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What Is Driving Analytics?

1. Data availability
2. Inexpensive data storage
3. Faster computer processing

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Data: The Four Vs

- Volume: amount of data
- Velocity: how fast you get new data
- Variety: different types of data
- Veracity: how accurate is the data

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Herb Simon, Nobel Laureate, Carnegie Mellon

- Data overload
  - "In an information-rich world, the wealth of information means a dearth of something else: a scarcity of whatever it is that information consumes."
  - "What information consumes is rather obvious: it consumes the attention of its recipients."
  - "Hence a wealth of information creates a poverty of attention and a need to allocate that attention efficiently among the overabundance of information sources that might consume it."

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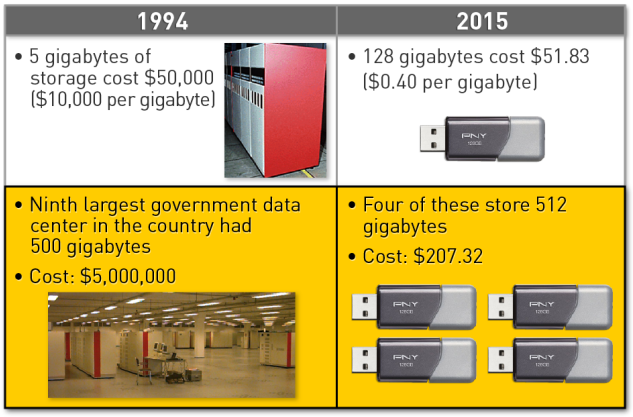
Data Storage: Size and Cost



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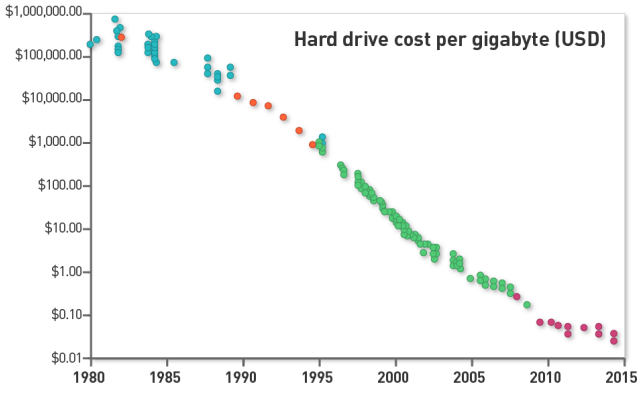
Storage Cost Trend



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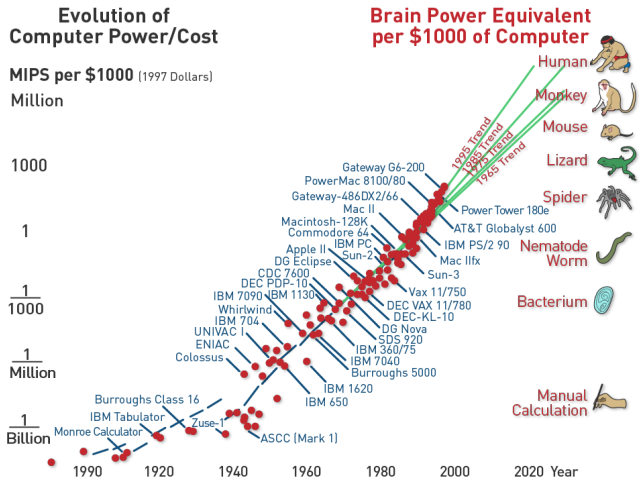

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Computer Trends

- 1989: *Deep Thought* chess program developed by Carnegie Mellon researchers
  - Defeated by Garry Kasparov
- 1996: IBM refines program, renames it *Deep Blue*
  - Defeated again by Kasparov 4-2
- 1997: IBM's *Deep Blue* upgraded further
  - Defeats Kasparov 3.5-2.5
- 2011: IBM *Watson* defeats Jeopardy champions
- 2021–2074: Projected that computers will be superintelligent, i.e., smarter than humans

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How Do These Trends Apply to Business?

- 1990s: retail outlets tailored customer prices to the individual
- 2000: Amazon.com tailored customer web pages based on browsing and purchasing behavior in 350 milliseconds (0.35 seconds)
- 2010: highly customized content delivery to customers

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Business Analytics Applications

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

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Questions

- In your industry, how has analytics affected your business?
- How do you expect it to affect your company in the next decade?

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Business Analytics: What Is It?

- Goal:
  - Analyzing data to facilitate achievement of business objectives
- How?
  - Reporting of data to analyze trends
  - Creating predictive models for forecasting
  - Optimizing business processes for enhanced performance

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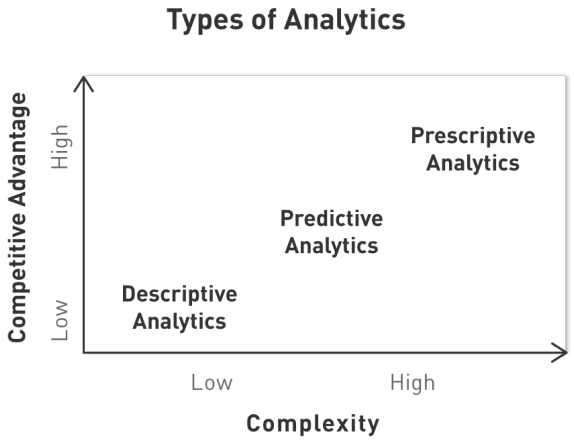

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Summary: Types of Analytics

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

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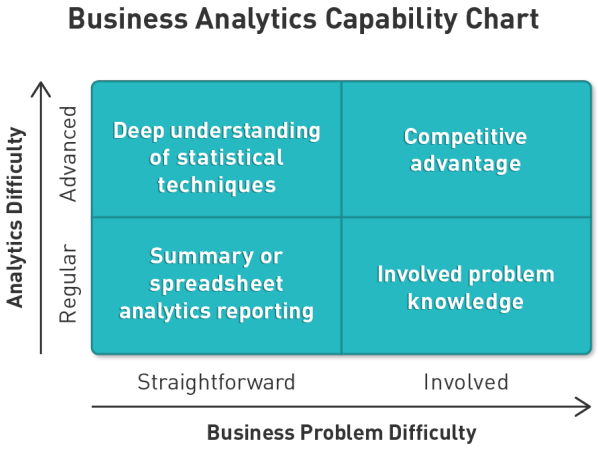

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Why Is Business Analytics Difficult?

- Data is power.
  - Gartner Group reports that analytics will fuel disruption in organizations and business processes
- Industry lacks the skills to quickly move into analytics.
  - McKinsey reports a shortage of 140,000–190,000 staff with analytics expertise
  - And a shortage of 1.5 million managers and analysts to understand and make decisions

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Business Analytics Pitfalls

1. Information and disinformation overload
2. Overanalysis
3. Oversimplification
4. Deterministic thinking (be careful with causality)
5. Overdependence on industry knowledge
6. Tunnel thinking
7. Overconfidence
8. Unpiloted big bang launches

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Cultural Myths

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

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Question

- What are the barriers to using analytics in your organization?

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Excel Overview

- Calculations and formulas
- Graphing and visualization
- Sorting and filters
- Pivot tables and charts
- Power View

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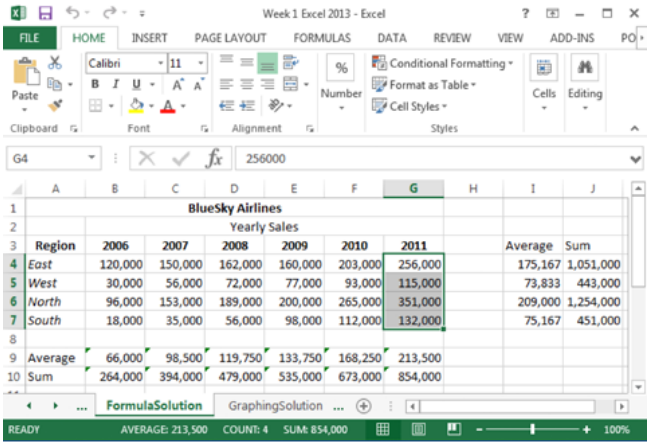

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Graphing and Visualization

- Ability to generate:
  - Bar charts
  - Scatter diagrams
  - Pie charts
  - 3–D representations of data

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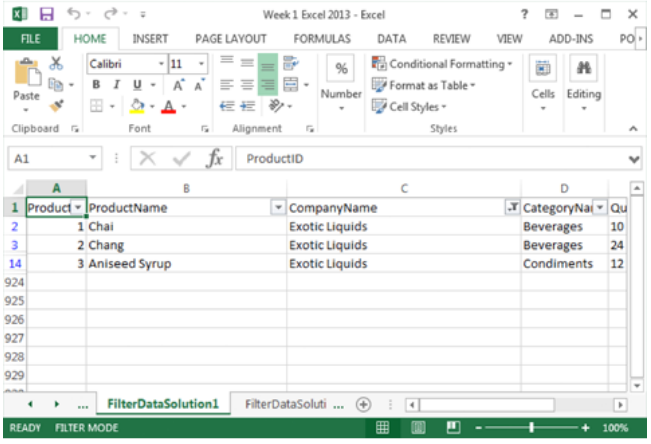

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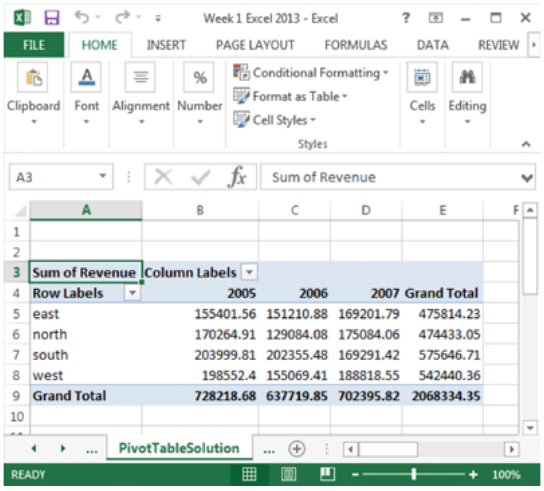

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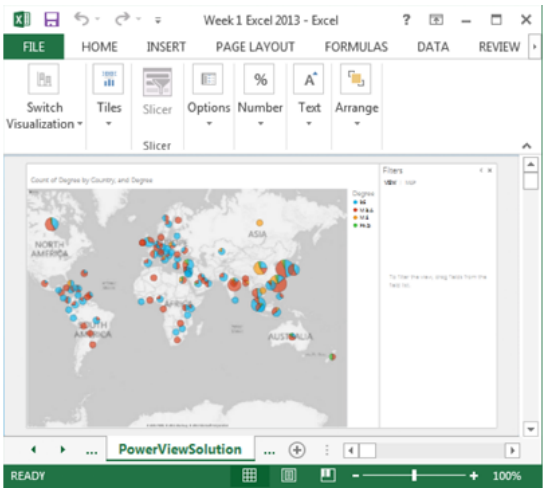

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