

# Sensing, Seeing, and Showing: Visualizing Data in OAC

Analytics and Data Summit 2018

Dan VlamiS and Tim VlamiS

March 22, 2018

@VlamiSoftware

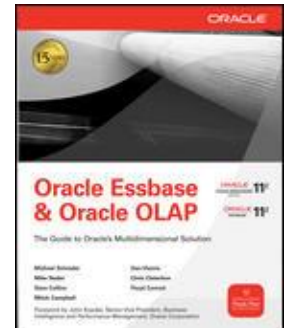
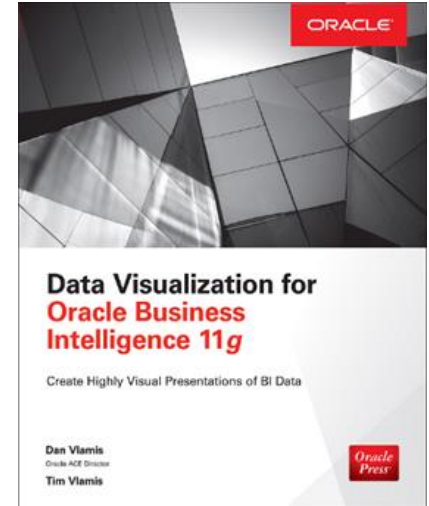
# VlamiS Software Solutions

- VlamiS Software founded in 1992 in Kansas City, Missouri
- Developed 200+ Oracle BI and analytics systems
- Specializes in Oracle-based:
  - Enterprise Business Intelligence & Analytics
  - Analytic Warehousing
  - Data Mining and Predictive Analytics
  - Data Visualization
- Multiple Oracle ACEs, consultants average 15+ years
- [www.vlamiS.com](http://www.vlamiS.com) (blog, papers, newsletters, services)
- Co-authors of book “Data Visualization for OBI 11g”
- Co-author of book “Oracle Essbase & Oracle OLAP”
- Oracle University Partner
- Oracle Gold Partner

 EDUCATION RESELLER

 Gold  
Partner

Specialized  
Oracle Business Intelligence  
Foundation Suite 11g






# Dan Vlami and Tim Vlami

## Dan Vlami – President

- Founded Vlami Software Solutions in 1992
- 30+ years in business intelligence, dimensional modeling
- Oracle ACE Director 
- Developer for IRI (expert in Oracle OLAP and related)
- BIWA Board Member since 2008
- BA Computer Science Brown University

## Tim Vlami – Vice President & Analytics Strategist

- 30+ years in business modeling and valuation, forecasting, and scenario analyses
- Oracle ACE 
- Instructor for Oracle University's Data Mining Techniques and Oracle R Enterprise Essentials Courses
- Professional Certified Marketer (PCM) from AMA
- MBA Kellogg School of Management (Northwestern University)
- BA Economics Yale University



# Vlami Presentations

| Presenter   | Location   | Time                 | Title   |
|---|------------|----------------------|---|
| Mike Caskey<br>Dan Vlami  | Room 104   | Tuesday<br>11:15am   | Architecting for Analytics  |
| Charlie Berger<br>Karl Rexer<br>Tim Vlami   | Bldg 500   | Tuesday<br>1:10pm    | HOL: Machine Learning 101 with Oracle Data Miner and ADWC's Machine Learning Notebook |
| Arthur Dayton<br>Cathye Pendley   | Bldg 500   | Tuesday<br>3:35pm    | HOL: Property Graph 101 in Oracle Database for the Completely Clueless                |
| Tim Vlami   | Auditorium | Wednesday<br>11:10am | Machine Learning and Advanced Analytics in the Oracle Analytics Cloud                 |
| Charlie Berger<br>Stewart Bryson<br>Arthur Dayton<br>Nick Salem<br>Wayne Van Sluys<br>Tim Vlami | Auditorium | Wednesday<br>3:25pm  | Level Up – The technologies you need to learn to stay relevant in analytics           |
| Dan Vlami<br>Tim Vlami  | Auditorium | Thursday<br>9:50am   | Sensing, Seeing, and Showing: Visualizing Data in Oracle Analytics Cloud              |
| Eshwari Mulpuru<br>Tim Vlami  | Room 102   | Thursday<br>2:30pm   | Key Take-Aways in Exploring Oracle Cloud to Modernize BI and Analytics                |



# Presentation Agenda

- Explanation vs. Exploration vs. Extrapolation
- Dashboards and Analyses in the legacy OBIEE interface
- Data exploration in the Oracle Data Visualization interface
- Strategies for dimensional visualizations
- Using Sankey, parallel coordinates, and network visualizations
- Designing Narratives and visual guides
- Standards and conventions

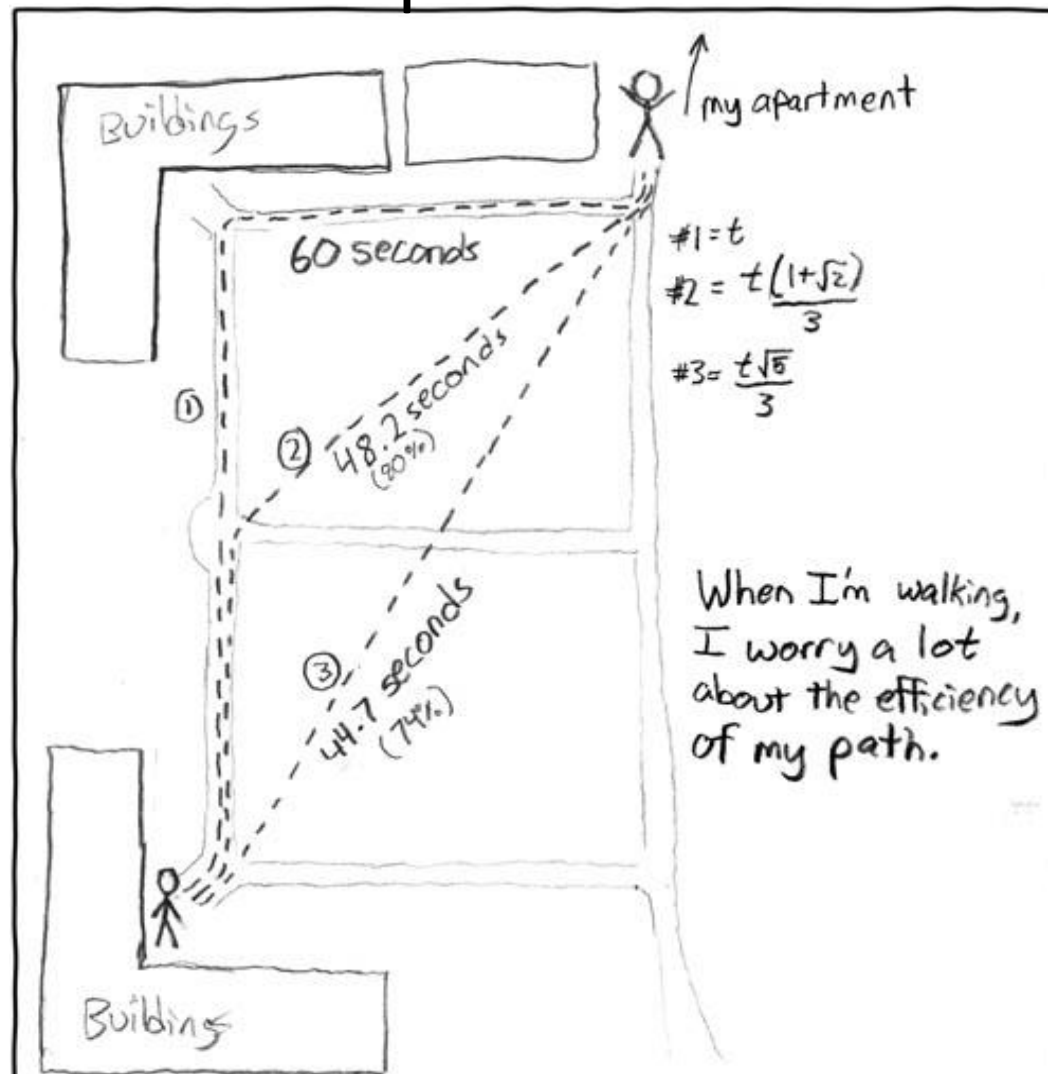


# Three Main Functions of Analytics Systems

## Exploration



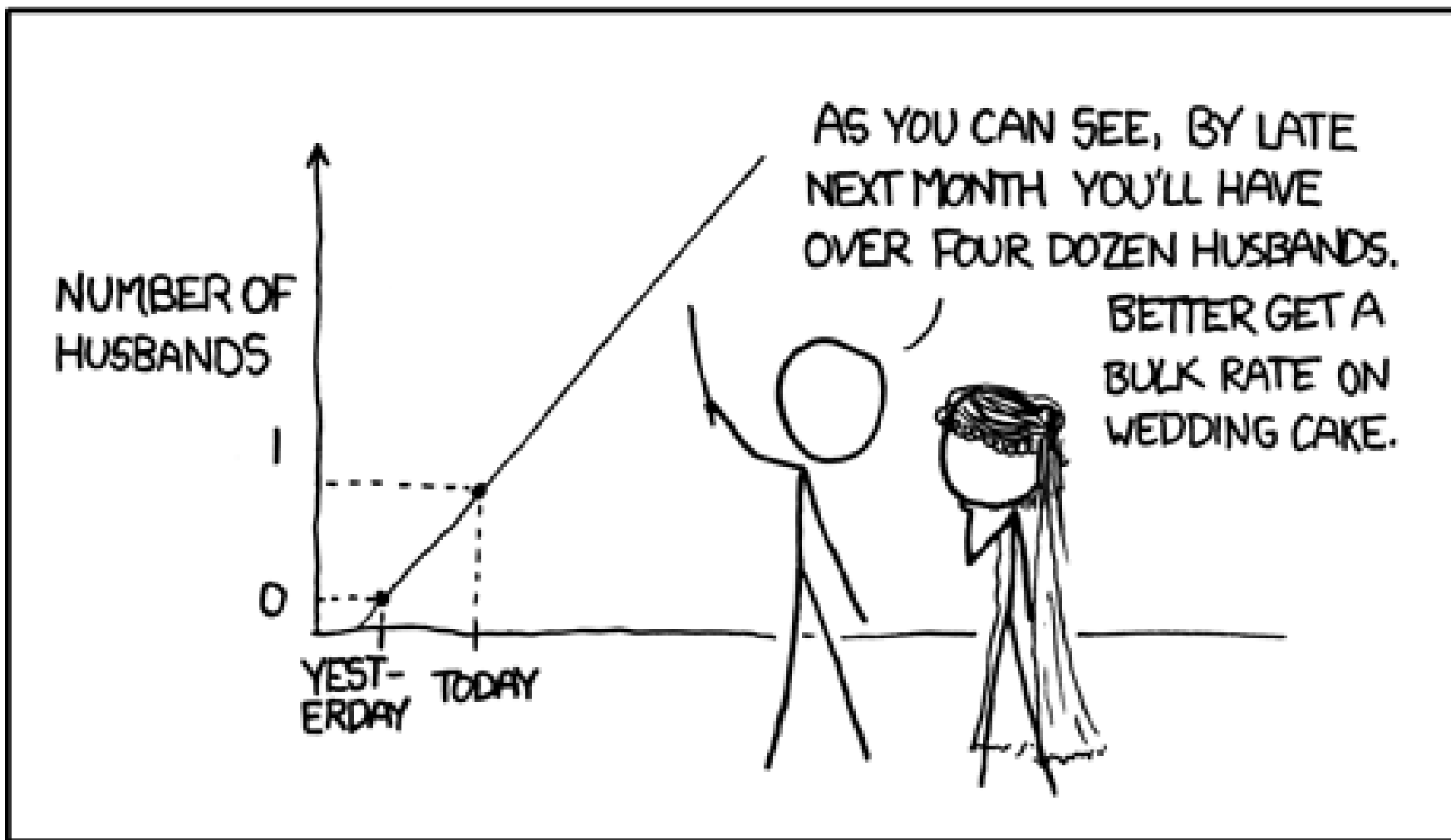
## Explanation





# Extrapolation

MY HOBBY: EXTRAPOLATING





# Data Visualization Scenarios

Deliberative  
Response

**Data  
Discovery**

**BI Dashboards**

Immediate  
Response

**Situational  
Awareness**

**Alerts  
Thresholds**

Individual

Organizational





# Dashboard Definition

*A Dashboard is a visual presentation of current summary information needed to manage and guide an organization or activity.*



# Dashboard Definition

*BI Dashboards should be designed to drive **organizational coherence** through a **shared understanding** of **organizational position**, **performance**, **flows**, and **influencers**.*





# Discovery - Explore vs Pioneer





# Data Discovery Steps

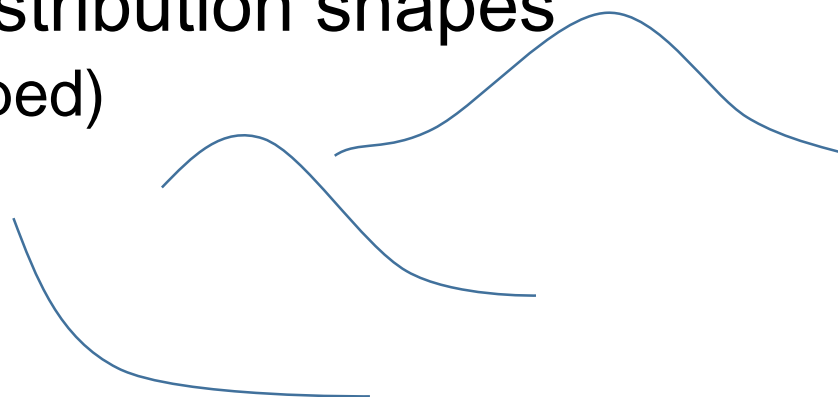
- Skim data in Data Prep Tiles view
- Determine primary dimensions and areas of interest based on data distributions and business hypothesis/interest
- Build major dimension summary view





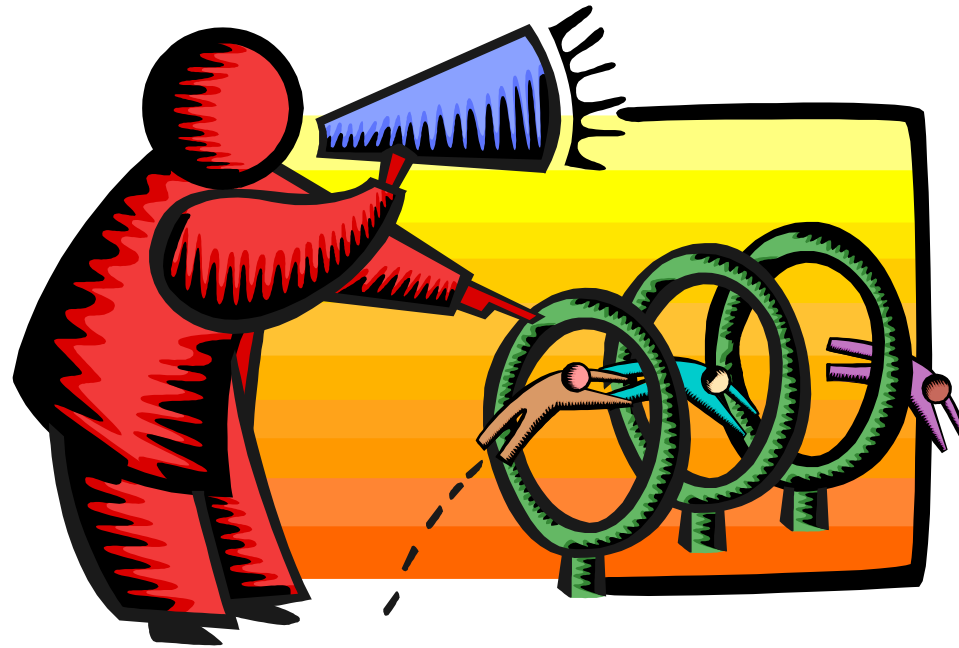
# Understanding Measures for Exploration

- Aggregation method is important
- If use average, also add a bucketed measure
- Compute differences
- Understand data's natural distribution shapes
  - Normal distributions (bell shaped)
  - Log-normal distributions
  - Exponential distributions
- Average has strong meaning only for normal distributions
- Outlier identification & treatment are important for non-normal distributions





# Demo





# An Example Useful Framework

| Position Analysis    | Performance Analysis   | Flow Analysis                   |
|----------------------|------------------------|---------------------------------|
| static               | period of time         | period of time                  |
| descriptive          | results                | change in single asset/resource |
| relative/comparative | fixed vs. variable     | sources and uses                |
| balance sheet        | P&L                    | cash flow                       |
| strength/weakness    | bottom line/zero based | change over time                |
| portrait             | motion picture         | narrative                       |



# Position Analysis



← Measure/Fact →

↑  
Attributes  
↓

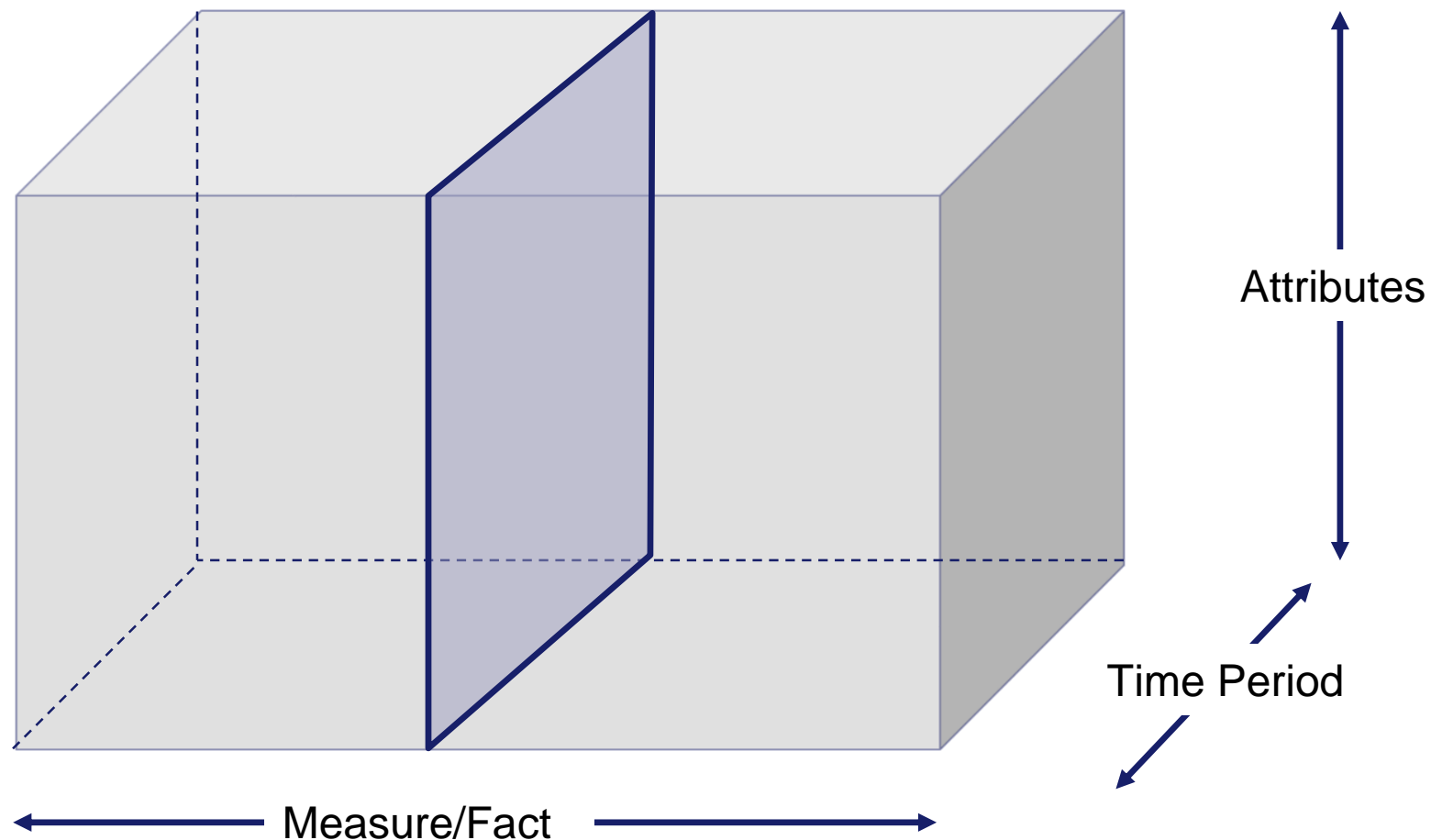
↗  
Time Period  
↘

Bar Chart  
Scatter Plot  
Treemap





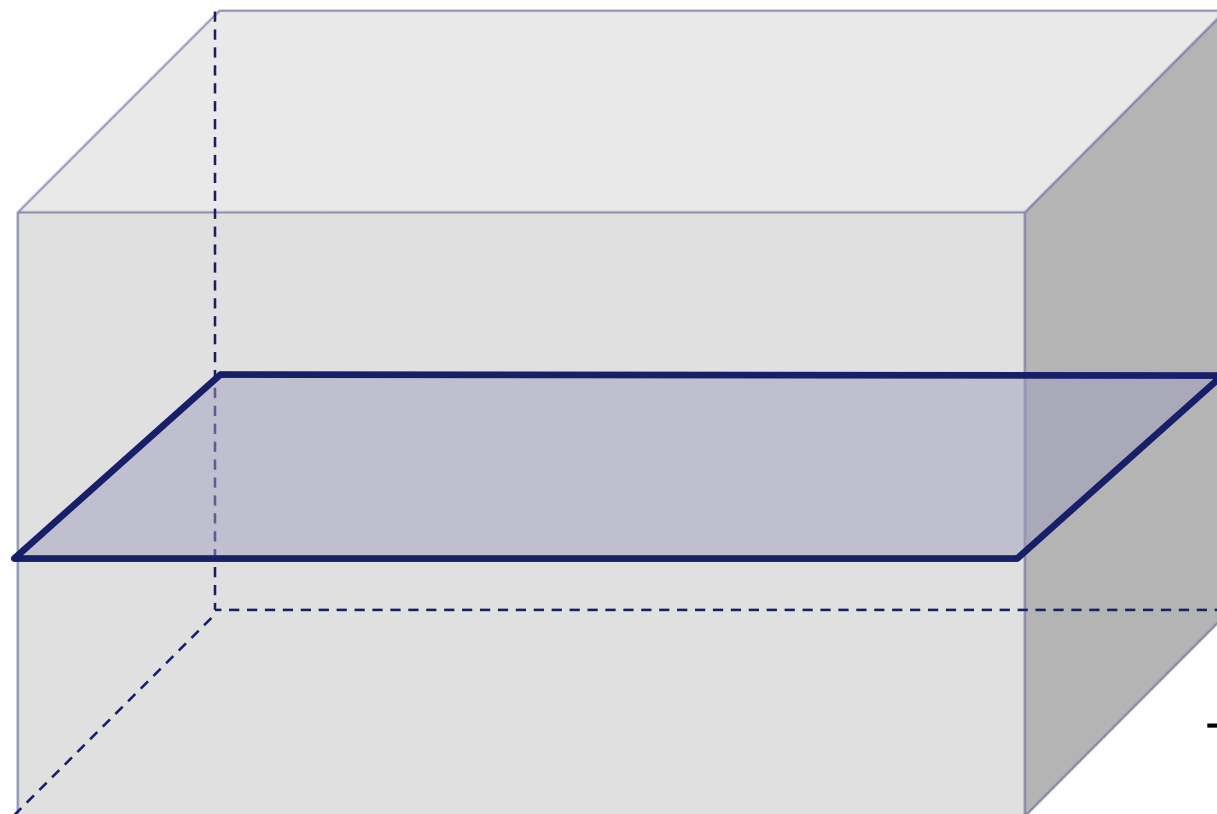
# Performance Analysis



Bar Chart  
Scatter Plot  
Line Chart  
Area Chart  
Trellis



# Flow Analysis



← Measure/Fact →

↑  
Attributes  
↓

↗  
Time Period  
↘

Line Chart  
Area Chart  
Trellis  
Waterfall



# Well Established Frameworks

- Key Performance Indicator (KPI) Development (business)
- Root cause analysis (science)
- Diagnostic analytics (science)
- Five W's (who, what, when, where, why)



# Dimensional Columns

High number of factors  
/  
cardinality

**Lowest Grain**

**Trend/cycle  
Correlation  
Outlier**

Low number of factors  
/  
cardinality

**Trellis**

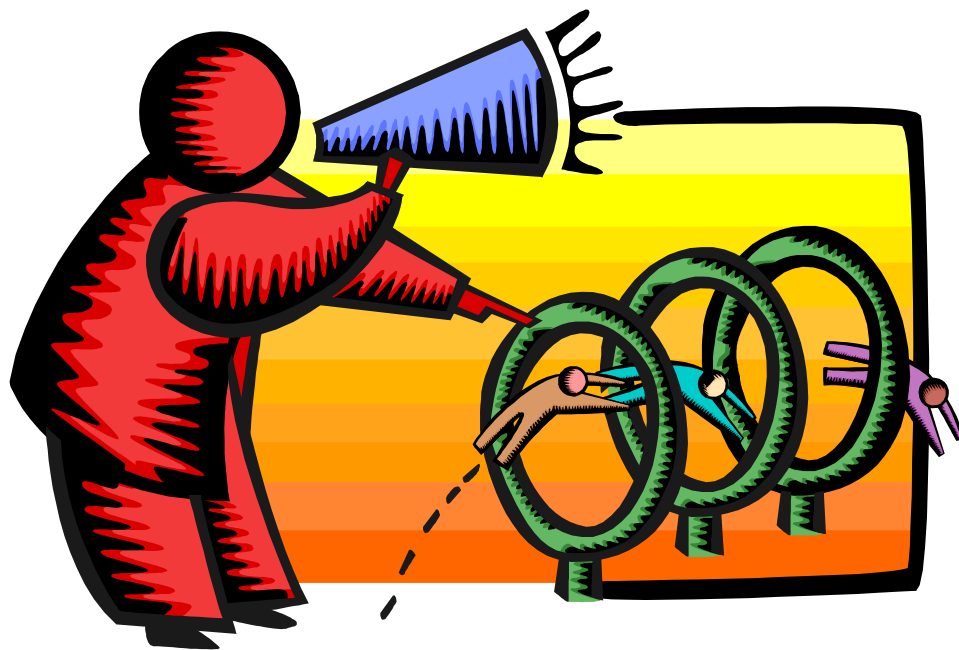
**Comparative  
Correlation**

Flat

Shaped



# Demo





# Keys to Data Discovery

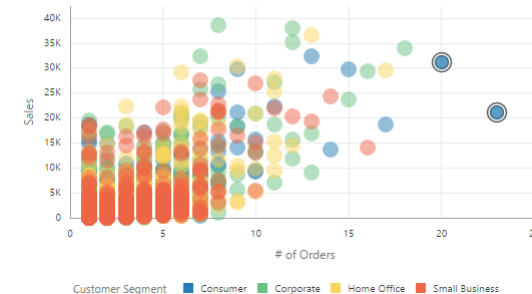
- Identify your main topic of interest with a performance tile
- Summary
- Evaluating a fact or a dimension?
  - Sales analysis
  - Customer or product analysis
- Fact analysis
  - Find lowest grain
  - Flat low distribution
  - Event or transaction
- Look for clustered distribution
  - Scatter with points as event in fact table
    - Set fact on X axis and response variable on Y axis



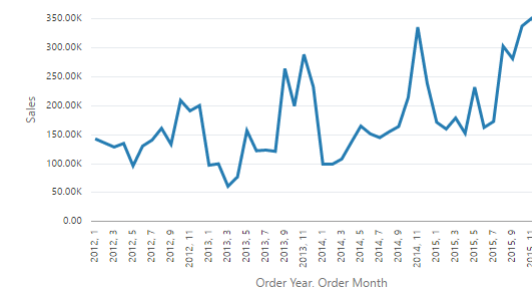
# Major Types and Uses of Graphs

- Scatter plot – outlier detection
- Line graph – time based measures. Looking for trends and patterns
- Bar graph – comparison analysis

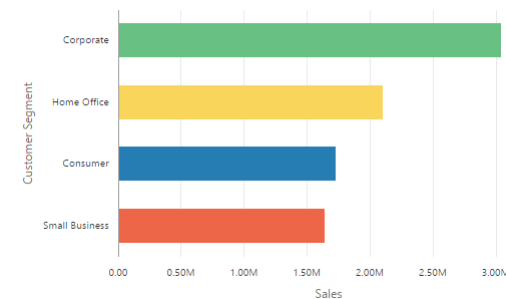
# of Orders, Sales by Customer Name, Customer Segment



Sales by Order Year, Order Month



Sales by Customer Segment





# Starting with Data Discovery

- Begin either with a specific question or a framework
- Avoid “wandering around”
- Most of your visualizations will not produce new insights
- Move quickly through visualizations
- Be prepared to open a lot of browser tabs





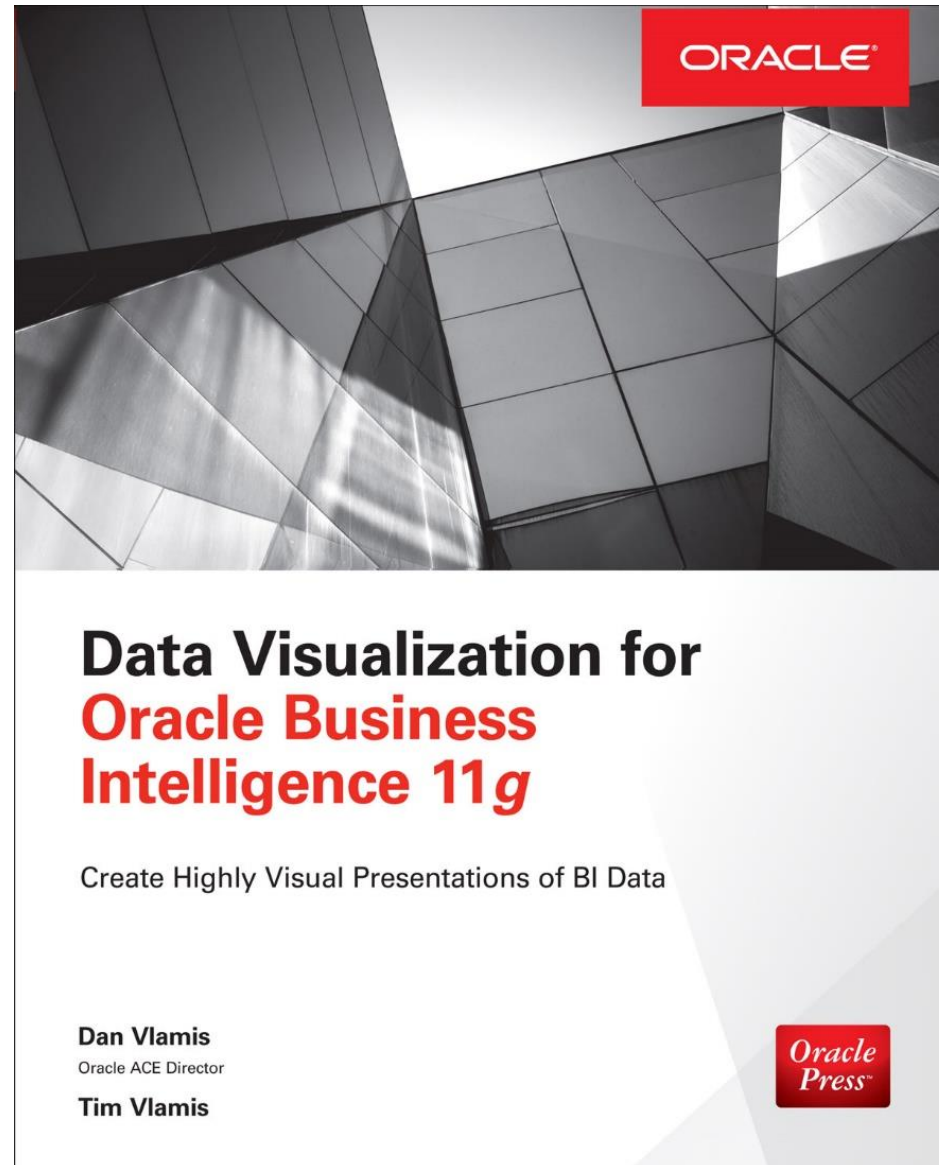
# Finding is not Explaining

- Process of interaction has a huge impact on the contextual understanding of an insight
- When someone discovers something, they believe it more
- Human Cognition Biases



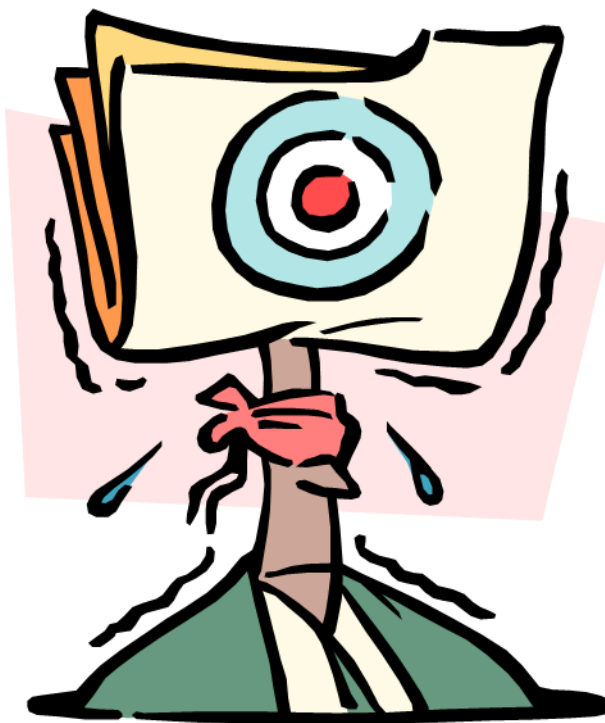
# Drawing for Free Book

Add business card to basket  
or fill out card





# Questions?



**Using the Oracle Database for an Analytic Warehouse**

<https://blogs.oracle.com/database/using-the-oracle-database-for-an-analytic-warehouse>