Analytics

OVERVIEW

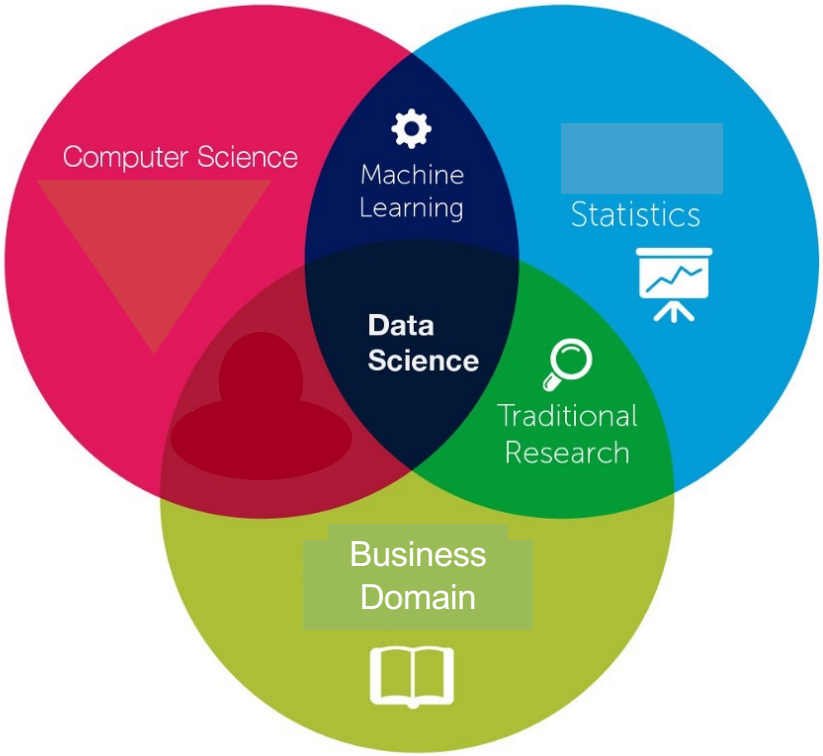
- Data Science
- Analytics
- What is the difference?

ANALYTICS vs. DATA SCIENCE

Analytics and Data Science combine tools and methods from

- Computer science
- Statistics
- Business

to find useful information from the data to solve a problem or to make an improvement



DATA ANALYTICS

Data Analytics professional is someone whose focus is on

- organizing
- collecting
- summarizing
- analyzing

} large amount of data

to find answers to business questions

DATA ANALYTICS

- Data scientists organize large amounts of data and use ML/SL algorithms to make prediction, classification, and clustering of key variables to find the best set of actions to improve a system or to solve a business problem
- Data scientists are more math and CS oriented
- Data analytics professional are more stat and business oriented

ANALYTICS vs. DATA SCIENCE

The difference is in the scope

Analytics

- Usage
- Past, present performance
- Focus is on actionable insights

Data Science

- Implementation
- Future performance
- Advanced tools

ANALYTICS vs. DATA SCIENCE -TOOLS

Data Analytics

- Tableau, MS Power BI
- Python, R, JMP
- Excel Add-ins (@Risk, Crystal ball, etc)
- SQL, NoSQL

Data Science

- Linux
- AWS, GCP, Azure
- HTML, CSS, Java Script
- Hadoop, Spark
- Deep learning

DATA ANALYTICS

What are the Business questions?

BUSINESS QUESTIONS

- What happened?

- What will happen?
- What we want to happen?

BUSINESS QUESTIONS

- What happened?
- Why did it happen?
- What will happen?
- What we want to happen?

MARKETING ANALYTICS

What happened?

- Which products underperformed?
- Which were more profitable?
- What is our market share?
- What was the customer churn (customer attrition) during the last year?
- Who are our most valuable customers?

FINANCIAL ANALYTICS

What will happen? -new investment-

- What is the investment expected return?
- What is the probability of a loss?
- If there is a loss, how large can it be?
- What +/- scenarios are possible?
- Major external risk in our sector?

DATA ANALYTICS

Analytics Levels

ANALYTICS LEVELS

What happened?	Descriptive Analytics
Why did it happen?	Diagnostic Analytics
What may happen?	Predictive Analytics

ANALYTICS LEVELS

What happened? — Descriptive Analytics

- Descriptive Stats
- Summary Tables (crosstabs, pivot tables)
- Data visualization
- Dashboards

Why did it happen? — Diagnostic Analytics

- Stratify

What may happen? — Predictive Analytics

- Prediction Models
- Classification Models
- Clustering methods

ANALYTICS LEVELS

- Descriptive Analytics
- Diagnostic Analytics
- Predictive Analytics
- Prescriptive Analytics

ANALYTICS LEVELS

Past performance	Today	Future performance
Historical data	observe & predict	results

Timeline

ANALYTICS LEVELS

Past performance Historical data	Today observe & predict	Future performance results
What happened?		What may happen?

INTRODUCTION

Past performance Historical data	Today observe & predict	Future performance results
What happened? Describe/summarize data		What may happen? scenarios

INTRODUCTION

Past performance Historical data	Today observe & predict	Future performance results
What happened?		What may happen?
Describe/summarize data		scenarios
Descriptive Stats		
Barplots, scatterplots, boxplots		Prediction Models
Line charts, Histograms		
Averages, std. deviations		
correlations		

INTRODUCTION

Past performance Historical data	Today observe & predict	Future performance results
What happened?		What may happen?
Describe/summarize data		scenarios
Descriptive Stats		
Barplots, scatterplots, boxplots		Prediction Models
Line charts, Histograms		prediction models
Averages, std. deviations		classification models
correlations		clustering methods
Descriptive Analytics		Predictive Analytics

INTRODUCTION

Past performance Historical data	Today Decisions	Future performance results
What happened?	What we want to happen?	What may happen?
Describe/summarize data	create new scenarios	scenarios
Descriptive Stats		
Barplots, scatterplots, boxplots		Prediction Models
Line charts, Histograms		prediction models
Averages, std. deviations		classification models
correlations		clustering methods
Descriptive Analytics		Predictive Analytics

INTRODUCTION

Past performance Historical data	Today Decisions	Future performance results
What happened?	What we want to happen?	What may happen?
Describe/summarize data	create new scenarios	scenarios
Descriptive Stats	What decisions are needed	
Barplots, scatterplots, boxplots	to make things happen?	Prediction Models
Line charts, Histograms		prediction models
Averages, std. deviations		classification models
correlations		clustering methods
Descriptive Analytics		Predictive Analytics

INTRODUCTION

Past performance Historical data	Today Decisions	Future performance results
What happened?	What we want to happen?	What may happen?
Describe/summarize data	create new scenarios	scenarios
Descriptive Stats	What decisions are needed	
Barplots, scatterplots, boxplots	to make things happen?	Prediction Models
Line charts, Histograms	Prescriptive Methods	prediction models
Averages, std. deviations	Simulation models	classification models
correlations	Optimization models	clustering methods
Descriptive Analytics	Prescriptive Analytics	Predictive Analytics