Oracle Analytics Cloud in the Bright Lights of the City of Las Vegas

Al Pitts, IT Business Relationship Manager, City of Las Vegas
Raghav Venkat, City of Las Vegas
Dan Vlamis, Vlamis Software Solutions, Inc.

Monday, September 16, 01:45 PM – 02:30 PM | Moscone West - Room 2024A
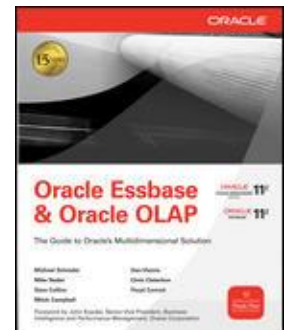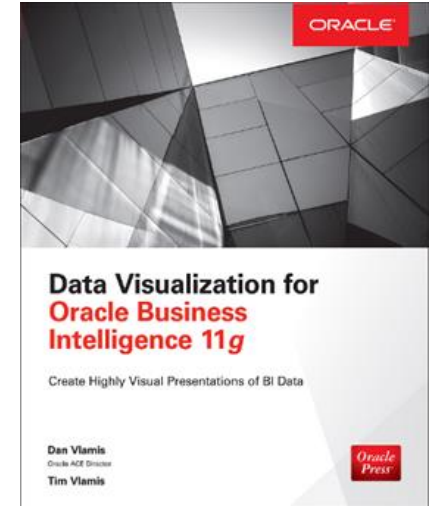
WELCOME TO LAS VEGAS

- 26th Largest City
- 40 Million Annual Visitors
- $1.1B Downtown Gaming Revenue
- 44% Work in Tourism
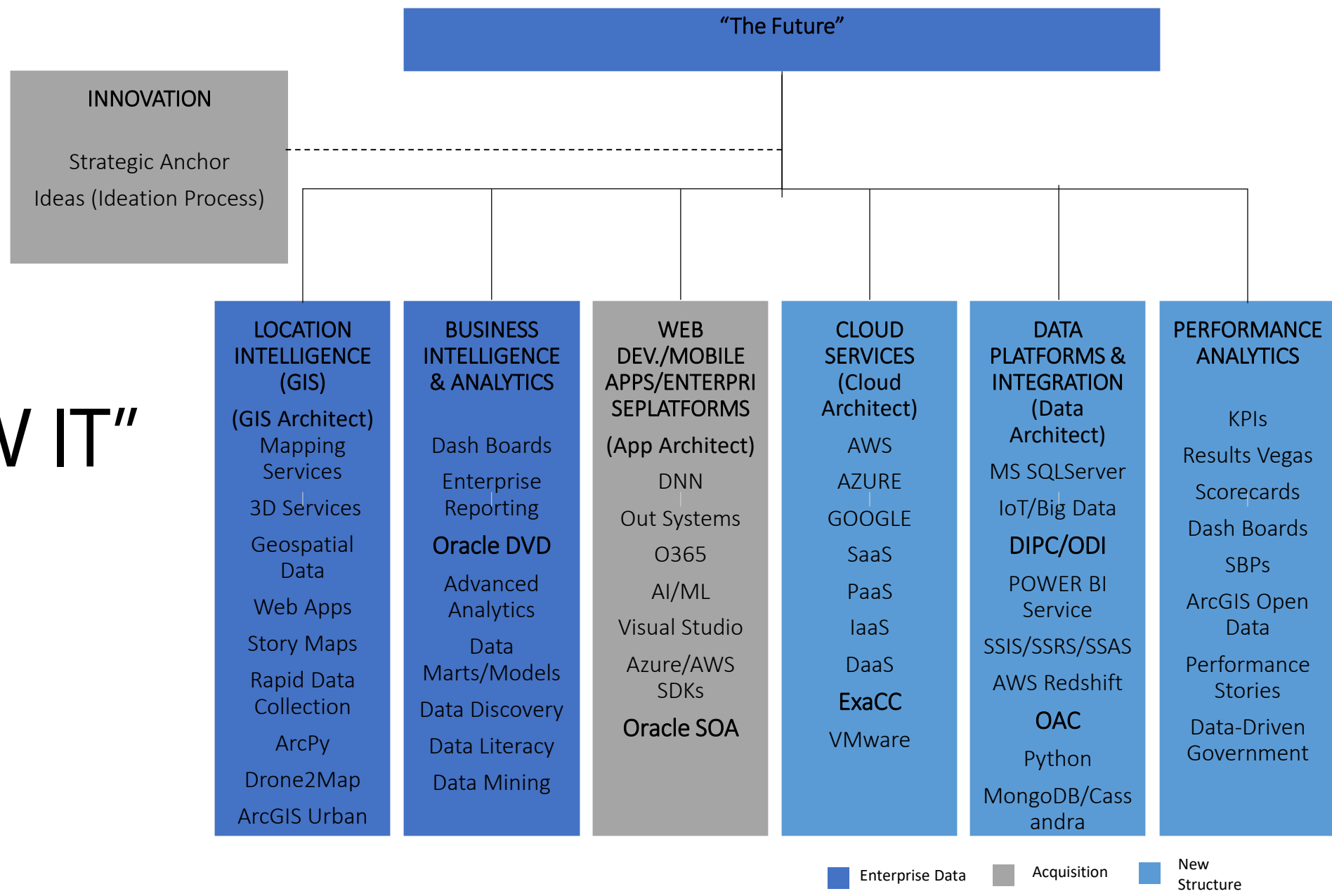- 21,000 Conventions
- $700 Gambling Budget

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 (blog, papers, newsletters, services)
- Co-authors of book "Data Visualization for OBI"
- Co-author of book "Oracle Essbase & Oracle OLAP"
- Oracle University Reseller
- Oracle Gold Partner

"THE NEW IT"

"The Future"

INNOVATION

Strategic Anchor

Ideas (Ideation Process)

LOCATION INTELLIGENCE (GIS)

(GIS Architect)
Mapping Services
3D Services
Geospatial Data
Web Apps
Story Maps
Rapid Data Collection
ArcPy
Drone2Map
ArcGIS Urban

BUSINESS INTELLIGENCE & ANALYTICS

Dash Boards
Enterprise Reporting
Oracle DVD
Advanced Analytics
Data Marts/Models
Data Discovery
Data Literacy
Data Mining

WEB DEV./MOBILE APPS/ENTERPRISEPLATFORMS

(App Architect)
DNN
Out Systems
O365
AI/ML
Visual Studio
Azure/AWS SDKs
Oracle SOA

CLOUD SERVICES (Cloud Architect)

AWS
AZURE
GOOGLE
SaaS
PaaS
IaaS
DaaS
ExaCC
VMware

DATA PLATFORMS & INTEGRATION (Data Architect)

MS SQLServer
IoT/Big Data
DIPC/ODI
POWER BI Service
SSIS/SSRS/SSAS
AWS Redshift
OAC
Python
MongoDB/Cassandra

PERFORMANCE ANALYTICS

KPIs
Results Vegas
Scorecards
Dash Boards
SBPs
ArcGIS Open Data
Performance Stories
Data-Driven Government

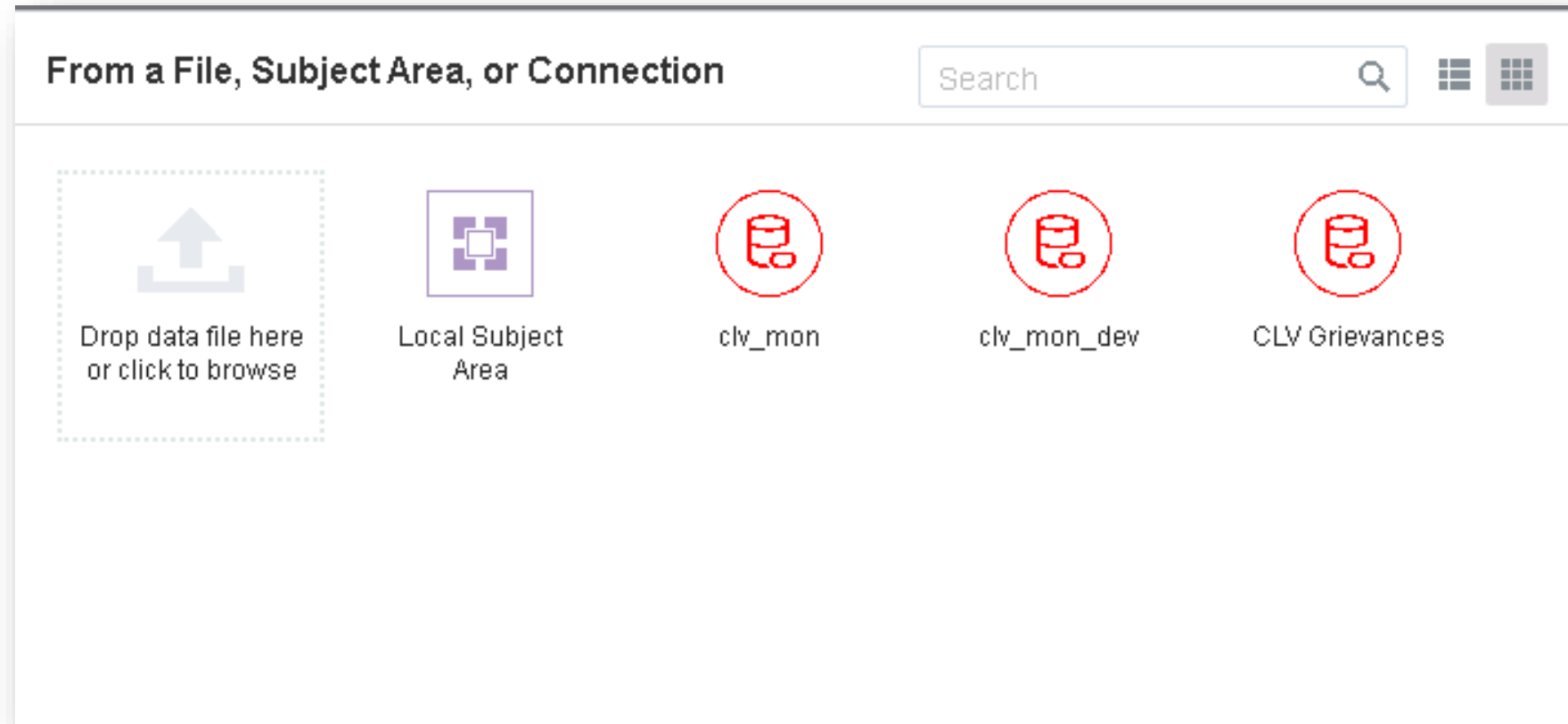Enterprise Data   Acquisition   New Structure

Oracle Analytics Cloud (OAC)

- **Great visualization platform**
- **Powerful mobile platform**
- **Stresses on self-service**
- **Advanced Analytics**

Building a data set / data model

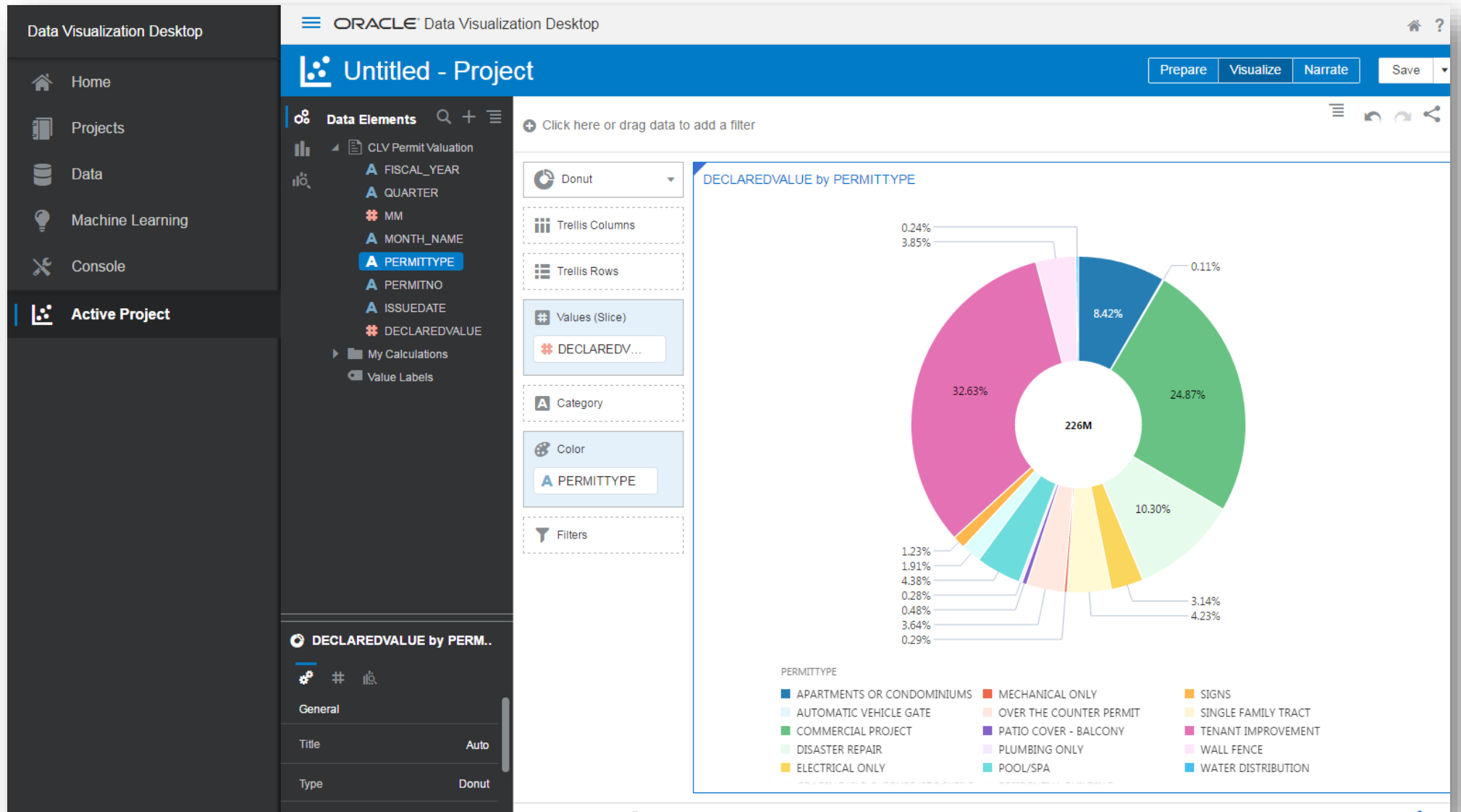# Design an extract, transform and load sequence

Drag and drop visualization builder

Instant Mobility

Voice Activated Analytics

Data Visualization Scenarios

	Individual	Organizational
Deliberative Response	**Data Discovery**	**BI Dashboards**
Immediate Response	**Situational Awareness**	**Alerts Thresholds**

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Dashboard Definition

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

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Dashboard Definition

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

Exec Dashboard Issues Never Talked About

- Too many prompts
- Too much raw data without comparisons
    - Lack of normalization
    - Lack of differencing
- Lack of exception analysis
- Data views out of scale with each other
- Data scale not matched to decision scale

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Data Discovery Steps

- Read through data in Data Prep view
- Determine what defines a record
- Identify facts and dimensions
- Use "Explain" with fact(s) to reveal important dimensions
- Build major dimension summary view

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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

Differencing (aka variance)

- How does the raw data differ from a comparative?
  - Difference from the average?
  - Difference by time?
  - Difference from a baseline?
- Graph differences when change or context is important.

Tables of raw data are difficult to interpret in terms of insights.

Profit by Product Category, Ship Date (Month of Year)

Ship Date (Year): 2016

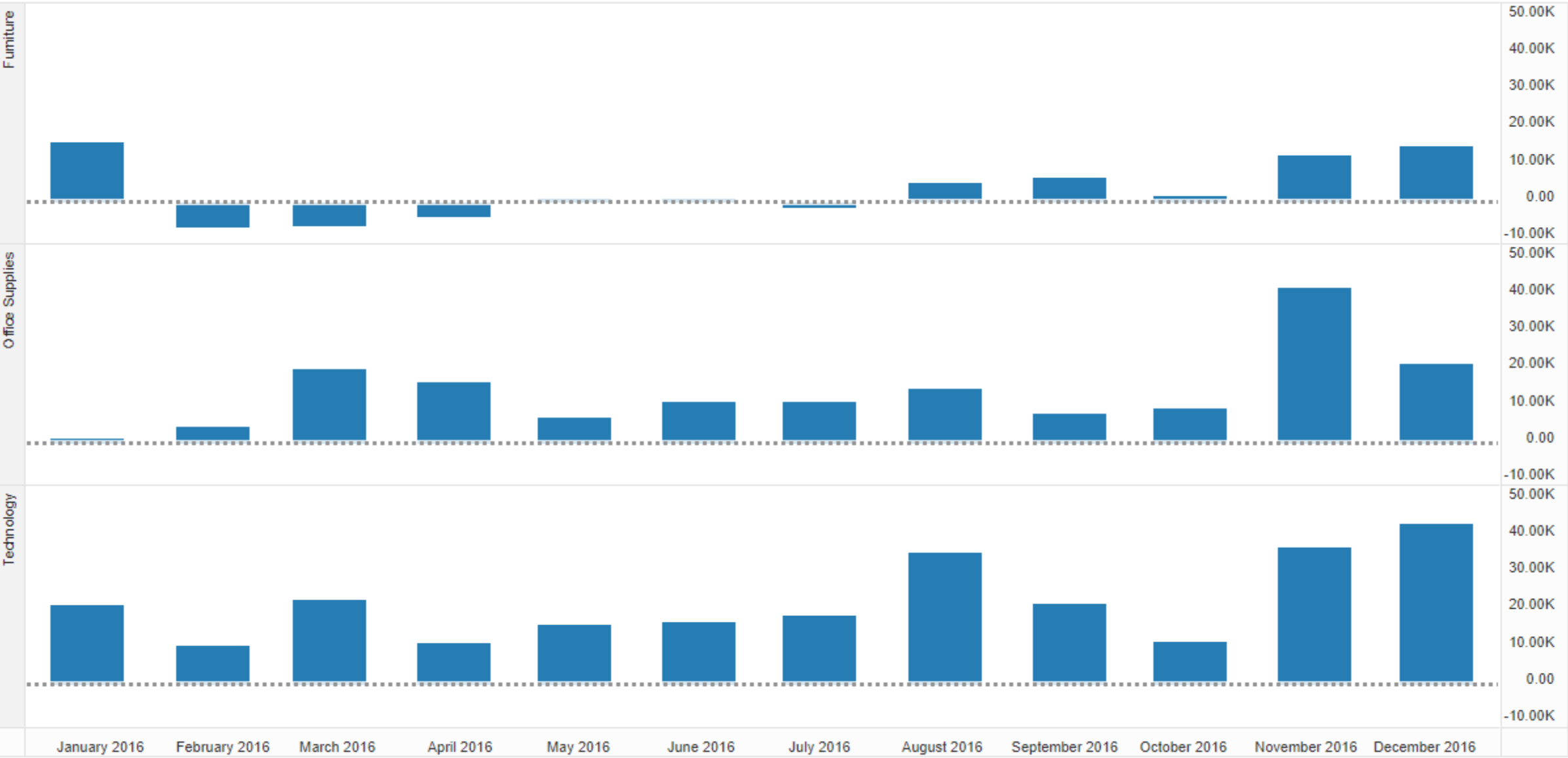|	January	February	March	April	May	June	July	August	September	October	November	December
	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit
Furniture	15,319.52	-6,521.75	-6,036.51	-3,840.61	815.26	786.44	-1,495.06	4,773.15	6,144.44	1,592.76	11,754.98	14,248.85
Office Supplies	1,304.85	4,328.80	18,881.06	15,416.42	6,415.03	10,620.04	10,439.39	13,747.45	7,426.44	8,987.29	39,365.44	20,105.56
Technology	20,072.05	9,937.51	21,529.90	10,436.88	15,091.24	15,696.36	17,631.00	33,250.75	20,419.80	11,012.20	34,628.01	40,749.94

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Profit by Profit, Product Category, Ship Date (Month of Year)

Ship Date (Year): 2016

	January	February	March	April	May	June	July	August	September	October	November	December
	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit	Profit
Furniture	15,319.52	-6,521.75	-6,036.51	-3,840.61	815.26	786.44	-1,495.06	4,773.15	6,144.44	1,592.76	11,754.98	14,248.85
Office Supplies	1,304.85	4,328.80	18,881.06	15,416.42	6,415.03	10,620.04	10,439.39	13,747.45	7,426.44	8,987.29	39,365.44	20,105.56
Technology	20,072.05	9,937.51	21,529.90	10,436.88	15,091.24	15,696.36	17,631.00	33,250.75	20,419.80	11,012.20	34,628.01	40,749.94

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Profit by Ship Date (Month), Product Category

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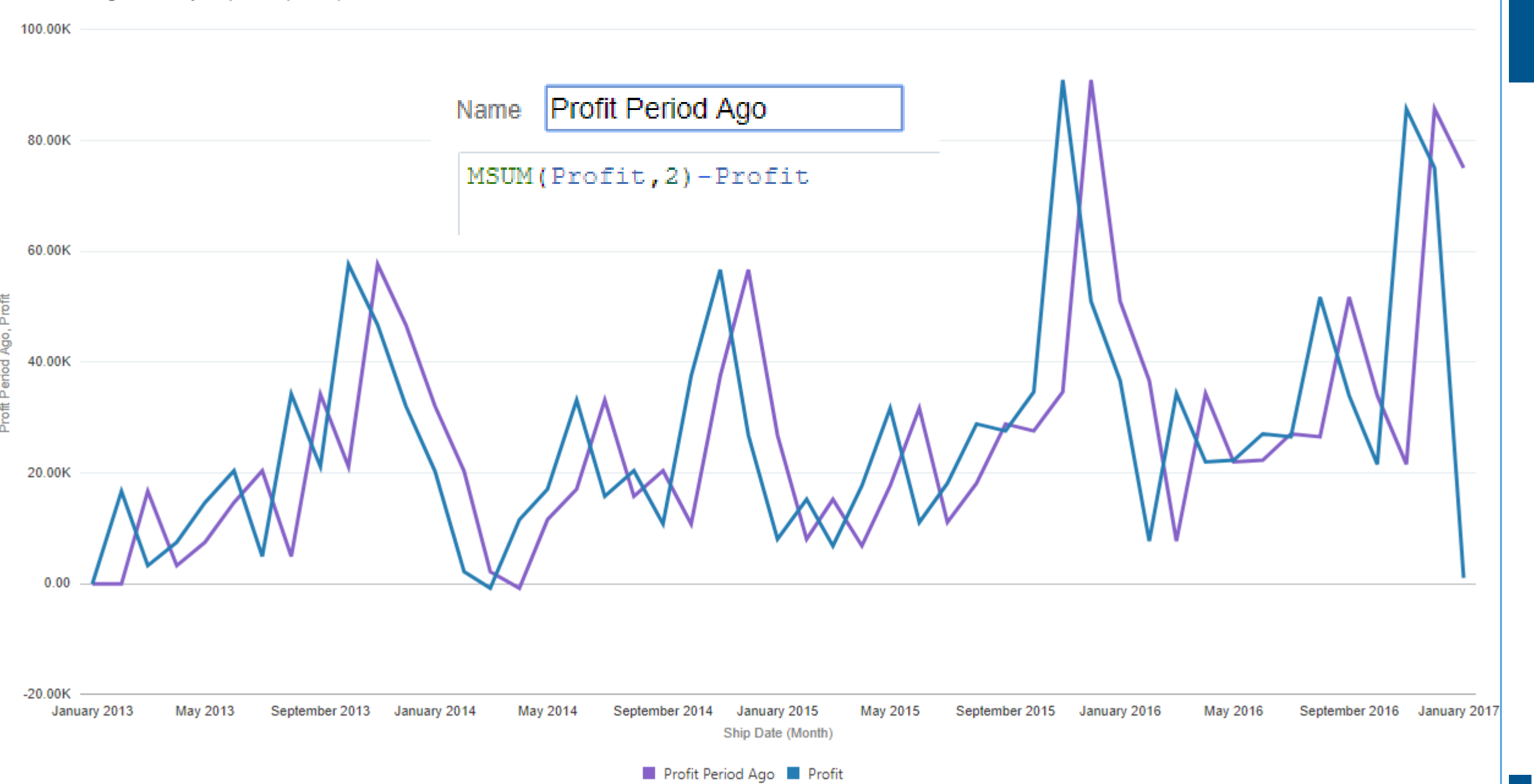
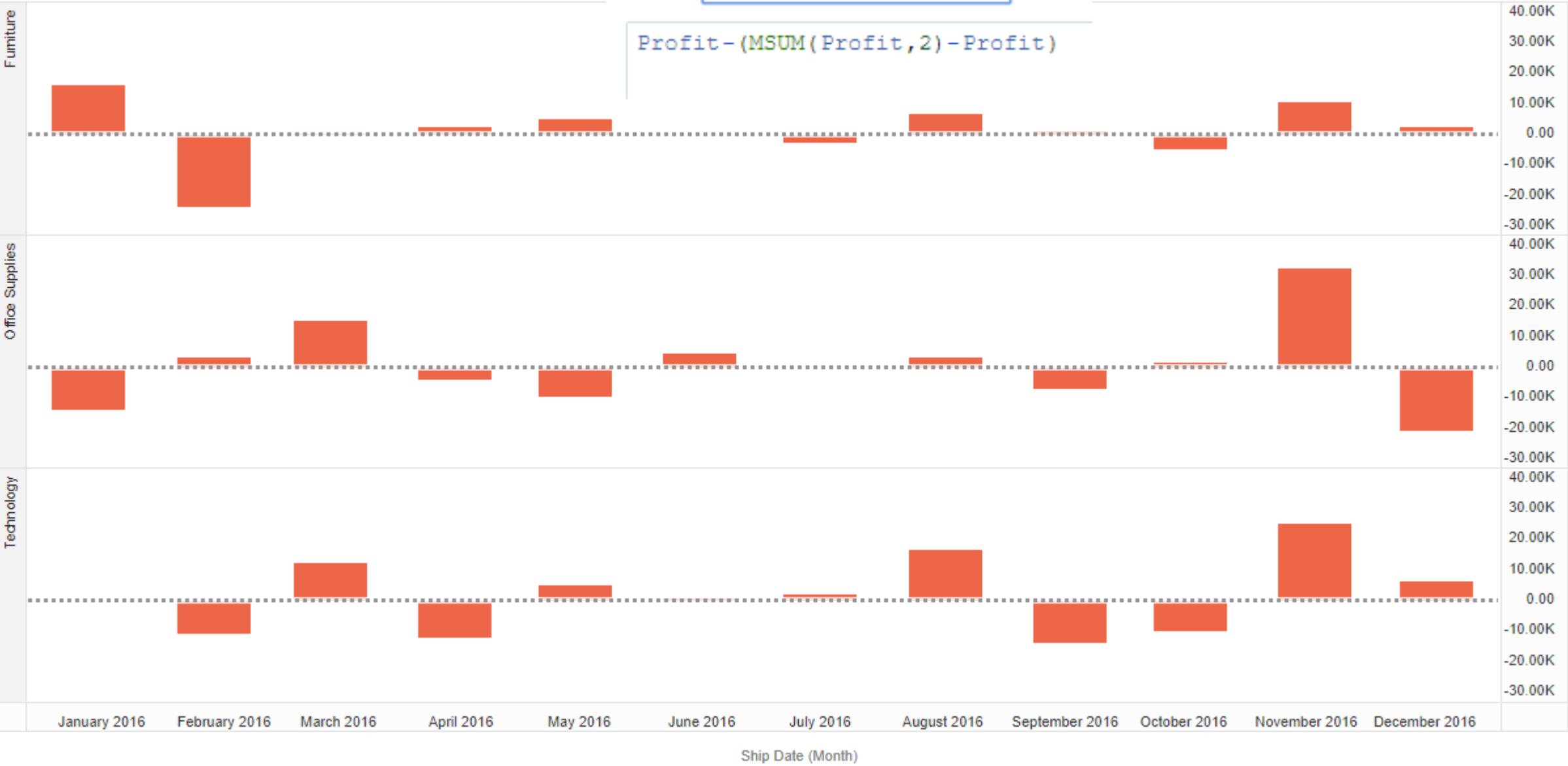# Profit Diff by Ship Date (Month), Product Category

Ship Date (Year): 2016

Name: Profit Diff

$$Profit-(MSUM(Profit,2)-Profit)$$

Ship Date (Month)

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Ship Date (Year)
2016

Sales
Top 50

Ship Date (Month)
February 2016

Horizontal Bar

Trellis Columns

Trellis Rows

Values (X-Axis)
Profit Diff

Category (Y-Axis)
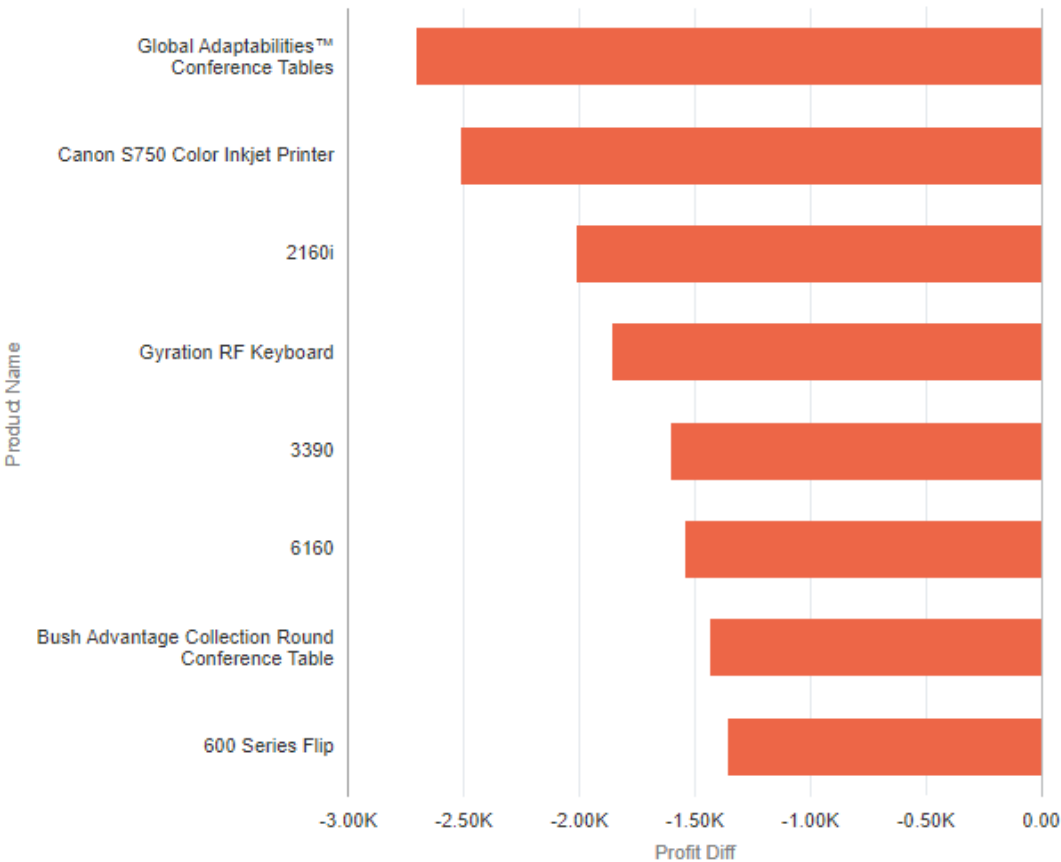Product Name

Color

Size (Width)

Tooltip

Detail

Filters
Profit Diff

Biggest Profit Movers By Month

Top 50 Products by Sales
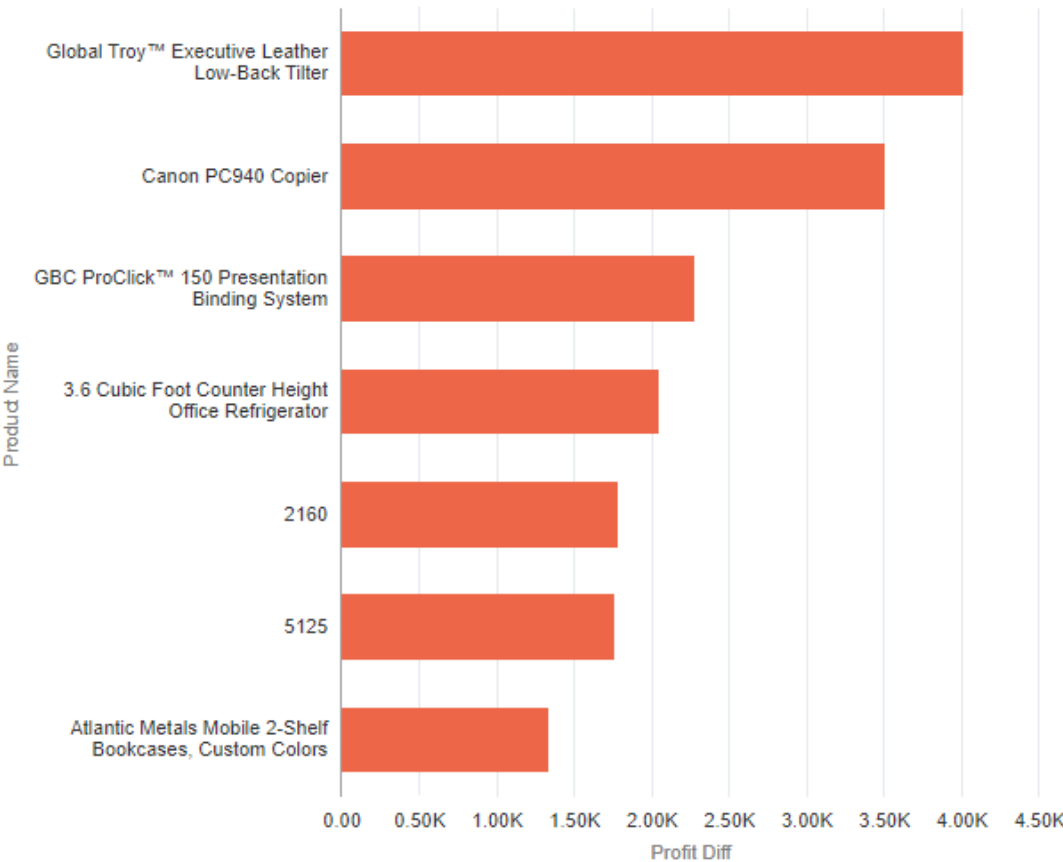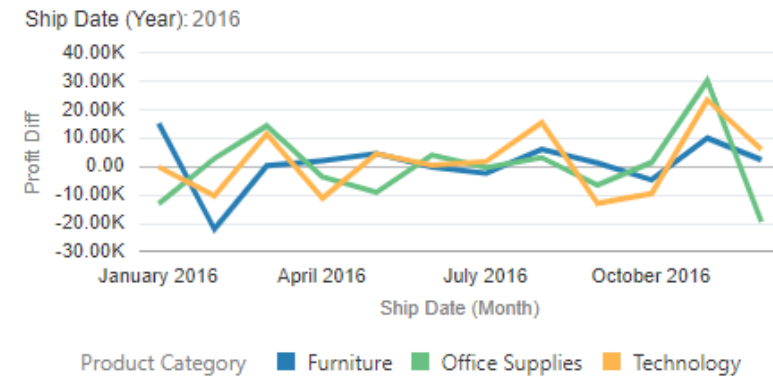
Profit Diff by Product Name
Bottom 10 Profit Diff

Product Name	
Global Adaptabilities™ Conference Tables	
Canon S750 Color Inkjet Printer	
2160i	
Gyration RF Keyboard	
3390	
6160	
Bush Advantage Collection Round Conference Table	
600 Series Flip	

Profit Diff axis: -3.00K, -2.50K, -2.00K, -1.50K, -1.00K, -0.50K, 0.00

Profit Diff

Profit Diff by Product Name
Top 10 Profit Diff

Product Name	
Global Troy™ Executive Leather Low-Back Tilter	
Canon PC940 Copier	
GBC ProClick™ 150 Presentation Binding System	
3.6 Cubic Foot Counter Height Office Refrigerator	
2160	
5125	
Atlantic Metals Mobile 2-Shelf Bookcases, Custom Colors	

Profit Diff axis: 0.00, 0.50K, 1.00K, 1.50K, 2.00K, 2.50K, 3.00K, 3.50K, 4.00K, 4.50K

Profit Diff

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Bar

Trellis Columns

Trellis Rows

A Product Cate...

Values (Y-Axis)

Profit Diff

Category (X-Axis)

Ship Date (M...

Color

Size (Width)

Tooltip

Detail

Filters

Ship Date (Ye...

Profit Diff by Ship Date (Month), Product Category

Ship Date (Year): 2016

Ship Date (Month)

··· Constant

Profit Diff by Ship Date (Month), Product Category

Ship Date (Year): 2016

Ship Date (Month)

Product Category ■ Furniture ■ Office Supplies ■ Technology

Profit by Profit, Ship Date (Month of Year), Product Category

Ship Date (Year): 2016

	Furniture	Office Supplies	Technology
	Profit	Profit	Profit
January	15,319.52	1,304.85	20,072.05
February	-6,521.75	4,328.80	9,937.51
March	-6,036.51	18,881.06	21,529.90
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October	1,592.76	8,987.29	11,012.20
November	11,754.98	39,365.44	34,628.01
December	14,248.85	20,105.56	40,749.94

Profit   -7K   41K

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Dimensional Analysis

- Use brushing and selection with multiple graph layouts.
  - Build four or five graphs with related attributes or measures.
  - Too many graphs or several highly dense graphs exceed limitations
- Consider alternative graph types
  - Scatter plots
  - Trellis charts
  - Sankey graphs
  - Parallel coordinates

Dimensional Analysis

- Order of importance for Scatter Plots
  1. Y Axis typically has the "response variable", i.e. highest interest
  2. X axis has the "independent variable".

  3. Color (can be categorical or numeric)
  4. Size
  5. Trellis by category
  6. Shape
  7. Filters
- Use logarithmic scale for "long tail" distributions or break into two or more graphs.

Trellis Charts

- Make sure that the major axis of interest is aligned with Trellis chart choice.
  - Vertical when X axis is important
    - Example: compare patterns over time
    - Compare length of horizontal bar graph
  - Horizontal when Y axis important
    - Compare lengths of vertical bar graphs
- Use horizontal for long, scrolling trellis charts with many members
- Use both to create a table of graphs

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Sankey Graphs

- Used in "flow" analyses and comparative analyses
- Used to show relative strengths of relationships between attributes
- Line weight and size are proportional to flow/relational measure
- Hover and click on lines to show relationships
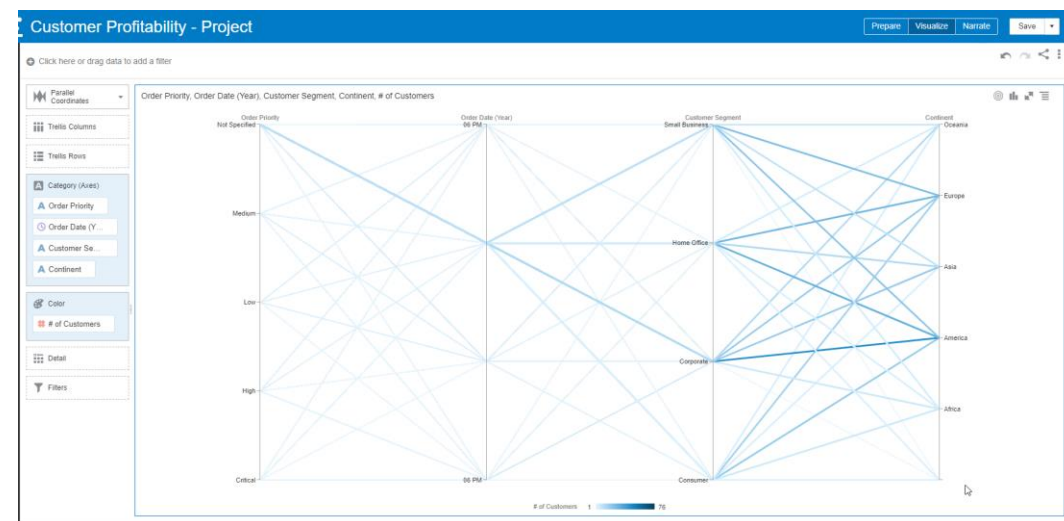- Sort order is very important
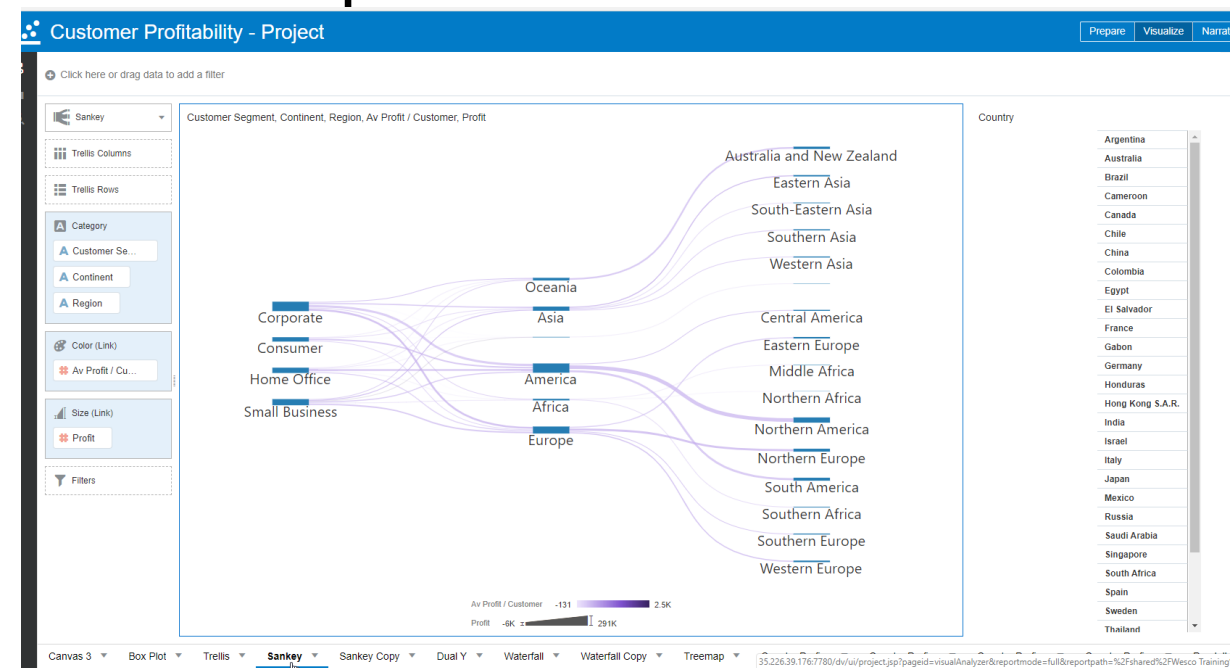
Parallel Coordinates Graphs

- Used to show otherwise disparate relationships
- "Custom join graph"
- Each line represents a record in the **active** data set
- Sort order is extremely important
- Highly interactive
- Not recommended for general users

Customer Profit Analysis

- Highlight **Customer Segment** and **Profit** and drag to canvas.
  - Horizontal bar chart
  - Set "Use as Filter"
- Create new column "**Customer Profit Bin**" and "**Gross Profit**"
- Highlight **Sales**, **Profit**, **Customer Profit Bin** and **Gross Profit** and drag to canvas.
  - Bar graph Sales and Profit, color as "Gross Profit"
- Highlight **Profit**, **Sales**, and **Customer Name** and drag to canvas.
 - Scatter plot and add reference lines.

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

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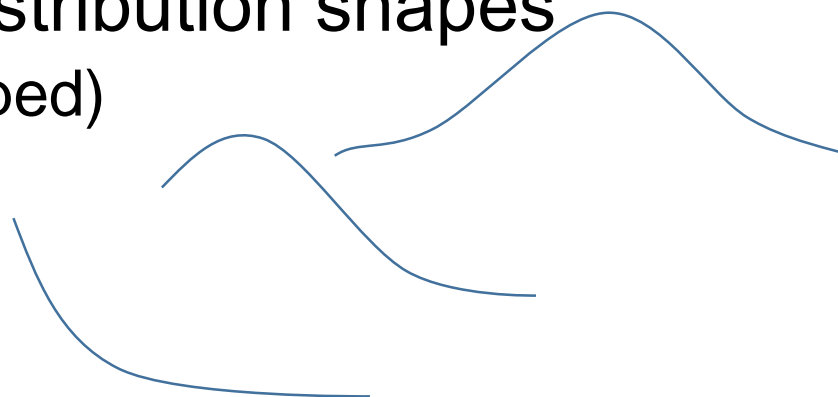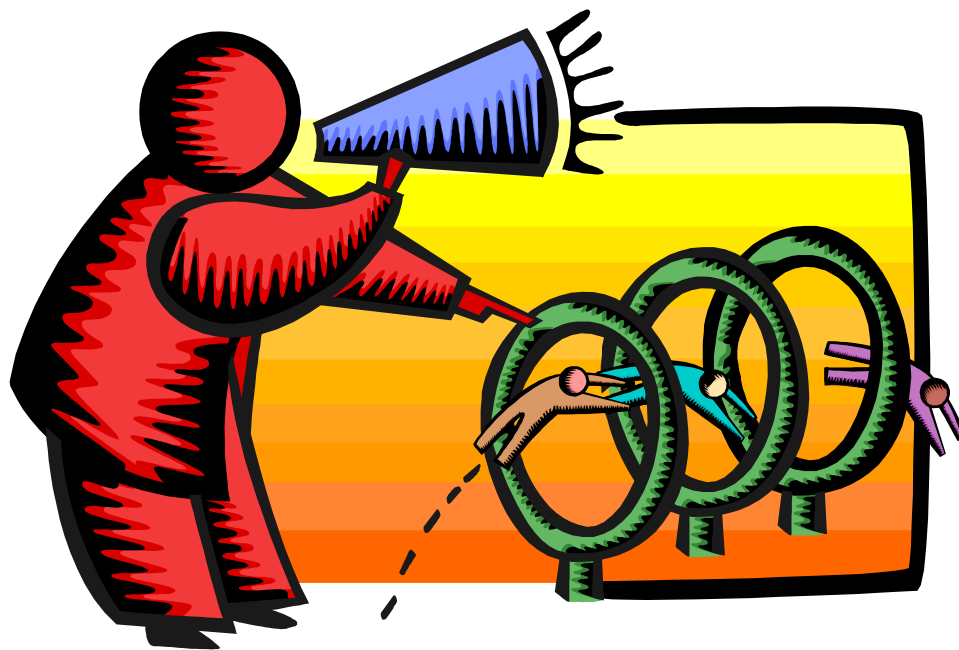
Keys to Data Discovery

- 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
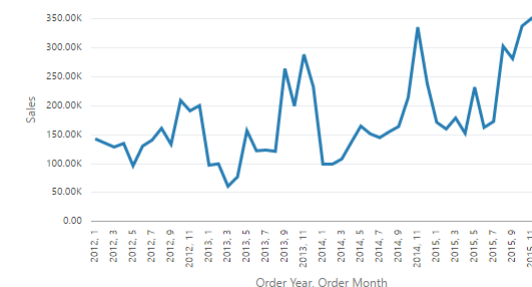
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Major Types and Uses of Graphs

- Scatter plot – outlier detection

- Line graph – time based measures. Looking for trends and patterns

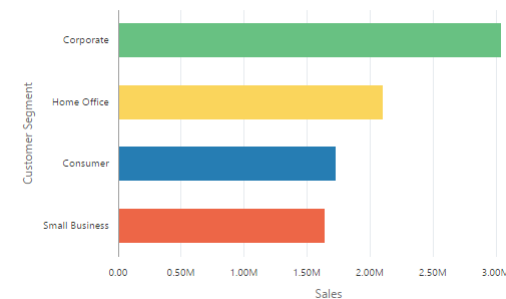- Bar graph – comparison analysis

# of Orders, Sales by Customer Name, Customer Segment

Customer Segment ■ Consumer ■ Corporate ■ Home Office ■ Small Business
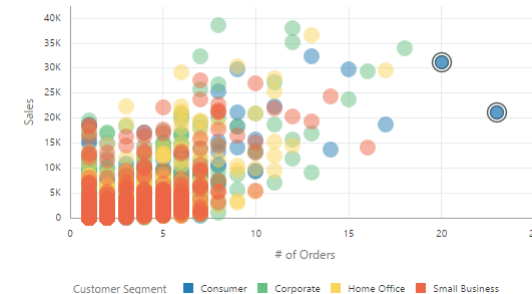
Sales by Order Year, Order Month

Sales by Customer Segment

Map Views and Location Analytics

- GeoJSON map layers
- Understanding and using built-in features of OAC
- NEW Spatial Studio

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Data Narratives/Evidence Based Stories

- Using OAC Narrative tab
- Reader/viewer experience
- Add verbiage for clarity and emphasis
- Numbers are read like words
- Graphs and visualizations are interpreted like pictures

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