



# Data Visualization for Oracle BI 12c and Visual Analyzer

Dan VlamiS

Thursday, February 9, 2017

RMOUG Training Days

# VlamiS Software Solutions

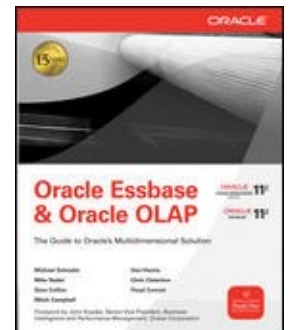
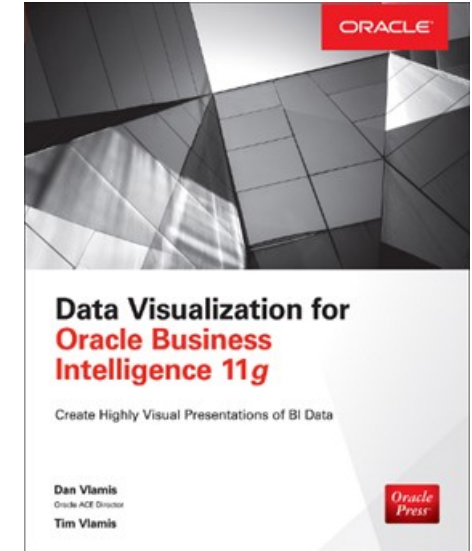
- VlamiS Software founded in 1992 in Kansas City, Missouri
- Developed 200+ Oracle BI and analytics systems
- Specializes in Oracle-based:
  - Enterprise Business Intelligence
  - Data Warehousing
  - Data Mining and Predictive Analytics
  - Data Visualization
- Multiple Oracle ACEs, consultants average 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

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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



# Agenda

- BI Exploring vs Explanation
- Understanding the foundations of data discovery
- Discovery scenarios
- Discovery frameworks
- Using Visual Analyzer to discover data insights

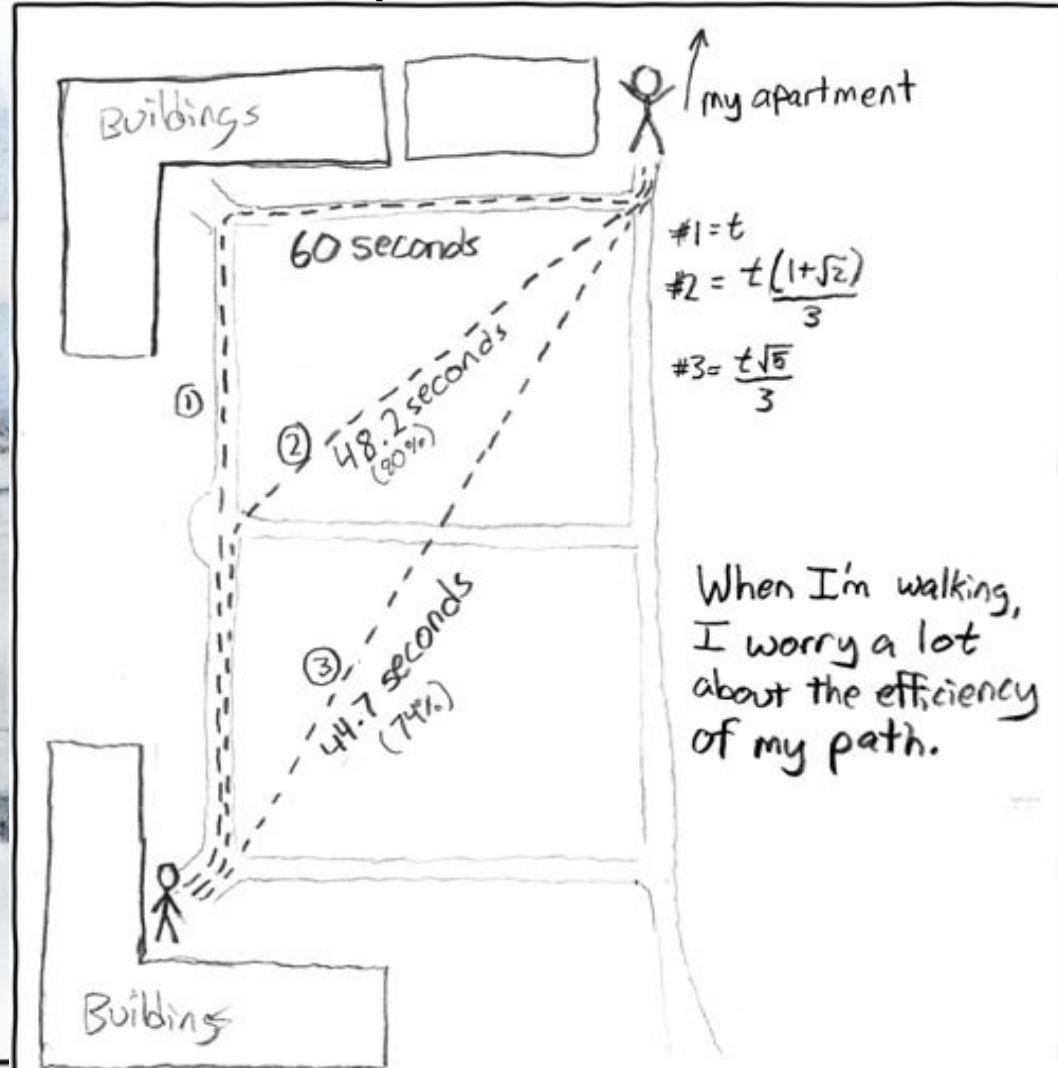


# Main Uses of BI Systems

## Exploration



## Explanation





# Many BI Systems Can Create Beautiful Results





**OBI Operates at  
a Different Scale**





A rich, detailed still life composition of various kitchen ingredients and tools. In the foreground, there's a large bowl of leeks and celery, a pile of small potatoes, green and red bell peppers, and a bowl of yellow lentils. To the right, a basket holds a pineapple, several oranges, and a bottle of wine. In the background, a wooden lattice holds more wine bottles, and a bunch of garlic hangs from a string. Two copper pots hang from a brass scale in the center. Various jars of spices and oils are scattered throughout, including one labeled 'VINEGAR' and another 'OIL'. The scene is set against a backdrop of autumn leaves and greenery, creating a warm, rustic atmosphere.

**Ingredients → Data Quality & Variety**



## Technique → Data Processing & Prep





**Presentation → Data Visualization**





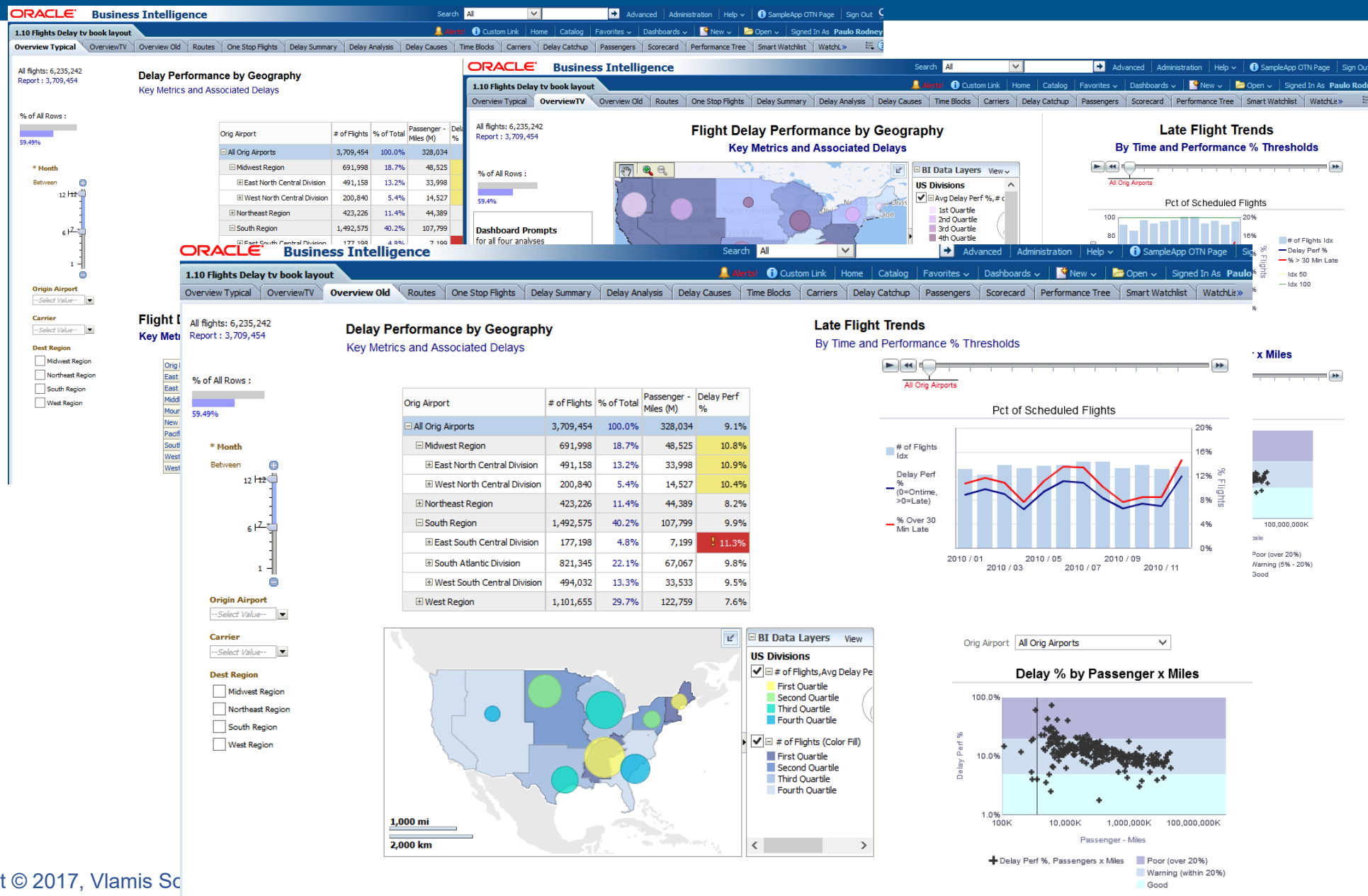
# The Principles of Human Cognition Should Guide BI Visualization Design







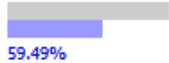
# OBIEE Demo Content from Chap 1



All flights: 6,235,242  
Report : 3,709,454

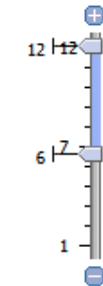
Delay Performance by Geography  
Key Metrics and Associated Delays

% of All Rows :



\* Month

Between



Origin Airport

--Select Value--

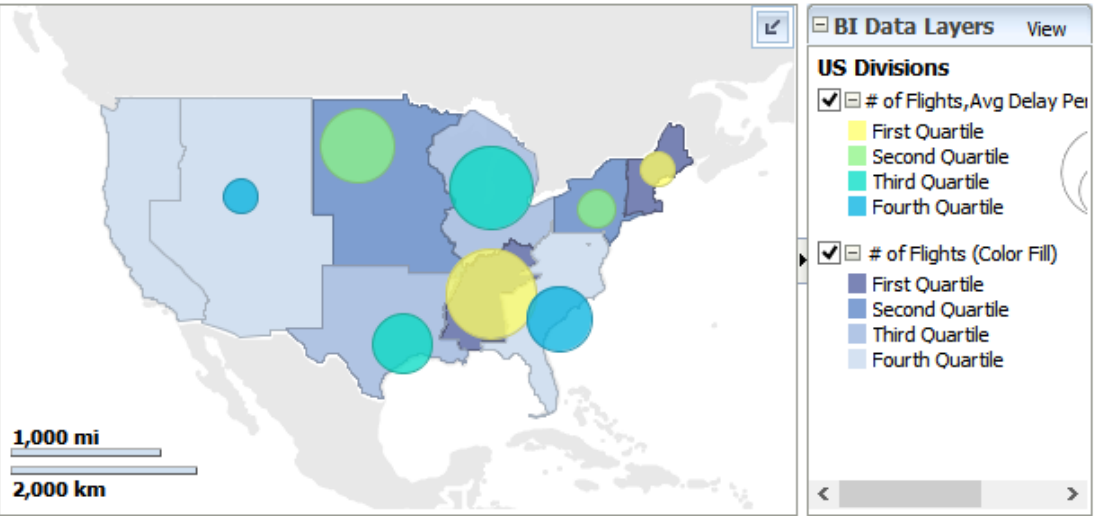
Carrier

--Select Value--

Dest Region

- ☐ Midwest Region
- ☐ Northeast Region
- ☐ South Region
- ☐ West Region

Orig Airport	# of Flights	% of Total	Passenger - Miles (M)	Delay Perf %
All Orig Airports	3,709,454	100.0%	328,034	9.1%
Midwest Region	691,998	18.7%	48,525	10.8%
East North Central Division	491,158	13.2%	33,998	10.9%
West North Central Division	200,840	5.4%	14,527	10.4%
Northeast Region	423,226	11.4%	44,389	8.2%
South Region	1,492,575	40.2%	107,799	9.9%
East South Central Division	177,198	4.8%	7,199	11.3%
South Atlantic Division	821,345	22.1%	67,067	9.8%
West South Central Division	494,032	13.3%	33,533	9.5%
West Region	1,101,655	29.7%	122,759	7.6%

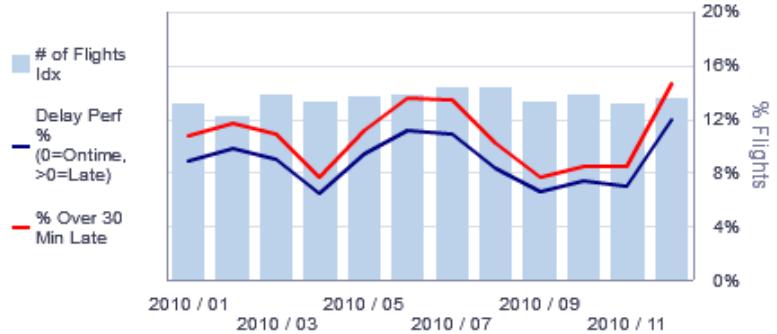


Late Flight Trends

By Time and Performance % Thresholds

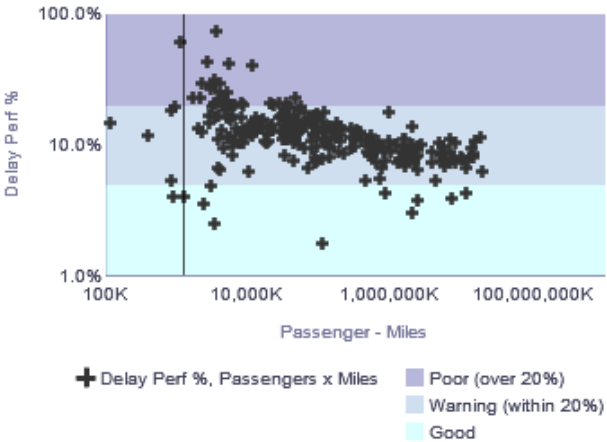


Pct of Scheduled Flights



Orig Airport: All Orig Airports

Delay % by Passenger x Miles





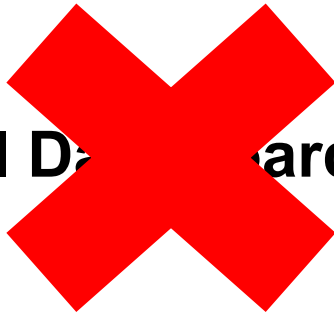


# Data Visualization Scenarios

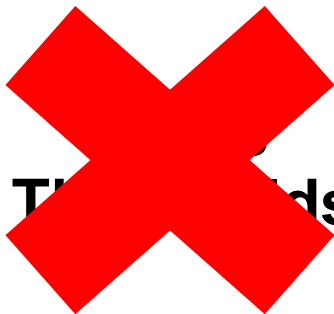
Deliberative  
Response



BI Dashboards



Immediate  
Response



Individual

Organizational





# Discovery - Explore vs Pioneer







# True Discovery





# Data Discovery Sequence

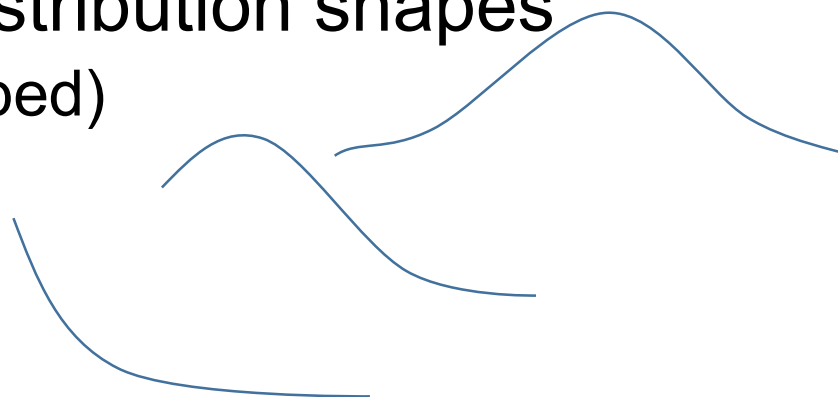
- “Skim” the entire data set to get a sense of its size and scope
- “Read” the data set a **second** time more carefully
  - Identify facts/measures
  - Transaction/event records included?
  - Identify major dimensions
- Make a list of potentially important or interesting business issues/implications
- Compare your original business issues with your new list
- Apply useful frameworks
- Transform data and add new data
- Apply useful frameworks





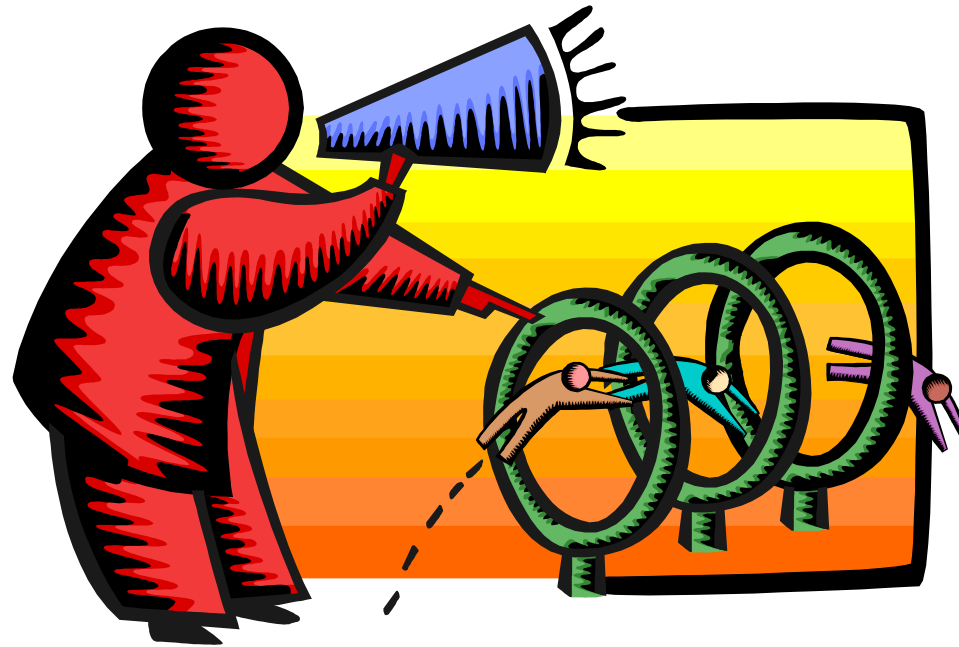
# Understanding Measures for Exploration

- 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





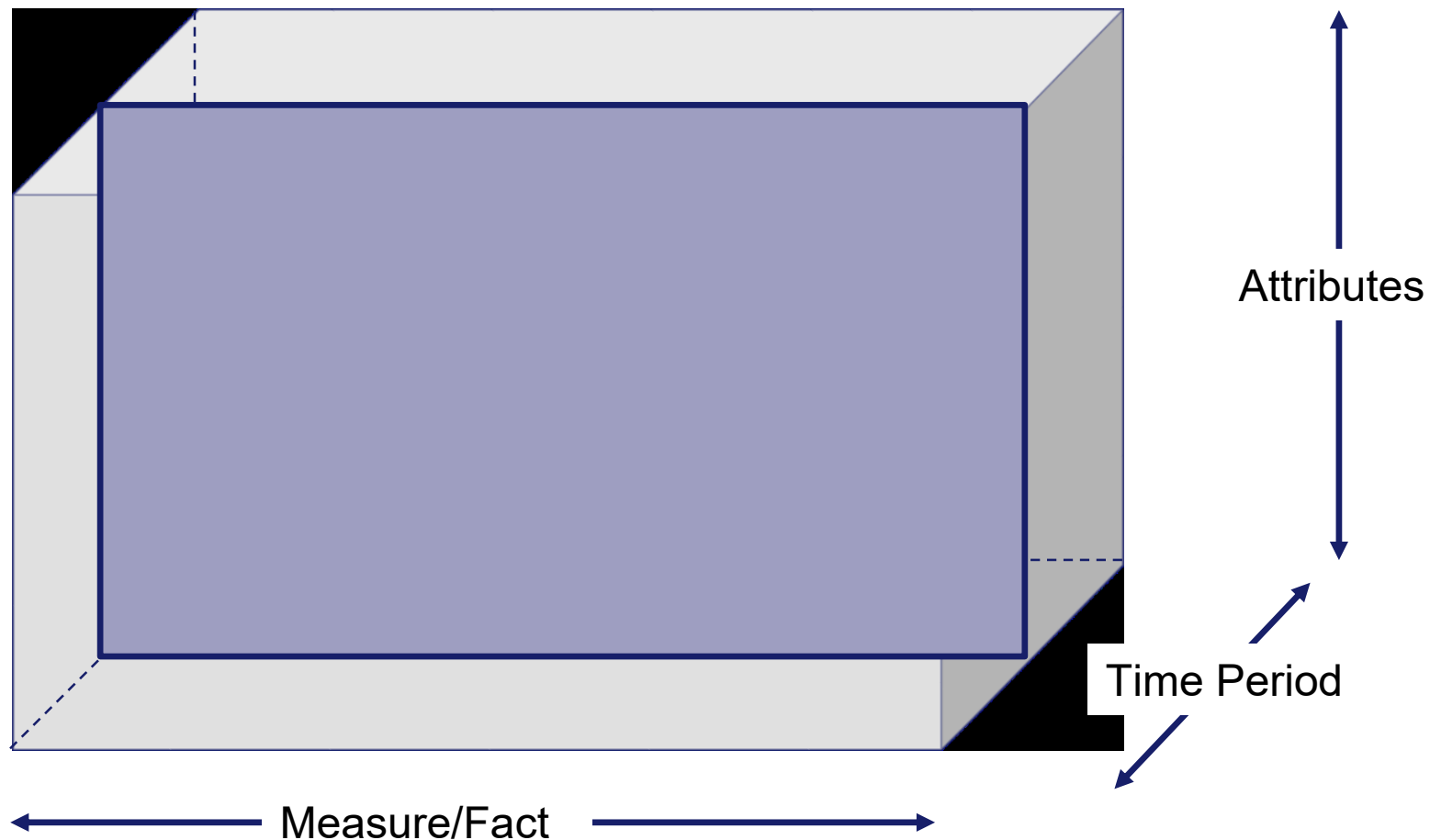


# An Example Useful Framework

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

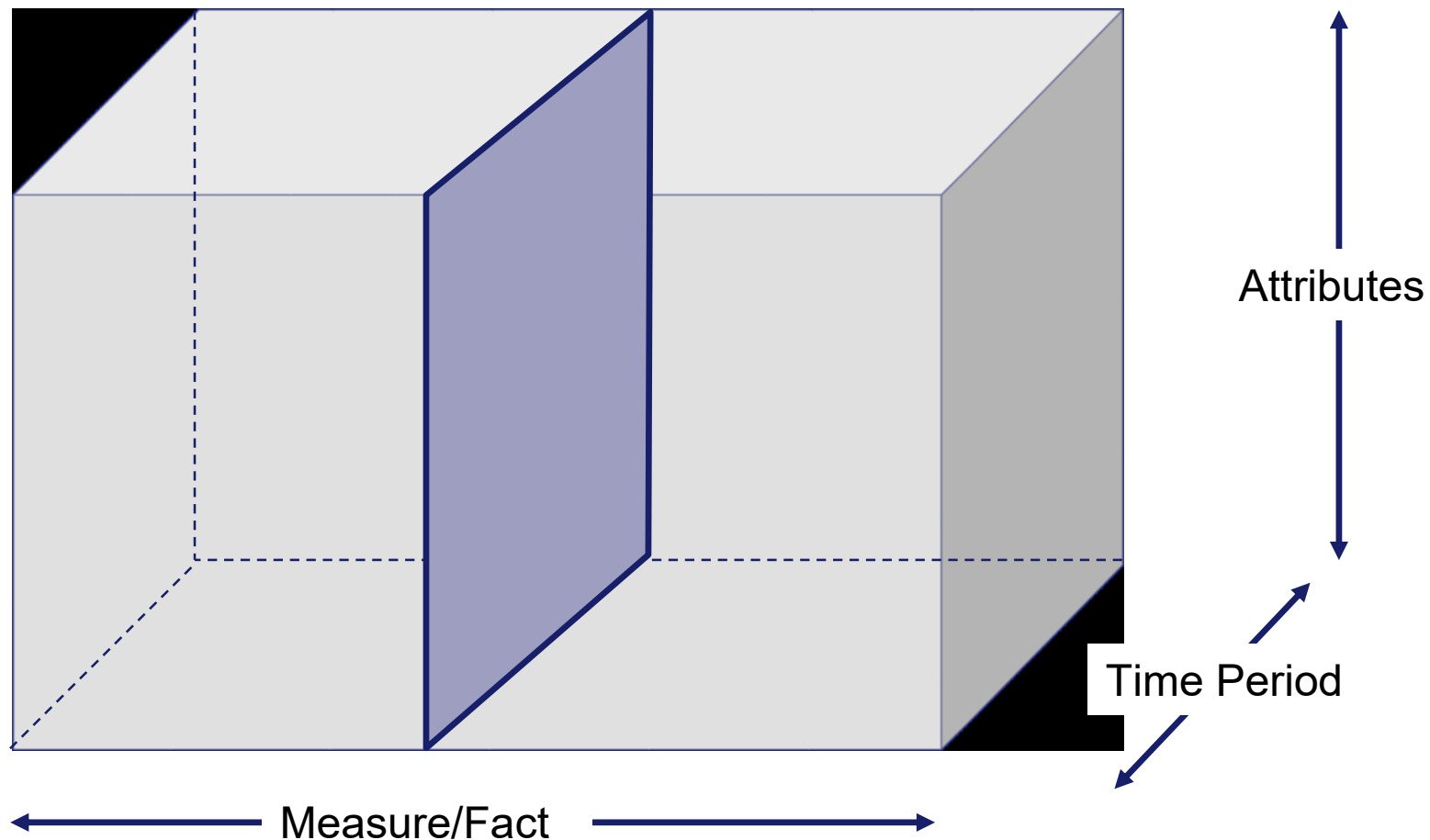


Bar Chart  
Scatter Plot  
Treemap





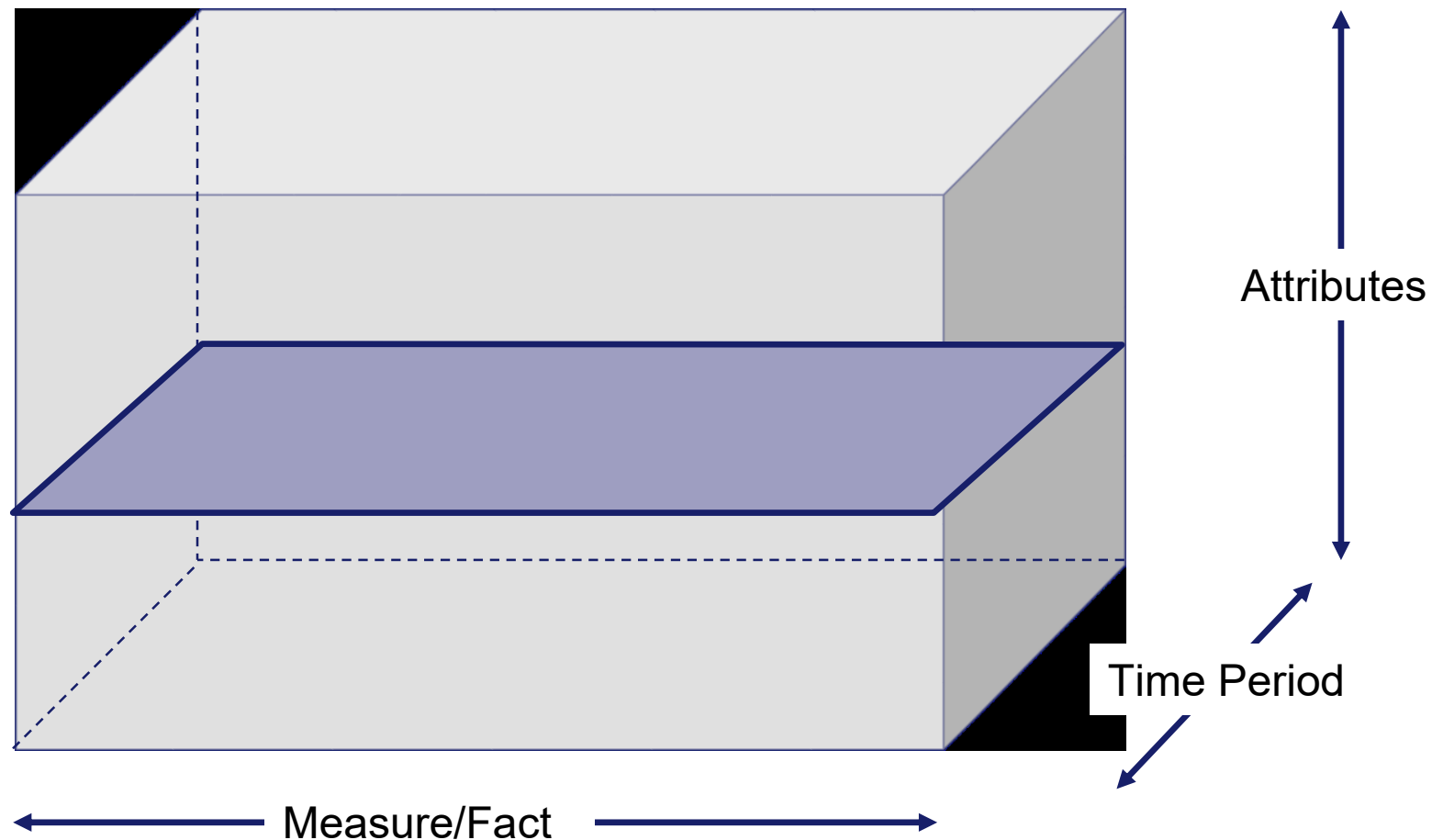
# Performance Analysis



Bar Chart  
Scatter Plot  
Line Chart  
Area Chart  
Trellis



# Flow Analysis



Line Chart  
Area Chart  
Trellis  
Waterfall





# Well Established Frameworks

- Key Performance Indicator (KPI) Development (business)
- Root cause analysis (science)
- Diagnostic analytics (science)



# Dimensional Columns

High number of factors  
/  
cardinality

**Lowest Grain**

**Trend/cycle  
Correlation  
Outlier**

Low number of factors  
/  
cardinality

**Trellis**

**Comparative  
Correlation**

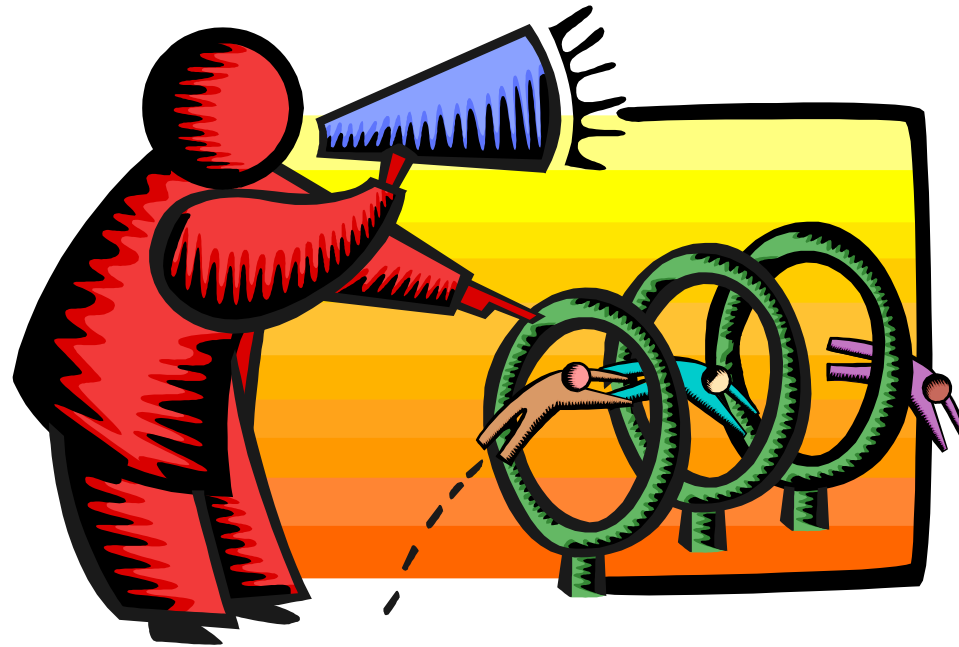
Flat

Shaped





# Demo





# Keys to Data Discovery

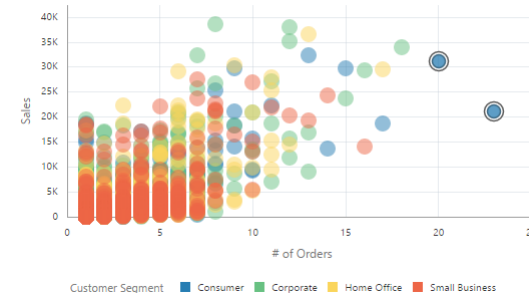
- Identify your main topic of interest with a performance tile
- Summary
- Evaluating a fact or a dimension?
  - Sales analysis
  - Customer or product analysis
- Fact analysis
  - Find lowest grain
  - Flat low distribution
  - Event or transaction
- Look for clustered distribution
  - Scatter with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



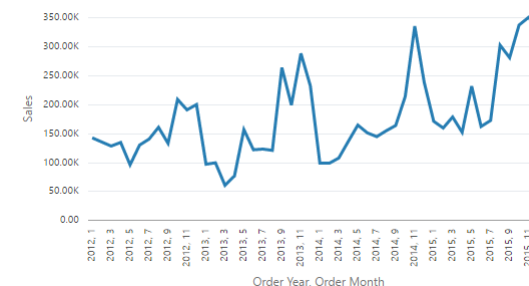
# Major Types and Uses of Graphs

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

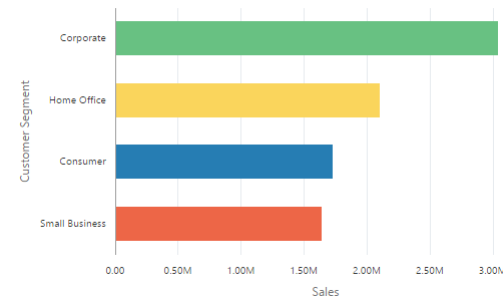
# of Orders, Sales by Customer Name, Customer Segment



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



# Oracle Test Drive

- Free to try Oracle BICS, Oracle Advanced Analytics
- Go to [www.vlamis.com/td](http://www.vlamis.com/td)
- Runs on Oracle Cloud
- Test Drives for:
  - Oracle BICS
  - Oracle Advanced Analytics (initially Oracle Data Mining)
- Once sign up, you can access for 24 hours
- Click by click script included, but can go “off road”
- Faster and easier than official Oracle “trial web account”





# Using BICS Test Drive on Oracle Cloud

## 1. Go to [www.vlamiS.com/td](http://www.vlamiS.com/td)

Select the cloud service you wish to try: \*

- ☐ Oracle BI Cloud Service - Visual Analyzer
- ☐ Oracle Advanced Analytics - Oracle Data Mining

Your Name \*

Email Address \*

This must be your corporate email address. Requests from free mail services such as Gmail will be declined.

Company Name \*

Daytime Phone Number \*

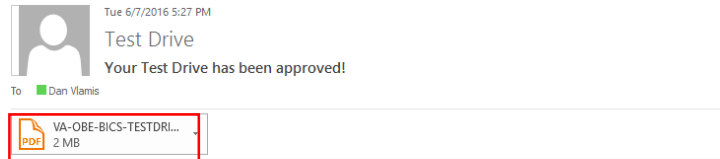
(###)    ###    #####

US phone number where you can be reached during normal business hours.

Comments

Submit

## 2. We send you email with userid/pw and script



Dear Dan,

Thank you for requesting time on the VlamiS Oracle Business Intelligence Cloud Services (BICS) Test drive.

You can access this from your browser at:



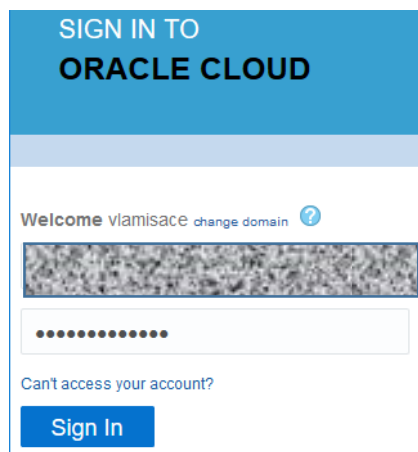
Please login with the following:

username / Password:

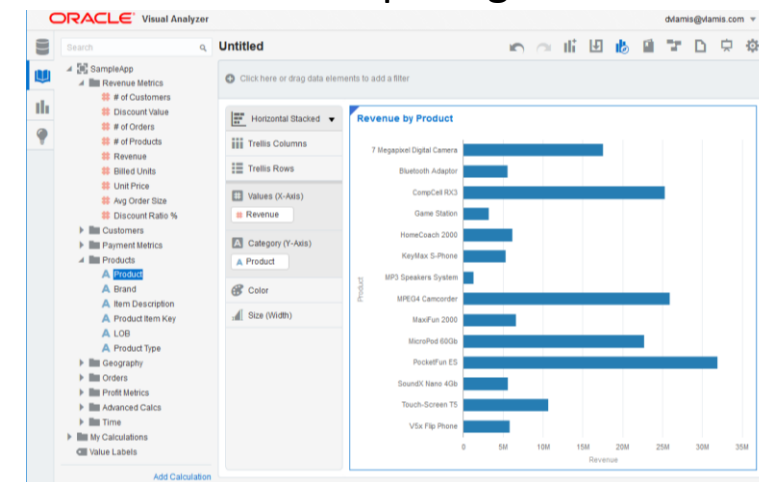


The attached document has access information and the lab activities. We hope you enjoy your exploration of Oracle BICS and we will follow up after your completion. This environment will be available to you for 24 hours.

## 3. Sign into BICS



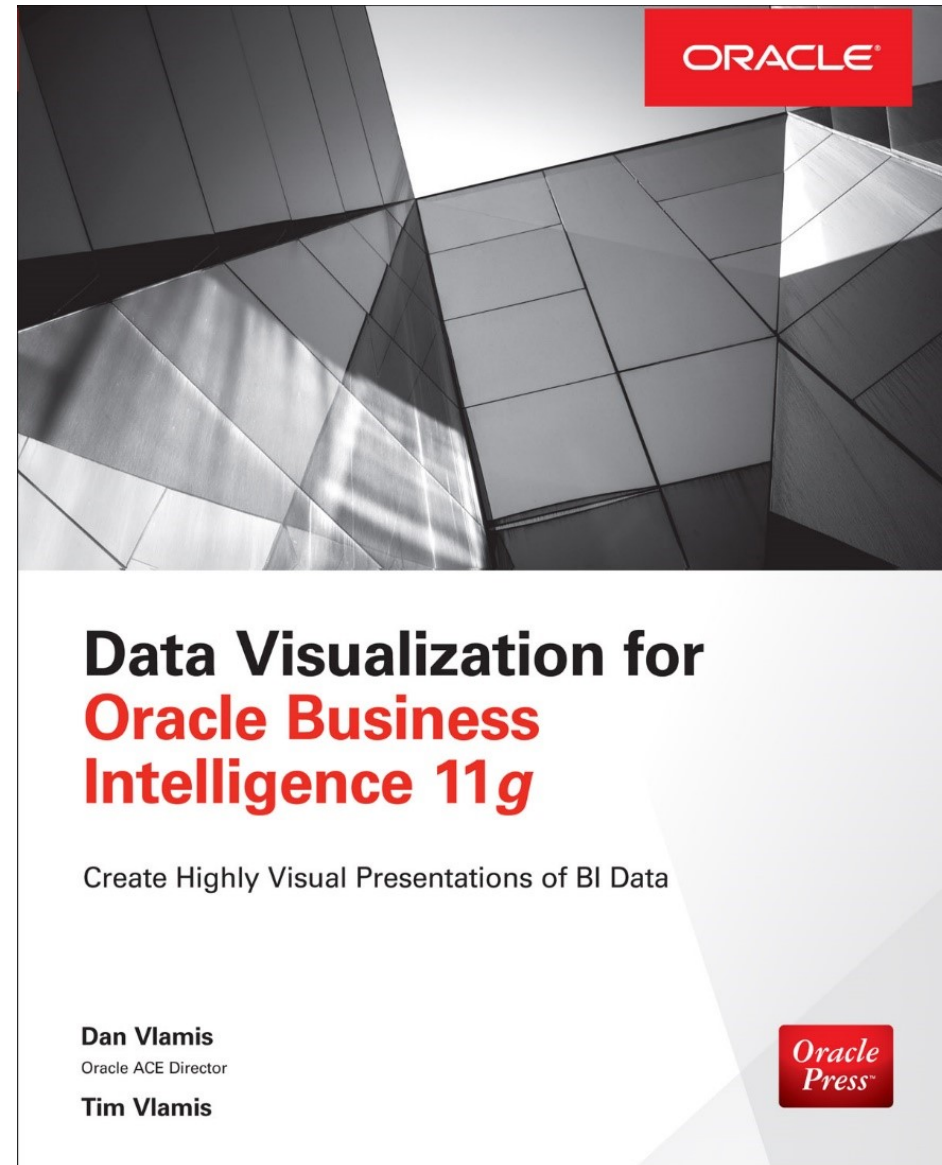
## 4. Use PDF file script or go off-road!





# Drawing for Free Book

Add business card to basket  
or fill out card



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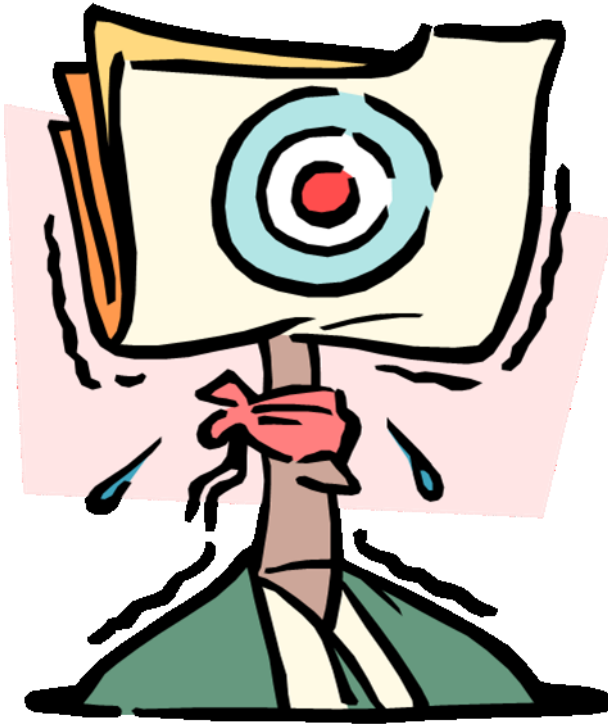


[www.biwasummit.org](http://www.biwasummit.org)





# Questions?





# Thank You!

## Data Visualization Best Practices for Oracle Business Intelligence

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