

ODTUG

Kscope16



CHICAGO, ILLINOIS · JUNE 26-30

PLEASE FILL OUT YOUR EVALUATIONS

# Data Visualization for Oracle Business Intelligence

ODTUG KScope 16  
Dan VlamiS & Tim VlamiS  
Monday, June 27, 2016



# VlamiS Software Solutions

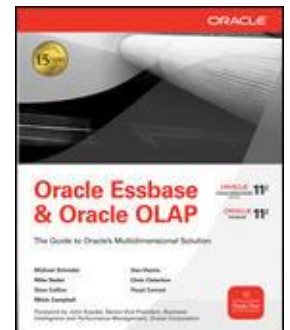
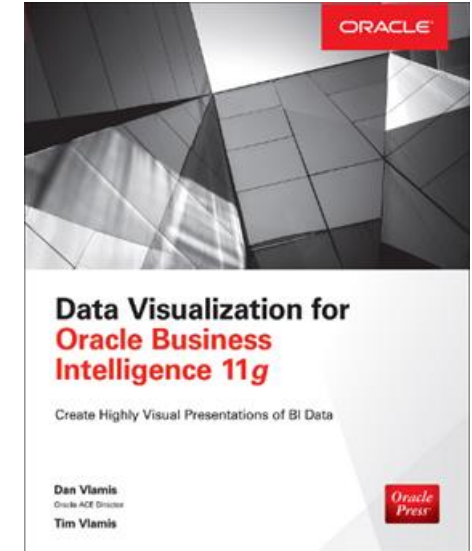
- VlamiS Software founded in 1992 in Kansas City, Missouri
- Developed 200+ Oracle BI and analytics systems
- Specializes in Oracle-based:
  - Enterprise Business Intelligence & Analytics
  - Analytic Warehousing
  - Data Mining and Predictive Analytics
  - Data Visualization
- Multiple Oracle ACEs,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

 APPROVED  
EDUCATION CENTER

 Gold  
Partner

Specialized  
Oracle Business Intelligence  
Foundation Suite 11g






# Dan and Tim VlamiS

## Dan VlamiS – President

- Founded VlamiS Software Solutions in 1993
- 30+ years in business intelligence, dimensional modeling
- Oracle ACE Director  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  ORACLE  
ACE
- Instructor for Oracle University's Data Mining Techniques and Oracle R Enterprise Essentials Courses
- Professional Certified Marketer (PCM) from AMA
- Adjunct Professor of Business Benedictine College
- MBA Kellogg School of Management (Northwestern University)
- BA Economics Yale University



# Vlami Involvement in Presentations

| Presenter                 | Time          | Location   | Title   |
|---------------------------|---------------|------------|---|
| Dan Vlami & Arthur Dayton | Mon 8:30 AM   | Mayfair    | Upgrading to Oracle Business Intelligence 12c   |
| Dan Vlami & Tim Vlami     | Mon 4:30 PM   | Mayfair    | Data Visualization for Oracle Business Intelligence   |
| Tim Vlami                 | Tues 8:30 AM  | Missouri   | Clustering Data with Oracle Data Mining: The Easiest Place to Start in Predictive Analytics |
| Arthur Dayton             | Tues 11:15 AM | Superior A | Data Discovery Best Practices with Visual Analyzer – Hands On Lab                           |
| Tim Vlami & Dan Vlami     | Tues 2:00 PM  | Mayfair    | Visual Analyzer and Best Practices for Data Discovery through Data Visualization            |



# Presentation Agenda

- Human cognition insights
- OBIEE demo
- Table design
  - Best practices
  - When and when not to use
- Graph design
  - Best practices
  - Use cases for different graph types
- Data Exploration
- Questions from audience at all times

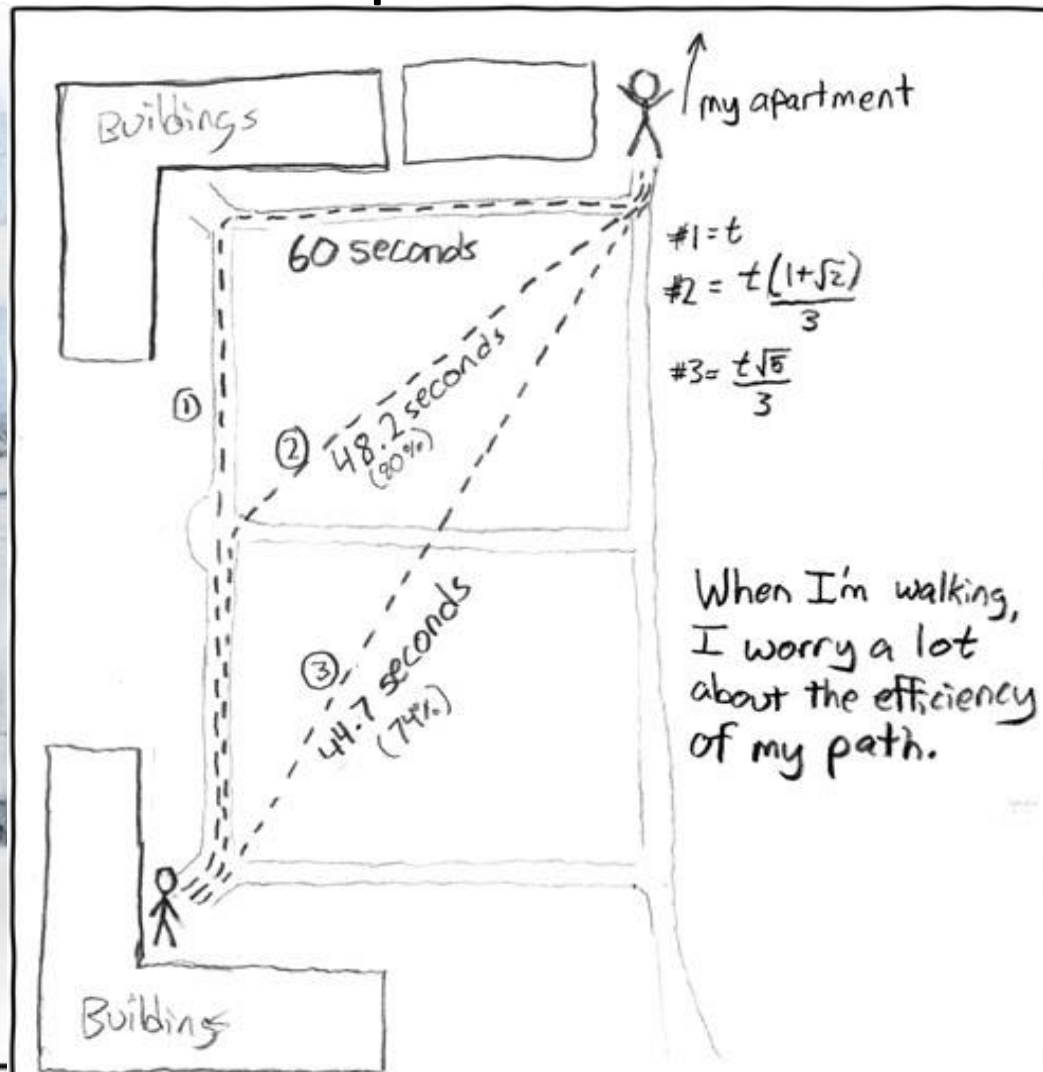


# Main Uses of BI Systems

## 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 wine rack is filled with more bottles, and a bunch of garlic hangs from a string. Two copper pots hang from a brass scale in the center. The scene is set against a backdrop of autumn leaves and greenery, with jars of spices and other kitchenware scattered throughout.

**Ingredients → Data Quality & Variety**



**Technique → Data Processing & Prep**



**Presentation → Data Visualization**







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

## Delay Performance by Geography

Key Metrics and Associated Delays

% of All Rows :

59.49%

\* Month

Between

12

6

1

Origin Airport

--Select Value--

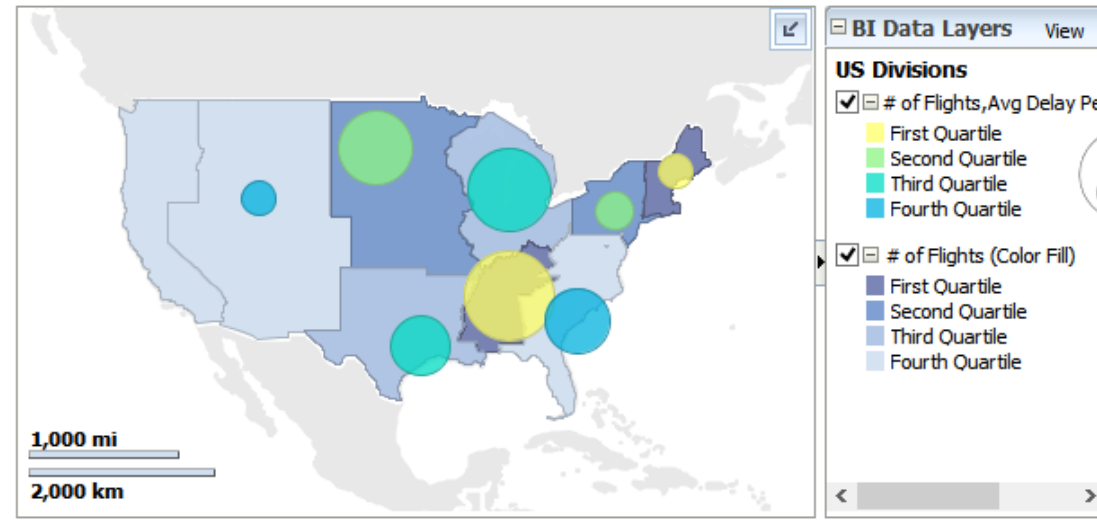
Carrier

--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%         |

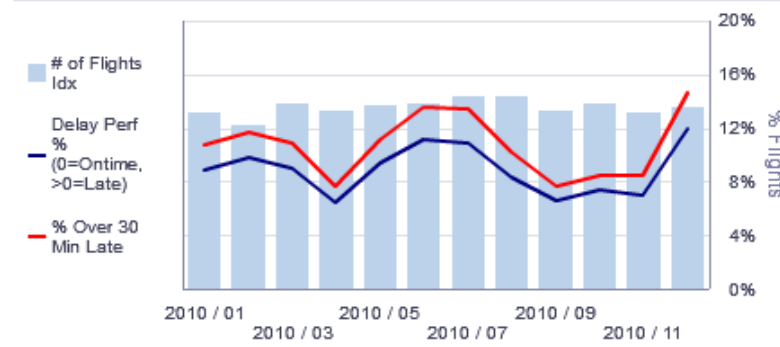


## Late Flight Trends

By Time and Performance % Thresholds

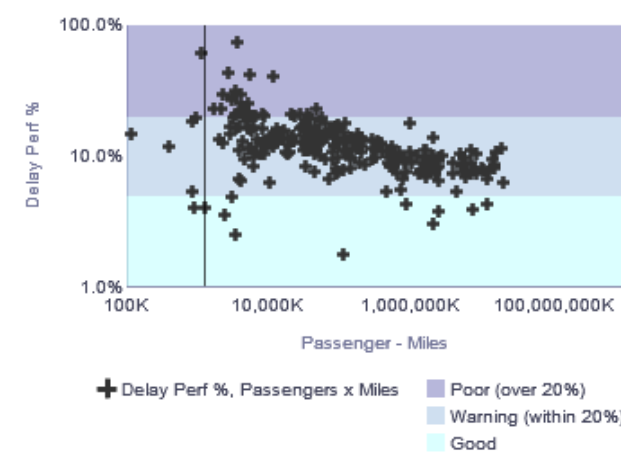


### Pct of Scheduled Flights



Orig Airport: All Orig Airports

### Delay % by Passenger x Miles





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

# Flight Delay Performance by Geography

## Key Metrics and Associated Delays

% of All Rows :  
  
59.4%

Dashboard Prompts  
for all four analyses

\* Month  
Between  
12 11 10 9 8 7 6 5 4 3 2 1

Origin Airport  
--Select Value--

Carrier  
--Select Value--

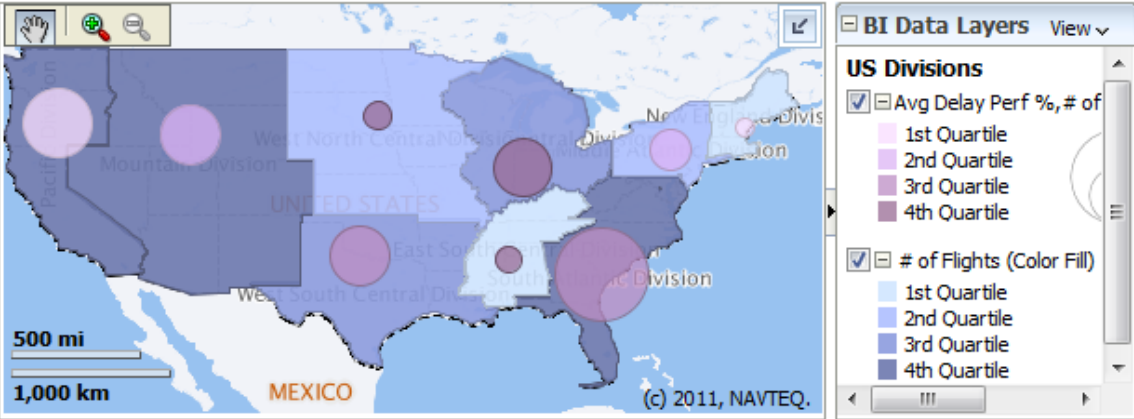
Dest Region  

☐ Midwest Region

☐ Northeast Region

☐ South Region

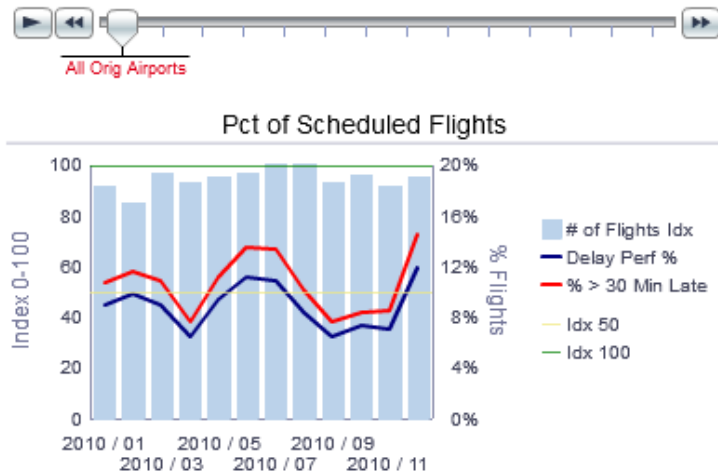
☐ West Region



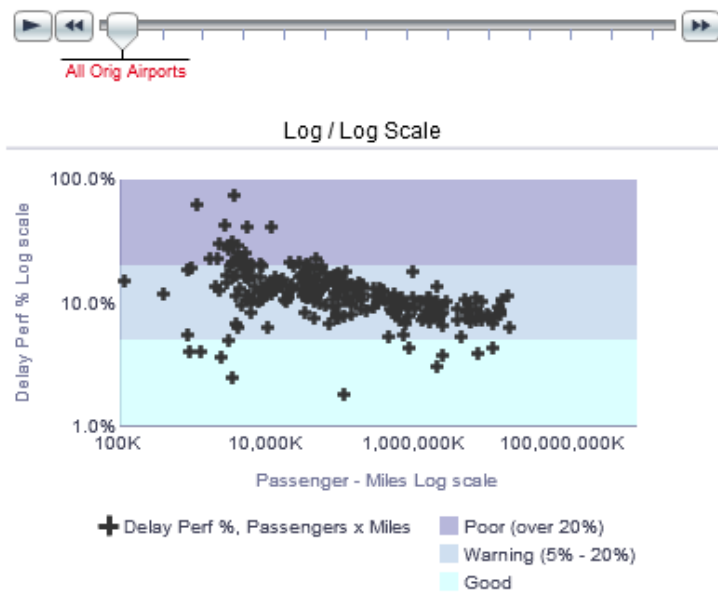
| Orig Airport                | # of Flights | % of Total | Passenger - Miles (M) | Delay Perf % |
|-----------------------------|--------------|------------|-----------------------|--------------|
| All Orig Airports           | 3,709,454    | 100.0%     | 328,034               | 9.1%         |
| Midwest 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



# Delay % by Passenger x Miles





# Best Practice Focus for Dashboards

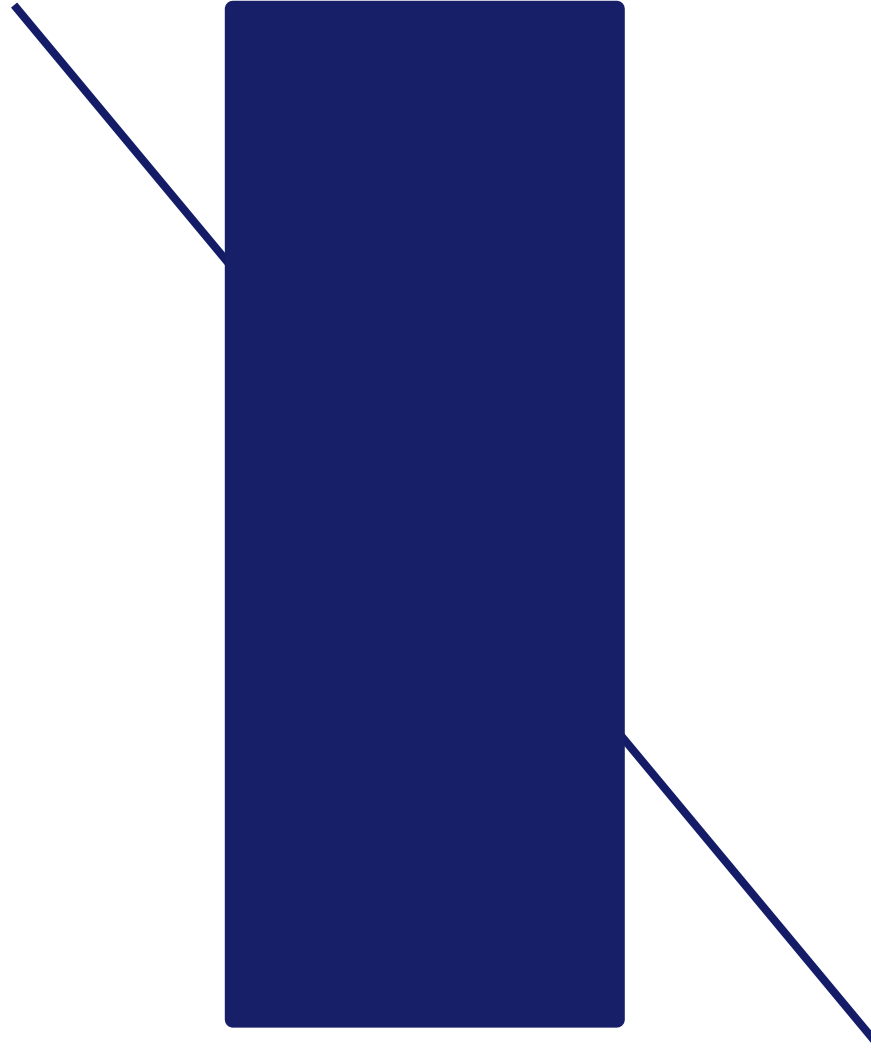
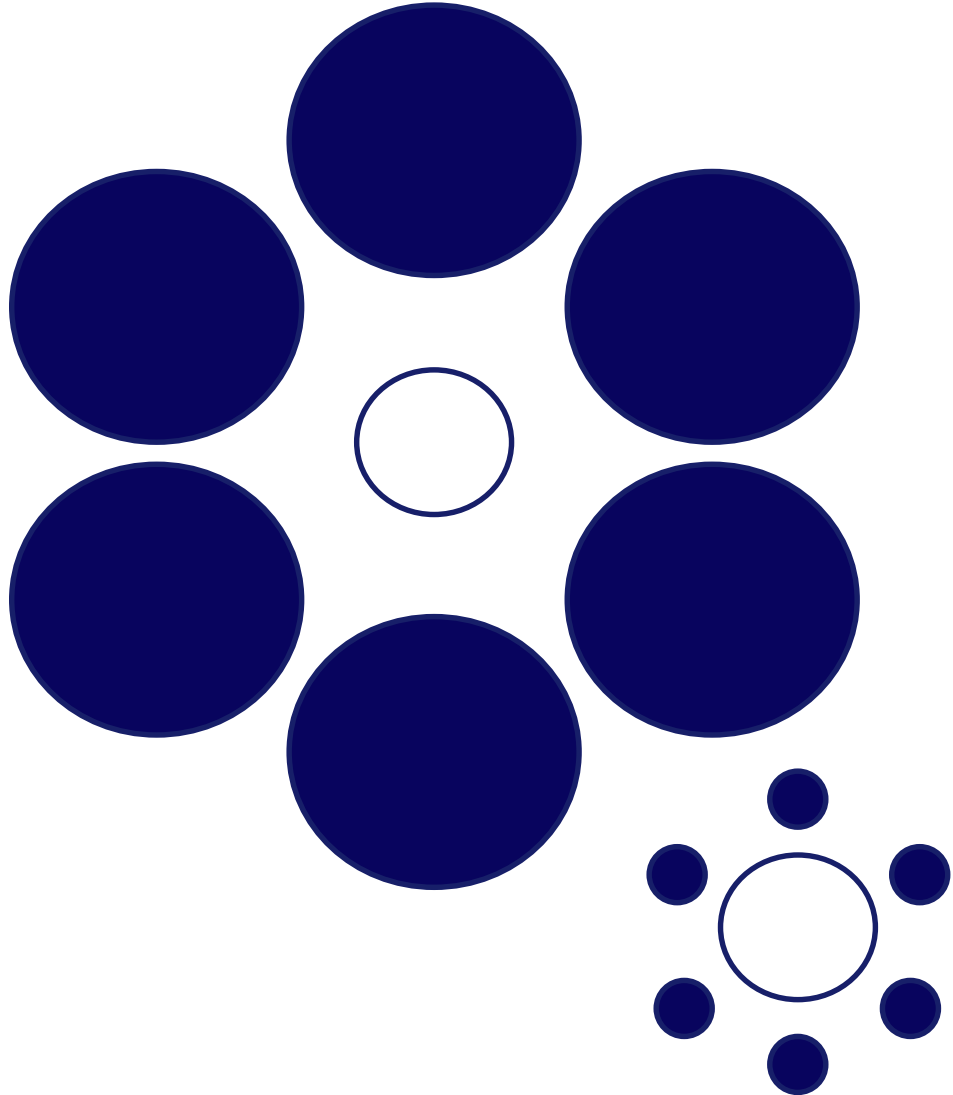
- Best practices are objective guides for effectiveness
- Visualizations should be guided by:
  - Human cognition
  - Accurate representations of data
  - Preferred message (consciously designed by visualization developer)
- Visualizations should NOT be guided by:
  - Taste or what looks “good” to one person
  - Entertain users
  - A desire to “fill the white space”



# The Principles of Human Cognition Should Guide BI Dashboard Design

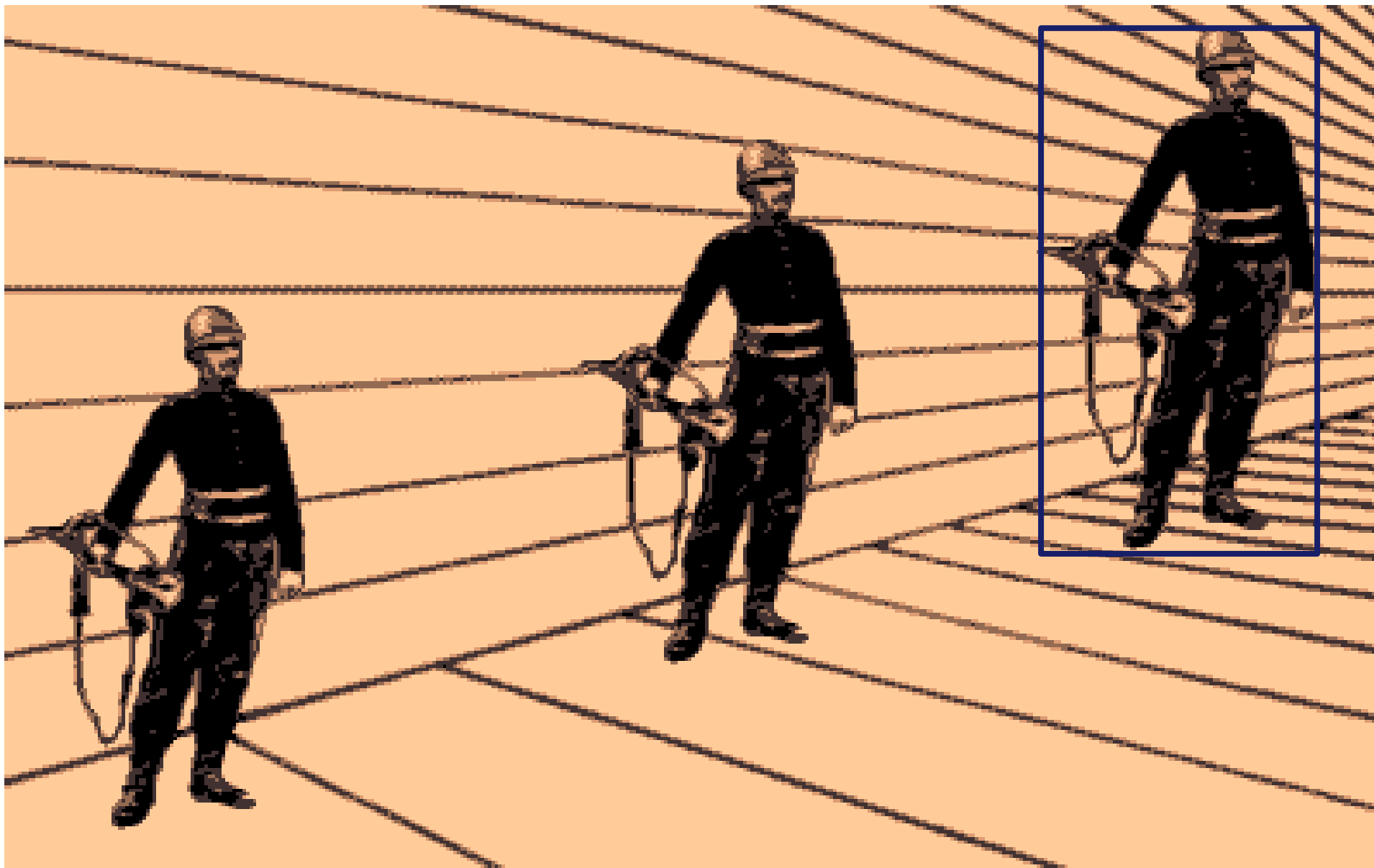


# Classic Optical Illusions

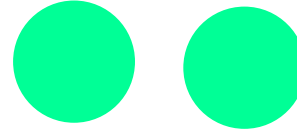
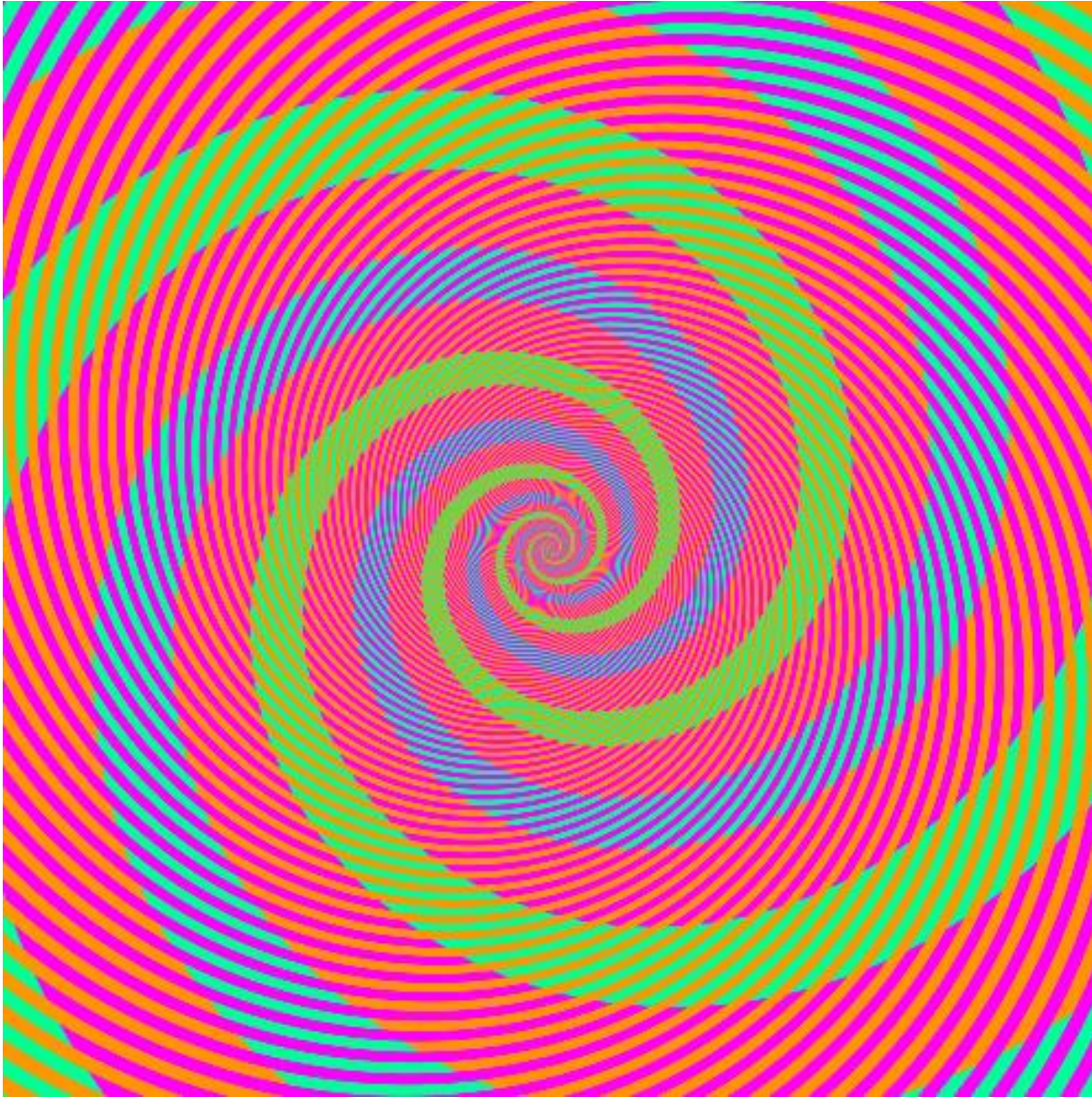




# Which Soldier is Tallest

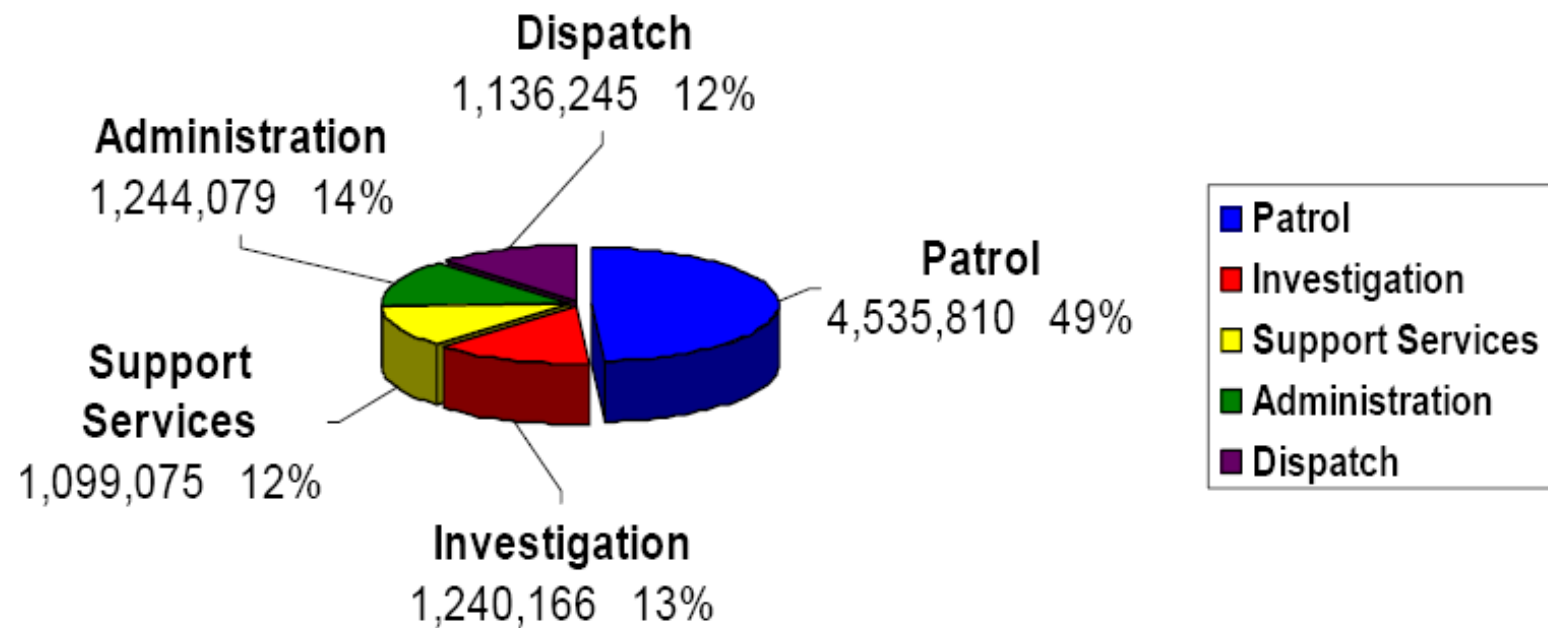




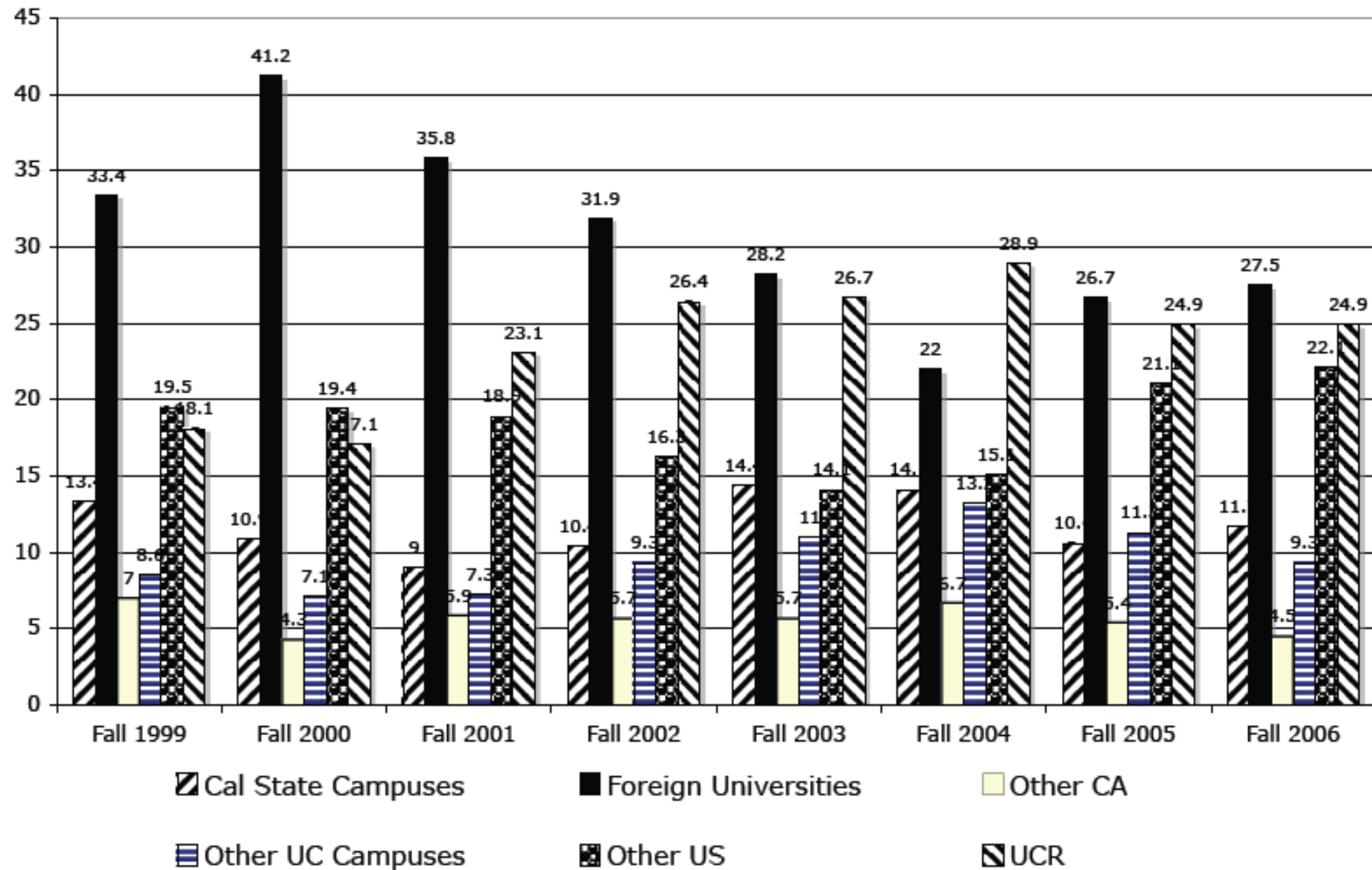


# 2004 - 2005 Budget

## Budget By Division

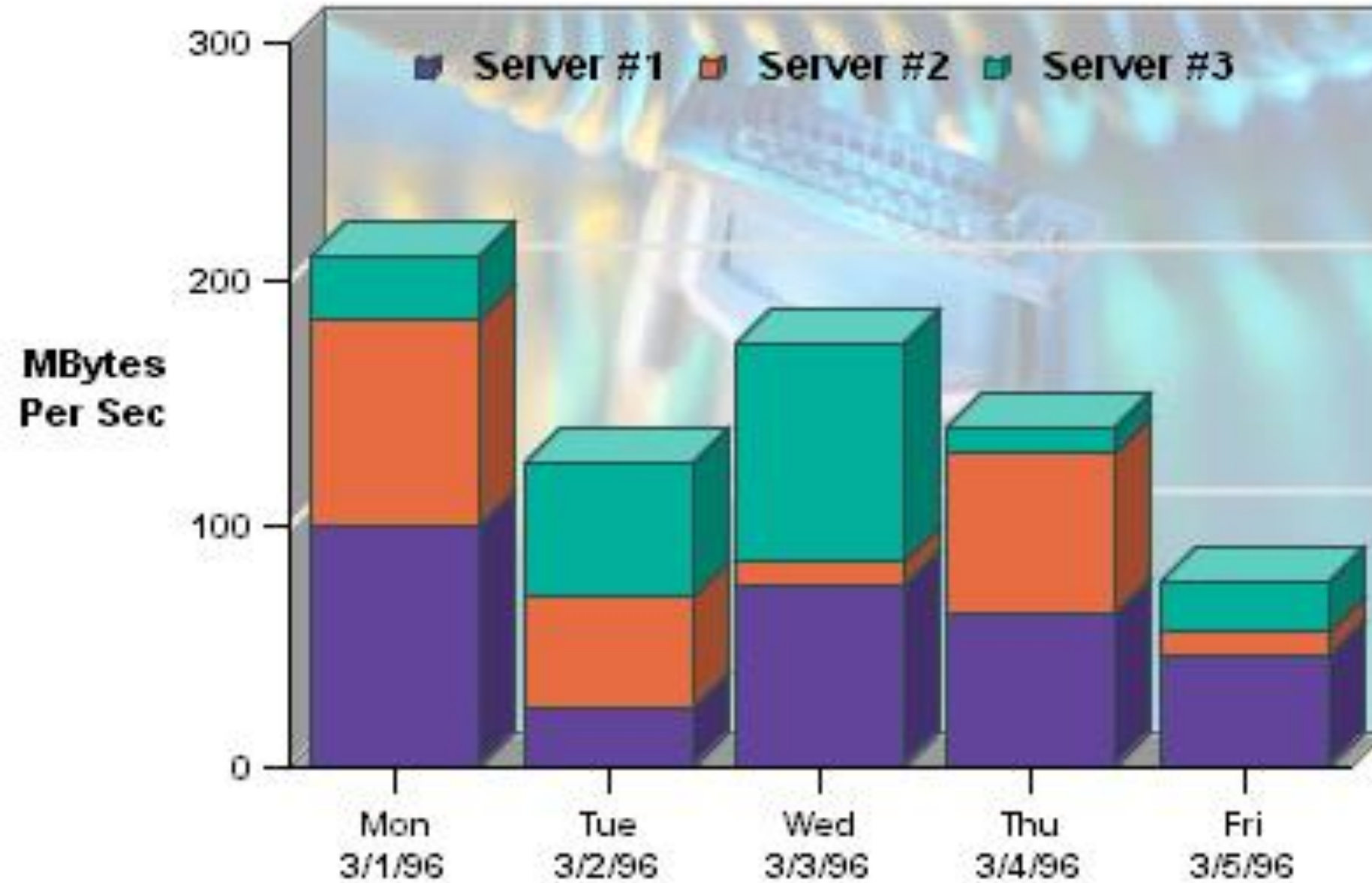


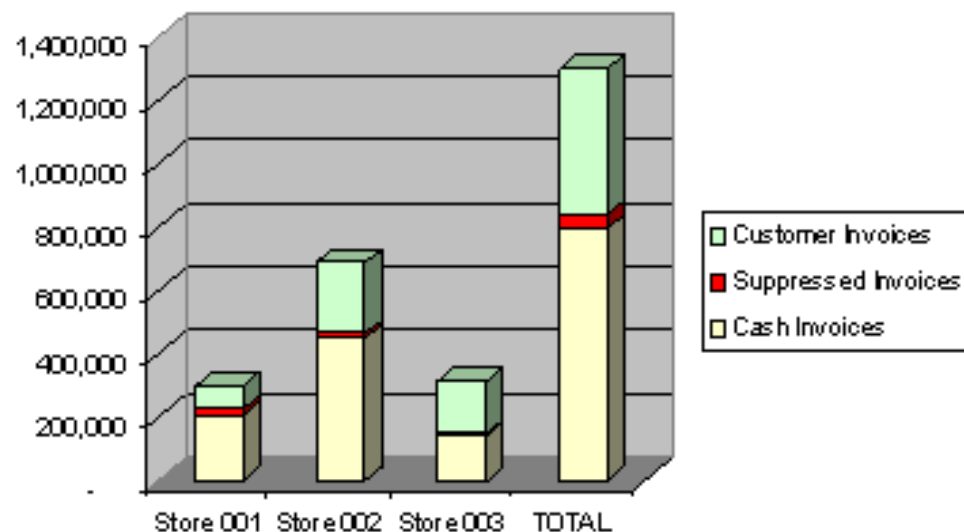
# Baccalaureate Degree Institutions of New Graduate Students- Fall Quarters- Percentages from Type of Institution





## Weekday Server Load



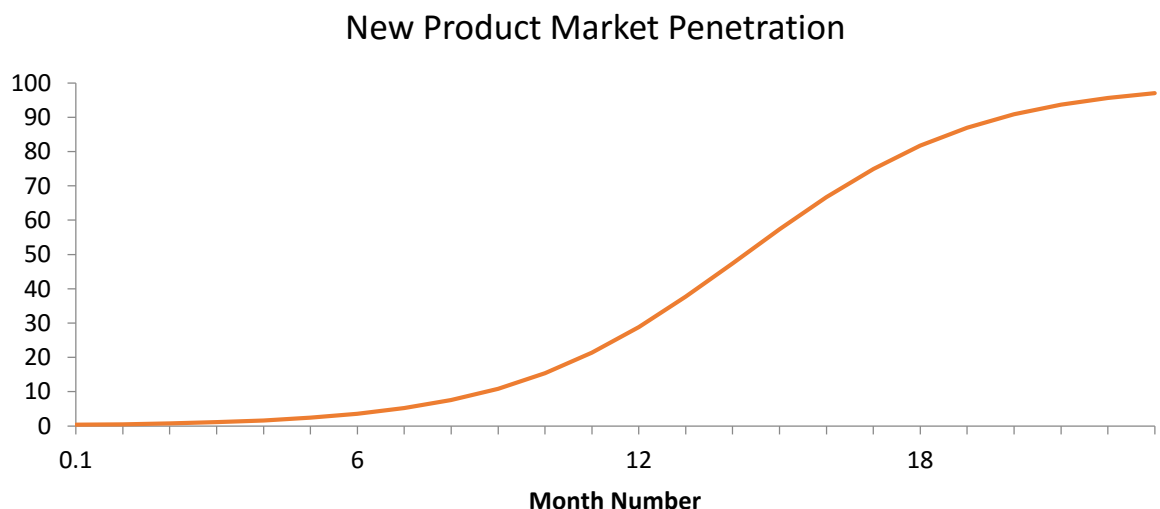


|                           | Store 001 | Store 002 | Store 003 | TOTAL     |
|---------------------------|-----------|-----------|-----------|-----------|
| Total Invoices            | 298,943   | 687,091   | 313,140   | 1,299,174 |
| <i>less</i>               |           |           |           |           |
| Cash Invoices             | 207,256   | 449,064   | 141,305   | 797,625   |
| <i>leaves</i>             |           |           |           |           |
| Non-cash Invoices         | 91,687    | 238,027   | 171,835   | 501,549   |
| <i>consisting of</i>      |           |           |           |           |
| Suppressed Invoices       | 18,888    | 15,527    | 6,501     | 40,916    |
| <i>and</i>                |           |           |           |           |
| Customer Invoices         | 72,799    | 222,500   | 165,334   | 460,633   |
| <i>for purchases from</i> |           |           |           |           |
| Suppressed Customer Names | 2,123     | 4,306     | 870       | 7,299     |
| <i>and</i>                |           |           |           |           |
| Active Customer Names     | 2,103     | 14,747    | 8,342     | 25,192    |
| <i>which include</i>      |           |           |           |           |
| Duplicate Customer Names  | 70        | 693       | 619       | 1,382     |
| <i>leaving</i>            |           |           |           |           |
| Unique Customer Names     | 2,033     | 14,054    | 7,723     | 23,810    |
| <i>which include</i>      |           |           |           |           |
| Bad Addresses             | 1,055     | 5,759     | 2,406     | 9,220     |
| <i>leaving</i>            |           |           |           |           |
| Mailable Customer Names   | 978       | 8,295     | 5,317     | 14,590    |



# Graphs and Tables

- Graphs and Charts depict visual representations and relationships



- Tables show data organized for lookup of specific, precise values or items.

| Order Type  | No of Orders | Sales        | Billed Quantity | Actual Unit Price |
|-------------|--------------|--------------|-----------------|-------------------|
| Express     | 13,980       | \$14,027,034 | 1,117,199       | \$12.56           |
| Secure      | 29,347       | \$28,513,745 | 2,326,540       | \$12.26           |
| Standard    | 27,673       | \$27,459,221 | 2,213,482       | \$12.41           |
| Grand Total | 71,000       | \$70,000,000 | 5,657,221       | \$12.37           |





# Characteristics of Tables

- Can present data at drastically different scales.
- Can present very different data types simultaneously.
- Can repeat and include multiple sets of the same data values.
- Are extraordinarily dense and include numerous data relationships without direct distortion of the data itself.
- Tables can present “federated” data from different sources in a single simultaneous view.



# Keys to Effective Tables

- Prefer smaller tables
- Words are important
  - Enable roll overs for meta data for commonly used tables
  - Write informative titles for tables and column head descriptions
- Make tables clean and easy to read
  - Eliminate unnecessary gridlines
  - Use space (padding) to create groups of data
  - Left justify text cells and Right justify numerical cells
- Make numbers easy to read and understand
  - Judiciously use conditional formatting
  - Avoid putting text in color
  - Align the decimal point for numerical cells
  - Use symbols to denote units of measure (% , \$ , etc.)
- Enable column and row sorting
- Avoid scrolling (if possible)
- Be transparent about data selection





# Keys to Effective Tables

Year 2010 ▾

| Product Type             | Company        | Sales            |                  |                  |                  |                  |                  |                  |
|--------------------------|----------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
|                          |                | Active Singles   | Baby Boomers     | Others           | Rural based      | Seniors          | Students         | Urban based      |
| Accessories              | Genmind Corp   | \$95,916         | \$29,746         | \$23,710         | \$40,947         | \$60,397         | \$59,891         | \$77,722         |
|                          | Stockplus Inc. | \$128,470        | \$29,693         | \$38,455         | \$68,506         | \$100,349        | \$120,508        | \$111,572        |
|                          | Tescare Ltd.   | \$104,461        | \$35,374         | \$27,900         | \$56,392         | \$96,501         | \$121,121        | \$93,280         |
| <b>Accessories Total</b> |                | <b>\$328,847</b> | <b>\$94,813</b>  | <b>\$90,064</b>  | <b>\$165,845</b> | <b>\$257,247</b> | <b>\$301,520</b> | <b>\$282,574</b> |
| Audio                    | Genmind Corp   | \$168,612        | \$50,236         | \$21,842         | \$74,952         | \$126,754        | \$133,788        | \$124,072        |
|                          | Stockplus Inc. | \$215,921        | \$42,336         | \$55,632         | \$124,469        | \$149,511        | \$169,330        | \$144,029        |
|                          | Tescare Ltd.   | \$173,022        | \$61,713         | \$30,048         | \$102,717        | \$162,078        | \$202,451        | \$161,995        |
| <b>Audio Total</b>       |                | <b>\$557,555</b> | <b>\$154,285</b> | <b>\$107,522</b> | <b>\$302,137</b> | <b>\$438,343</b> | <b>\$505,569</b> | <b>\$430,096</b> |
| Camera                   | Genmind Corp   | \$154,930        | \$50,453         | \$23,935         | \$73,360         | \$129,189        | \$143,608        | \$136,459        |
|                          | Stockplus Inc. | \$189,520        | \$45,571         | \$57,449         | \$88,445         | \$154,237        | \$181,047        | \$162,000        |
|                          | Tescare Ltd.   | \$182,757        | \$83,650         | \$45,512         | \$89,213         | \$140,187        | \$208,441        | \$151,215        |
| <b>Camera Total</b>      |                | <b>\$527,207</b> | <b>\$179,675</b> | <b>\$126,895</b> | <b>\$251,019</b> | <b>\$423,613</b> | <b>\$533,096</b> | <b>\$449,674</b> |
| Cell Phones              | Genmind Corp   | \$120,376        | \$40,799         | \$24,293         | \$61,451         | \$82,200         | \$103,754        | \$97,480         |
|                          | Stockplus Inc. | \$161,238        | \$47,570         | \$37,670         | \$71,548         | \$129,511        | \$133,459        | \$144,812        |
|                          | Tescare Ltd.   | \$157,717        | \$50,948         | \$30,873         | \$79,242         | \$130,167        | \$164,272        | \$116,630        |
| <b>Cell Phones Total</b> |                | <b>\$439,331</b> | <b>\$139,317</b> | <b>\$92,837</b>  | <b>\$212,241</b> | <b>\$341,879</b> | <b>\$401,484</b> | <b>\$358,921</b> |
| Fixed                    | Genmind Corp   | \$144,814        | \$35,190         | \$20,000         | \$94,115         | \$128,411        | \$152,767        | \$138,280        |
|                          | Stockplus Inc. | \$234,518        | \$56,263         | \$53,554         | \$109,985        | \$160,065        | \$238,484        | \$180,872        |
|                          | Tescare Ltd.   | \$197,073        | \$57,671         | \$50,893         | \$121,302        | \$170,018        | \$173,601        | \$177,137        |



# Pivot Table “Needs” Sentence

*I want to see fact/measure (specifies cell values)  
by dimension and dimension (defines rows)  
**across** dimension and dimension (defines columns).*

Year 2010 ▾

|                   |                | Sales          |              |           |             |           |           |             |
|-------------------|----------------|----------------|--------------|-----------|-------------|-----------|-----------|-------------|
| Product Type      | Company        | Active Singles | Baby Boomers | Others    | Rural based | Seniors   | Students  | Urban based |
| Accessories       | Genmind Corp   | \$95,916       | \$29,746     | \$23,710  | \$40,947    | \$60,397  | \$59,891  | \$77,722    |
|                   | Stockplus Inc. | \$128,470      | \$29,693     | \$38,455  | \$68,506    | \$100,349 | \$120,508 | \$111,572   |
|                   | Tescare Ltd.   | \$104,461      | \$35,374     | \$27,900  | \$56,392    | \$96,501  | \$121,121 | \$93,280    |
| Accessories Total |                | \$328,847      | \$94,813     | \$90,064  | \$165,845   | \$257,247 | \$301,520 | \$282,574   |
| Audio             | Genmind Corp   | \$168,612      | \$50,236     | \$21,842  | \$74,952    | \$126,754 | \$133,788 | \$124,072   |
|                   | Stockplus Inc. | \$215,921      | \$42,336     | \$55,632  | \$124,469   | \$149,511 | \$169,330 | \$144,029   |
|                   | Tescare Ltd.   | \$173,022      | \$61,713     | \$30,048  | \$102,717   | \$162,078 | \$202,451 | \$161,995   |
| Audio Total       |                | \$557,555      | \$154,285    | \$107,522 | \$302,137   | \$438,343 | \$505,569 | \$430,096   |
| Camera            | Genmind Corp   | \$154,930      | \$50,453     | \$23,935  | \$73,360    | \$129,189 | \$143,608 | \$136,459   |
|                   | Stockplus Inc. | \$189,520      | \$45,571     | \$57,449  | \$88,445    | \$154,237 | \$181,047 | \$162,000   |
|                   | Tescare Ltd.   | \$182,757      | \$83,650     | \$45,512  | \$89,213    | \$140,187 | \$208,441 | \$151,215   |
| Camera Total      |                | \$527,207      | \$179,675    | \$126,895 | \$251,019   | \$423,613 | \$533,096 | \$449,674   |
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|                   | Tescare Ltd.   | \$157,717      | \$50,948     | \$30,873  | \$79,242    | \$130,167 | \$164,272 | \$116,630   |
| Cell Phones Total |                | \$439,331      | \$139,317    | \$92,837  | \$212,241   | \$341,879 | \$401,484 | \$358,921   |
| Fixed             | Genmind Corp   | \$144,814      | \$35,190     | \$20,000  | \$94,115    | \$128,411 | \$152,767 | \$138,280   |
|                   | Stockplus Inc. | \$234,518      | \$56,263     | \$53,554  | \$109,985   | \$160,065 | \$238,484 | \$180,872   |
|                   | Tescare Ltd.   | \$197,073      | \$57,671     | \$50,893  | \$121,302   | \$170,018 | \$173,601 | \$177,137   |





# Pivot Table “Needs” Sentence

*I want to see **Sales** (specifies cell values)  
**by Product Type and Company** (defines rows)  
**across Market Segments** (defines columns).*

Year 2010 ▾

|                   |                | Sales          |              |           |             |           |           |             |
|-------------------|----------------|----------------|--------------|-----------|-------------|-----------|-----------|-------------|
| Product Type      | Company        | Active Singles | Baby Boomers | Others    | Rural based | Seniors   | Students  | Urban based |
| Accessories       | Genmind Corp   | \$95,916       | \$29,746     | \$23,710  | \$40,947    | \$60,397  | \$59,891  | \$77,722    |
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|                   | Tescare Ltd.   | \$182,757      | \$83,650     | \$45,512  | \$89,213    | \$140,187 | \$208,441 | \$151,215   |
| Camera Total      |                | \$527,207      | \$179,675    | \$126,895 | \$251,019   | \$423,613 | \$533,096 | \$449,674   |
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|                   | Tescare Ltd.   | \$157,717      | \$50,948     | \$30,873  | \$79,242    | \$130,167 | \$164,272 | \$116,630   |
| Cell Phones Total |                | \$439,331      | \$139,317    | \$92,837  | \$212,241   | \$341,879 | \$401,484 | \$358,921   |
| Fixed             | Genmind Corp   | \$144,814      | \$35,190     | \$20,000  | \$94,115    | \$128,411 | \$152,767 | \$138,280   |
|                   | Stockplus Inc. | \$234,518      | \$56,263     | \$53,554  | \$109,985   | \$160,065 | \$238,484 | \$180,872   |
|                   | Tescare Ltd.   | \$197,073      | \$57,671     | \$50,893  | \$121,302   | \$170,018 | \$173,601 | \$177,137   |

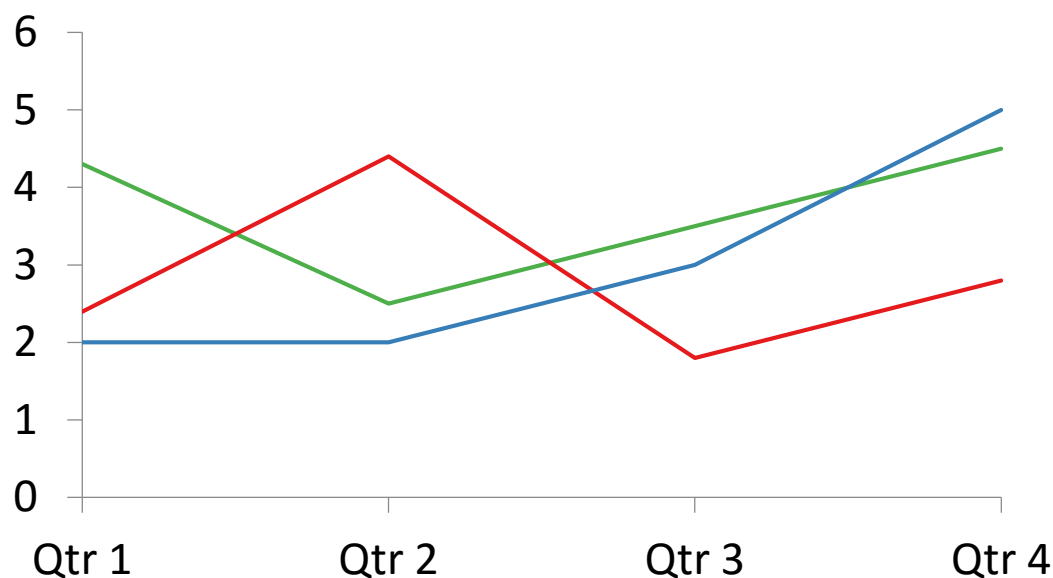


# 7 Keys to Effective Graphs

- Do not use 3-D effects.
- Avoid “stop light” color palette.
- Prefer pastel color palettes and avoid bright colors.
- Eliminate gridlines, drop shadows, and other graphics.
- Enable interaction for “exploration” graphs.
- Prioritize a single message for “explanation” graphs.
- Above all else, show the data!



# Line Graph

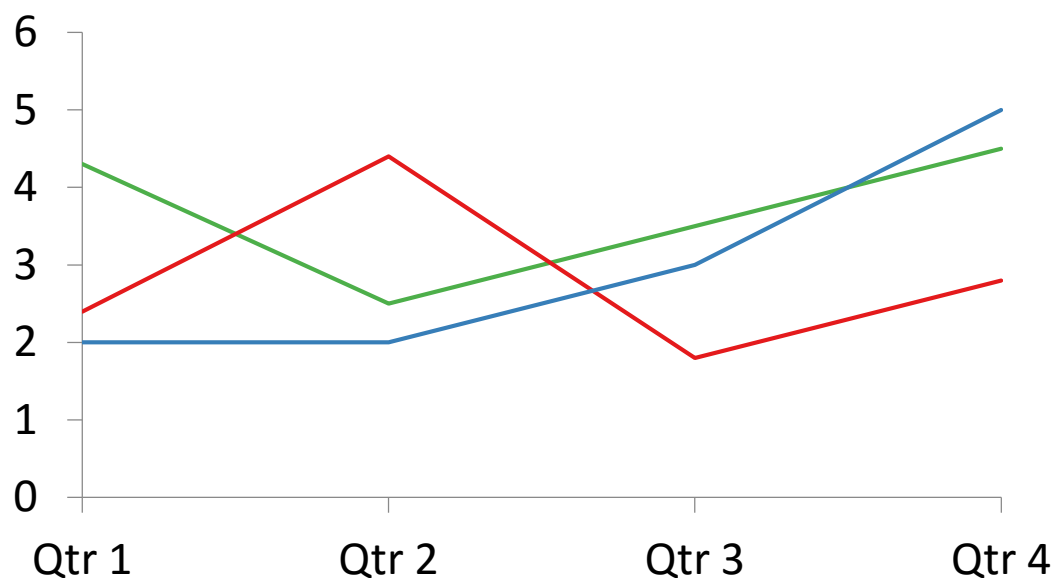


- Show a pattern or progression over a continuous range.
- Can be valued within a range to highlight a particular pattern (careful!).
- Maintain a rectangular shape close to golden proportion.
- Use scale marker lines and ranges for context.



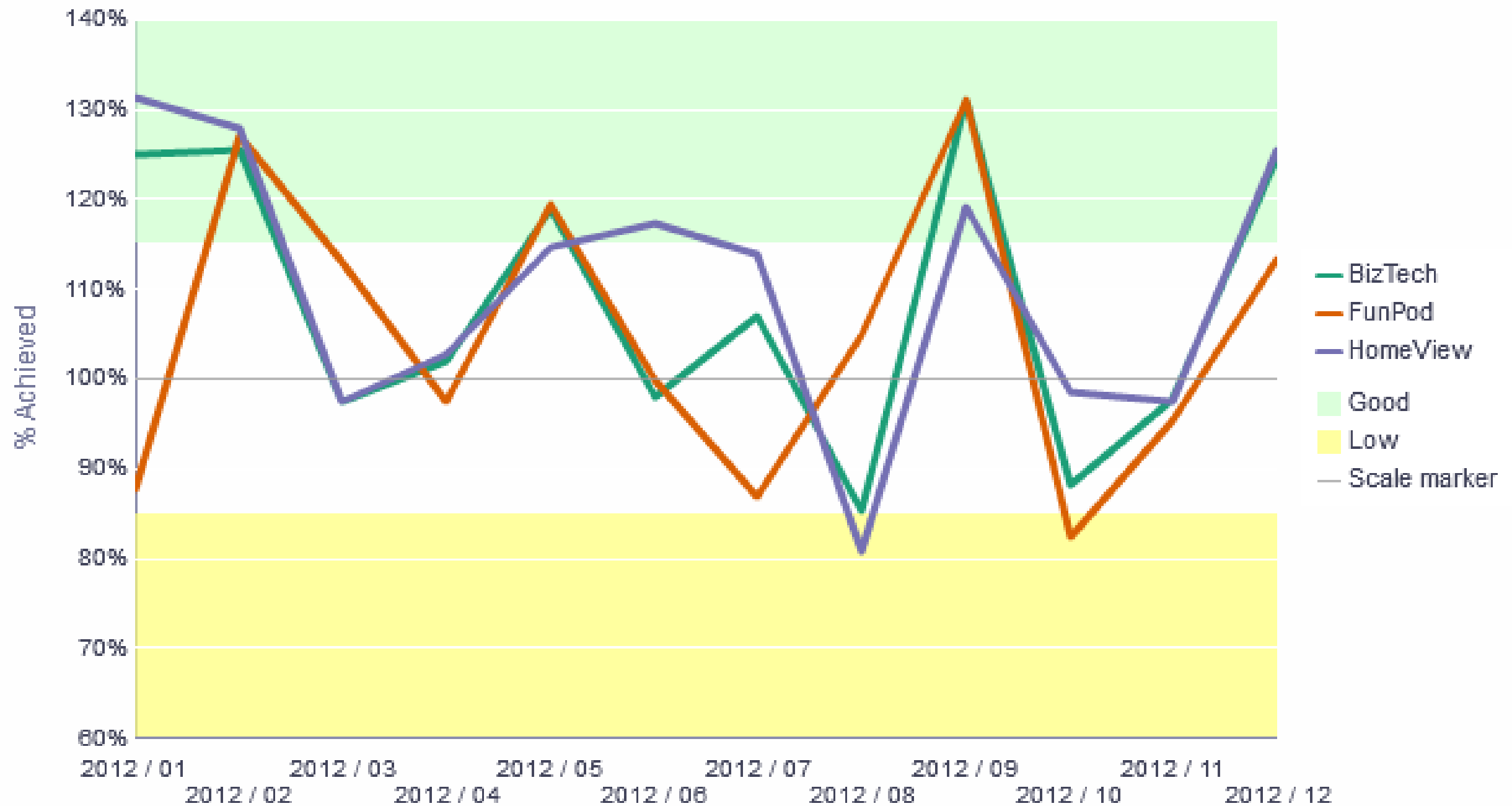


# Line Graph



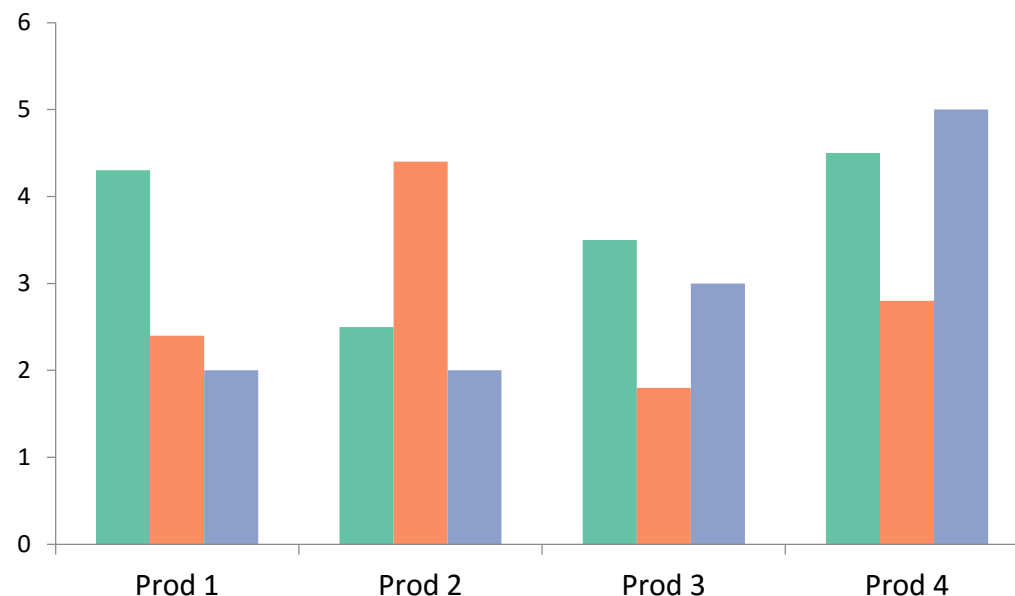
- Use darker versions of standard colors.
- Eliminate grid lines.
- Use zoom function for detailed line graphs.
- Choose curved lines to smooth overall shape.
- Choose stepped lines to emphasize point transitions.

# Target Revenue % by Brand for 2012





# Bar Graphs

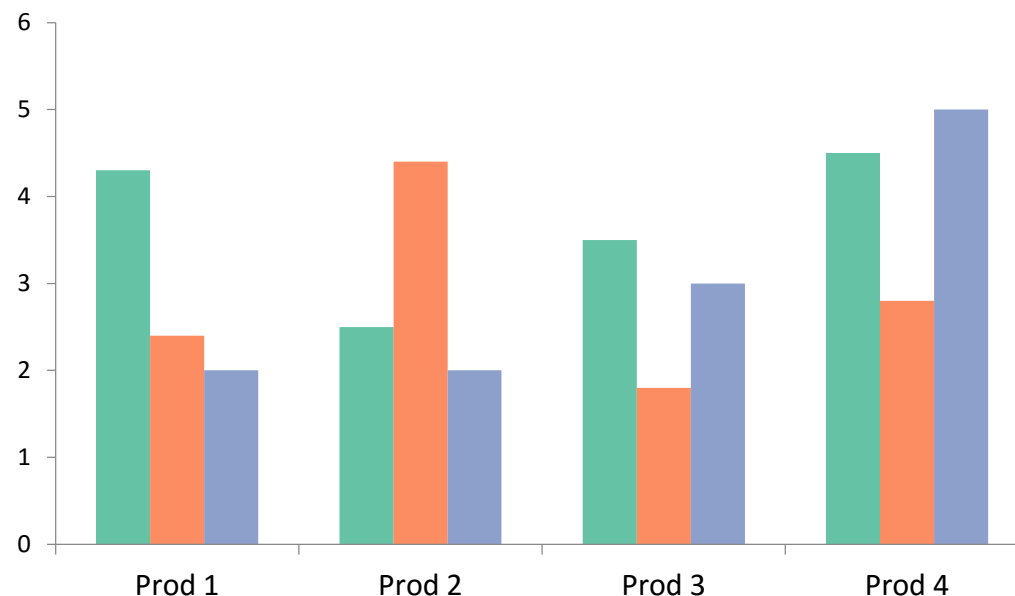


- Show nominal data values in comparison to one another.
- Start with zero.
- If use a logarithmic scale, clearly notate.
- Think through sort order carefully.





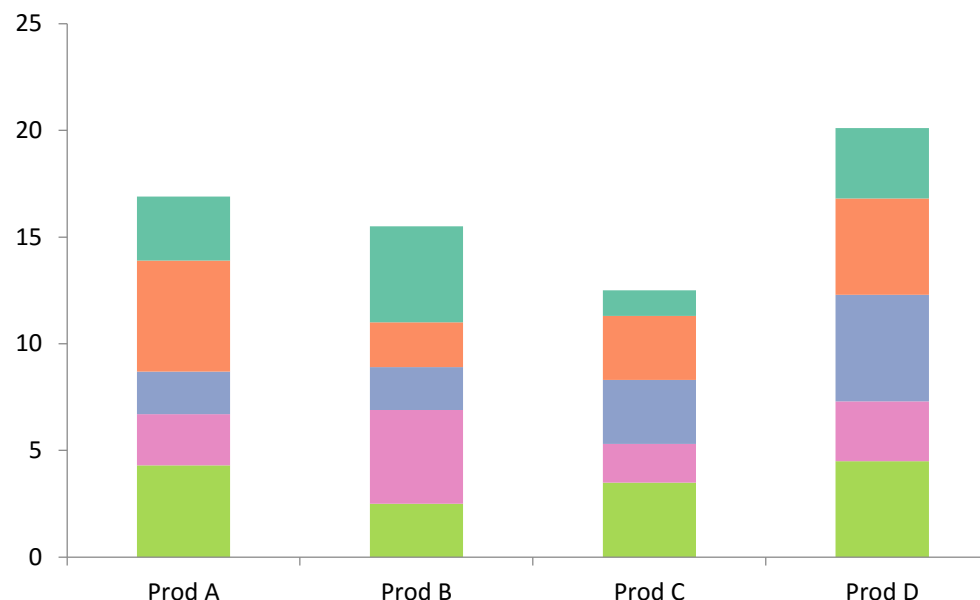
# Bar Graphs



- Add data labels as interactive rollover.
- Balance colors.
- If change is most important, graph change.



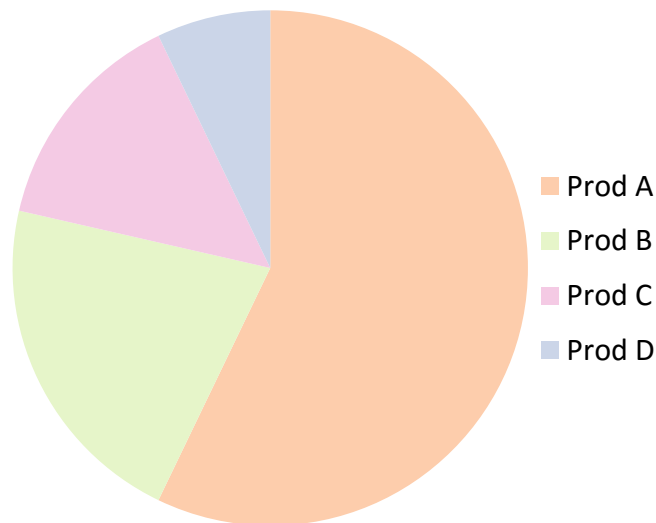
# Stacked Bar Chart



- Somewhat confusing, not great for representing change.
- Total is most clearly represented number.
- Typically stack with largest values on the bottom.
- Single scale can make for interesting intra-bar comparisons.



# Pie Charts

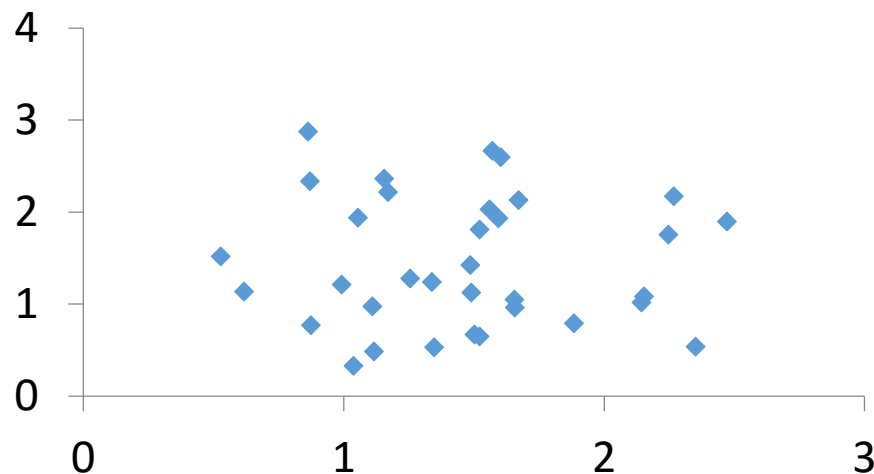


- Typically used for showing parts of whole by percentage.
- Not great for piece to piece comparisons.
- Limit number of pieces.
- Can be interesting to show many pies together if significant differences exist.
- Stephen Few hates them.
- Do not use 3-D.





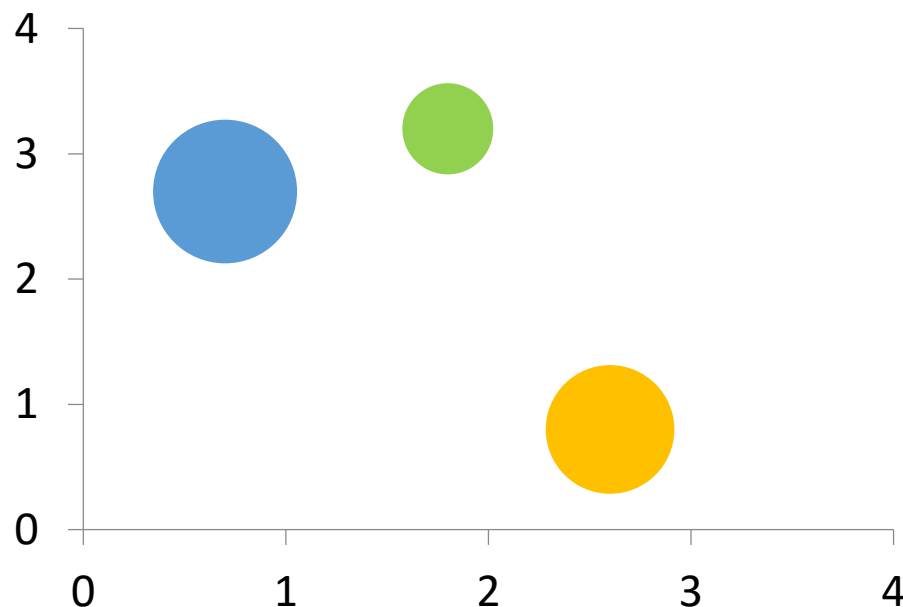
# Scatter Plot



- Shows single data points at the intersection of two values.
- Often depict a large number of discrete data points (hundreds or thousands).
- Useful comparisons of two variables.
- Trend lines are often added.
- Clearly notate if use logarithmic scale(s).



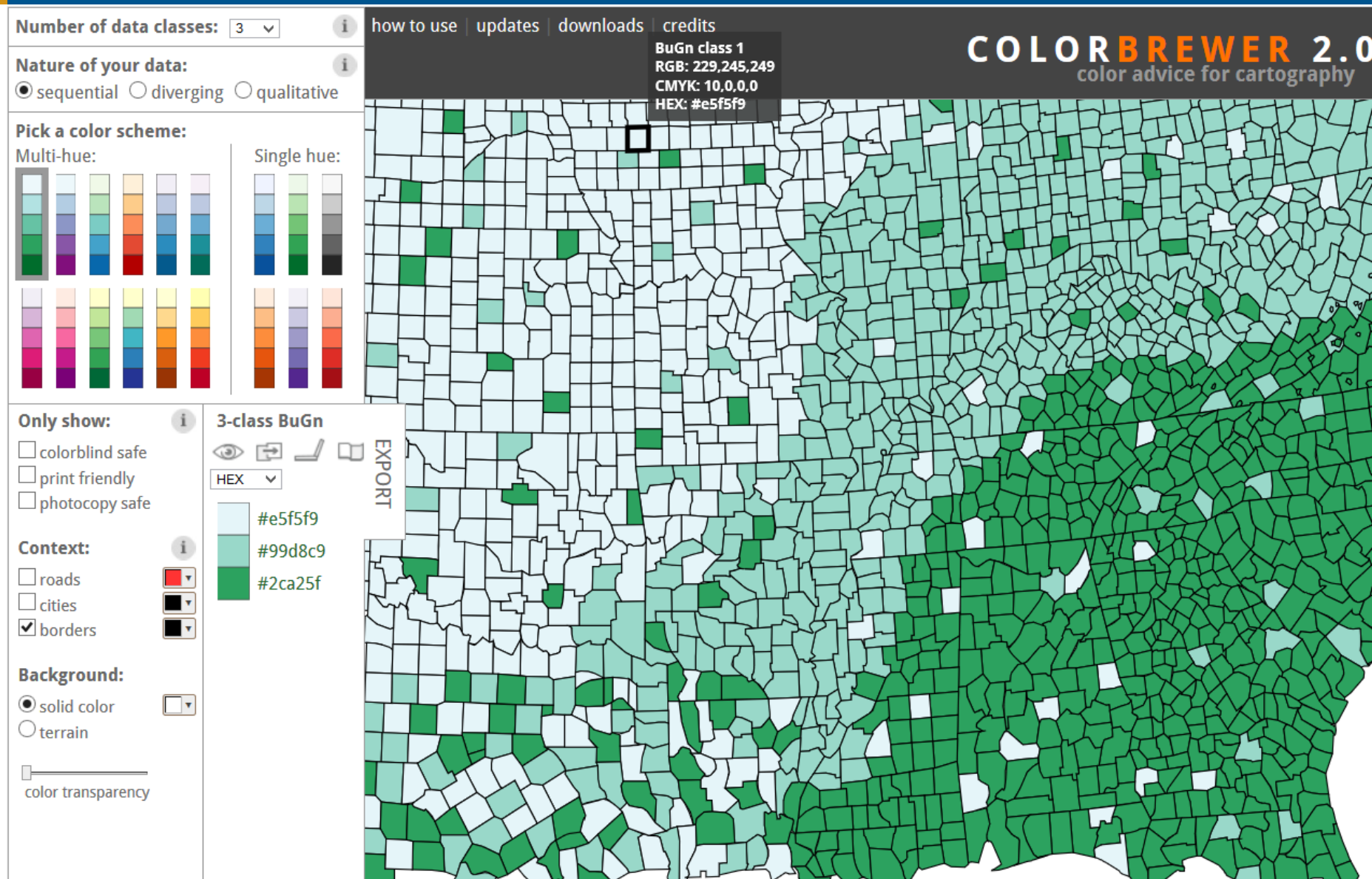
# Bubble Chart



- Special type of scatter plot.
- Size of bubble is related to a third variable.
- Color is related to a fourth variable.
- Reduces number of points that can be depicted.
- Best for depicting approximate values and comparisons.



# ColorBrewer2.org







# i want hue

[I want hue](#)[Tutorials](#)[Examples](#)[Theory](#)[Experiment](#)[Old version ▾](#)[GitHub](#)[Issues](#)[+ Médialab Tools](#)

## i want hue

Colors for data scientists. Generate and refine palettes of optimally distinct colors.

### Color space

Presets... ▾

H

0



360

C

0



3

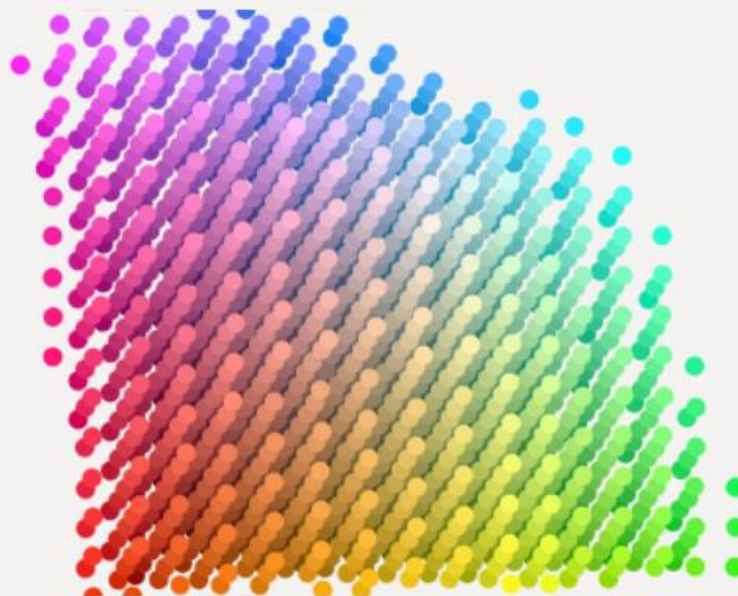
L

0



1.5

☐ Dark background



### Palette

7

colors

soft (k-Means) ▾

Make a palette





# Dashboard Definition

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



# BI Dashboards are Different

- No mechanical systems needed to move indicators.
- Decisions are not typically made on a second-to-second basis.
- BI dashboards are not primarily single situation or single person devices.



# BI Dashboards

- Role-based.
- Data selection and filtering are extremely important.
- Dashboards support evidenced-based decision making.
- Shared understanding of business situation is a key benefit.
- Content may be individualized.
- Design should be standardized.





# OBIEE Dashboard Overview

- Designed with columns and sections (containers).
- Presentation server is often separate from BI server.
- Dashboards are web-based and are viewed with browsers.
- HTML, XML, and Java coding skills are useful, but not required.



# Dashboard Principles

- Promote user interactivity
  - Prompts
  - View and column selectors
  - Hierarchical column drills
  - Column sorts
  - Guided navigation and action links
- Promote data transparency
  - Prompts
  - Filter views
  - Narrative views
  - Master detail linking
- Establish design guidelines for consistency



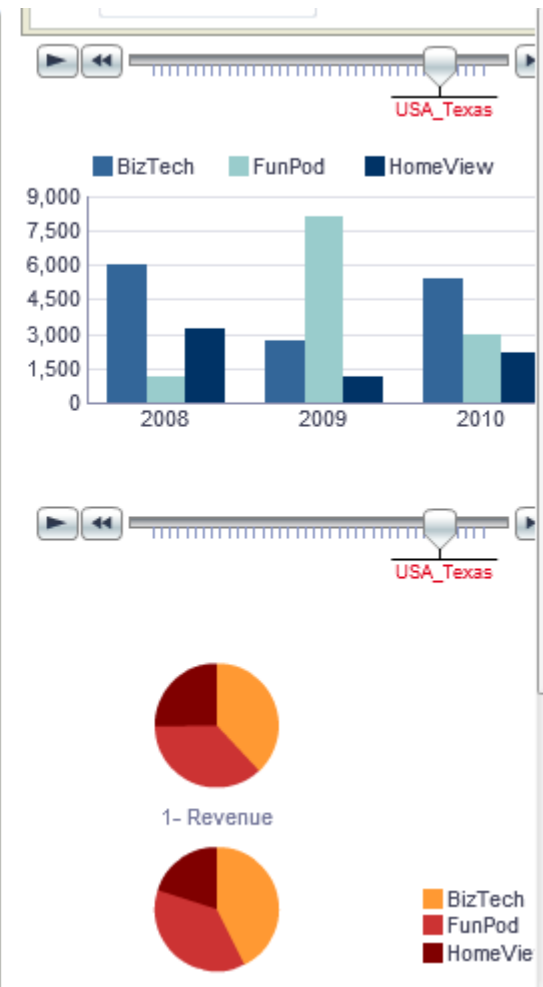
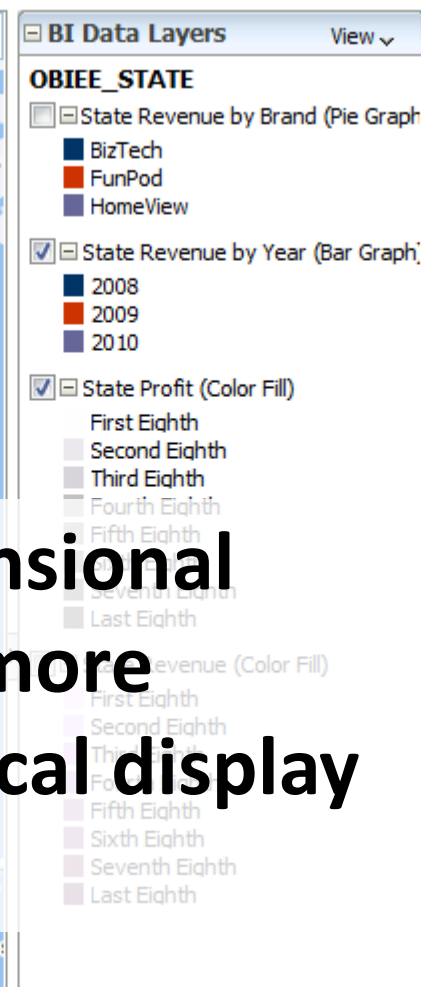
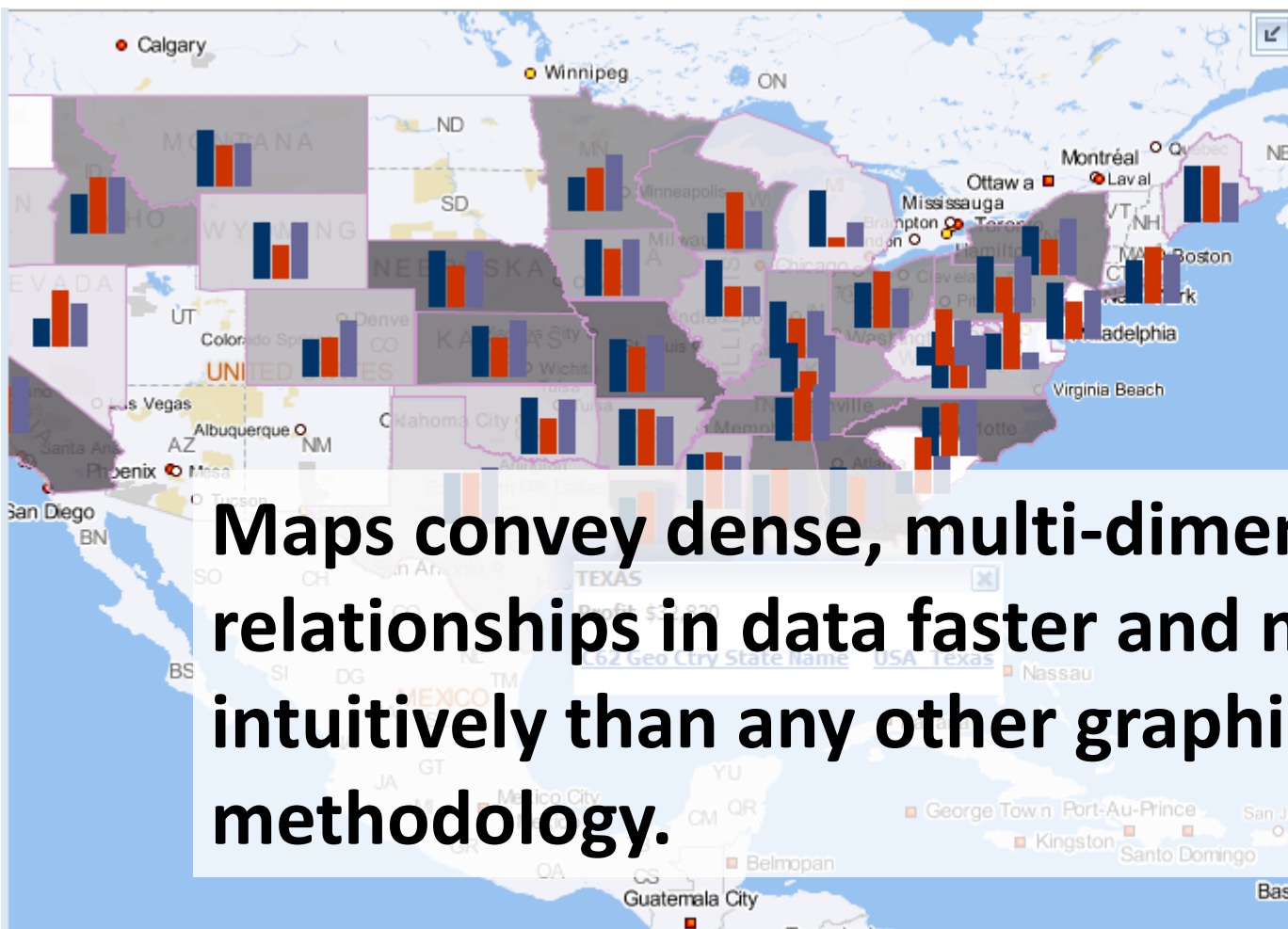
# Maps

- Humans think spatially
- Types of maps
- Map best practices
- Making meaningful maps
- Built-in data sets
- Sources for additional data sets





# Why Maps are Powerful







# When Are Map Views Useful?

- Visualizing data related to geographic locations.
- Showing or detecting spatial relationships and patterns.
- Showing lots of data in a relatively small area.
- Drilling down from a (map) overview to a detailed report, chart, or graph.
- When is location important? Can the dimension be plotted on a map?



# Map View Tips

- Think about what scale to use. Different map scales will reveal different patterns and insights.
- Use Variable marker to display two measures on a map at a point – size and color.
- Avoid overlapping shapes too much.
- Be aware of spatial distortions E.g. Texas is larger than Connecticut.
- Look at color palette. [www.colorbrewer2.org](http://www.colorbrewer2.org)



# Map Definitions

- **FEATURE**
  - Provide a spatial context: cities, highways, rivers, etc...
  - Features of Interest: store location, postal boundaries, pipelines, etc...
- **STYLE**
  - Define rendering properties for features
  - Can control fill color, border color, line thickness, line style and more
- **THEME**
  - Collection of features
  - Typically associated with a spatial geometry layer
  - County/state boundaries, major highways, etc...
- **BASEMAP**
  - A grouping of themes to create a map
  - Maps can share themes
  - When associating a theme with a map, can specify min scale and max scale (sometimes known as zoom control)
- **MAP**
  - Basemap with additional themes overlain



# Map Interactivity in OBIEE

- Display BI data on top of maps
  - Color fill
  - FOI point display
- Interact with other Dashboard Elements
  - Drive map content with dashboard prompts
  - Drive map content through drilling and navigation
  - Drive other dashboard elements through map interactions
- Reveal additional information on maps through mouseovers
- Drill to map detail





# Map View Formats

- Color Fill (choropleth)
  - Percentile, Value, Continuous binning
  - Dashboard user run-time slider
- Graphs – Bar, Pie
  - Adjustable graph size
  - Series by second dimension
- Bubble (variable sized)
  - Min-Max size specification
  - Color specification
- Variable Shape
  - Circle, Triangle, Diamond
  - Customizable
- Image
  - Imported via MapViewer
  - More can be added from MapBuilder
- Custom Point Layer
  - Uses Lat / Long
  - Does not require a Layer Def



# Trellis Charts

- Trellis layout of smaller charts in a grid with consistent scales
- Great for finding structures / patterns in complex data
- Use 2D layout to view multidimensional data





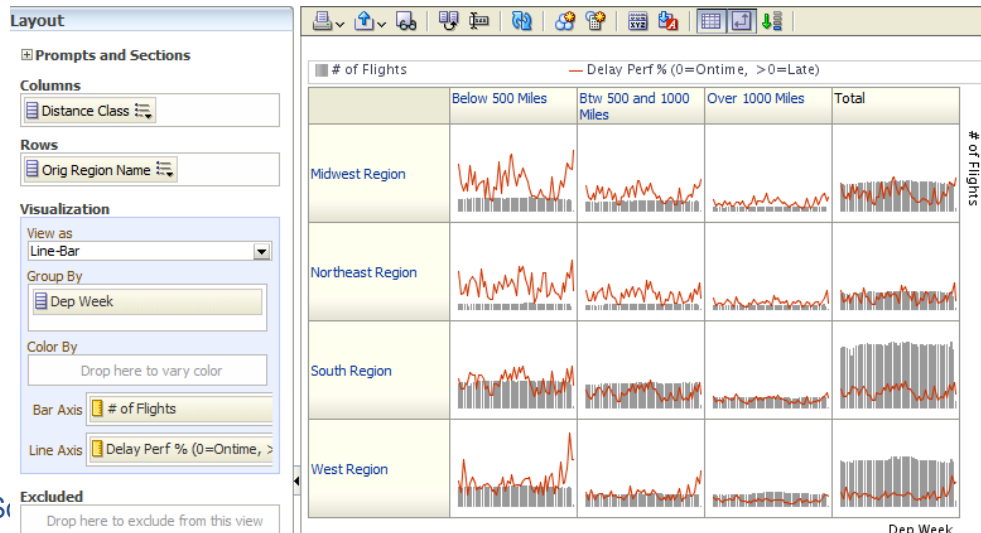
# Trellis Views

- May not *require* Exalytics, but need a fast Presentation Server
- Can display LOTS of data in compact form
- Capable of dense visualizations
  - Great for snapshot of trending
  - Great for comparing patterns across dimension values
- Two types
  - Simple (shows full graphs per cell)
  - Advanced (sparklines – no scales per cell, separate scales)
- Need to think what you're trying to show on a trellis



# Trellis View - Simple

- Single type of inner visualization
- Common synchronized scale across all graphs
- Has scale showing by default (can turn off)
- Lots of graph types
  - Vertical Bar
  - Horizontal Bar
  - Line
  - Area
  - Line-Bar
  - Pie
  - Scatter
  - Bubble



Airlines Delay Performance Matrix  
By Distance Group by Departure Time

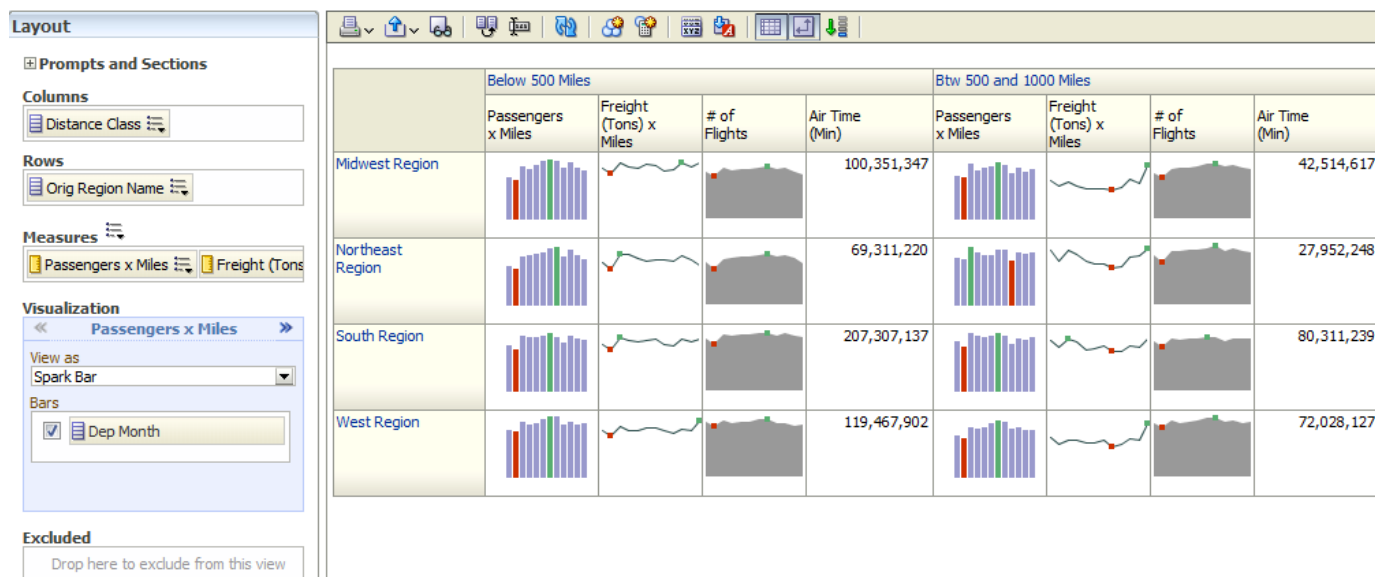






# Trellis View - Advanced

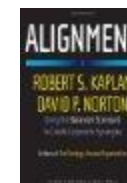
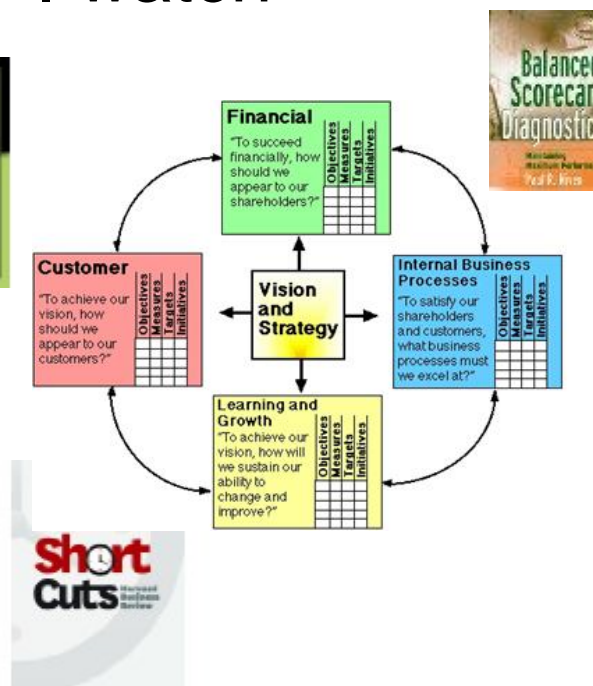
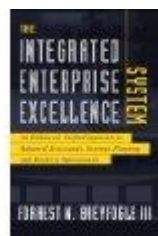
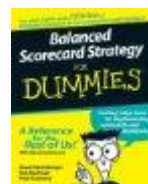
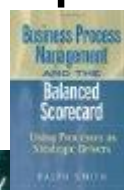
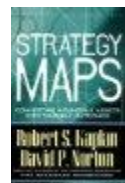
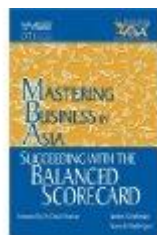
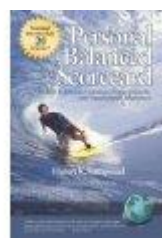
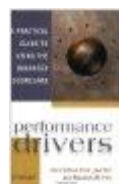
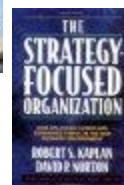
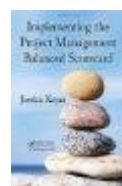
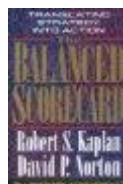
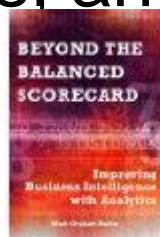
- Pivot table with numbers or graphs in cells
- Each microchart has its own scale and not shown
- Most often used to see trend lines
- No axis description, so across should be time
- Can have different visualizations for different measures
  - Spark bar
  - Spark line
  - Spark area
  - numbers





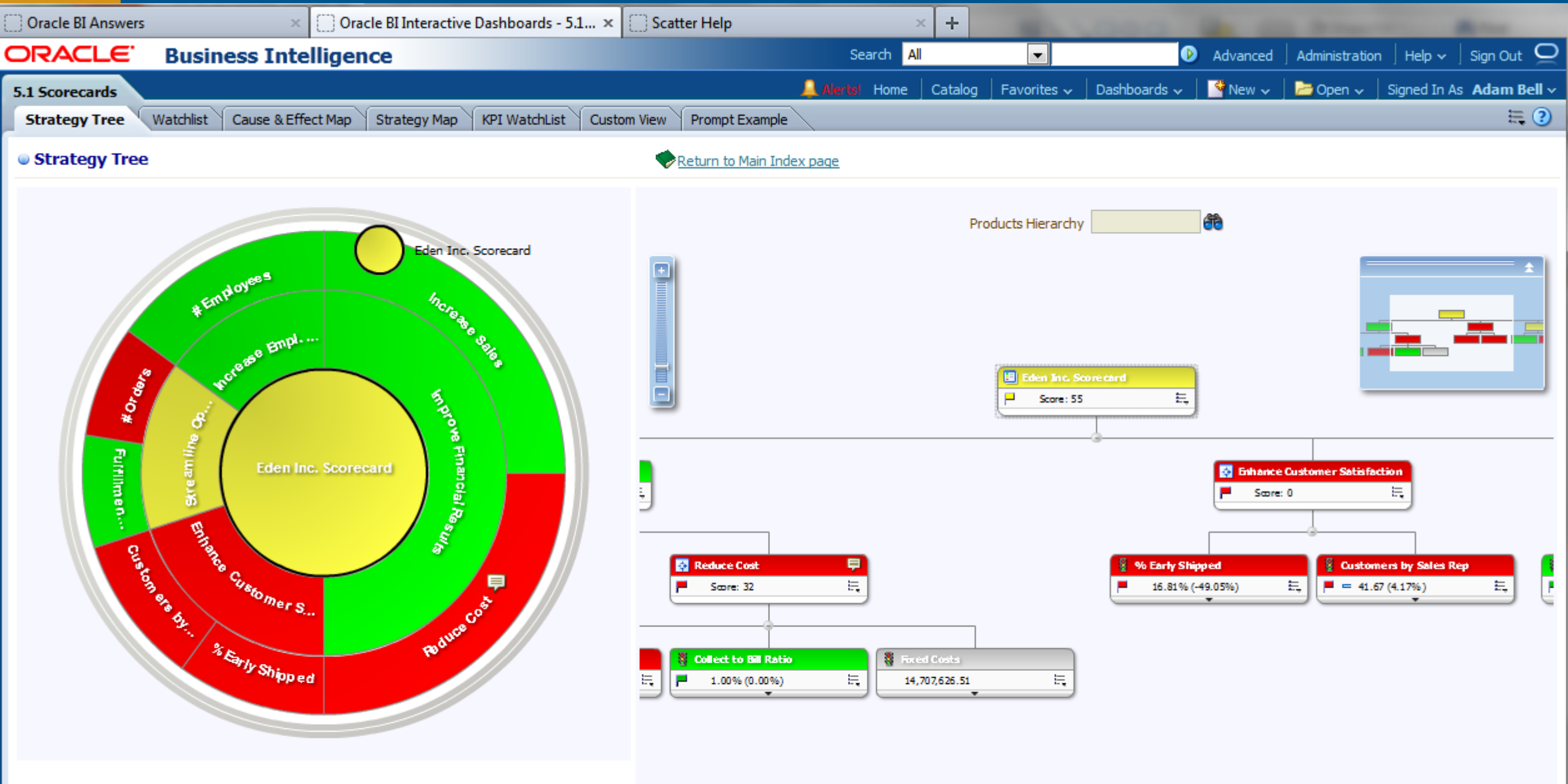
# OBI Scorecard & Strategy Management

- Integrated toolset in OBIEE
- Follows “Balanced Scorecard” methodology
- Enables corporate goals and objectives to be monitored and managed
- Includes strategy maps, strategy trees, KPI watch lists, and cause and effect maps



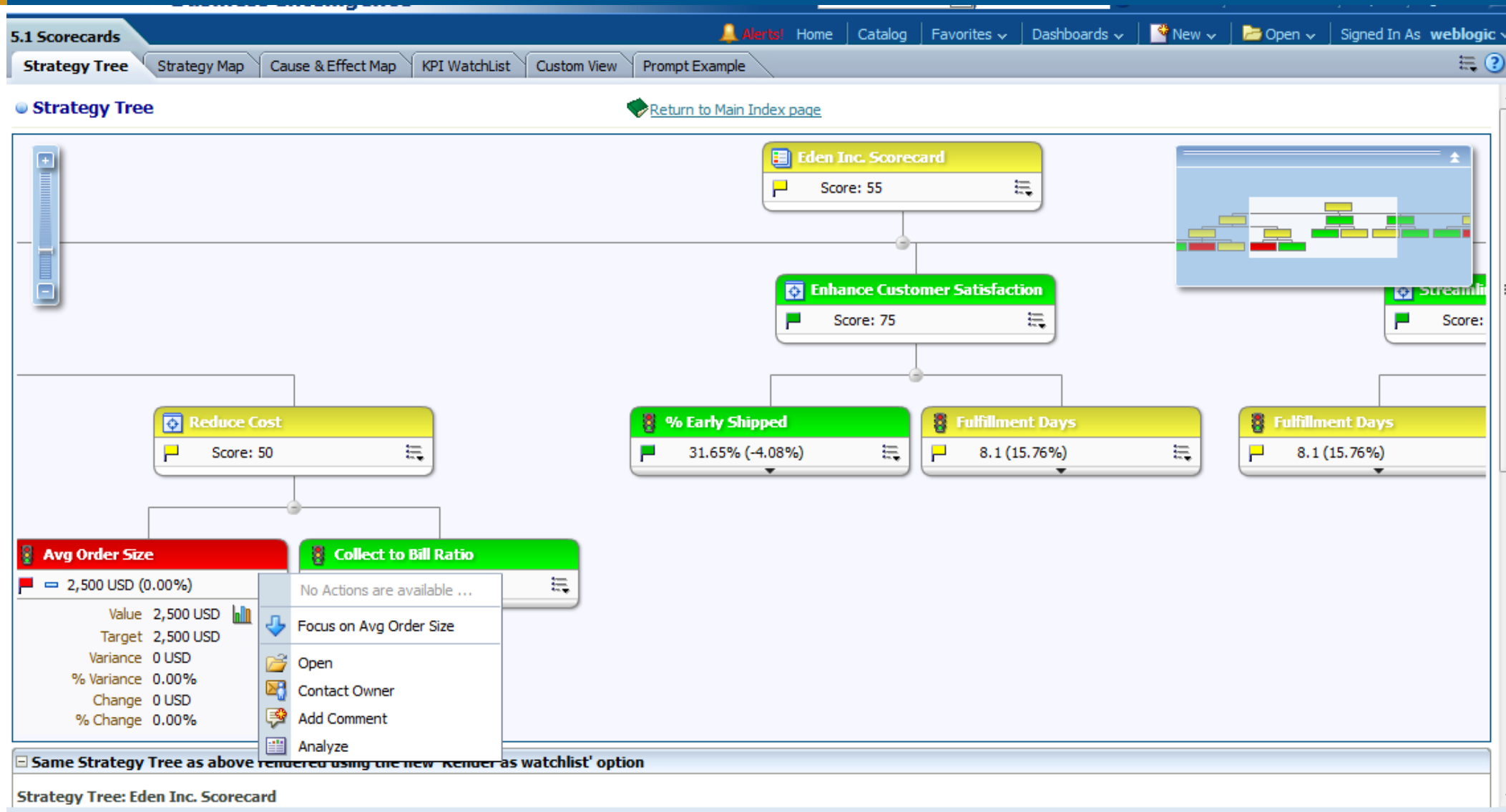


# New Contribution Wheel Visualization





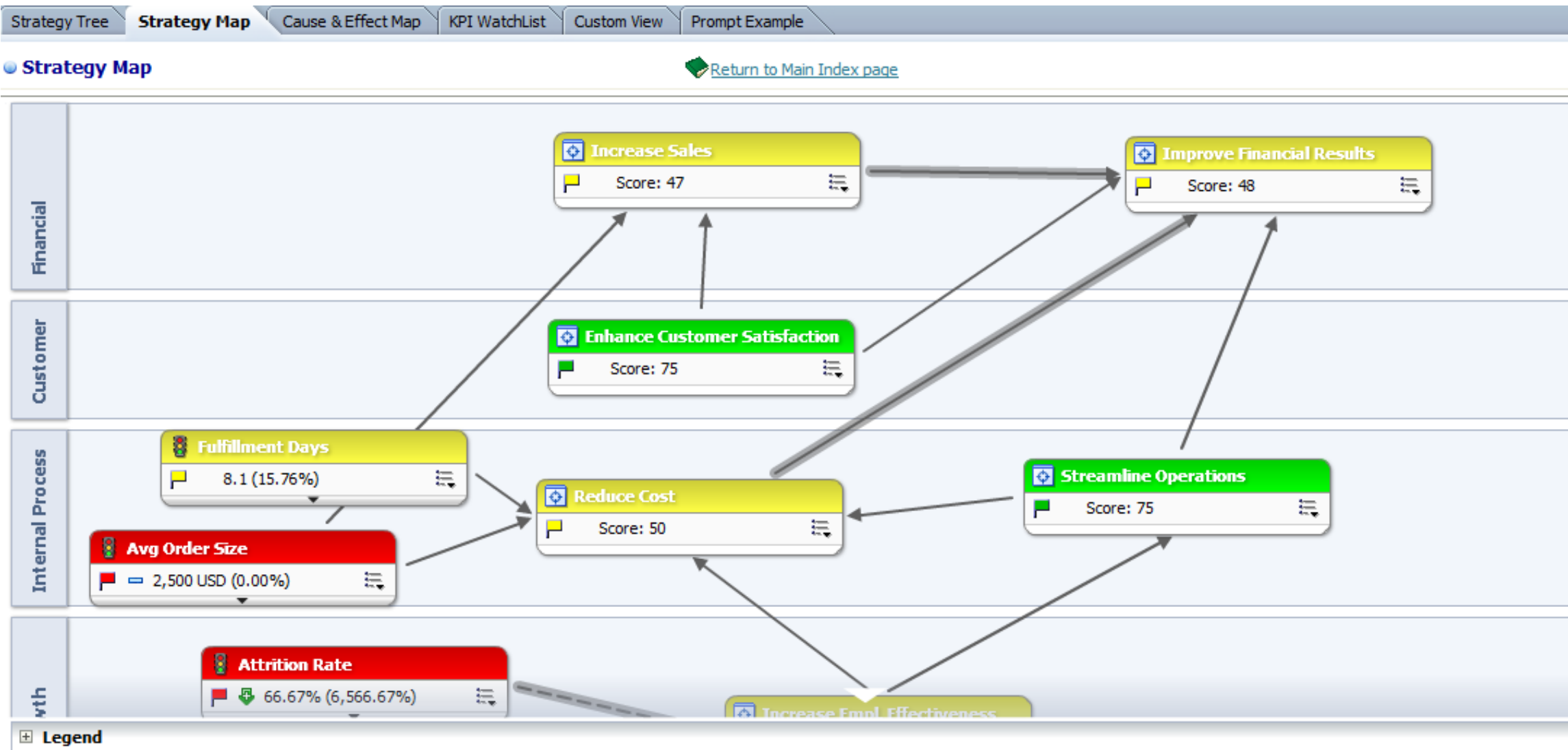
# Strategy Tree View







# Strategy Map View





# Where to Start

- Workshops
- Assessments
- Training
- Standards development and documentation



# Foundations of Data Discovery

- Reveal relationships, patterns, and features in data sets.
- This is virtually the same definition we use for data mining.
- Data discovery needs to come to masses because of the 3 V's



# 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





# Discovery Scenarios

- New to a data set, true exploration
- Familiar with data, looking for new insights
- Looking for new ways to see known relationships



# 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



# General Advice

- Working with BI Catalog
- Development Standards
- Working with Executives
- Working with IT and DBAs
- Developing Trust in BI Systems
- Getting Started
  - Workshops
  - Assessments
  - Training
  - Standards Development and Documentation
- The Long Road



# 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”
- In production now



# 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 \*

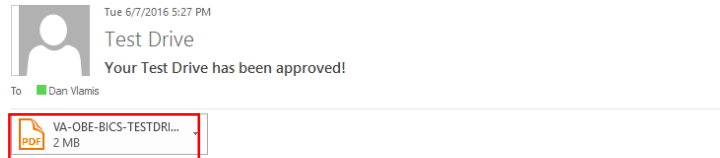
(###)    ###    #####

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:



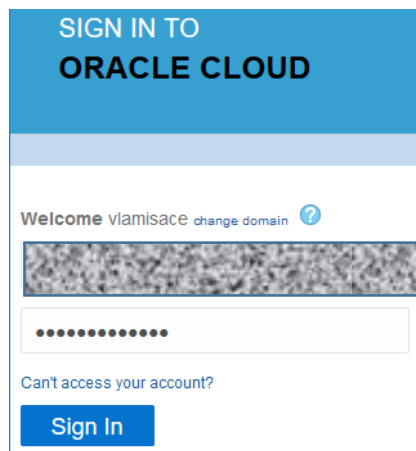
Please login with the following:

username / Password:

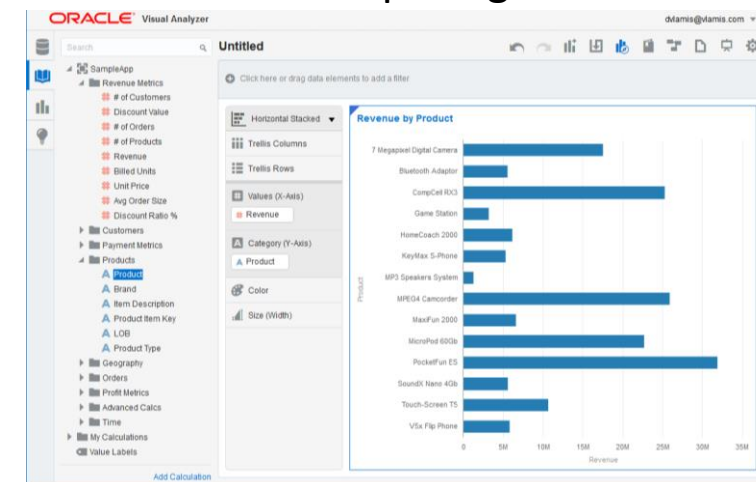


The attached document has access information and the lab activities. We hope you enjoy your exploration of Oracle BICS and we will follow up after your completion. This environment will be available to you for 24 hours.

## 3. Sign into BICS



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







# Thank You!

## Data Visualization for Oracle Business Intelligence

Tim Vlami

[tvlamis@vlamis.com](mailto:tvlamis@vlamis.com)

[www.vlamis.com](http://www.vlamis.com)



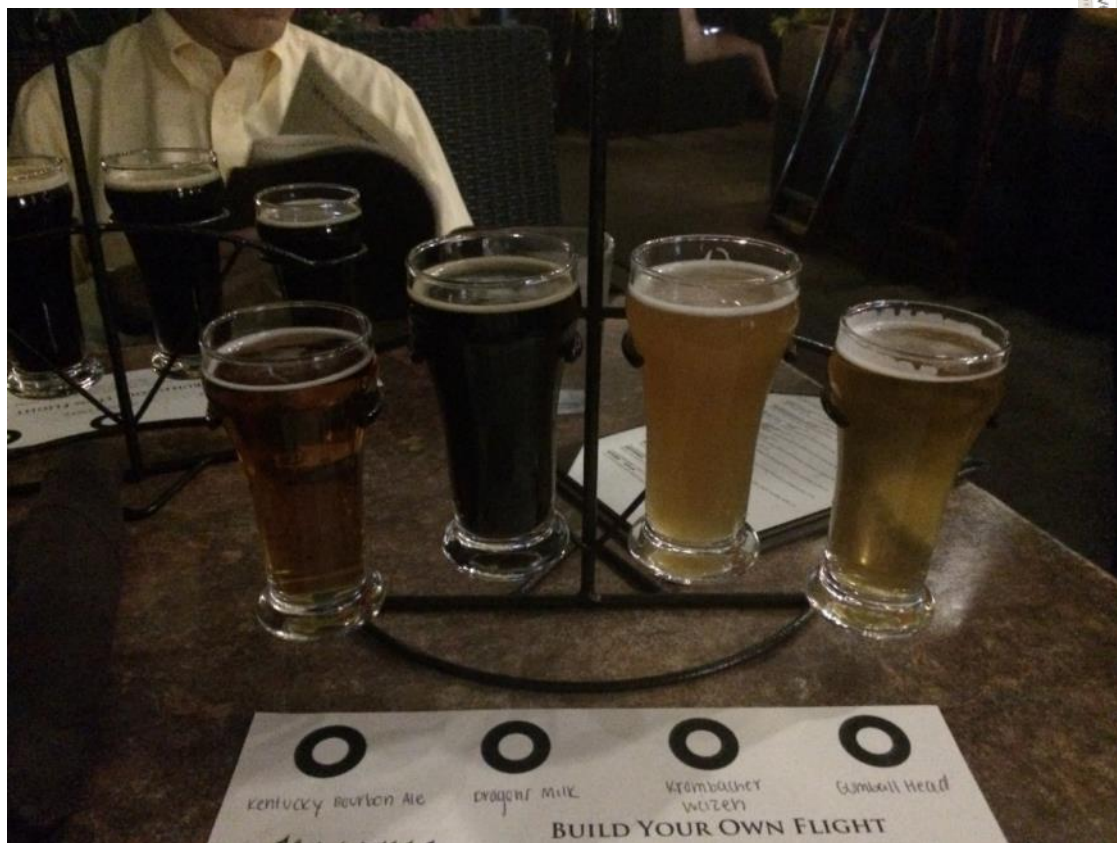
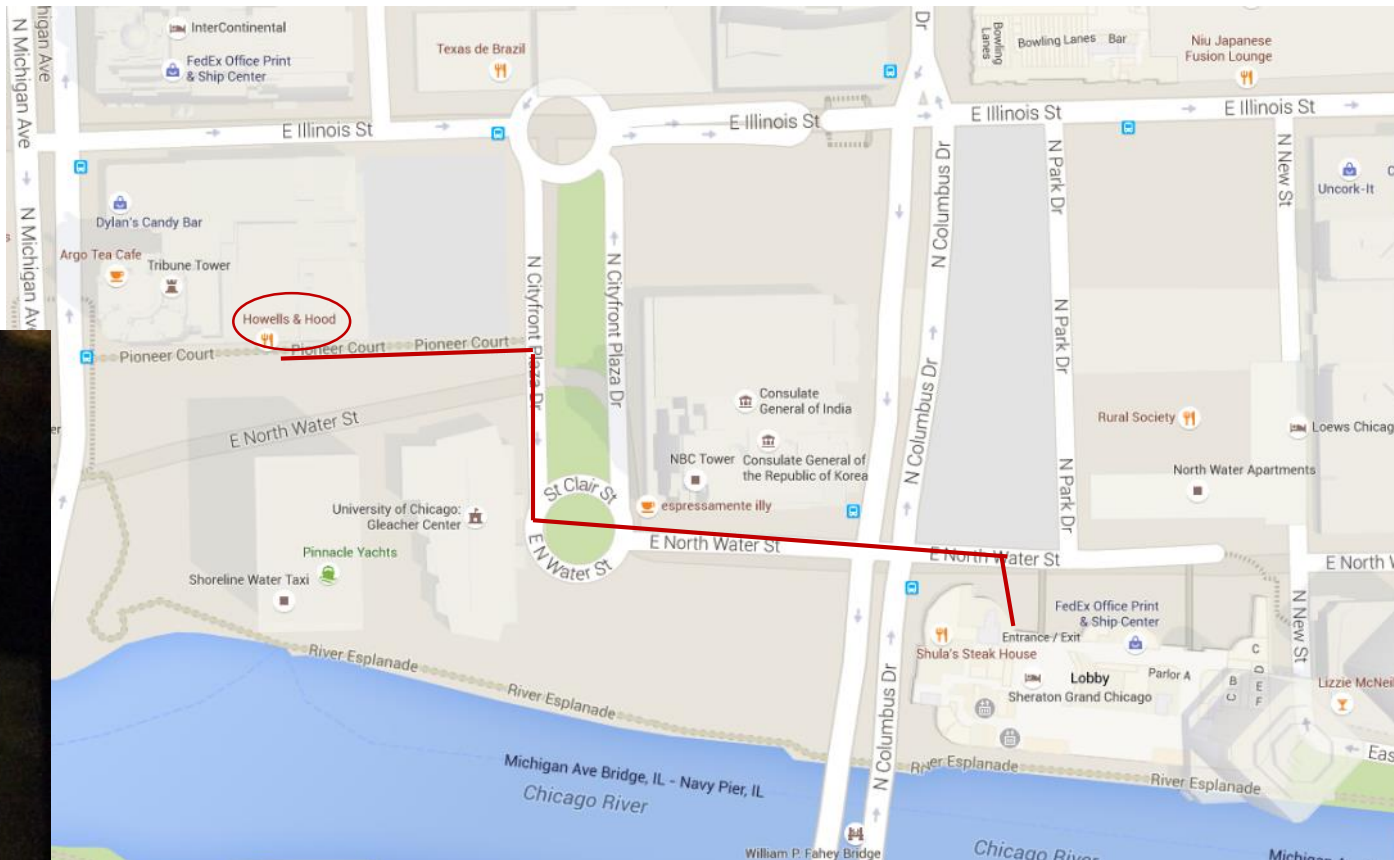
# Join Us For a Beer at Howells and Hood

Howells and Hood

[www.howellsandhood.com](http://www.howellsandhood.com)

435 N. Michigan Avenue

In Tribune Tower





ODTUG

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CHICAGO, ILLINOIS • JUNE 26-30

PLEASE FILL OUT YOUR EVALUATIONS