Data Visualization for Oracle BI 12c and Visual Analyzer

Tim Vlamis and Dan Vlamis
Wednesday, February 1, 2017
Agenda

- Understanding the foundations of data discovery
- Discovery scenarios
- Discovery frameworks
- Using Visual Analyzer to discover data insights
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
Dan Vlamis and Tim Vlamis

Dan Vlamis – President
- Founded Vlamis 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 Vlamis – 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
Data Visualization Scenarios

Deliberative Response

Data Discovery

Immediate Response

Situational Awareness

Thresholds

BI Dashboards

Individual

Organizational
Discovery - Explore vs Pioneer
True Discovery

[Image of Ernest Shackleton]

[Image of newspaper advertisement: "MEN WANTED for hazardous journey, small wages, bitter cold, long months of complete darkness, constant danger, safe return doubtful, honor and recognition in case of success."

Ernest Shackleton

4 Burlington st.

MEN—Near-appearing young men of 21 and 40..."]
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
<table>
<thead>
<tr>
<th>Position Analysis</th>
<th>Performance Analysis</th>
<th>Flow Analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>static</td>
<td>period of time</td>
<td>period of time</td>
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<tr>
<td>descriptive</td>
<td>results</td>
<td>change in single asset/resource</td>
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<tr>
<td>relative/comparative</td>
<td>fixed vs. variable</td>
<td>sources and uses</td>
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<td>balance sheet</td>
<td>P&amp;L</td>
<td>cash flow</td>
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<tr>
<td>strength/weakness</td>
<td>bottom line/zero based</td>
<td>change over time</td>
</tr>
<tr>
<td>portrait</td>
<td>motion picture</td>
<td>narrative</td>
</tr>
</tbody>
</table>

An Example Useful Framework
Position Analysis

- Measure/Fact
- Time Period
- Attributes
- Bar Chart
- Scatter Plot
- Treemap
Performance Analysis

- Measure/Fact
- Attributes
- Time Period

- Bar Chart
- Scatter Plot
- Line Chart
- Area Chart
- Trellis
Flow Analysis

Line Chart
Area Chart
Trellis
Waterfall

Measure/Fact

Attributes

Time Period
Well Established Frameworks

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

<table>
<thead>
<tr>
<th>Low number of factors / cardinality</th>
<th>High number of factors / cardinality</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lowest Grain</strong></td>
<td><strong>Trend/cycle Correlation Outlier</strong></td>
</tr>
<tr>
<td><strong>Trellis</strong></td>
<td><strong>Comparative Correlation</strong></td>
</tr>
<tr>
<td><strong>Flat</strong></td>
<td><strong>Shaped</strong></td>
</tr>
</tbody>
</table>
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

Add screen captures for each type with callouts?
Examples in SampleApp DV?
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 Cloud Test Drive

- **Free** to try Oracle BICS, Oracle Advanced Analytics
- Go to [www.vlamis.com/tdcloud](http://www.vlamis.com/tdcloud)
- Runs on Oracle Cloud
- Test Drives for:
  - Oracle BICS
  - Oracle Advanced Analytics (call us)
  - More test drives to be added
- 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”
Add business card to basket or fill out card
Questions?
Thank You!

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