# Data Visualization Best Practices:
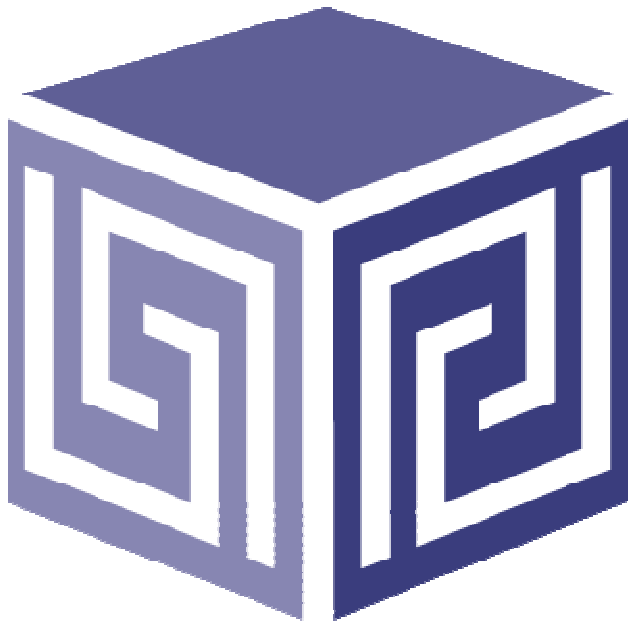## Know How to Design and Improve you BI & EPM Dashboards, Reports, & Queries

## Collaborate 2010

**Dan Vlamis**

**Tim Vlamis**

**Vlamis Software Solutions**

**816-781-2880**

**http://www.vlamis.com**

# Vlamis Software Solutions, Inc.

- Founded in 1992 in Kansas City, Missouri
- Oracle Partner and reseller since 1995
- Developed more than 200 Oracle BI systems
- Specializes in ORACLE-based:
  - Data Warehousing
  - Business Intelligence
  - Data Transformation (ETL)
  - Web development and portals
- Delivers
  - Design and integrated BI and DW solutions
  - Training and mentoring
- Exclusive supplier world-wide for Windows-based Oracle BIC2G BI & EPM VMs
- Expert presenter at major Oracle conferences
- www.vlamis.com (blog, papers, newsletters, services)

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# Vlamis Collaborate Presentations

| Presenter | Time | Title |
|---|---|---|
| Chris Claterbos | Wed 9:15 | Using Multidimensional Data Sources with Oracle BIEE+ 11g |
| Tim Vlamis Dan Vlamis | Wed 10:30 | Data Visualization Best Practices |
| Cathye Pendley | Wed 11:45 | Turnkey Healthcare Financial Analytics (with Anthem Healthcare Analytics) |

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# Dan Vlamis' Bio

- Developer for IRI (former owners of Oracle OLAP).
- Founded Vlamis Software in 1992.
- Wrote portions of Oracle Sales Analyzer.
- Beta tester for Oracle products including OBIEE 11g.
- Oracle ACE.
- Expert speaker at Oracle conferences.
- Co-author of new book "Oracle Essbase & Oracle OLAP".
- BI/DW/EPM Track Chair for 2010 Collaborate Conference.
- BA Computer Science Brown University.

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# Tim Vlamis' Bio

- 20+ years experience in business modeling and valuation, forecasting, and scenario analyses.
- Expert in principles and elements of design.
- Expert in curriculum development and pedagogical theory.
- Professional Certified Marketer (PCM) from AMA.
- Active Member of NICO (Northwestern Institute on Complex Systems).
- MBA Kellogg School of Management (Northwestern).
- BA Economics Yale University.

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# Overview

- Cognition, Data Visualization, and Principles of Design
- Graphs versus Tables
- Tips for Tables
- Types of Graphs and when to use them
- Visualizations with Oracle BI
- BI Implementation Success
- Review and Summary

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# Mooers's Laws

- An information retrieval system will tend not to be used whenever it is more painful and troublesome for a customer to have information than for him not to have it.

- Where an information retrieval system tends not to be used, a more capable information retrieval system may tend to be used even less.
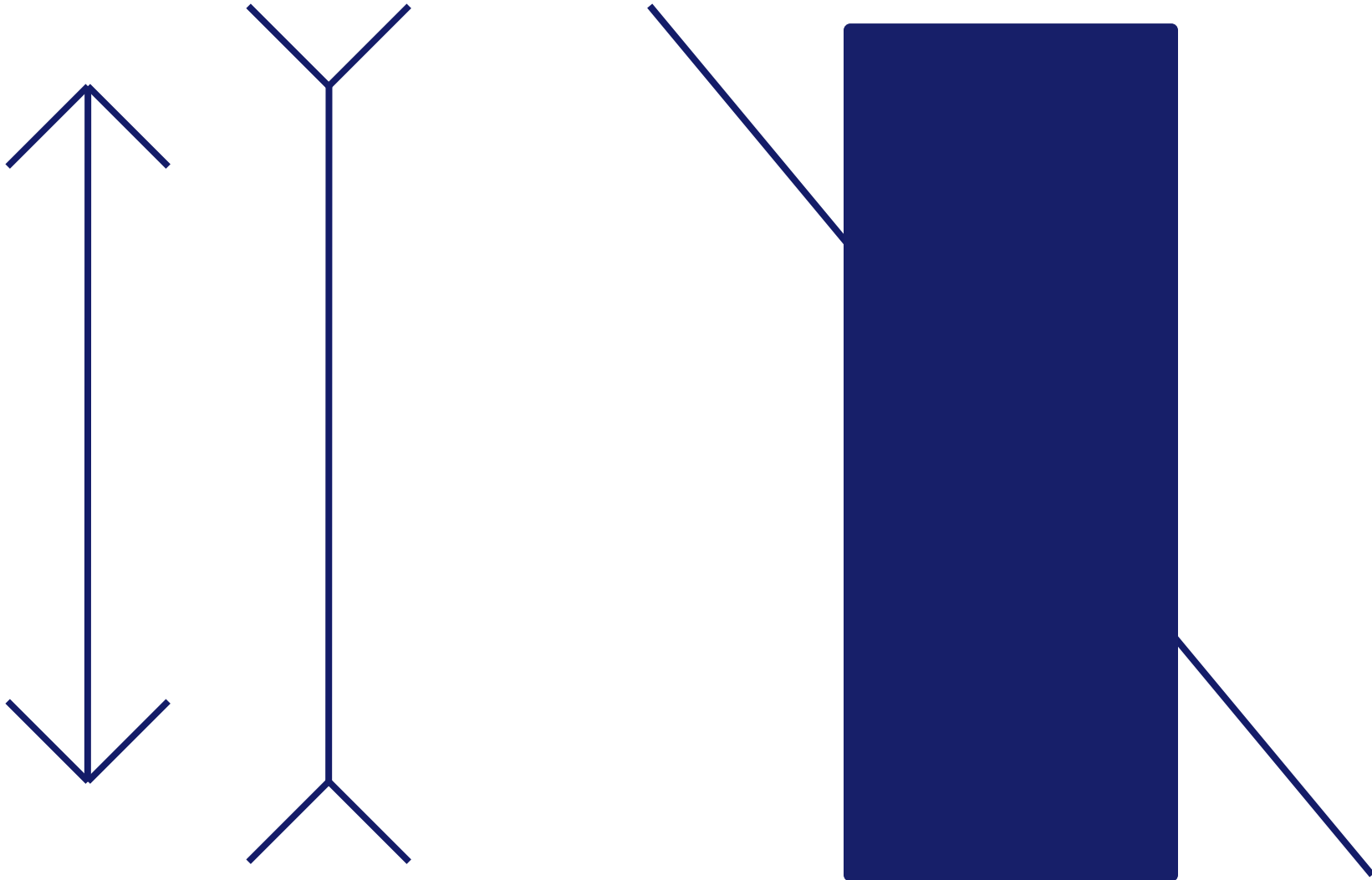
Calvin Mooers 1959

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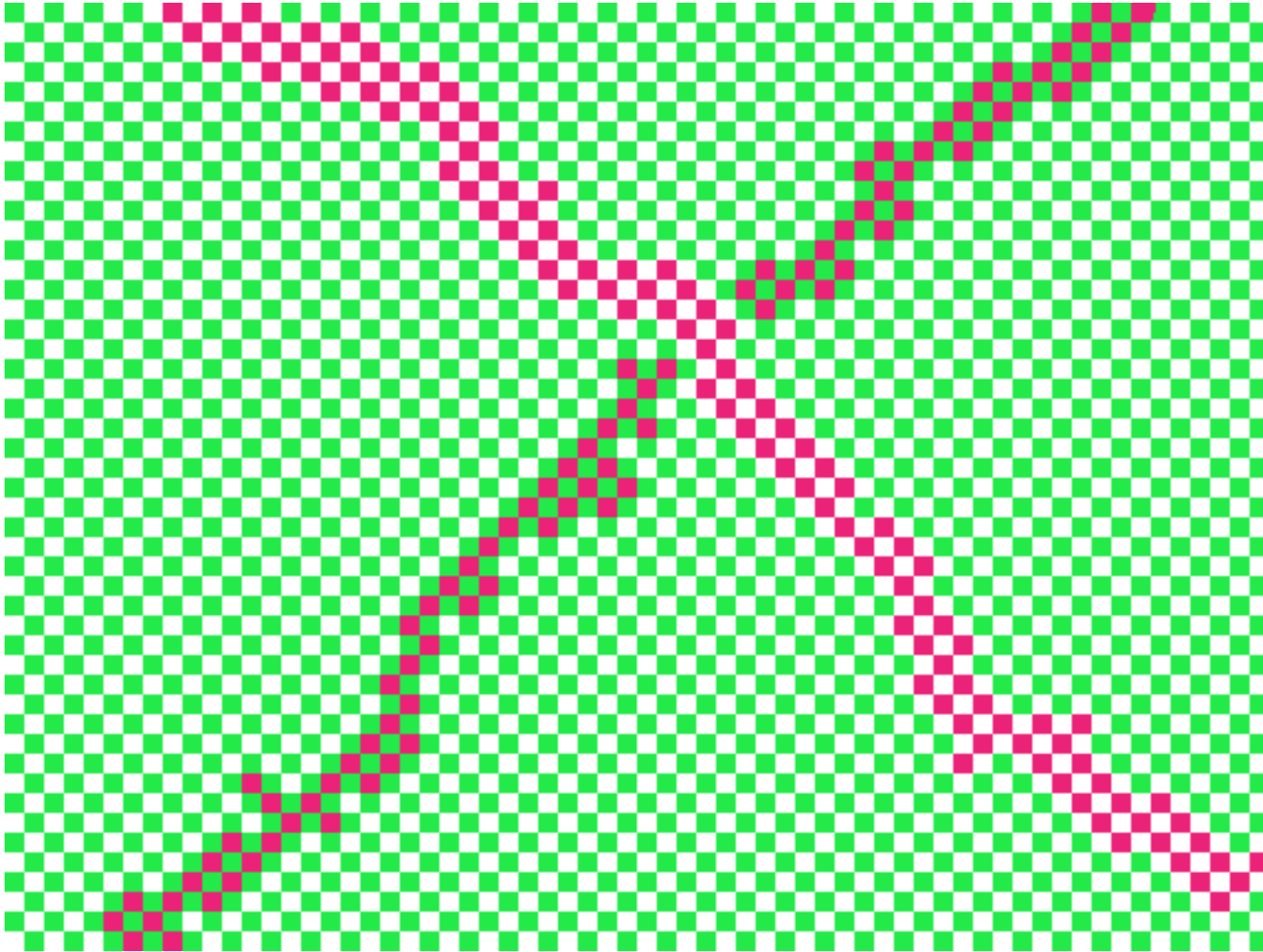
# Commonly Overlooked BI Fundamentals

- BI reports and dashboards should be viewed primarily as communication devices.

- Both the principles of human cognition and the needs of the individual user should help guide their proper use.
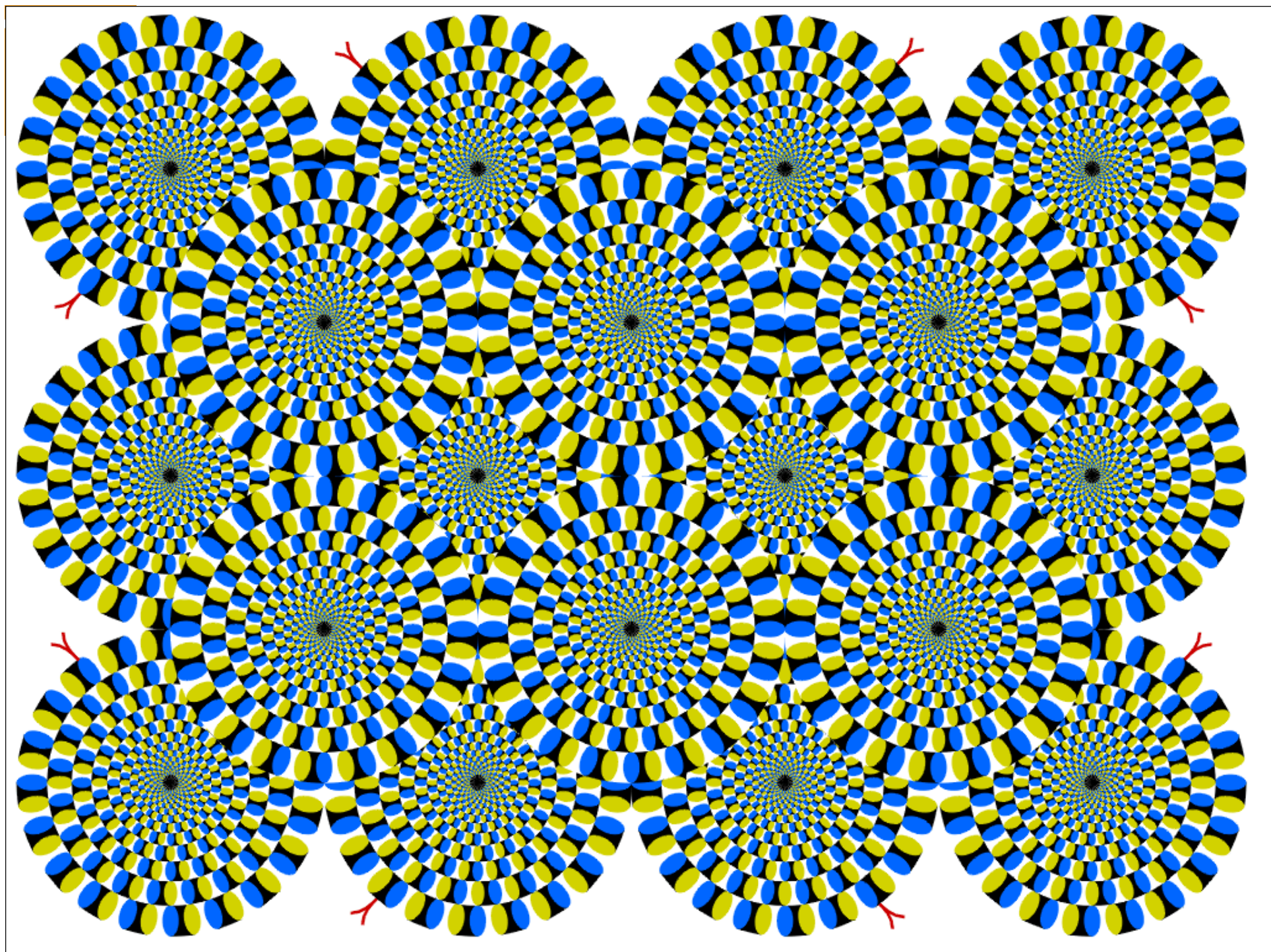
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# Classic Optical Illusions

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# How many colors do you see?



There are only 3 colors: White, green, and pink.
There seem to be two different shades of pink,
but there is only one pink.

# Universal Principles of Design

- Guiding concepts or ideas that help us evaluate the relative strengths of a work.
  - Unity
  - Harmony
  - Balance
  - Rhythm
  - Proportion and Scale
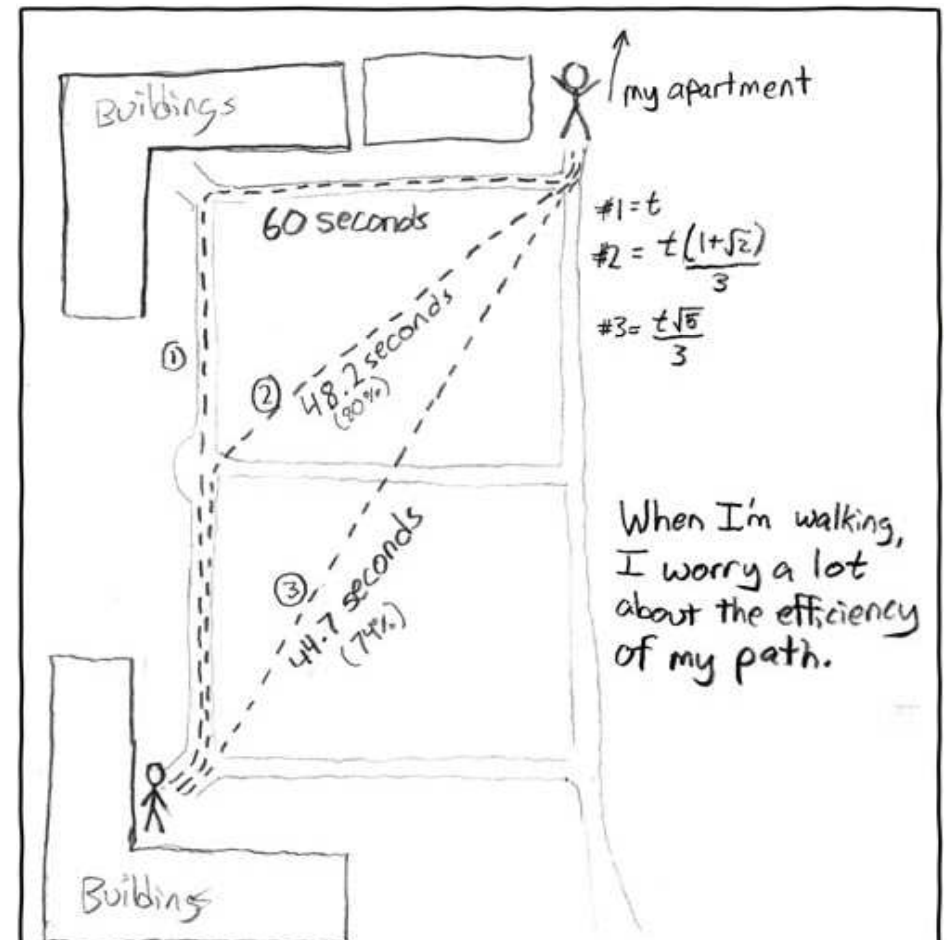  - Emphasis or Dominance
  - Variation

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# Main Uses of BI Reports & Dashboards

## Exploration

## Explanation



xkcd.com

# Strong Foundations

- It's much easier to misuse BI tools than to use them well.

- Do a few things well and build from there.

- Think through your BI visualizations
  (don't automatically assume that default settings are fine.)

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# Tufte's 5 Principles

- Above all else show the data.
- Maximize the data to ink ratio.
- Erase non-data ink.
- Erase redundant data ink.
- Revise and edit.

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# Vlamis' 5 Principles

- Maximize data to ink ratio.
- Match data format with viewer needs, explain or explore.
- Match data scale with data precision.
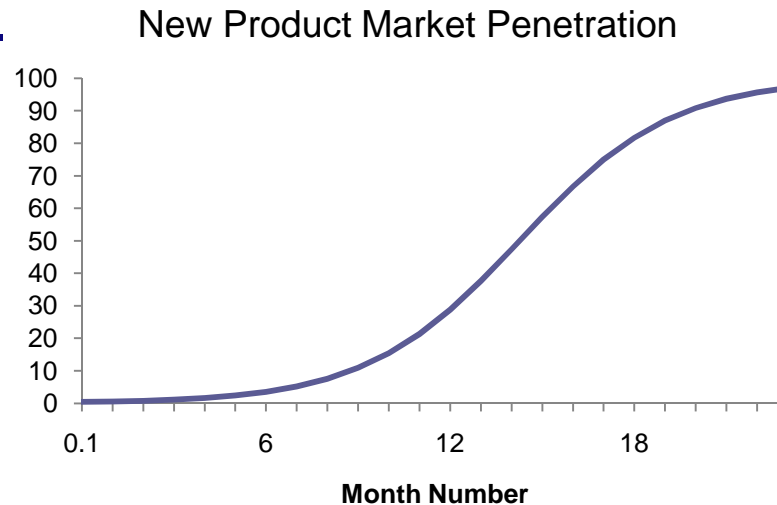- Don't misrepresent data.
- Use color carefully.

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# Communication is about perception, not reality.

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# Graphs and Tables

- Graphs and Charts depict visual representations and relationships.

New Product Market Penetration



Month Number

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

| District | Month | Dollars | WB Forecast Dollars | % Forecast |
|---|---|---|---|---|
| ATLANTA DISTRICT | 03/01/2008 | 595,232.0 | 535,185.0 | 111.2 |
| BOSTON DISTRICT | 03/01/2008 | 1,882,036.0 | 1,954,736.7 | 96.3 |
| CHARLOTTE DISTRICT | 03/01/2008 | 215,360.0 | 204,592.0 | 105.3 |
| CHICAGO DISTRICT | 03/01/2008 | 1,381,552.0 | 1,236,574.0 | 111.7 |
| CINCINNATI DISTRICT | 03/01/2008 | 827,162.0 | 742,869.0 | 111.3 |
| DALLAS DISTRICT | 03/01/2008 | 1,060,316.0 | 897,654.0 | 118.1 |
| DENVER DISTRICT | 03/01/2008 | 955,876.0 | 1,050,735.4 | 91.0 |
| DETROIT DISTRICT | 03/01/2008 | 961,026.0 | 1,249,333.8 | 76.9 |
| JACKSONVILLE DISTRICT | 03/01/2008 | 1,827,434.0 | 1,892,779.4 | 96.5 |

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# Keys to Effective Tables

- Provide a search interface.
- Avoid scrolling if possible.
- Lock headers and titles if use scrolling.
- Display significant figures.
  - Don't imply precision that doesn't exist.
- Judiciously use conditional formatting for data exploration.
- Avoid putting text in color.
- Alignment, proximity, contrast.

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# Bad Table

| | WIDGETS TO GADGETS RATIO CALCULATED USING CHECK LEVEL DETAIL | | | | | |
| | ELECTROMECHANICAL | | | PNEUMATIC | | |
| PERIOD | IN-STORE | WEBSITE | DISTRIBUTOR | IN-STORE | WEBSITE | DISTRIBUTOR |
|---|---|---|---|---|---|---|
| PERIOD 1 | 22.36% | 11.37% | 83.00% | 85.34% | 20.90% | 46.80% |
| PERIOD 2 | 21.22% | 15.25% | 81.00% | 81.31% | 18.01% | 35.39% |
| PERIOD 3 | 21.64% | 13.22% | 82.00% | 78.29% | 29.94% | 41.28% |
| PERIOD 4 | 20.89% | 13.44% | 82.00% | 47.82% | 16.30% | 39.46% |
| PERIOD 5 | 21.90% | 13.24% | 81.00% | 84.58% | 17.19% | 20.52% |
| PERIOD 6 | 25.09% | 14.78% | 80.00% | 59.93% | 31.08% | 35.14% |
| PERIOD 7 | 26.23% | 14.98% | 79.00% | 36.35% | 32.85% | 22.52% |
| PERIOD 8 | 26.83% | 13.08% | 80.00% | 82.10% | 30.41% | 36.10% |
| PERIOD 9 | 23.79% | 14.27% | 81.00% | 43.40% | 25.17% | 23.81% |
| PERIOD 10 | 24.39% | 12.61% | 82.00% | 38.21% | 17.70% | 40.30% |

INCLUDES ONLY DATES FROM JANUARY THRU OCT 2007

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# Better Table

## Widgets to Gadgets Ratio

| | Electromechanical | | | Pneumatic | | |
|---|---|---|---|---|---|---|
| Period | In-store | Website | Distributor | In-store | Website | Distributor |
| 1 | 22% | 11% | 83% | 51% | 21% | 40% |
| 2 | 21% | 15% | 81% | 74% | 21% | 32% |
| 3 | 22% | 13% | 82% | 48% | 22% | 23% |
| 4 | 21% | 13% | 82% | 58% | 31% | 30% |
| 5 | 22% | 13% | 81% | 52% | 19% | 28% |
| 6 | 25% | 15% | 80% | 87% | 15% | 22% |
| 7 | 26% | 15% | 79% | 51% | 23% | 20% |
| 8 | 27% | 13% | 80% | 44% | 22% | 45% |
| 9 | 24% | 14% | 81% | 54% | 17% | 31% |
| 10 | 24% | 13% | 82% | 75% | 31% | 29% |

Ratios calculated using check level detail.

Periods include Jan - Oct 2007

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# 2004 - 2005 Budget

## Budget By Division

**Dispatch**
1,136,245   12%

**Administration**
1,244,079   14%

**Patrol**
4,535,810   49%

**Support Services**
1,099,075   12%

**Investigation**
1,240,166   13%

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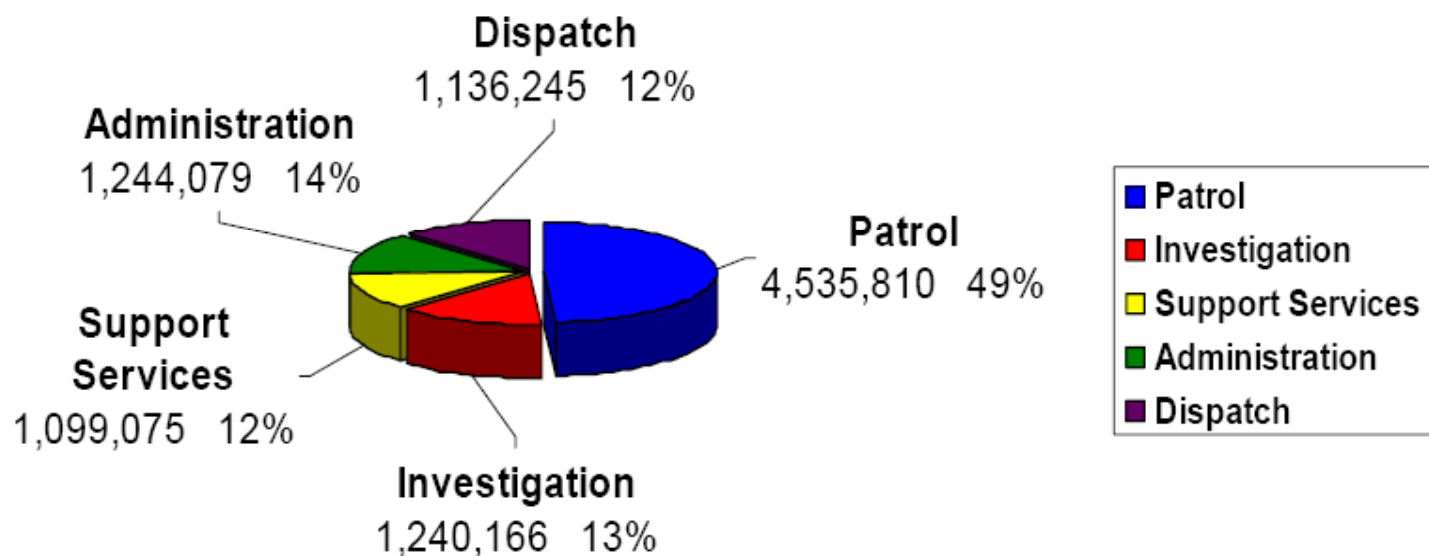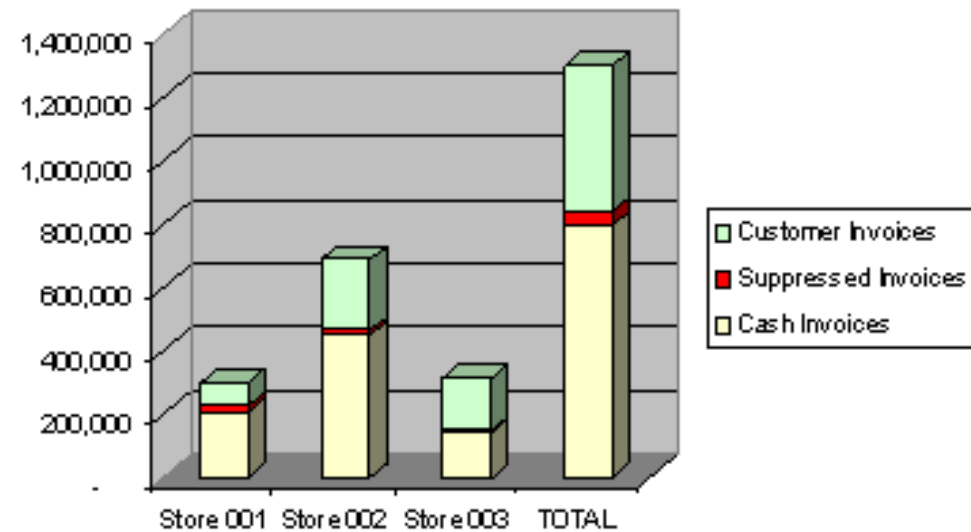
| | Store 001 | Store 002 | Store 003 | TOTAL |
|---|---|---|---|---|
| Total Invoices | 298,943 | 687,091 | 313,140 | 1,299,174 |
| *less* | | | | |
| Cash Invoices | 207,256 | 449,064 | 141,305 | 797,625 |
| *leaves* | | | | |
| Non-cash Invoices | 91,687 | 238,027 | 171,835 | 501,549 |
| *consisting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

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



| | Fall 1999 | Fall 2000 | Fall 2001 | Fall 2002 | Fall 2003 | Fall 2004 | Fall 2005 | Fall 2006 |
|---|---|---|---|---|---|---|---|---|
| Cal State Campuses | 13.3 | 10. | 9 | 10. | 14. | 14. | 10. | 11. |
| Foreign Universities | 33.4 | 41.2 | 35.8 | 31.9 | 28.2 | 22 | 26.7 | 27.5 |
| Other CA | 7 | 4.3 | 5.9 | 5.7 | 5.7 | 6.7 | 5.4 | 4.5 |
| Other UC Campuses | 8.6 | 7.1 | 7.3 | 9.3 | 11 | 13. | 11. | 9.3 |
| Other US | 19.5 | 19.4 | 18.9 | 16. | 14. | 15. | 21.0 | 22. |
| UCR | 18.1 | 17.1 | 23.1 | 26.4 | 26.7 | 28.9 | 24.9 | 24.9 |
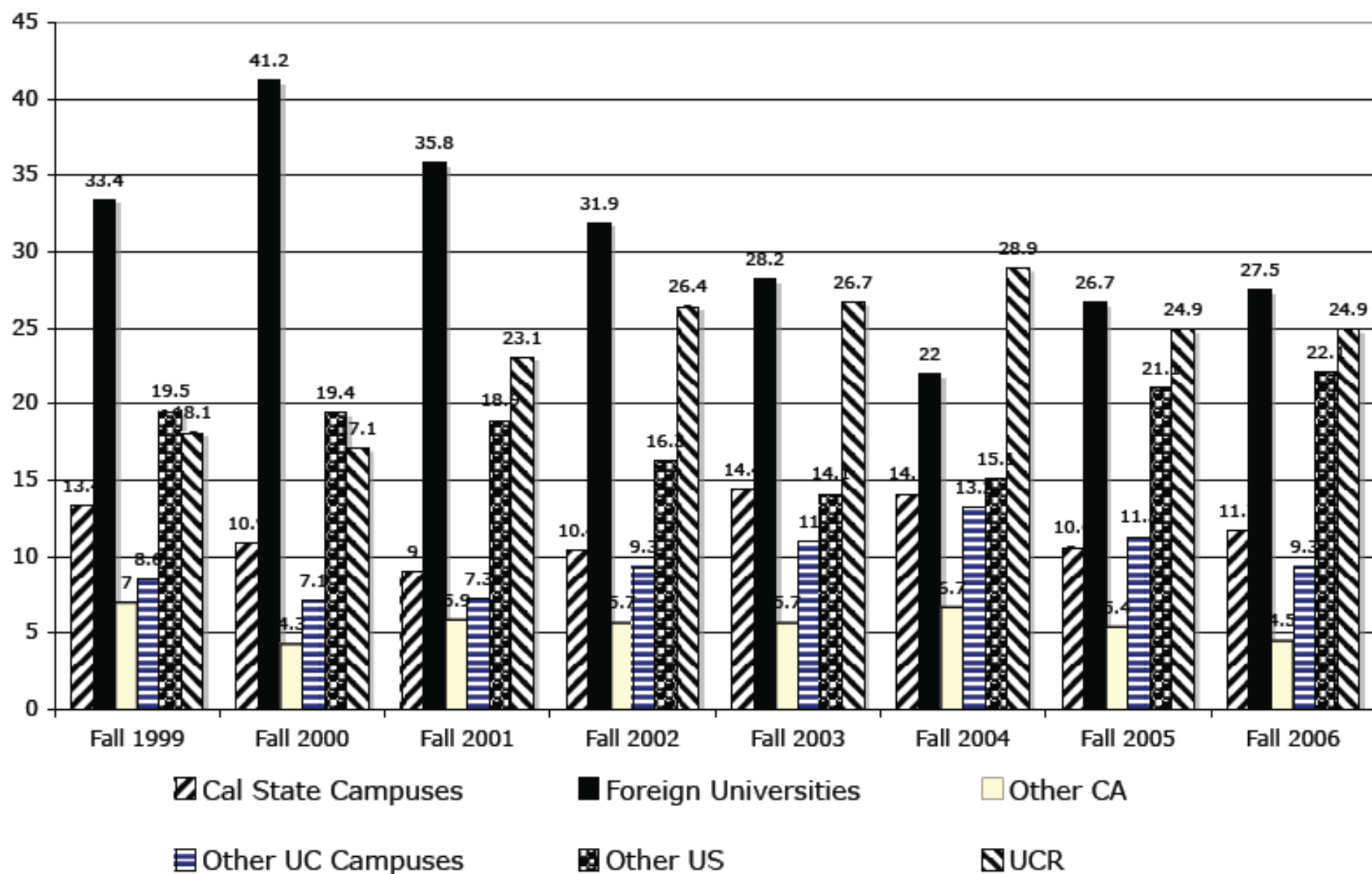
Weekday Server Load
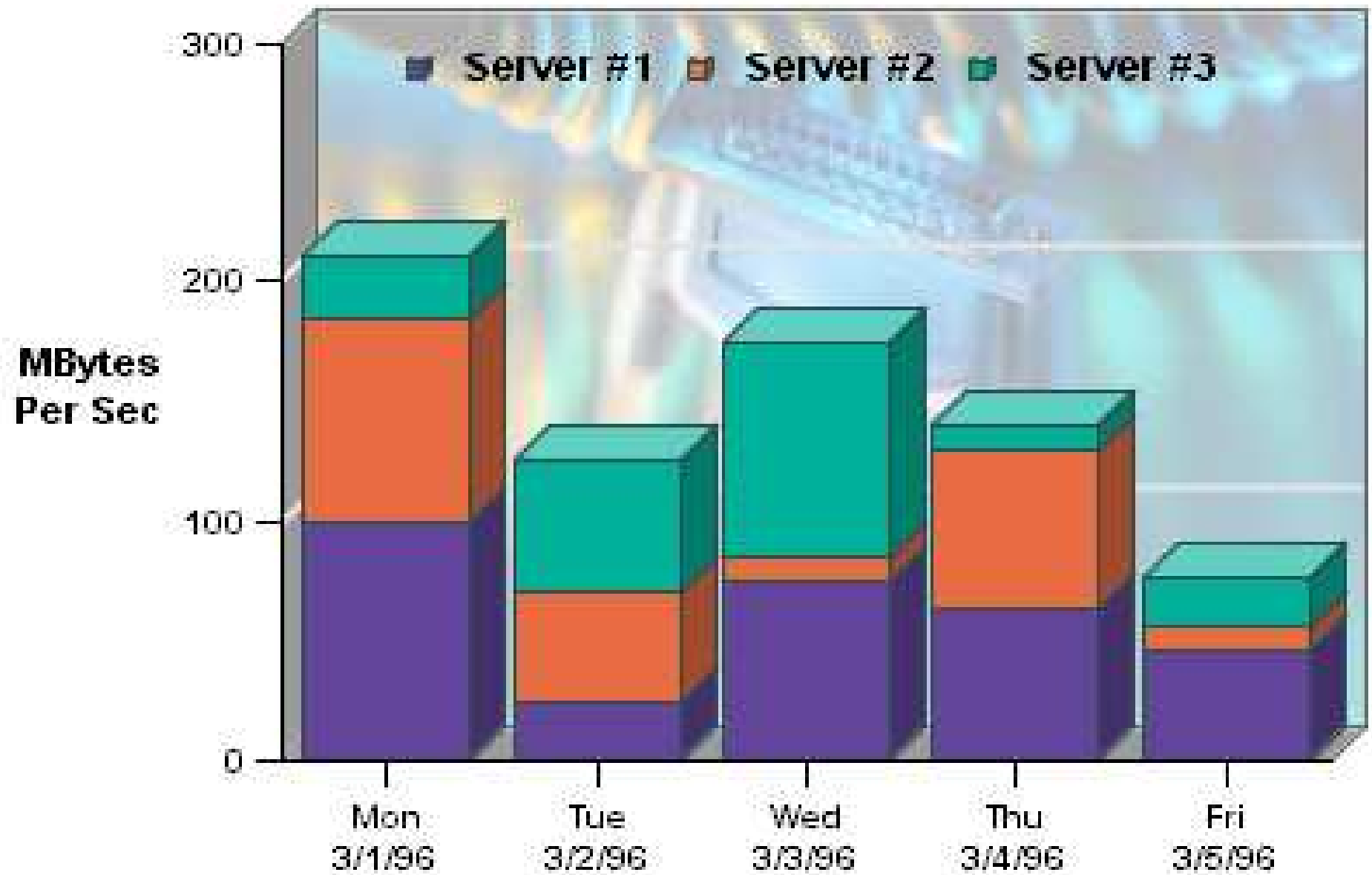
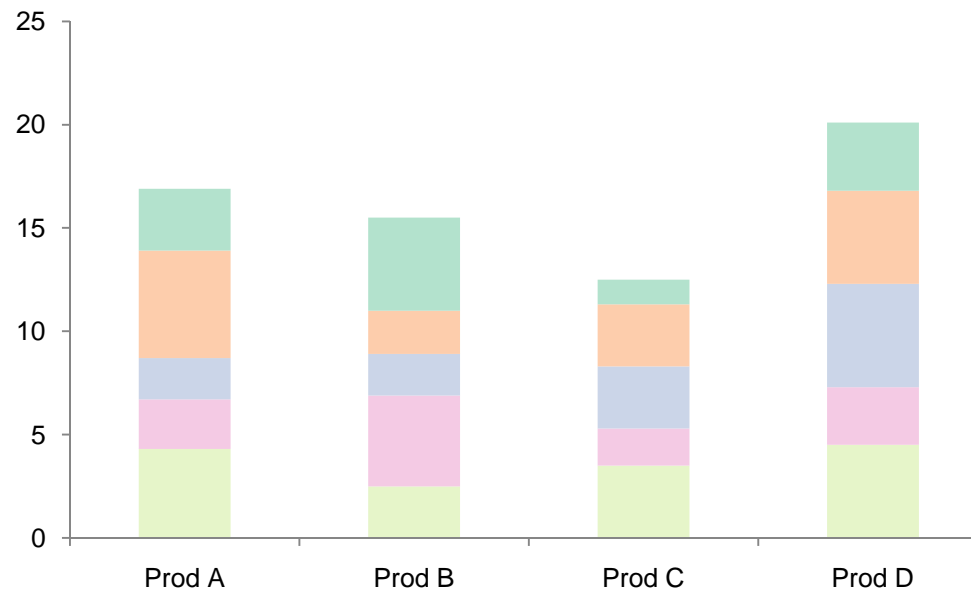"*With great power comes great responsibility.*"

Uncle Ben to Peter Parker, Spiderman 2002

# Bar Charts
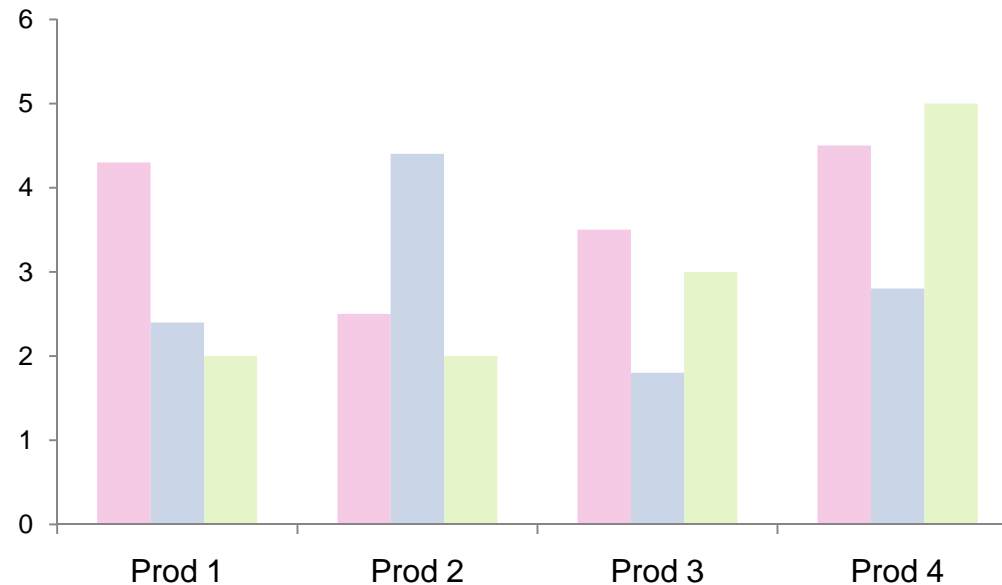


- Show nominal data values in comparison to one another.
- Start with zero.
- If use a logarithmic scale, clearly notate.

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# 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.

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# Pie Charts



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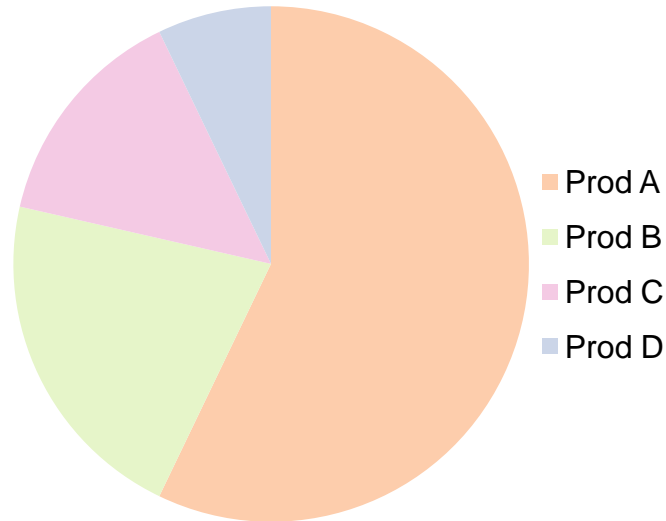
- Typically used for showing parts of whole by percentage.
- Not great for piece to piece comparisons.
- Limit number of pieces.
- Can be interesting to show lots of pies together if significant differences exist.
- Stephen Few hates them.
- Do not use 3-D.

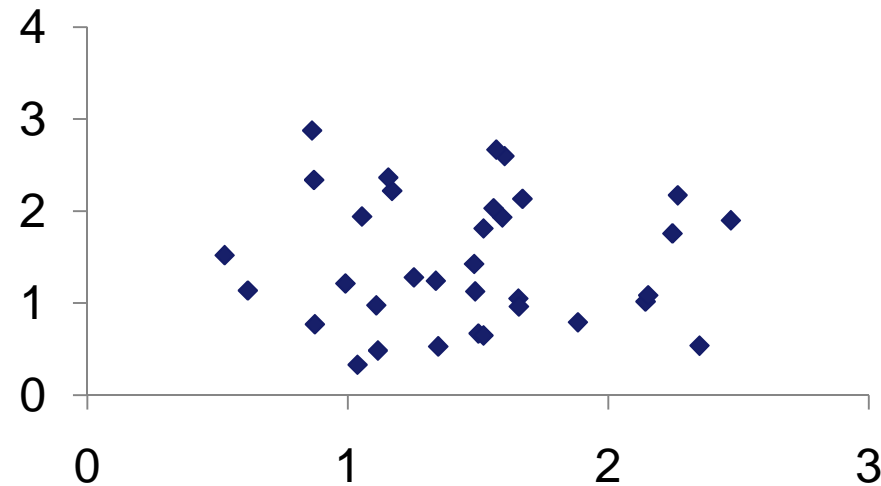vlamis ™
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# Line Chart
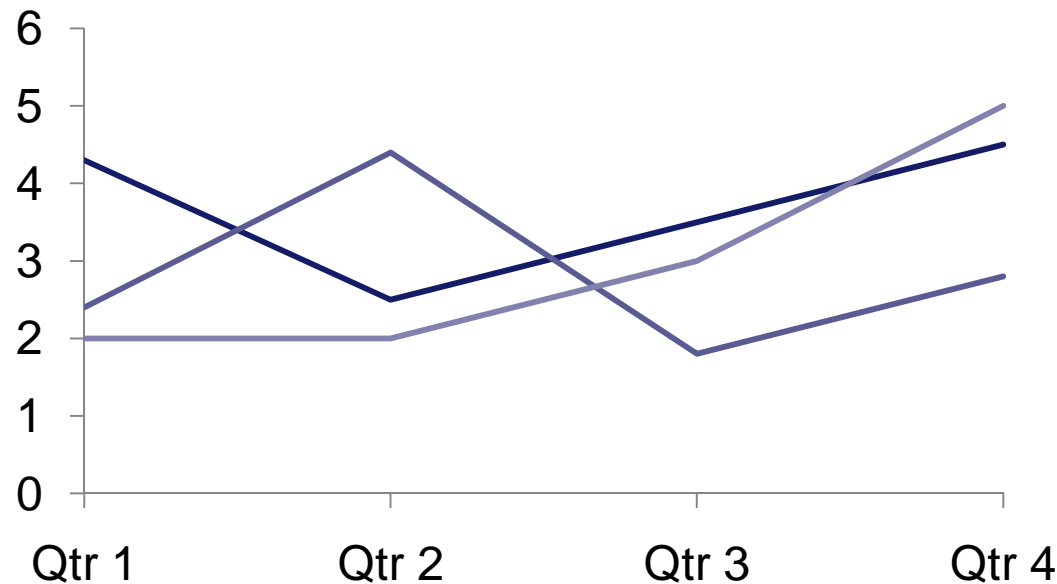


- Show a pattern or progression over a continuous range or period.
- Can be valued within a range to highlight a particular pattern (careful!).
- Maintain a rectangular shape close to golden proportion.
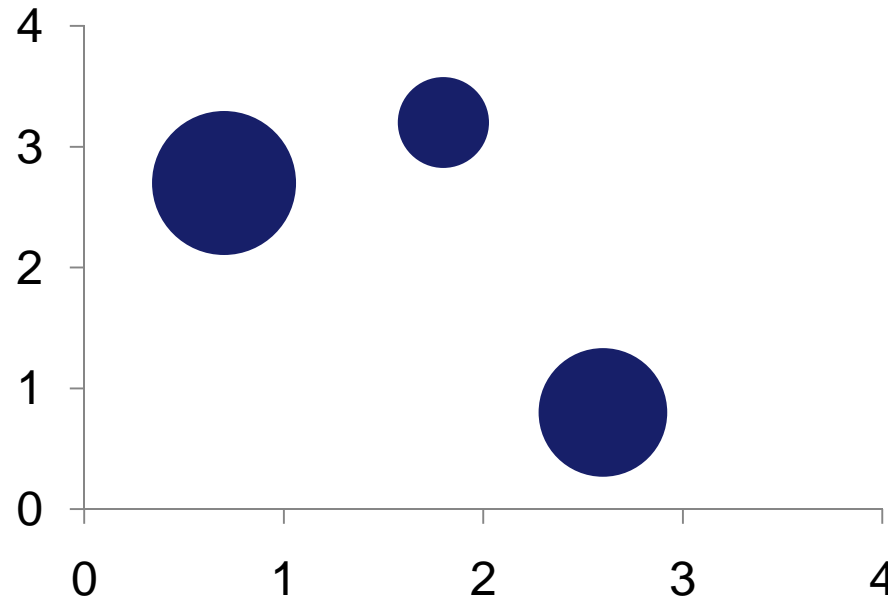
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# Scatter Plot



- 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).

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# Bubble Chart



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

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# Using Color Effectively

- Consciously choose a color palate.

- ColorBrewer2.org
  - Sequential schemes
    - Designed for ordered data that progresses from low to high.

  - Divergent schemes
    - Place equal emphasis on mid-range values and extremes at both ends of the data range.

  - Qualitative schemes
    - Used for nominal and categorical data where magnitude differences between classes should not be emphasized.

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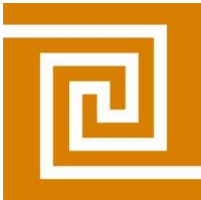
# Tables & Graphs Communicate Differently

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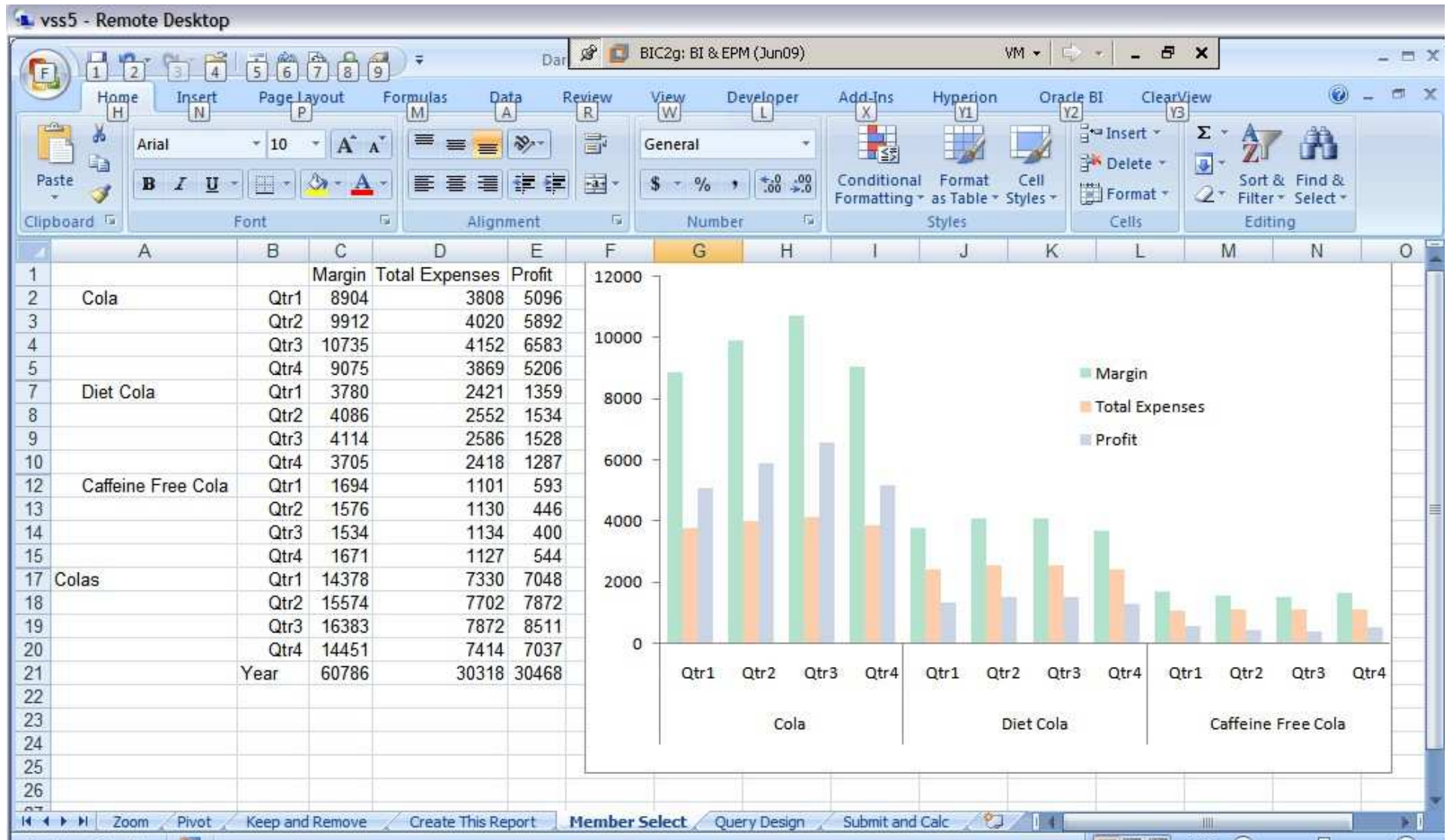
| Quarter | Product Hierarchy 1 Name | Go |
|---|---|---|

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Opportunity Revenue (000) | 14,544 🟢 | Recognized Revenue (000) | 471 🔴 | % Order Discount | 14.6% 🟡 | Orders to Booking Close Rate | 48.3% 🟡 |
| Expected Revenue (000) | 1156 🔴 | % Revenue Lag | 62.2% 🔴 | Ordered COGS (000) | 1,122 🟡 | Average Order Size (000) | 43 🟢 |
| Total Ordered Amount (000) | 1,246 🟢 | # of Orders | 29 🟢 | Order Gross Profit (000) | 123 🟡 | Total Return Amount (000) | 35 🟢 |

### Pipeline, Forecast and Actuals

Select View | Chart

- Recognized Revenue
- Expected Revenue (000)
- Opportunity Revenue (000)
- Total Ordered Amount (000)

Week
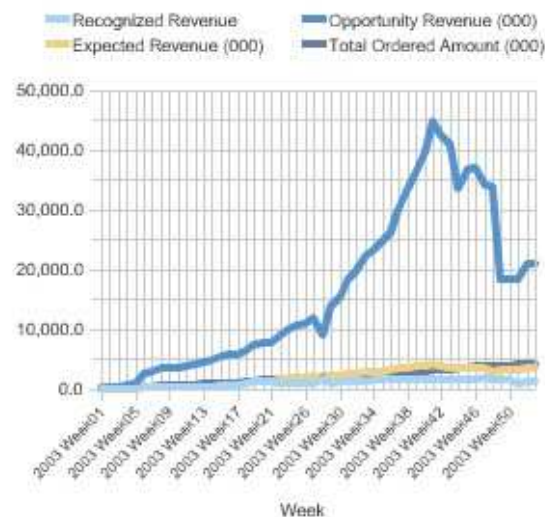
### Cumulative Order Revenue versus Last Quarter

Select View | Chart

- Cumulative Order Revenue
- Quarter Ago Cumulative Order Amount

3,632.0

Week

Year is equal to 2003

### Order Revenue Growth Over Previous Year

Select View | Chart

- % Growth
- Total Ordered Amount

% Growth

Week

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## Profit & Loss - Quarterly

| | 2005 Q 1 | 2005 Q 2 | 2005 Q 3 | 2005 Q 4 |
|---|---|---|---|---|
| Revenue | $11,078,583,759 | $12,956,966,463 | $21,256,939,680 | $128,287 |
| Cost of Goods Sold | $7,378,739,645 | $6,456,696,510 | $11,069,679,847 | $5,534,023,222 |
| Gross Profit | $3,699,844,114 | $6,500,269,953 | $10,187,259,833 | ($5,533,894,935) |
| Gross Margin % | 33.4% | 50.2% | 47.9% | (4,313,691.7%) |
| Sales & Marketing Expenses | $513,880,300 | $6,118,303 | $4,691,190,391 | $416,600 |
| R&D Expenses | $0 | $0 | $2,590,056,700 | $0 |
| Other Operating Expenses | $0 | $112,548 | $607,734 | $0 |
| Operating Profit | $3,185,963,814 | $6,494,039,103 | $2,905,405,009 | ($5,534,311,536) |
| Operating Margin % | 29% | 50% | 14% | (4,314,016%) |
| Depreciation Expenses | $0 | $112,548 | $0 | $0 |
| Other Income | ($345,057) | ($297,161) | ($62,734) | ($35) |
| EBIT | $3,185,618,757 | $6,493,629,394 | $2,905,342,275 | ($5,534,311,571) |
| EBIT Margin % | 28.8% | 50.1% | 13.7% | (4,314,016.5%) |
| Interest Expense | $129,519 | $176,415 | $25 | $0 |
| EBT | $3,185,489,238 | $6,493,452,979 | $2,905,342,250 | ($5,534,311,571) |
| EBT Margin % | 28.8% | 50.1% | 13.7% | (4,314,016.5%) |
| Income Tax Expense | $0 | $206,600 | $0 | $0 |
| Net Income | $3,185,489,238 | $6,493,246,379 | $2,905,342,250 | ($5,534,311,571) |
| Net Income Margin % | 28.8% | 50.1% | 13.7% | (4,314,016.5%) |

Modify - Refresh - Print - Download

## Profit & Loss - Quarterly YTD

| | 2005 Q 1 | 2005 Q 2 | 2005 Q 3 | 2005 Q 4 |
|---|---|---|---|---|
| Revenue YTD | 11,078,583,758.7 | 24,035,550,222.1 | 45,292,489,901.8 | 45,292,618,188.5 |
| Cost of Goods Sold YTD | 7,378,739,645.1 | 13,835,436,155.0 | 24,905,116,001.8 | 30,439,139,223.9 |
| Gross Profit YTD | 3,699,844,113.7 | 10,200,114,067.1 | 20,387,373,900.0 | 14,853,478,964.6 |
| Gross Margin YTD % | 33% | 42% | 45% | 33% |
| Sales & Marketing Expense YTD | 513,880,300.0 | 519,998,602.9 | 5,211,188,993.5 | 5,211,605,593.9 |
| R&D Expense YTD | $0 | $0 | $2,590,056,700 | $2,590,056,700 |
| Other Operating Expense YTD | 0.0 | 112,548.0 | 720,281.5 | 720,281.5 |
| Operating Profit YTD | 3,185,963,813.7 | 9,680,002,916.2 | 12,585,407,925.0 | 7,051,096,389.2 |
| Operating Margin YTD % | 29% | 40% | 28% | 16% |
| Depreciation Expenses YTD | 0.0 | 112,548.0 | 112,548.0 | 112,548.0 |
| Other Income YTD | ($345,057) | ($642,218) | ($704,951) | ($704,986) |
| EBIT YTD | 3,185,618,756.7 | 9,679,248,150.7 | 12,584,590,426.0 | 7,050,278,855.2 |
| EBIT YTD Margin % | 29% | 40% | 28% | 16% |
| Interest Expense YTD | 129,519.0 | 305,934.0 | 305,959.0 | 305,959.0 |
| EBT YTD | 3,185,618,756.7 | 9,679,248,150.7 | 12,584,590,426.0 | 7,050,278,855.2 |
| EBIT Margin % | 29% | 40% | 28% | 16% |
| Income Tax Expense YTD | 0.0 | 206,600.0 | 206,600.0 | 206,600.0 |
| Net Income YTD | $3,185,489,238 | $9,678,735,617 | $12,584,077,867 | $7,049,766,296 |
| Net Income Margin % | 29% | 40% | 28% | 16% |

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# Which is easier to read?

## Profit & Loss - Quarterly

| | 2005 Q 1 | 2005 Q 2 | 2005 Q 3 | 2005 Q 4 |
|---|---|---|---|---|
| Revenue | $11,078,583,759 | $12,956,966,463 | $21,256,939,680 | $128,287 |
| Cost of Goods Sold | $7,378,739,645 | $6,456,696,510 | $11,069,679,847 | $5,534,023,222 |
| Gross Profit | $3,699,844,114 | $6,500,269,953 | $10,187,259,833 | ($5,533,894,935) |
| Gross Margin % | 33.4% | 50.2% | 47.9% | (4,313,691.7%) |
| Sales & Marketing Expenses | $513,880,300 | $6,118,303 | $4,691,190,391 | $416,600 |
| R&D Expenses | $0 | $0 | $2,590,056,700 | $0 |
| Other Operating Expenses | $0 | $112,548 | $607,734 | $0 |
| Operating Profit | $3,185,963,814 | $6,494,039,103 | $2,905,405,009 | ($5,534,311,536) |
| Operating Margin % | 29% | 50% | 14% | (4,314,016%) |
| Depreciation Expenses | $0 | $112,548 | $0 | $0 |
| Other Income | ($345,057) | ($297,161) | ($62,734) | ($35) |
| EBIT | $3,185,618,757 | $6,493,629,394 | $2,905,342,275 | ($5,534,311,571) |
| EBIT Margin % | 28.8% | 50.1% | 13.7% | (4,314,016.5%) |
| Interest Expense | $129,519 | $176,415 | $25 | $0 |
| EBT | $3,185,489,238 | $6,493,452,979 | $2,905,342,250 | ($5,534,311,571) |
| EBT Margin % | 28.8% | 50.1% | 13.7% | (4,314,016.5%) |
| Income Tax Expense | $0 | $206,600 | $0 | $0 |
| Net Income | $3,185,489,238 | $6,493,246,379 | $2,905,342,250 | ($5,534,311,571) |
| Net Income Margin % | 28.8% | 50.1% | 13.7% | (4,314,016.5%) |

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## Profit & Loss - Quarterly YTD

| | 2005 Q 1 | 2005 Q 2 | 2005 Q 3 | 2005 Q 4 |
|---|---|---|---|---|
| Revenue YTD | 11,078,583,758.7 | 24,035,550,222.1 | 45,292,489,901.8 | 45,292,618,188.5 |
| Cost of Goods Sold YTD | 7,378,739,645.1 | 13,835,436,155.0 | 24,905,116,001.8 | 30,439,139,223.9 |
| Gross Profit YTD | 3,699,844,113.7 | 10,200,114,067.1 | 20,387,373,900.0 | 14,853,478,964.6 |
| Gross Margin YTD % | 33% | 42% | 45% | 33% |
| Sales & Marketing Expense YTD | 513,880,300.0 | 519,998,602.9 | 5,211,188,993.5 | 5,211,605,593.9 |
| R&D Expense YTD | $0 | $0 | $2,590,056,700 | $2,590,056,700 |
| Other Operating Expense YTD | 0.0 | 112,548.0 | 720,281.5 | 720,281.5 |
| Operating Profit YTD | 3,185,963,813.7 | 9,680,002,916.2 | 12,585,407,925.0 | 7,051,096,389.2 |
| Operating Margin YTD % | 29% | 40% | 28% | 16% |
| Depreciation Expenses YTD | 0.0 | 112,548.0 | 112,548.0 | 112,548.0 |
| Other Income YTD | ($345,057) | ($642,218) | ($704,951) | ($704,986) |
| EBIT YTD | 3,185,618,756.7 | 9,679,248,150.7 | 12,584,590,426.0 | 7,050,278,855.2 |
| EBIT YTD Margin % | 29% | 40% | 28% | 16% |
| Interest Expense YTD | 129,519.0 | 305,934.0 | 305,959.0 | 305,959.0 |
| EBT YTD | 3,185,618,756.7 | 9,679,248,150.7 | 12,584,590,426.0 | 7,050,278,855.2 |
| EBIT Margin % | 29% | 40% | 28% | 16% |
| Income Tax Expense YTD | 0.0 | 206,600.0 | 206,600.0 | 206,600.0 |
| Net Income YTD | $3,185,489,238 | $9,678,735,617 | $12,584,077,867 | $7,049,766,296 |
| Net Income Margin % | 29% | 40% | 28% | 16% |

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## Profit & Loss - Quarterly

| | 2005 Q 1 | 2005 Q 2 | 2005 Q 3 | 2005 Q 4 |
|---|---|---|---|---|
| Revenue | $11,078,583,759 | $12,956,966,463 | $21,256,939,680 | $128,287 |
| Cost of Goods Sold | $7,378,739,645 | $6,456,696,510 | $11,069,679,847 | $5,534,023,222 |
| **Gross Profit** | $3,699,844,114 | $6,500,269,953 | $10,187,259,833 | ($5,533,894,935) |
| **Gross Margin %** | 33.4% | 50.2% | 47.9% | (4,313,691.7%) |
| Sales & Marketing Expenses | $513,880,300 | $6,118,303 | $4,691,190,391 | $416,600 |
| R&D Expenses | $0 | $0 | $2,590,056,700 | $0 |
| Other Operating Expenses | $0 | $112,548 | $607,734 | $0 |
| **Operating Profit** | $3,185,963,814 | $6,494,039,103 | $2,905,405,009 | ($5,534,311,536) |
| **Operating Margin %** | 29% | 50% | 14% | (4,314,016%) |
| Depreciation Expenses | $0 | $112,548 | $0 | $0 |
| Other Income | ($345,057) | ($297,161) | ($62,734) | ($35) |
| **EBIT** | $3,185,618,757 | $6,493,629,394 | $2,905,342,275 | ($5,534,311,571) |
| **EBIT Margin %** | 28.8% | 50.1% | 13.7% | (4,314,016.5%) |
| Interest Expense | $129,519 | $176,415 | $25 | $0 |
| **EBT** | $3,185,489,238 | $6,493,452,979 | $2,905,342,250 | ($5,534,311,571) |
| **EBT Margin %** | 28.8% | 50.1% | 13.7% | (4,314,016.5%) |
| Income Tax Expense | $0 | $206,600 | $0 | $0 |
| **Net Income** | $3,185,489,238 | $6,493,246,379 | $2,905,342,250 | ($5,534,311,571) |
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## Profit & Loss - Quarterly

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| Net Income Margin % | 28.8% | 50.1% | 13.7% | (4,314,016.5%) |

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Month 01/01/2008

| Region | Units | Dollars |
|---|---|---|
| CENTRAL REGION | 1,340,558.0 | 4,990,504.0 |
| EASTERN REGION | 2,899,502.0 | 9,885,568.0 |
| SOUTHERN REGION | 1,183,690.0 | 4,407,744.0 |
| WESTERN REGION | 1,647,962.0 | 6,601,288.0 |

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Top & Bottom Performing Districts
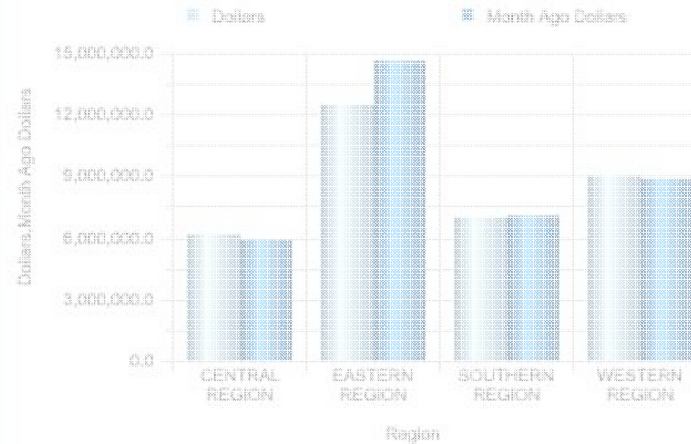Top 5 Performing Markets
Bottom 5 Performing Markets
Top 5 Products

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**Regional Revenue**
Current vs Prior Period

Measure 1 [Dollars ▾] Measure 2 [Month Ago Dollars ▾] [Go]

■ Dollars ▩ Month Ago Dollars

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**Market Share Summary**

[Price Per Unit ▾]

Price Per Unit

27.76%    26.35%

**Colors by Region**

Color [Cherry Red ▾]

| District | Units | Percentile | Price Per Unit |
|---|---|---|---|
| ATLANTA DISTRICT | 21,528 | 13% | $3.89 |
| BOSTON DISTRICT | 429,778 | 76% | $3.84 |
| CHARLOTTE DISTRICT | 13,884 | 10% | $3.80 |
| CHICAGO DISTRICT | 235,946 | 60% | $3.74 |
| CINCINNATI DISTRICT | 156,158 | 49% | $3.87 |
| DALLAS DISTRICT | 41,830 | 21% | $3.94 |
| DENVER DISTRICT | 19,040 | 12% | $3.75 |
| DETROIT DISTRICT | 340,560 | 70% | $3.92 |
| JACKSONVILLE DISTRICT | 169,260 | 51% | $3.91 |
| KANSAS CITY DISTRICT | 128,746 | 43% | $3.82 |
| LOS ANGELES DISTRICT | 266,464 | 64% | $3.96 |
| MEMPHIS DISTRICT | 14,420 | 11% | $3.95 |
| MINNEAPOLIS DISTRICT | 49,366 | 23% | $3.69 |
| NEW YORK DISTRICT | 723,362 | 86% | $3.90 |
| PHILADELPHIA DISTRICT | 691,540 | 85% | $3.79 |
| PORTLAND DISTRICT | 94,012 | 35% | $3.88 |
| SAN FRANCISCO DISTRICT | 85,318 | 34% | $3.95 |
| YOUNGSTOWN DISTRICT | 204,596 | 57% | $3.85 |

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## Colors by Region

Color: Cherry Red

| District | Units | Percentile | Price Per Unit |
|---|---|---|---|
| ATLANTA DISTRICT | 21,528 | 13% | $3.89 |
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| SAN FRANCISCO DISTRICT | 85,318 | 34% | $3.95 |
| YOUNGSTOWN DISTRICT | 204,596 | 57% | $3.85 |

## Colors by Region

Color: Black

| District | Units | Percentile | Price Per Unit |
|---|---|---|---|
| ATLANTA DISTRICT | 641,762 | 84% | $4.10 |
| BOSTON DISTRICT | 2,839,882 | 99% | $3.21 |
| CHARLOTTE DISTRICT | 247,398 | 61% | $4.52 |
| CHICAGO DISTRICT | 1,136,362 | 91% | $4.45 |
| CINCINNATI DISTRICT | 770,156 | 88% | $4.36 |
| DALLAS DISTRICT | 1,120,302 | 91% | $4.22 |
| DENVER DISTRICT | 982,344 | 90% | $4.18 |
| DETROIT DISTRICT | 995,148 | 90% | $5.16 |
| JACKSONVILLE DISTRICT | 2,069,562 | 97% | $3.32 |
| KANSAS CITY DISTRICT | 600,320 | 82% | $4.80 |
| LOS ANGELES DISTRICT | 7,332,318 | 100% | $3.41 |
| MEMPHIS DISTRICT | 636,976 | 84% | $3.90 |
| MINNEAPOLIS DISTRICT | 103,578 | 38% | $5.55 |
| NEW YORK DISTRICT | 4,373,086 | 100% | $3.31 |
| PHILADELPHIA DISTRICT | 3,090,688 | 99% | $3.68 |
| PORTLAND DISTRICT | 746,920 | 87% | $5.14 |
| SAN FRANCISCO DISTRICT | 1,183,880 | 92% | $3.92 |
| YOUNGSTOWN DISTRICT | 1,644,042 | 95% | $4.40 |

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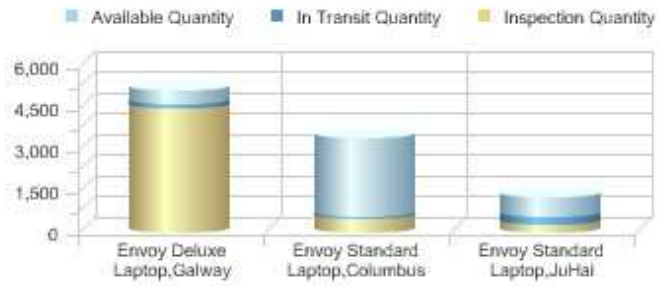SOFTWARE SOLUTIONS

## Inventory Snapshot - Available

(To see corresponding valuation information, please drill on Plant Location value in the chart or table.)

Select Dimension [Plant Location Name ▼]

Legend: ■ Available Quantity   ■ In Transit Quantity   ■ Inspection Quantity

| Product Name ▲ | Plant Location Name | Available Quantity | In Transit Quantity | Inspection Quantity |
|---|---|---|---|---|
| Envoy Deluxe Laptop | Galway | 500 | 150 | 4,500 |
| Envoy Deluxe Laptop Total | | 500 | 150 | 4,500 |
| Envoy Standard Laptop | Columbus | 2,900 | 60 | 500 |
| Envoy Standard Laptop | JuHai | 700 | 250 | 300 |
| Envoy Standard Laptop Total | | 3,600 | 310 | 800 |

### Report Legend

■ Excess Inventory   ■ At Safety Stock

Product Name is equal to **Envoy Deluxe Laptop, Envoy Standard Laptop**

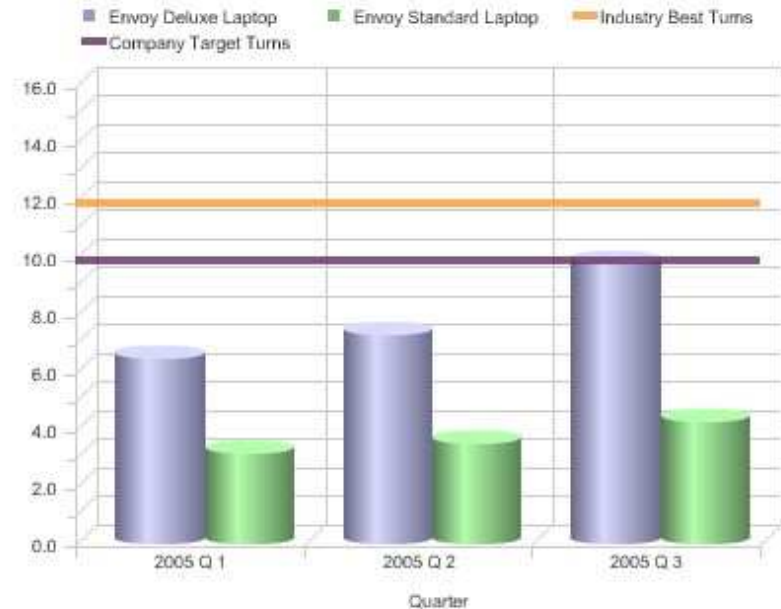Modify - Refresh - Print - Download - Add to Briefing Book

In addition to looking at the Inventory Snapshot by Plant that details information on a Quantity basis, it is very important to also understand the dollar value of these quantities. In order to obtain this information please click on the link below.

Top 10 Inventory Valuation Report By Plant Or Product Type

## Inventory Turns Compared to Industry

Select View [Chart ▼]

Legend: ■ Envoy Deluxe Laptop   ■ Envoy Standard Laptop   ─ Industry Best Turns   ─ Company Target Turns

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**Inventory Snapshot - Available**

(To see corresponding valuation information, please drill on Plant Location value in the chart or table.)

Select Dimension: Plant Location Name

- Available Quantity
- In Transit Quantity
- Inspection Quantity

| Product Name ▲ | Plant Location Name | Available Quantity | In Transit Quantity | Inspection Quantity |
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**Report Legend**

- Excess Inventory
- At Safety Stock

Product Name is equal to **Envoy Deluxe Laptop, Envoy Standard Laptop**

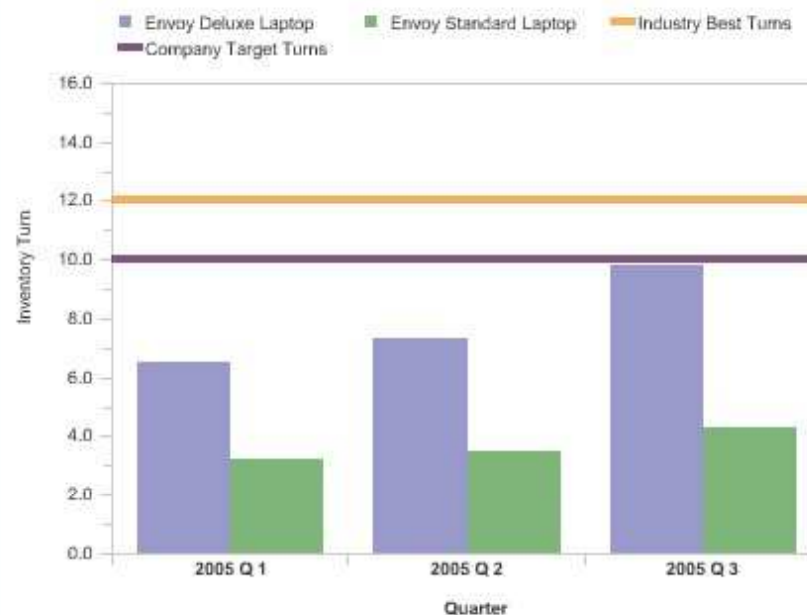Modify - Refresh - Print - Download - Add to Briefing Book

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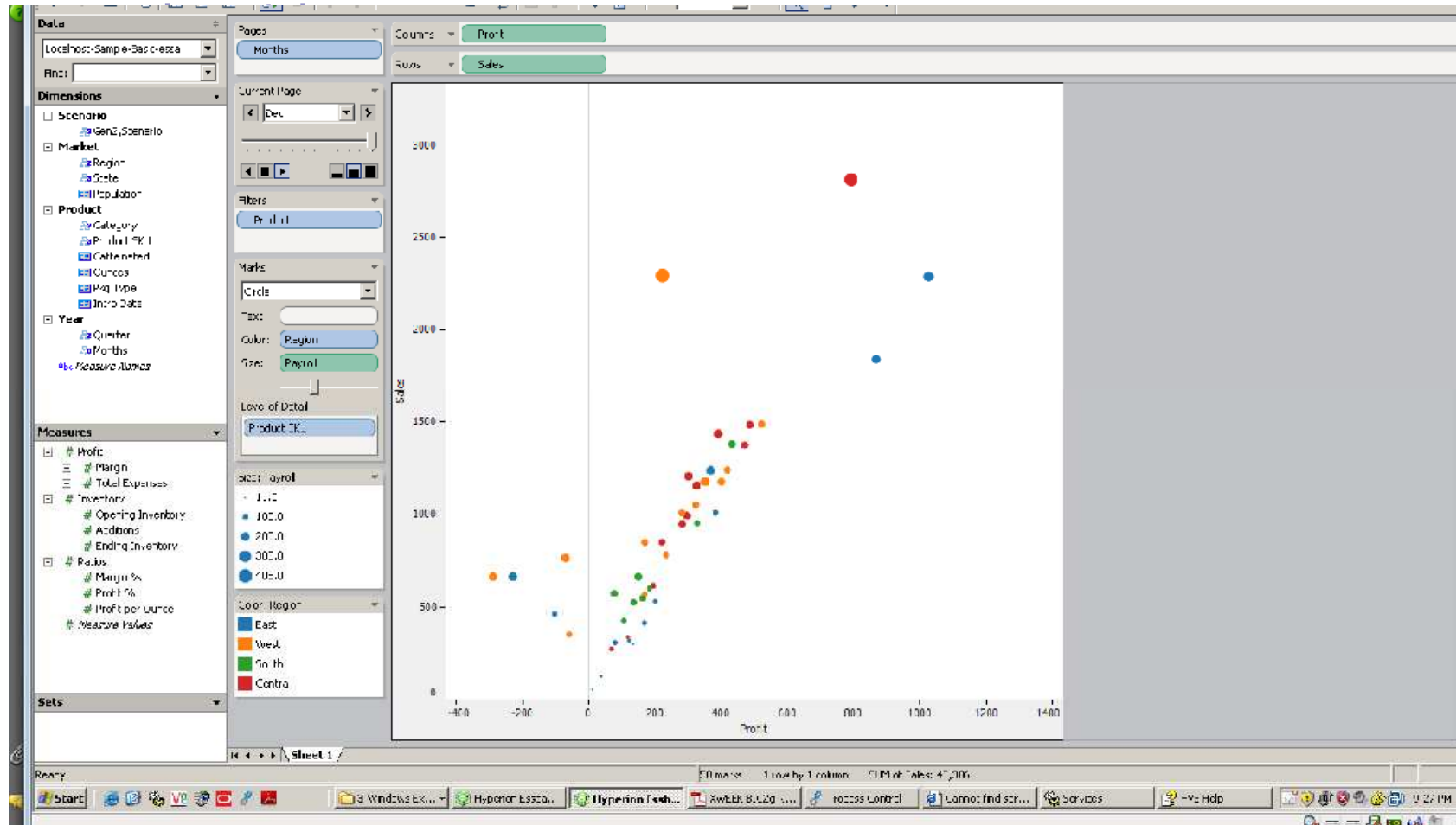
**Inventory Turns Compared to Industry**

Select View: Chart

- Envoy Deluxe Laptop
- Envoy Standard Laptop
- Industry Best Turns
- Company Target Turns

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# Hyperion Visual Explorer

# BI Implementation Success

- BI systems provide value when they are used.

- Proper visualizations encourage usage.

- Poor visualizations mislead and frustrate and ultimately lead to misuse, mistrust, or abandonment of the BI system.

- BI implementations typically require tremendous time and money, but also offer the potential for huge ROIs.

- Most executives lack training in visualizing data and analysis and are unlikely to do it properly by chance.

- "Finish the project" with a small percentage of resource stretched over the first year of the system's use.

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# Summary

- Don't use defaults.

- Use color very sparingly.

- Favor pastels. (Check out ColorBrewer.com)

- Don't use 3-D graphs.

- Eliminate gridlines.

- Eliminate other non-data ink as much as possible.

- Use the appropriate graph or table style.

- Determine if users are exploring or explaining.

- Finish the project. Don't stop at installation.

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"*Vision is the art of seeing what is invisible to others.*"

Jonathan Swift, 1667-1745

# Oracle BIWA SIG—Like Minded Users

- BIWA TechCasts (45-min webcasts + Q&A)
  - Any Oracle professional may submit abstracts for
  - **Audience is technical**
  - Live demos are strongly encouraged
  - Visit:  www.oraclebiwa.org to submit

# Wednesday TechCast Series

*Example topics of particular interest to BIWA summit attendees include, but are not limited to the following:*

## Data Access and Data Integration

- Data quality
- Extract, transform, load (ETL)
- Accessing distributed data
- SOA integration

## Data Warehouses

- Data Governance
- Master Data Management
- Partitioning
- Tuning warehouse
- Faster cubes for faster information
- Managing images

## Reporting and BI Dashboards

- Better reports & better information
- Custom BI environments
- Real-time analytics
- Interactive dashboards & EPM
- OBI EE, Essbase & Oracle Database

## Advanced Analytics

- Predictive analytics and modeling
- Data mining and text mining
- SQL Statistical functions
- Fraud detection
- Market basket analysis
- Churn and retention strategies
- Building & using OLAP "cubes"
- What if? Analysis
- Leveraging spatial data
- Time series and forecasting
- Harvesting more insight from data"Best practices"

## Case Studies

## Tips & Tricks

# Questions and Observations

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