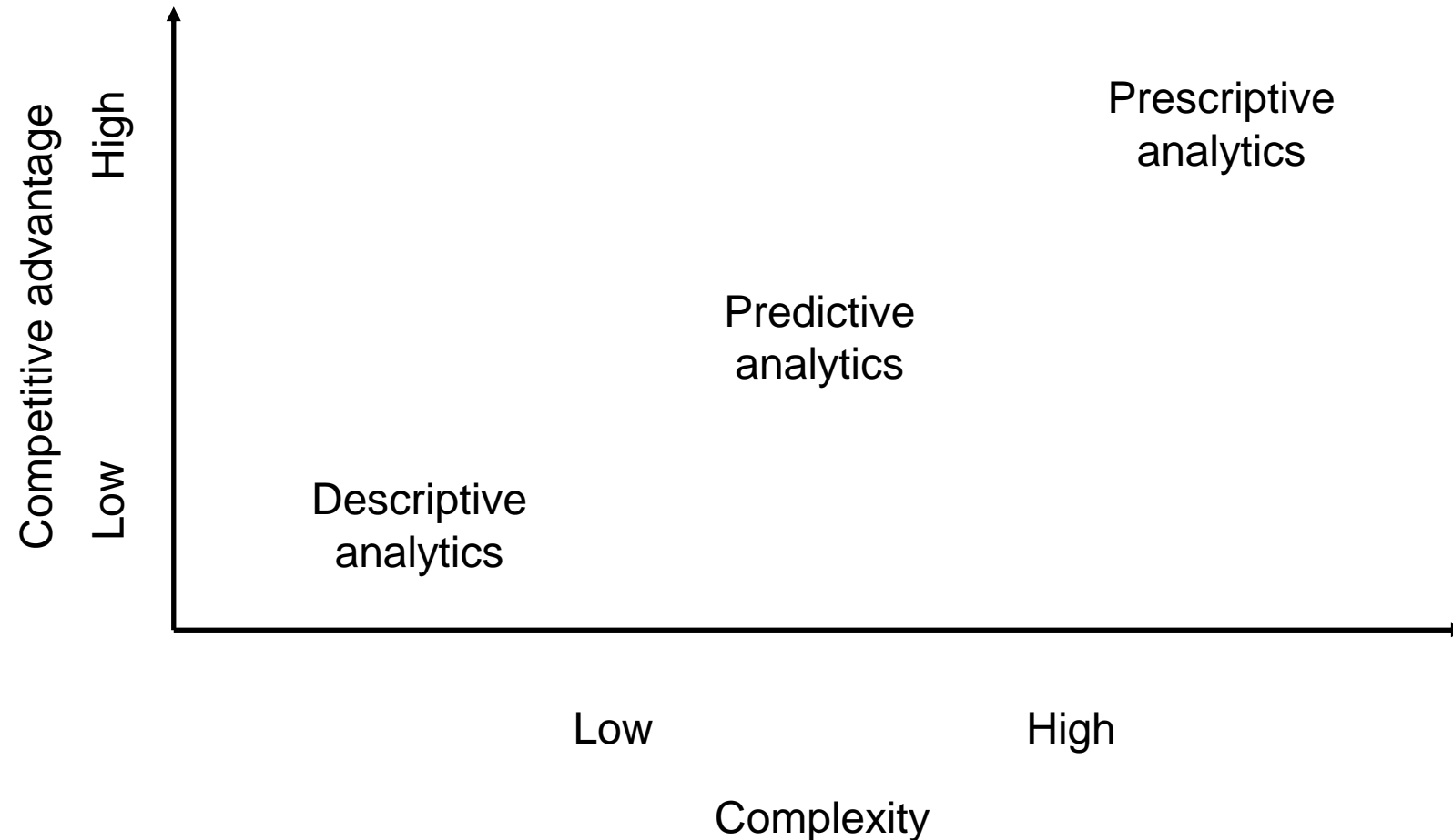


What Is Business Analytics?

Business Analytics: What Is It?

Analytics facilitates realization of business objectives through reporting of data to analyze trends, creating predictive models for forecasting, and optimizing business processes for enhanced performance (informatics.org).

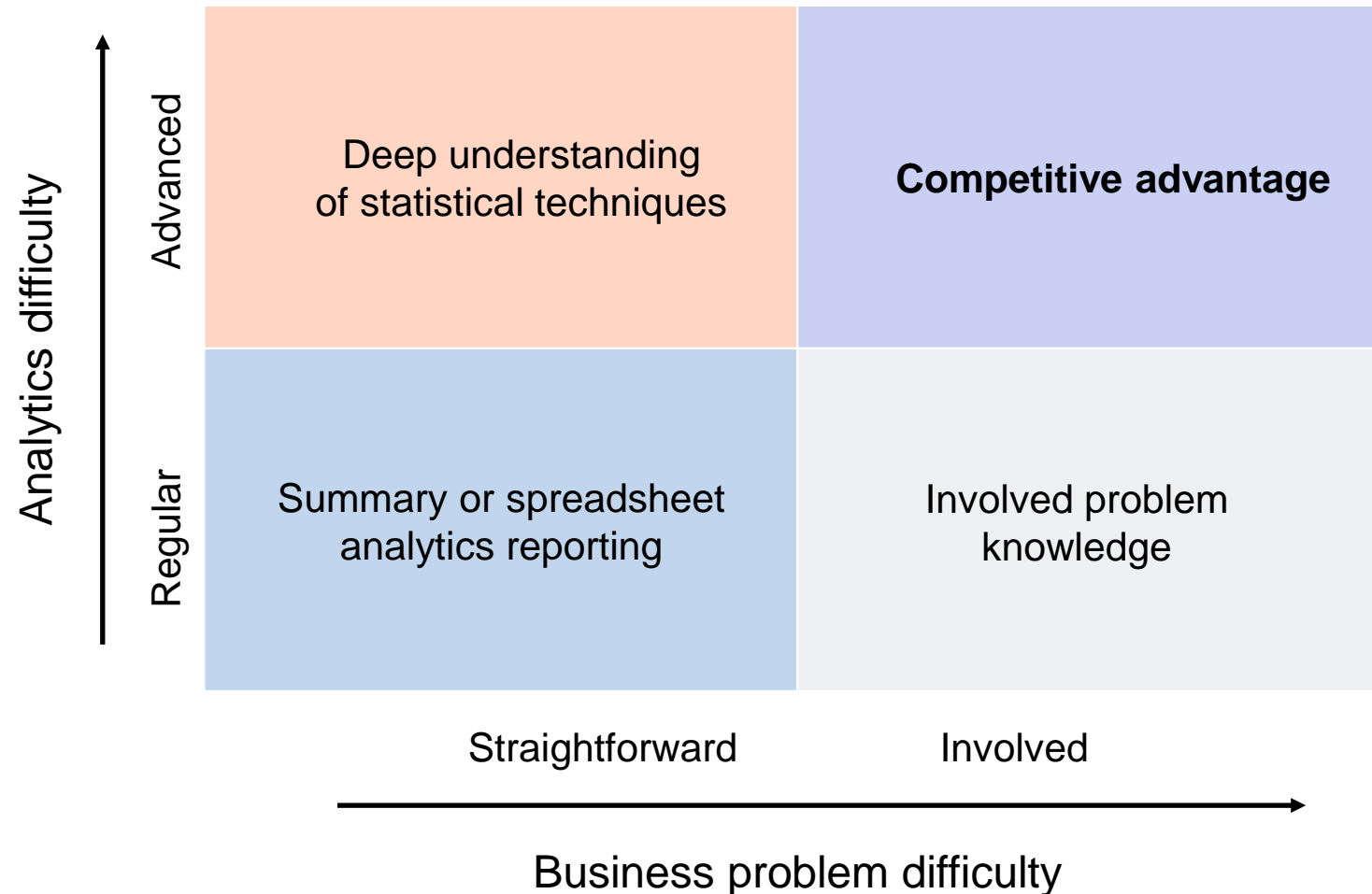
Types of Analytics



Types of Analytics (cont.)

- Descriptive analytics
 - Start with visualization
 - Describe the data to better understand facts and make better decisions
- Predictive analytics
 - Forecasting and modeling
 - Cluster analysis, regression, neural networks
- Prescriptive analytics
 - Optimization

Business Analytics Capability Chart



Business Analytics Applications

- Retail sales
- Financial services
- Risk and credit
- Marketing and pricing
- Fraud
- Inventory control and supply chain

Business Analytics: What Is Business Analytics?

The End

What Is Driving Analytics?

What Drives Business Analytics?

Data!

- Volume
- Velocity
- Variety
- Veracity

What Is Driving Business Analytics?

Declining Storage Costs

1994

- 5 gigabytes of storage cost \$50,000 (\$10,000 per gigabyte)
- Ninth largest system in country had 500 gigabytes \$5,000,000 (each of seven sites)

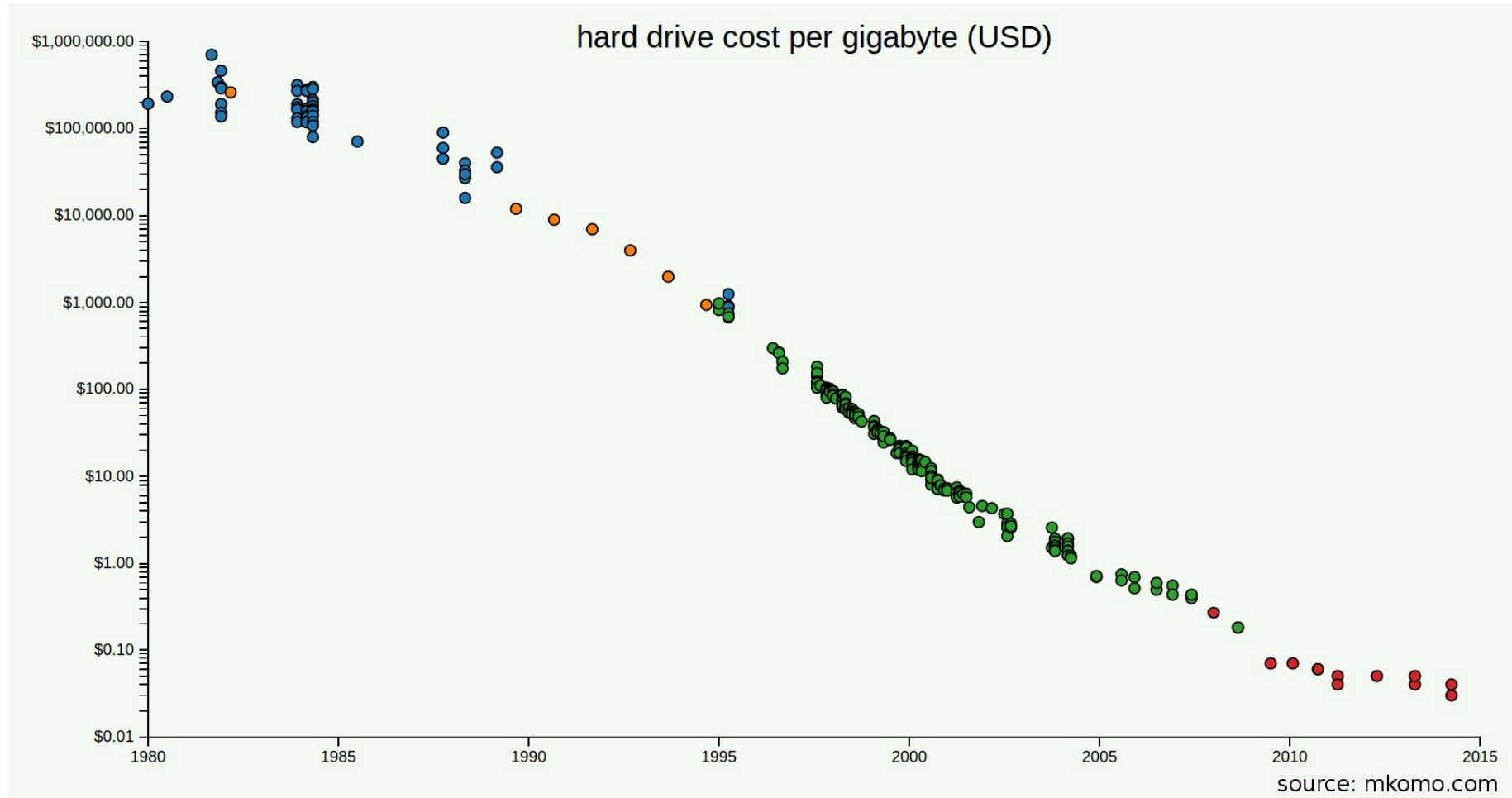


2021

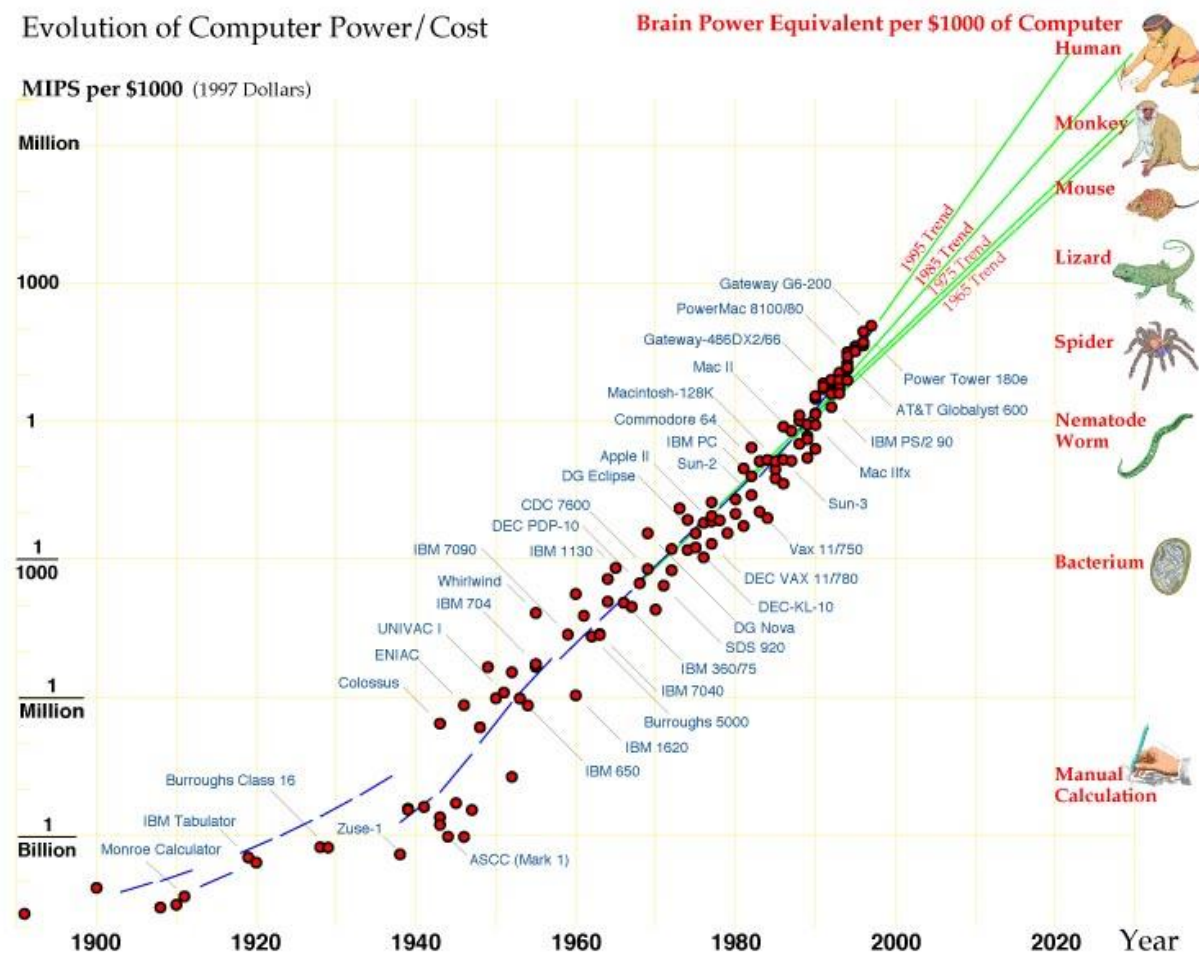
- 512 gigabytes cost \$84.99 at BestBuy (\$0.17 per gigabyte)



Storage Cost Trend



Processor Speed Trend



Moravec, H. (1998). When will computer hardware match the human brain? *Journal of Transhumanism*, Vol. 1.

Business Analytics: What Is Driving Analytics?

The End

What Makes Analytics Difficult?

Business Analytics Pitfalls

- Information and disinformation overload
- Overanalysis
- Oversimplification
- Deterministic thinking (be careful with causality)
- Overdependence on industry knowledge
- Tunnel thinking
- Overconfidence
- Unpiloted big bang launches

What Else Makes It Difficult? Cultural Myths

- Data in my industry are different—beyond outsider comprehension.
- Statistical tools in my industry are different—beyond outsider comprehension.

How Do You Get These Skills?

- Business analytics training
 - INFORMS (Institute for Operations Research and the Management Sciences) [informs.org]
 - Certified Analytics Professional (CAP) started in 2013
- Business analytics tools
 - Excel (pivot tables, power query, power pivot, power view, correlation, regression)
 - Access and SQL (data organization and retrieval)
 - Google Analytics (trends and AdWords)
 - R (statistical analysis, data mining, neural networks, support vector machine (SVM), k-means clustering)
 - Tableau (dashboard representation)
 - MS Power business intelligence (BI) (analysis and dashboards)

Business Analytics: What Makes Analytics Difficult?

The End

Excel Overview

Excel Overview, Part I

- Excel
 - Lookup
 - Sorting and filters
 - Pivot tables and charts
 - 3D maps

Excel Overview, Part II

- Lookup
 - VLOOKUP (vertical lookup) searches for a value down a column in a table and returns a corresponding value in another column
 - HLOOKUP (horizontal lookup) searches for a value across a row in a table and returns a corresponding value in another row

Excel Overview, Part III

- Sorting
 - Sorting arranges a table by putting rows in ascending or descending order according to the values in one or more columns
 - Ascending order is from low to high on numbers and A to Z on alphanumeric strings
 - Descending order is from high to low on numbers and Z to A on alphanumeric strings
- Filters
 - A filter selects a subset of the data based on one or more criteria

Excel Overview, Part IV

- Pivot tables
 - A pivot table collapses and summarizes data in a spreadsheet
 - Pivot tables allow multiple levels of grouping to create a hierarchy of summaries
 - A pivot table also allows the addition of a filter to display a summary based on a subset of the data
- Pivot charts
 - A pivot chart converts a pivot table into a chart with the style selected by the user, such as bar chart, pie chart, etc.

Excel Overview, Part V

- 3D maps
 - The 3D maps overlay data onto a geographic map
 - Geographic maps can plot data using cities, counties, states, countries, or zip codes
 - The height of bars or shading of regions depends on the values of the data
 - Categorical data can be represented in different colors
 - Filters allow selection of a subset of data
 - A timeline animates the map as data change over time
 - Movies can be created using different animated scenes

Business Analytics: Excel Overview

The End