

Know the Customers Better than they Know Themselves

Dr. Yngvi Björnsson
School of Computer Science / CADIA
Reykjavik University

Who am I?

- Yngvi Björnsson
 - Professor, School of Computer Science, Reykjavik University (RU)
 - Artificial Intelligence (AI)
 - E-mail: yngvi@ru.is
- Co-founder and ex-director of **CADIA**, RU's research center in artificial intelligence.



Today's Lecture

- Speaking the “Lingo”
 - Confusing and ambiguous terminology
- Data Analytics
 - Overview, with focus on knowing the customer.
- Example Usage
 - Prominent success stories



Image: finextra.com

Speaking the Lingo



Image: novotech.com

Making Sense of the Terminology

Technical foundation

Application

“Big Data Analytics”

Data Analytics

Data Mining

Statistics

Algorithms

ML

PR

CI

Business Intelligence

Data presentation

Data queries

Data warehouse

Big Data

Data Analytics

The process of extracting useful information from data and transforming it into an understandable structure for further use.



Image: energy.gov

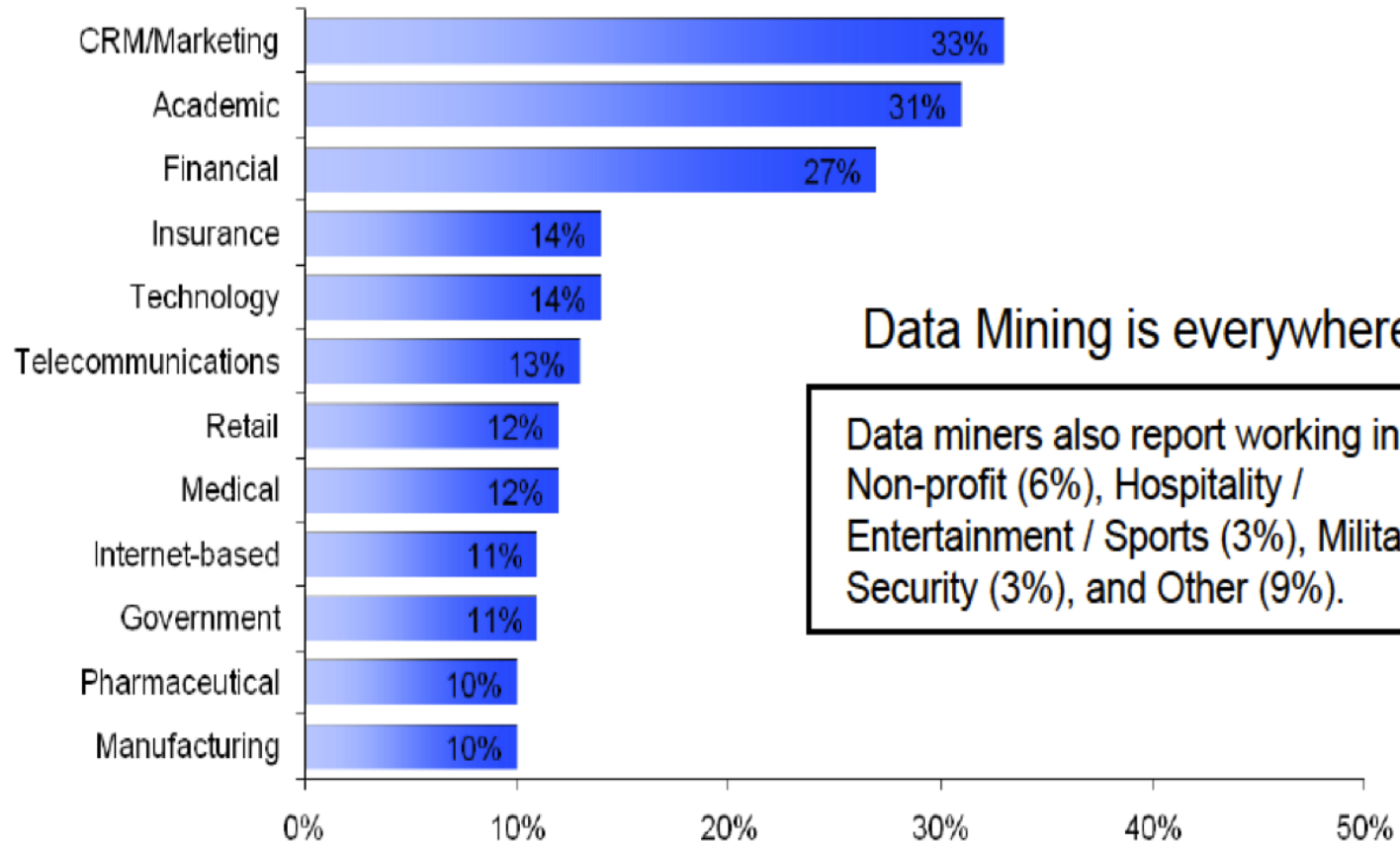
Why Data Analytics?

- Useful information often to be mined from (raw) data
 - The new era of gold digging!
- Value to be created for
 - Customers
 - Businesses
- Increasingly relevant
 - Businesses for staying competitive



Image: umich.com

Usage of Data Analytics



Data Mining is everywhere!

Data miners also report working in Non-profit (6%), Hospitality / Entertainment / Sports (3%), Military / Security (3%), and Other (9%).

Source: Rexter_Analytics_2011_Data_Miner_Survey

Know the Customers

- Yesterday
 - Know the customers
 - Personalization
 - Non-scalable
- Today
 - Know the customers
 - Better scalable
- Tomorrow
 - Know the customers better than they know themselves
 - Personalization
 - Fully scalable



Data Analytics Techniques

- Classification
 - Categorize into existing groups
- Clustering Analysis
 - Identify potential groups
- Affinity Analysis
 - Identify co-occurrence relationships
- Other
 - Regression
 - Web-Data Mining
 - Social Network Analysis
 - Outlier Detection
 -



Image: fcw.com

Way Beyond Correlation



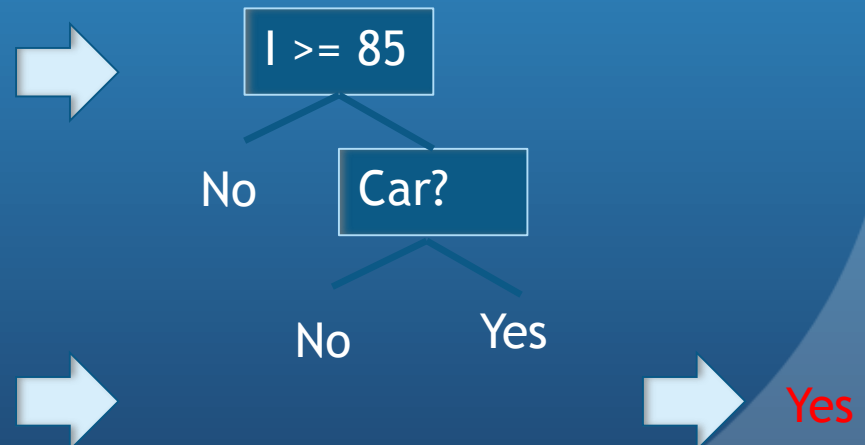
Image: tylervigen.com

Data Analytics: Classification

- Build a model from historical data instances (customers)
- Use model to predict about unseen data instances (customers)

Income	Car	Status	Pay
\$70,000	Yes	Single	No
\$90,000	No	Single	Yes
...	

Income	Car	Status	Pay
\$90,000	Yes	Married	?



Data Analytics: Clustering

- Identify different type of groups (like-minded customers) from historical data.
- Can be used e.g. for targeted marketing campaigns etc.

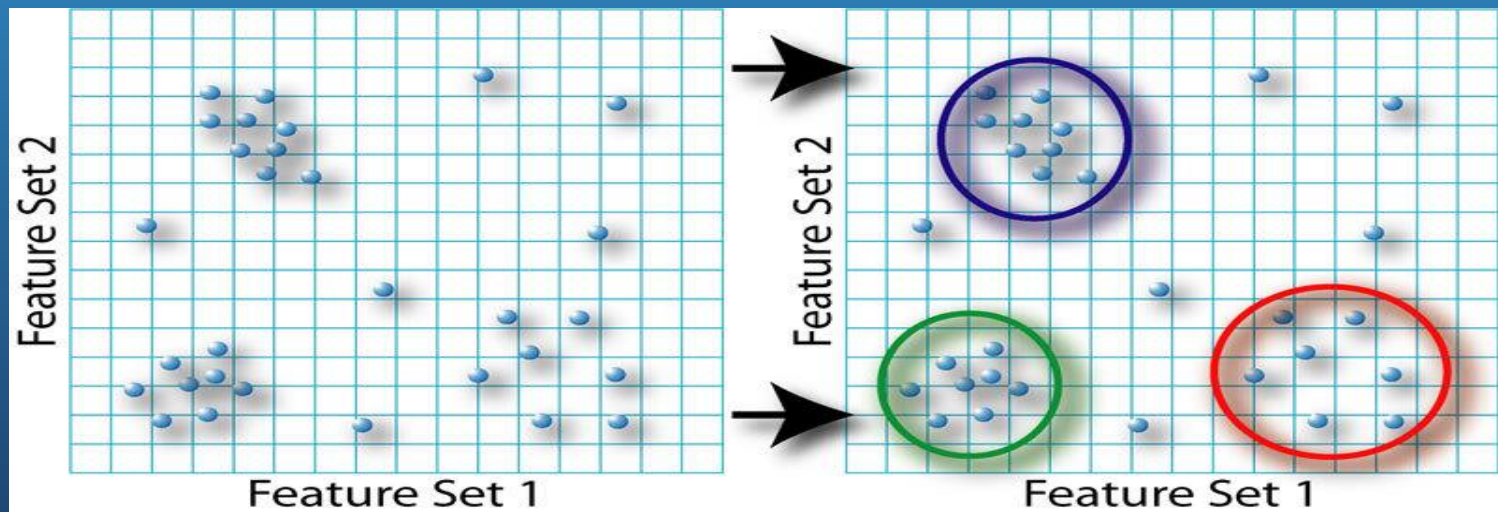


Image: sfsu.edu

Data Analytics: Affinity Analysis

- Identify co-occurrence relationships from historical data
- Different techniques:
 - Market-Basket Analysis

Milk and Cheese → Bread

- Recommender Systems

Bob and you seem to have a lot in common, so maybe you will also enjoy this obscure food that he really likes.



Image: analyticstraining.com

Recommender Systems

- Personal recommendations
- “The Long Tail”

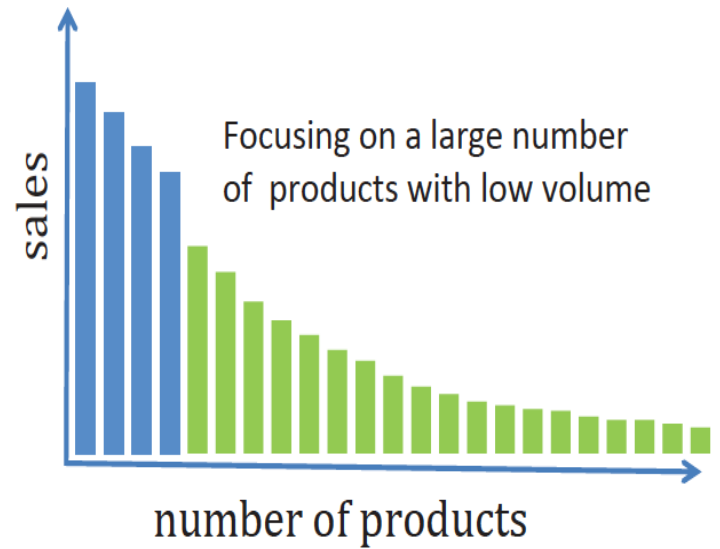
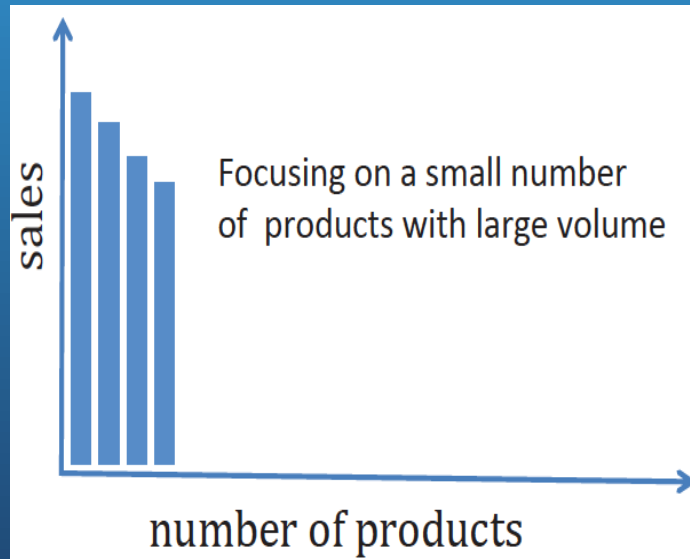
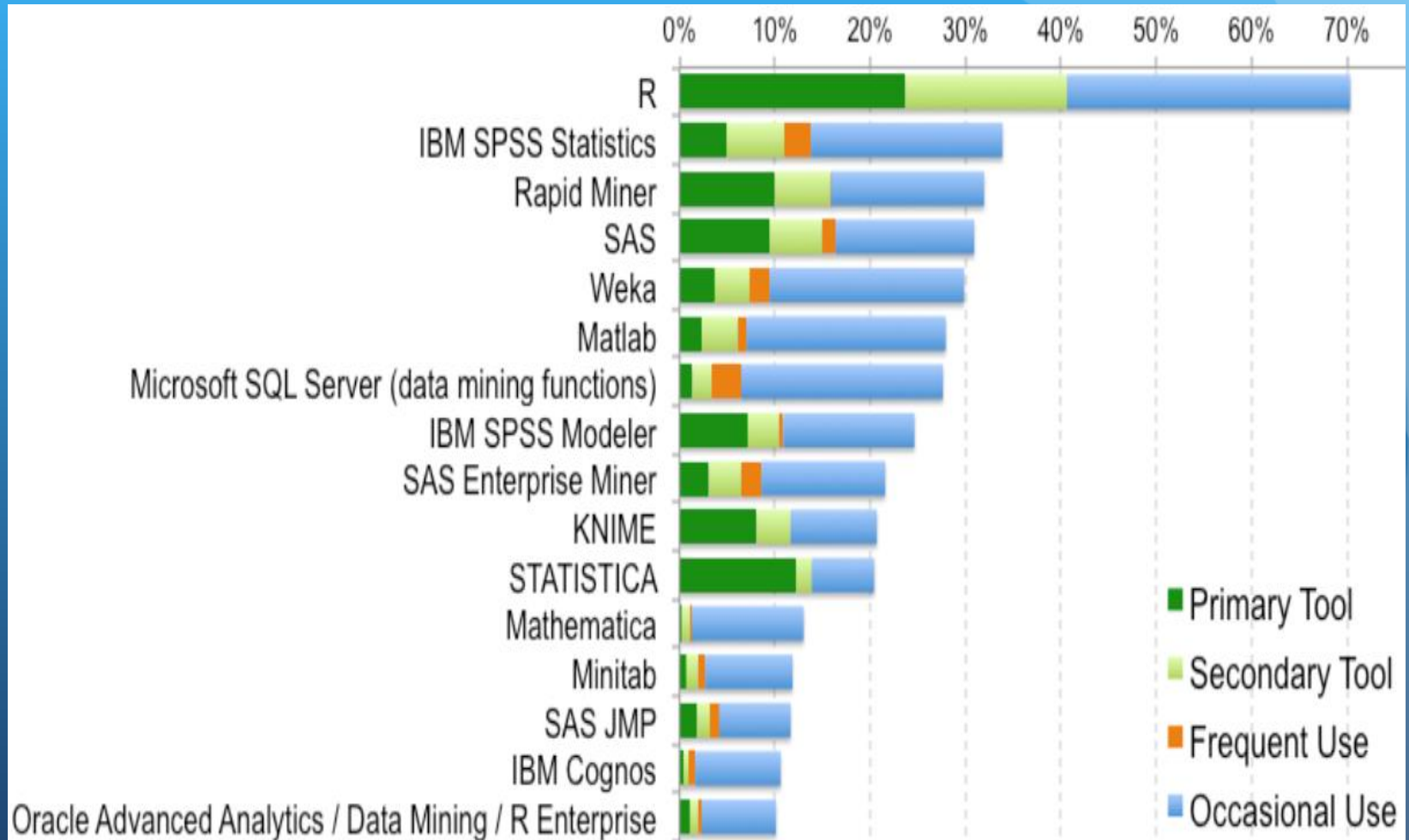


Image: Yin et al. (2012)

Data Analytics Tools



Source: REXER_Analytics_2013_Data_Miner_Survey

Summary

- Historical data is valuable
- Data analytics used to turn the data into valuable information
 - Traditional visualization techniques often insufficient
 - Rely on analytical tools and techniques
- Increasingly important in today's complex and fast-moving business world
 - For businesses to stay competitive

Questions?

Want to learn more?

I will be in the Reykjavik University booth during the lunch hour.