

WPU Webinar Series in Business Analytics

Myles D. Garvey, Ph.D



WPU Webinar and Workshop Series - 4-23-2020

Who is Myles D. Garvey?

- Assistant Professor of Management Analytics @ WPU
 - Research primarily lies in the areas of Supply Chain Risk Management, Social Media Textual Analytics, Marketing Analytics, and Optimization.
 - Currently tasked with designing and lecturing courses, as well as advising students within the Applied Business Analytics program.
- Educational Background
 - B.S in Math and a separate B.S. in Computer Science from University of Hartford, CT
 - Ph.D in Supply Chain Management and Marketing Science from Rutgers Business School
- Previously worked for Redhat as a Middleware Consultant
- Years of experience in analytics and software consulting.

Overview of Agenda

- Overview of Study
- Recap of Business Analytics
- Common Titles
- Skills Required
- Common Tools of the Trade
- Salaries
- Descriptive and Visualization Workshop
- Machine Learning and Simulation Workshop
- Prescriptive Analytics Workshop
- Closing Remarks and Final Questions
- For those who can stick around until 2pm, I will be more than willing to stay to answer any additional questions!

Rules and Recommendations

- We ask everyone to ask questions in the "QA Box", even as we are presenting. This allows us to build up a queue of questions to answer during the QA Times.
- If you wish to verbally ask your question, please raise your hand.
- We recommend during the workshop portion of today to view the webinar on one screen and work in the R Studio Browser in a different screen. This will allow you to more easily follow along with us.
- Please keep voiced questions to a maximum of 15 seconds. We will need to cut off questions short which are longer than this.
- Please ask questions that can be answered within a 15 second time frame.

Data Sources for BA Industry Study

- Our study on the field of Business Analytics is based on a rigorous academic study we conducted over the prior few weeks.
- Sources of information:
 - Job postings on Linked In with search parameters of:
 - "Business Analyst"
 - "New York Metropolitan Area"
 - Survey of manager with samples sizes of 100 international and 100 domestic.
 - Each set of data contains information regarding common job titles, roles, responsibilities, skills required, salaries, and degrees.
 - United States Bureau of Labor Statistics
 - Other Academic Research

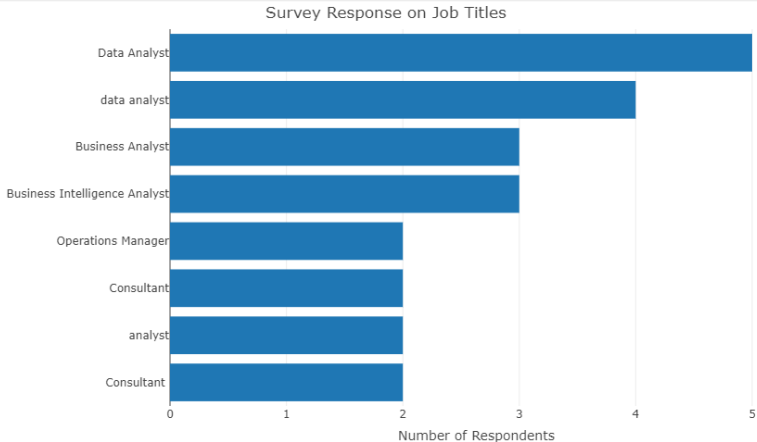
Recap of Business Analytics

- Definition:
 - *Business Analytics* is the process of applying the scientific process and principles of management, as well as technology, computer programming, mathematics, advanced statistical approaches, and business domain knowledge, leveraging past business data, theories, or assumptions, to problems that arise in any functional area within an organization, with the specific intent to make a decision, solve a business problem, or understand the consequences of potential actions under consideration. Put differently, Business Analytics is science, math, and technology-driven management.
- Common Responsibilities:
 - Engaging in Descriptive, Predictive, Diagnostic, and Prescriptive Analytics
 - Engages in a process of laying Strategic Groundwork, Data Analytics, and Implementation of BA Projects
 - Monitoring current KPIs by way of BI Tools
 - Identifying and formalizing business problems in functional areas of the firm
 - Acting as an advocate for various business analytics projects
 - Designing models to drive their decision making
 - Managing business analytics projects
 - Managing cross-functional teams of data scientists, data specialists, and software developers/engineers.

Recap of Business Analytics

- Demand
 - Bureau of Labor Statistics estimates growth of 14% from 2018 to 2028 in Management Analytics
 - Our Managers survey reveals that managers intend to steadily increase hiring over the the next 5 years.
 - This pattern will continue with advances in technology, Artificial Intelligence, and statistical methods.
- How Universities are Responding
 - In 2010, there were less than 10 Master of Science in Applied Business Analytics programs.
 - In 2020, there are now close to over 200 such programs.
 - William Paterson has a 30-credit MS ABA Program:
 - Lower Core: Calculus, Statistics
 - Upper Core: Business Analytics for Decisions, Data Warehousing and Data Mining, Multivariate Statistics, Machine Learning, Economic Models, Capstone
 - Electives: 2 required, wide variety of offerings
 - Most courses offered in Hybrid format.
 - Part-Time/Full-Time
 - Takes 1 to 1.5 years depending on own pace.
 - Cohort-style program

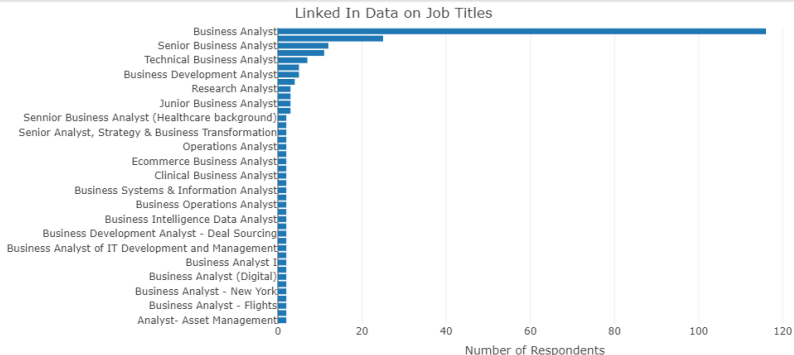
Common Titles



Common Titles



Common Titles



Differences Between Common Titles

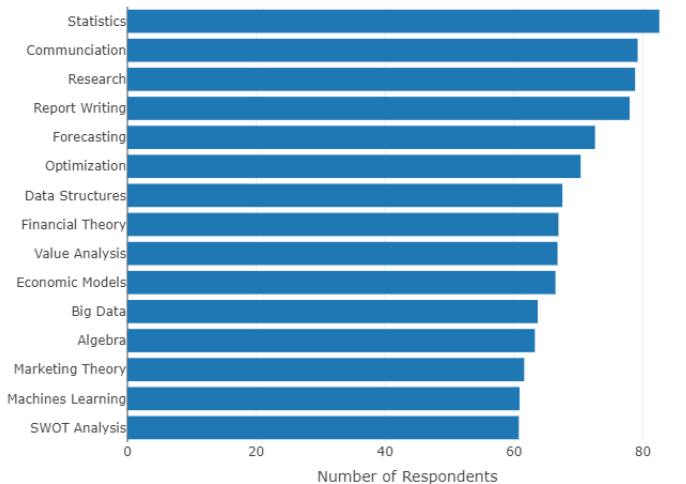
- Data Specialist
 - Sets data warehousing policy
 - Manages the insertion of new data, structured and unstructured
 - Responsible for aiding the Business Analyst in the acquisition, storing, and managing of existing and new data.
 - Expert at SQL, Relational Databases, and Possibly even the management of clusters (i.e. Hadoop/Spark)
- Data Scientist
 - Essentially is the "data engineer".
 - Is always looking for, as well as designing, new ways to analyze data.
 - Responsible for aiding the Business Analyst in the formalization of advanced and sophisticated models.
 - While an expert in domain knowledge (such as healthcare, finance, etc.), they lack management skills, strategic skills, etc.
- Business Intelligence Analyst
 - Is responsible for

Differences Between Common Titles

- HOWEVER, despite the academic differences between these roles, industry still mixes them up!
- For example, here is a posting for a "Data Scientist":
 - "... is looking for a talented Data Scientist to help build and execute strategies driving the company's continued growth in Retail and eCommerce. This role offers the unique opportunity to drive large scale, highly visible projects across different teams."
 - Responsibilities:
 - Translate complex business problems and solutions to all levels of the organization through analysis of customer data
 - Work with analytics leads to create, implement, and refine core customer insights and marketing measurement frameworks and models, including customer global segmentation, customer lifetime value, various predictive models for acquisition and retention, multitouch attribution, marketing mix, test and learn methodology and measurement etc.
 - Lead the effort to evaluate key marketing programs effectiveness
 - Partner with business stakeholders such as CRM, Digital Marketing and IT teams to design and implement new data sets and refine existing data sources
 - Help to develop KPI frameworks, gather requirements and deliver high-impact dashboard and insights comprised of aggregated data sets and advanced algorithms with a clean user experience
 - Participate in UAT to ensure accuracy of customer attributes across internal systems
 - Manage multiple priorities across a mix of ad-hoc and operational projects

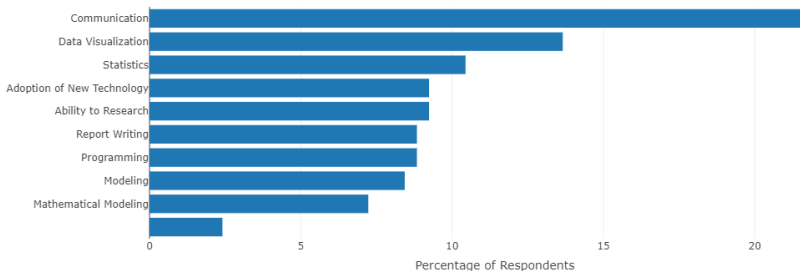
Skills Required

Managers Survey on Skills

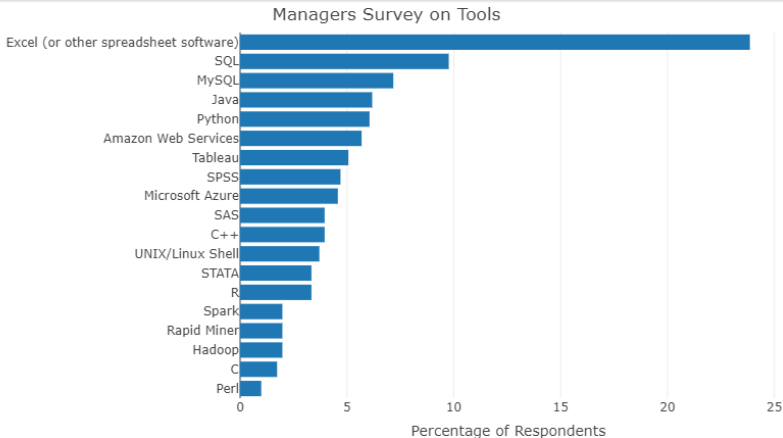


Skills Gap

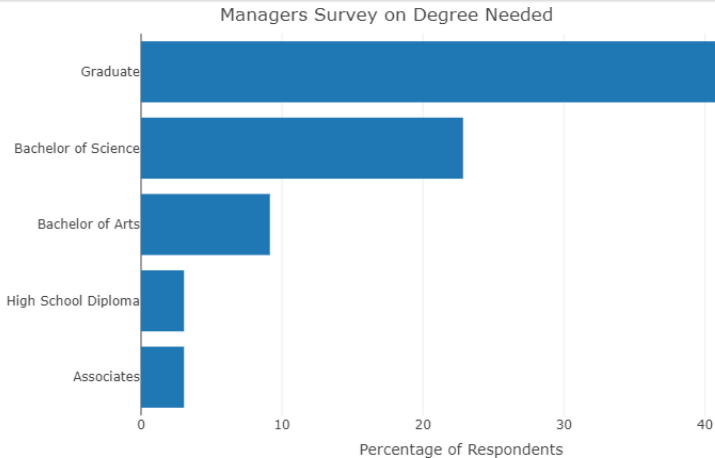
Managers Survey on Skills Gap



Common Tools of the Trade



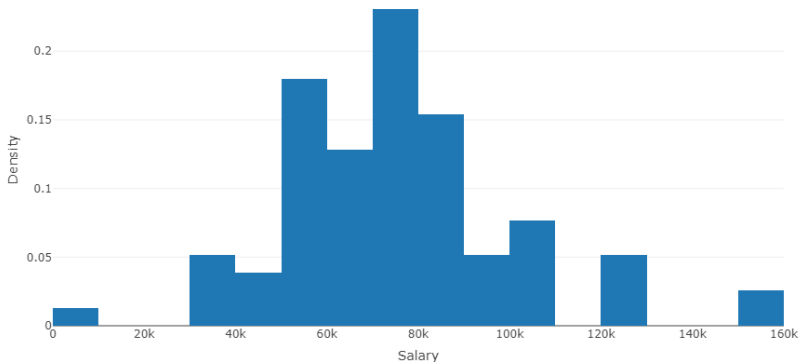
Degree Required



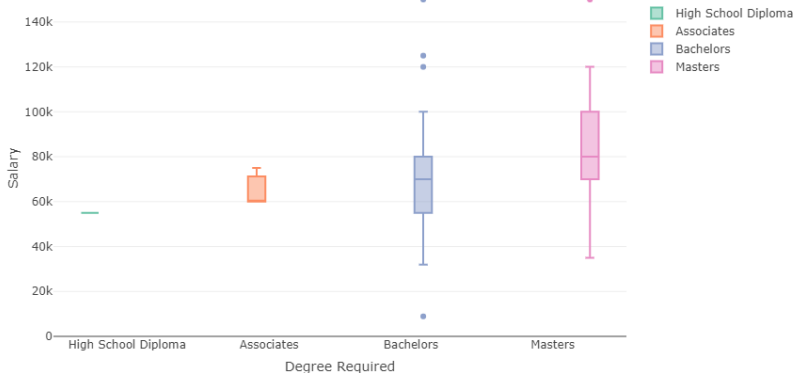
Salaries

- The moment you have all been waiting for!
- Bureau of Labor Statistics 2019 Median Pay for "Management Analyst": \$85,260
- Linked-in reports:
 - Business Analyst: \$50,000 - \$100,000, Median: \$68,000
 - Data Scientist: \$70,000 - \$150,000, Median: \$105,000
 - Data Analyst: \$39,000 - \$90,000, Median: \$61,000
- Glassdoor:
 - Business Analyst: \$50,000 - \$93,000, mean: \$68,346
 - Data Scientist: \$83,000 - \$154,000, mean: \$113,309
 - Data Analyst: \$43,000 - \$95,000, mean: \$62,453

Salaries - WPU Manager's Survey



Salaries - WPU Manager's Survey



Questions?

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