Program Endorsement Brief: 0506.00/Business Management
Business Data Analytics Certificate
Orange County Center of Excellence, June 2019

Introduction
The Orange County Center of Excellence for Labor Market Research (COE) prepared this report to provide regional labor market supply and demand data related to **data and business analysts.** This report is intended to help determine whether there is demand in the local labor market that is not being met by the supply from community college programs that align with relevant occupations.

Currently, there is not a Standard Occupational Classification (SOC) code in the Bureau of Labor Statistics' (BLS) coding system for data analysts, so traditional demand data **does not exist** for these occupations. Due to this data limitation, information was obtained by reviewing reports from companies such as LinkedIn, Burning Glass Technologies, IBM, and Robert Half Technology, analyzing online job postings from the past 12 months, and reviewing existing community college, four-year college and university, and advanced degree programs.

The COE would like to highlight the following key findings:

- In the past 12 months, there were **7,538 online job postings** for data and business analysts in Los Angeles and Orange Counties.
- While there were many job advertisements in the past 12 months, the vast majority of job postings (**92%**) **specified a Bachelor's degree as the minimum education requirement**.
- A data analytics program in the region could be a pathway for community college students in pursuit of a Bachelor's degree **OR** could equip 4-year graduates with the knowledge/skills needed to work as a data analyst.

Occupation
Data analysts typically collect, organize, and analyze data to reach conclusions that will better allow an organization to make strategic decisions. Business analysts are similar to data analysts, but typically have a greater emphasis on analyzing data related to information technology systems and processes. In addition to analyzing data, data and business analysts will oftentimes need other complimentary skills or knowledge based on the field or industry in which they are working, such as marketing, social media, healthcare, or financial services. Data and business analysts **typically hold a bachelor's or master's degree.**

Data and business analysts are different from data scientists. According to Northeastern University, "Data analysts examine large data sets to identify trends, develop charts, and create visual presentations to help businesses make more strategic decisions. Data scientists, on the other hand, design and construct new processes for data modeling and production using prototypes, algorithms, predictive models, and custom analysis."[1] Data scientists typically have a strong

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[1] Kristin Burnham, "Data Scientist vs. Data Analyst: What's the Difference?," Northeastern University, last modified August 17, 2017, accessed March 11, 2019, https://www.northeastern.edu/graduate/blog/data-scientist-vs-data-analyst/.

technical and mathematical background rooted in computer science; workers in this field typically hold an advanced degree.

Employment Outlook and Wages

The BLS does not currently have a Standard Occupational Classification (SOC) code for data analysts or data scientists, so traditional occupational demand data is not available.[2]

LinkedIn's *US Emerging Jobs Report* states that "data scientist roles have grown over 650 percent since 2012…supply of candidates for these roles cannot keep up with demand."[3] Another study from Burning Glass Technologies, Business-Higher Education Forum, and IBM estimates the number of job postings for data professionals is projected to grow to approximately 2,720,000, nationwide, by 2020. An estimated 5% (143,926) of these postings will be for data analysts. The study also finds that 6% of data analyst job postings require a master's degree or above.[4] It should be noted that job postings should not be used to establish current job openings, because the numbers may include duplicate job postings or postings intended to gather a pool of applicants. Job postings can help signal demand, but they are not a perfect measure of the number of open positions.

A 2017 study from Robert Half International, a technology staffing firm, estimated national average annual wages for several job titles related to data analysts. According to the study, local market variances for two major cities in the region, Irvine in Orange County and Los Angeles in Los Angeles County, show that regional wages are higher than the national average annual wage estimates. Though regional wages are higher than the national average, the jobs listed in Exhibit 1 typically require at least a bachelor's degree.

Exhibit 1: Average annual wage estimates for data analyst-related positions[5]

Job Type	Title	Typical Educational Level Required	Location	2017 Salary Range
Applications Development	Business Systems Analyst	Bachelor's degree	National	$86,250 - $127,000
			Irvine	$110,400 - $162,560
			Los Angeles	$112,125 - $165,100
	ERP Business Analyst	Bachelor's degree	National	$95,000 - $ 137,750
			Irvine	$121,600 - $176,320
			Los Angeles	$123,500 - $179,075

[2] A new SOC code for data scientists was added to the 2018 SOC system. While Federal agencies began using the new SOC system as of January 1, 2018, data is not yet available since full implementation of the 2018 SOC system occurs in stages to ensure sufficient data are collected in order to produce estimates.

[3] "LinkedIn's 2017 U.S. Emerging Jobs Report," LinkedIn, last modified December 7, 2017, accessed March 11, 2019, https://economicgraph.linkedin.com/research/LinkedIns-2017-US-Emerging-Jobs-Report.

[4] Louis Columbus, "IBM Predicts Demand for Data Scientists Will Soar 28% by 2022," *Forbes,* last modified May 13, 2017, accessed March 11, 2019. https://www.forbes.com/sites/louiscolumbus/2017/05/13/ibm-predicts-demand-for-data-scientists-will-soar-28-by-2020/.

[5] "2017 Salary Guide for Technology Professionals," Robert Half Technology, accessed March 11, 2019, https://www.fosster.com/industry-reports/2017_RHT_salary-guide.pdf.

Job Type	Title	Typical Educational Level Required	Location	2017 Salary Range
Data/Database Administration	Data Analyst/Report Writer	Bachelor's degree	National	$77,500 - $ 118,750
			Irvine	$99,200 - $152,000
			Los Angeles	$100,750 - $154,375
	Data Scientist	Master's degree	National	$116,000 - $ 163,500
			Irvine	$148,480 - $209,280
			Los Angeles	$150,800 - $212,550
	Data Warehouse Analyst	Bachelor's degree	National	$107,500 - $ 155,750
			Irvine	$137,600 - $199,360
			Los Angeles	$139,750 - $202,475
	Business Intelligence Analyst	Bachelor's degree	National	$118,000 - $ 171,750
			Irvine	$151,040 - $219,840
			Los Angeles	$153,400 - $223,275

Job Postings
There were 7,358 online job postings related to data and business analysts listed in the region in the past 12 months. The highest number of job postings were for data analyst, business intelligence analyst, and business analyst. The top specialized skills are: data analysis, SQL, and Tableau. The top three employers, by number of job postings in the region are: Anthem Blue Cross, Deloitte, and UnitedHealth Group. In Los Angeles and Orange Counties, **92% of all job postings request at least a bachelor's degree.** A sample of job postings and descriptions are included in Appendix A.

Education Programs and Community College Supply
A national search of community college data analyst programs shows that community college data analytics programs are typically intended for transfer to a four-year college or university, or marketed towards workers looking to upskill. Both associate degree programs and certificate programs at each college encourage further future study in data analytics, typically through transfer to a bachelor's degree program. Certificate programs range from 12 to 28 units.

Two California community colleges, Palomar College and Cerro Coso College, have certificate programs in data analytics. Both colleges programs are listed under the Computer Information Systems TOP code (0702.00). Palomar's program is either 27 or 28 units, depending on a student's course choices, while Cerro Coso's program is 12 units. Both programs teach students SQL and database management programs, but Palomar offers more programming courses such as Python Programming, R Programming, and C# Programming. From 2014 to 2017, no awards were conferred at Cerro Coso College. During the same time period, Palomar College has conferred six associate degrees under the Computer Information Systems (0702.00) TOP Code; however, Palomar College has two associate degree programs listed under the 0702.00 TOP Code, so the number of awards conferred in each program cannot be determined.

Exhibit 3 shows examples of other community college data analytics programs across the nation. Links to each program's website are included in Appendix B.

Exhibit 3: National community college data analyst programs

Award Type	Program Name	College	State
Associate degree	Computer Information Systems: Data Analytics	Palomar College	California
	Data Analytics	Normandale Community College	Minnesota
	Analytics	Great Bay Community College	New Hampshire
	Foundations in Data Analytics	Nashua Community College	New Hampshire
	Business Analytics	Wake Technical Community College	North Carolina
	Data Analytics Technology	Community College of Allegheny County	Pennsylvania
	Business Analytics	Northeast Wisconsin Technical College	Wisconsin
Certificate	Data Analytics	Maricopa Community College	Arizona
	Data Analyst I	Cerro Coso Community College	California
	Computer Information Systems: Data Analytics	Palomar College	California
	Data Science	Montgomery College	Maryland
	Data – Practical Data Science	Great Bay Community College	New Hampshire

Appendix A: Sample job postings

Business Information Analyst I, Remote Nationwide (PS17090FH)
Anthem, Inc

New

Location: United States

Field: Reporting & Data Analysis

Requisition #: PS17090

Post Date: 1 day ago

Your Talent. Our Vision. At Anthem, Inc ., its a powerful combination, and the foundation upon which were creating greater access to care for our members, greater value for our customers, and greater health for our communities. Join us and together we will drive the future of health care.

This is an exceptional opportunity to do innovative work that means more to you and those we serve at one of America's leading health benefits companies and a Fortune Top 50 Company.

Location: Remote Nationwide

Business Information Analyst I

Responsible for collecting, analyzing, and reporting on data related to one or several areas of regulatory sector reporting.

Primary duties may include, but are not limited to:

- Creates databases to track business performance.
- Develops and analyzes business performance reports (e.g. membership, claims, utilization data)
- Collects and analyzes data to create summary statistics of performance.
- Summary statistics of performance. Creates and publishes periodic reports as well as any necessary ad hoc reports. Possesses understanding of business processes and systems capability.
- Participates in developing and/or modifying requirements, business design specifications, user training and documentation.
- Researches and documents business issues.
- Translates business requirements to technical staff to ensure that requirements are incorporated into system design.
- Tests and documents solutions.
- Serves as liaison between users of the software and technical staff. Organizational skills, and communication are a must

Preferred Experience/Skills:

- SQL required with Tableau strongly desired
- Work flow design, data analysis, and/or systems automation and testing Regulatory experience
- Report preparation
- Datamining and prepare presentation of findings.
- Organization skills and attention to details
- Requires High School diploma; up to 2 years related experience; or any combination of education and experience, which provides an equivalent background.
- Analytical and problem solving skills.
- Proficient in statistical use of Microsoft Excel and Access or other general reporting tools.
- BS/BA degree preferred.

Business Intelligence Analyst
East West Bank

Location US-CA-El Monte

Job ID

2018-5941

Category

Information Technology

Position Type: Full Time

Overview

For more than 40 years, East West Bank has served as a pathway to success. With over 130 locations across the U.S. and Greater China, we are the premier financial bridge between the East and West. Our teams of experienced, multi-cultural professionals help guide businesses and community members on both sides of the Pacific looking to explore new markets and create new opportunities. And our sustained growth and expertise in industries like real estate, entertainment and media, private equity and venture capital, high-tech and aviation help build sustainable businesses and expand our employees' potential for career advancement.

Headquartered in California, East West Bank (Nasdaq: EWBC) is a top performing commercial bank with an exclusive focus on the U.S. and Greater China markets. With assets of $37.7 billion, we're ranked among the 30 largest banks in the United States and currently top 5 in "America's 100 Best Banks" by Forbes, a list where we've consistently been in the top 15 since 2010. With a strong foundation, an enterprising spirit and a commitment to absolute integrity, East West Bank gives people the confidence to reach further.

This position helps implementing East West Bank enterprise-wide data and information architecture to support business intelligence and data warehouse efforts. Responsibilities will include SSRS reporting and building visual dashboard using Tableau. Help the Bank adopt and organize data. He or she will improve existing systems to make it easier to manage and deliver information. Combining their knowledge of technology and business management to deliver state-of-the-art business intelligence solutions, improve efficiency. Produce financial and market intelligence by querying data repositories and generating periodic reports. Devise methods for identifying data patterns and trends in available information sources.

Primary Duties and Responsibilities:

- 3+ years of hands on experience working with large scale databases
- Design, develop and maintain reports, ad hoc queries and analytical tools.
- Produce metrics and other report objects and components.
- Analyze competitive market strategies through analysis of related product, market, or share trends. Synthesize current business intelligence or trend data to support recommendations for action.
- Collect business intelligence data from available industry reports, public information, field reports, or purchased sources
- Perform ongoing monitoring, automation and refinement of reports and BI solutions.

- Perform daily monitoring of data loads, automated production reports and automated report distributions through email.
- Work with BI Management to identify and resolve data related issues.
- Work with business departmental teams to help them define and document business requirements for new metrics and reports.
- Participate in process reviews and enhancements.

Qualifications: Required:

- Bachelor's Degree in Finance, Accounting, Management Information Systems or a similar field. Understanding of relational databases and SQL.
- Good business understanding and ability to convert complex business needs into efficient and accurate queries
- Ability to use logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions or approaches to problems.
- Job requires analyzing information and using logic to address work-related issues and problems. Excellent communication, interpersonal and organizational skills
- Must enjoy working in a fast-paced teamwork environment and dealing with a variety of people
- Financial Institution experience.
- Team Foundation Server or a similar source control software experience.
- Business Intelligence (BI) tools (i.e. SAS, Tableau, Business Objects, PowerView)
- Analytical Thinking and Analysis

Data Analyst CLC
City National Bank - El Segundo, CA3.7

10 hours ago Full-time Estimated: $59,000 - $80,000 a year Apply Now

Education

- Bachelor's Degree

Skills

- SQL
- SharePoint
- Tableau
- Minitab
- SAP

Provides support to the department and/or division by collecting and analyzing data and developing and generating reports on large data sets. This position will analyze and explain current and past activity, expected trends, and potential effects of proposed changes to business operations. The Data Analyst will report findings and recommendations to various management levels within the Bank.

Basic Qualifications:

- Minimum 2 years of experience working in a data analysis role
- Minimum 2 years of experience with SQL, SAS or other data management, reporting and query tools (Sharepoint, SAP Business Objects, Tableau, Crystal Reports/Dashboard, etc.)
- Minimum 2 years of experience developing summary reports

Skills and Knowledge:

- BS in Mathematics, Statistics, Business Analytics, Computer Science, Information Management or related discipline highly preferred
- Intermediate knowledge of MS Office tools including Excel, Access, and PowerPoint
- Adept in writing database queries (i.e. SQL, MySQL, PL/SQL, T-SQL) using Brio, T oad, SQL Developer, etc.
- Ability to collect, organize, analyze, and disseminate significant amounts of information with attention to detail and accuracy Strong analytical skills
- Proficient in developing and generating reports with varying complexity
- Ability to effectively communicate complex data analysis to non-data people
- Proficient in presenting results and working with Subject Matter Experts to craft narratives
- Strong knowledge of and experience with reporting packages (Tableau, Business Objects,etc.), databases (SQL etc.), programming (VBA, C#, Python, Javascript or ETL frameworks)
- Demonstrated knowledge of statistics and experience using statistical packages for analyzing datasets (Excel, MiniTab, R, SPSS, SAS etc.)

Provider Data Analyst, Cerritos, California, United States
CareMore

CareMore is entering a new growth phase, as a proven care delivery model for the highest-risk. We are a team of committed clinicians and business leaders passionate about transforming American healthcare delivery. We build and lead integrated, multi-disciplinary clinical teams to care for the most complex patients and currently serve nearly 200,000 patients in multiple states across Medicare, Medicaid, and commercial populations. We strive for excellence and have achieved significant and measurable improvement in total cost of care, clinical outcomes, and experience. As an Anthem subsidiary, we benefit from the scale and resources one of America's largest managed healthcare organizations.

CareMore's Health Networks, Primary Care+, Touch and CareMore@Home models drive strategy, operations, and care delivery in our national markets (Arizona, California, Colorado, Connecticut, Iowa, Nevada, New York, Tennessee, Texas, Virginia and the District of Columbia), where CareMore builds and runs capitated primary care medical groups, at-risk health networks and upstream care delivery products in service of high-risk Medicaid, Medicare and commercial patients, and our collaboration with Emory Health System in Georgia. Our comprehensive, upstream approach to health is led by robust multidisciplinary teams of extensivists (managing acute and post-acute episodes of care), primary care clinicians, behavioral health clinicians, care management & engagement specialists (including social workers, case managers and community

health workers), and mobile home-based care teams. We continue to evolve our model to effectively engage and care for complex patients, led by a team of passionate, execution-minded leaders dedicated to this mission.

Responsibilities:

- Analyzes, researches, coordinates and reports on provider file data to support both internal and/or external request.
- Primary duties may include, but are not limited to:
- Generates provider data reports and analyses to support internal client needs including network management, sales, account management, and other key functions.
- Performs provider data analysis and reporting in response to external request from providers and/or regulatory agencies.
- Serves as a technical data expert and liaison between the provider database organization, and other functional areas to support data requests and ensure uniform and consistent data and data flow.
- Acts as a liaison with the assigned analyst completing the report and the requesting department and/or provider, clarifies report to ensure that it meets the clients' needs and helps to clarify additional required information or data needs.
- Ensures the quality and accuracy of all reports.
- Perform provider data support, data/file analysis, network analysis, surveys, reporting (including creating and publishing), and other ad hoc data requests. Uses GeoNetworks and other software tools.
- May be responsible for enhancements and testing. e using software such as GeoNetworks preferred.

Requirements:

- 3+ years of experience in MS Excel including formulas, pivots, charts, graphs, etc.
- 3+ years of experience in SQL in an academic or professional environment using SQL Server Management Studio IDE
- 3 years of experience in healthcare industry preferred
- Requires a BA/BS degree in a related field
- 3-5 years of data file/reporting experience,
- Experience using analytics and/or relational database or any combination of education and experience, which would provide an equivalent background.

Appendix B: Other community college program links
To learn more about other community college data analyst programs, please click on the links below:

Associate's degree:

- Palomar College
- Normandale Community College

- Great Bay Community College
- Nashua Communinty College
- Wake Technical Community College
- Community College of Allegheny County
- Northeast Wisconsin Technical College

Certificate programs:

- Maricopa Community College
- Cerro Coso Community College
- Palomar College
- Montgomery College
- Great Bay Community College

Appendix C: Sources
- O*NET Online
- Labor Insight/Jobs (Burning Glass)
- Economic Modeling Specialists, International (EMSI)
- Bureau of Labor Statistics (BLS)
- Employment Development Department, Labor Market Information Division, OES
- Employment Development Department, Unemployment Insurance Dataset
- Living Insight Center for Community Economic Development
- California Community Colleges Chancellor's Office Management Information Systems (MIS)
- MIT Living Wage
- Chancellor's Office Curriculum Inventory (COCI 2.0)

For more information, please contact:

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