> EMSI 2022.03; 2019-2021.

## Appendix A: Online Job Postings for “Data Analysts” or “Research Analysts”

As previously mentioned, employers may separate “Data Analysts” and “Research Analysts” from “Data Scientists.” Therefore, this section provides additional information for Data Analysts and Research Analysts found in online job postings data to help identify key differences, if any, in these job titles.

### Top Employers

Between January 1, 2019 and December 31, 2021, the top five employers in San Diego County for “Data Analysts” or “Research Analysts” were [University of California San Diego](#), [Kforce](#), [Insight Global](#), [Axos Bank](#), and [Randstad](#) based on online job postings (Exhibit A-1).

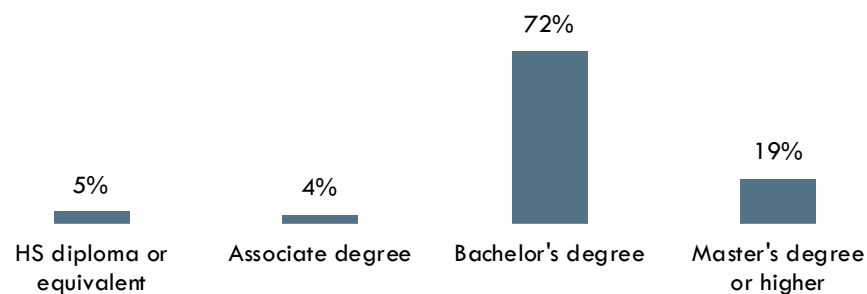
**Exhibit A-1: Top Employers for “Data Analysts” or “Research Analysts” in San Diego County<sup>19</sup>**

Top Employers	
<ul style="list-style-type: none"><li>• University of California San Diego</li><li>• Kforce</li><li>• Insight Global</li><li>• Axos Bank</li><li>• Randstad</li></ul>	<ul style="list-style-type: none"><li>• Healthstream Incorporated</li><li>• San Ysidro Health Center</li><li>• Illumina</li><li>• Chipton Ross</li><li>• Leidos</li></ul>

### Education, Skills, and Certifications

Based on online job postings between January 1, 2019 and December 31, 2021 in San Diego County, employers posted a [bachelor’s degree](#) as the educational requirement for “Data Analysts” or “Research Analysts” (Exhibit A-2).<sup>20</sup>

**Exhibit A-2: Educational Requirements for “Data Analysts” or “Research Analysts” in San Diego County<sup>21</sup>**



<sup>19</sup> EMSI 2022.03; 2019-2021.

<sup>20</sup> EMSI 2022.03; QCEW, Non-QCEW, Self-Employed.

<sup>21</sup> “Educational Attainment for Workers 25 Years and Older by Detailed Occupation,” Bureau of Labor Statistics, last modified September 8, 2021. [bls.gov/emp/tables/educational-attainment.htm](https://bls.gov/emp/tables/educational-attainment.htm).

Exhibit A-3 lists the top specialized, soft, and software skills that appeared in online job postings between January 1, 2019 and December 31, 2021.

**Exhibit A-3: Top Skills for “Data Analysts” or “Research Analysts” in San Diego County<sup>22</sup>**

Specialized Skills	Soft Skills	Software Skills
<ul style="list-style-type: none"> <li>• Data Analysis</li> <li>• Dashboard</li> <li>• Computer Science</li> <li>• Business Intelligence</li> <li>• Data Visualization</li> <li>• Data Modeling</li> <li>• Data Management</li> <li>• Statistics</li> <li>• Finance</li> <li>• Data Science</li> <li>• Data Quality</li> <li>• Data Collection</li> <li>• Statistical Analysis</li> <li>• Extract Transform Load</li> <li>• Data Mining</li> </ul>	<ul style="list-style-type: none"> <li>• Communications</li> <li>• Management</li> <li>• Detail Oriented</li> <li>• Research</li> <li>• Writing</li> <li>• Presentations</li> <li>• Mathematics</li> <li>• Operations</li> <li>• Problem Solving</li> <li>• Organizational Skills</li> <li>• Troubleshooting (Problem Solving)</li> <li>• Self-Motivation</li> <li>• Analytical Skills</li> <li>• Verbal Communication Skills</li> <li>• Decision Making</li> </ul>	<ul style="list-style-type: none"> <li>• SQL</li> <li>• Microsoft Excel</li> <li>• Python</li> <li>• Tableau</li> <li>• R</li> <li>• Microsoft PowerPoint</li> <li>• Microsoft Access</li> <li>• SAS</li> <li>• Microsoft SQL Servers</li> <li>• SQL Server Integration Services</li> <li>• Reporting Tools</li> <li>• JavaScript</li> <li>• Alteryx</li> <li>• SAP Applications</li> <li>• Amazon Web Services</li> </ul>

Exhibit A-4 lists the top certifications that appeared in online job postings between January 1, 2019 and December 31, 2021.

**Exhibit A-4: Top Certifications for “Data Analysts” or “Research Analysts” in San Diego County<sup>23</sup>**

Top Certifications in Online Job Postings
<ol style="list-style-type: none"> <li>1. Secret Clearance</li> <li>2. Security Clearance</li> <li>3. Top Secret-Sensitive Compartmented Information (TS/SCI Clearance)</li> <li>4. Cisco Certified Network Associate Security (CCNA Security)</li> <li>5. CompTIA Security+ CE</li> <li>6. GIAC Certifications</li> <li>7. GIAC Security Essentials Certification (GSEC)</li> <li>8. IAT Level II Certification</li> <li>9. Systems Security Certified Practitioner</li> </ol>

<sup>22</sup> EMSI 2022.03; 2019-2021.

<sup>23</sup> EMSI 2022.03; 2019-2021.

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### Important Disclaimers

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

This workforce demand report uses state and federal job projection data that was developed before the economic impact of COVID-19. The COE is monitoring the situation and will provide more information as it becomes available. Please consult with local employers to understand their current employment needs.