

Effective Presentation of Analytical Results

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November 10, 2011

T D W I R E S E A R C H

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Effective presentation of analytical results

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TDWI Webinar

Sponsored by Tableau Software

November 10, 2011

Major sections of this webinar

- Understanding the decision
- Tell a good story
- Display results in tables and graphs
- Conclusions

Communicating clearly

- Most analysts spend too little time on effective presentation of analytical results.
- A modest amount of care in data presentation and documentation will save you time in the long run and help you leap ahead of the vast majority of the world's analysts.

Know your audience

- Most analysts forget that other people don't care nearly as much about their analysis as they themselves do.
- Think about what your audience cares about, and express your results in those terms.
- Readers are different from listeners
- Most readers will only remember a few key points from your work. Choose them wisely.

Understanding the decision

Why focus on the decision?

- All analysis supports decision making
- Going back to the decision can help the analysis stay on track
- Your institution's decision making process matters

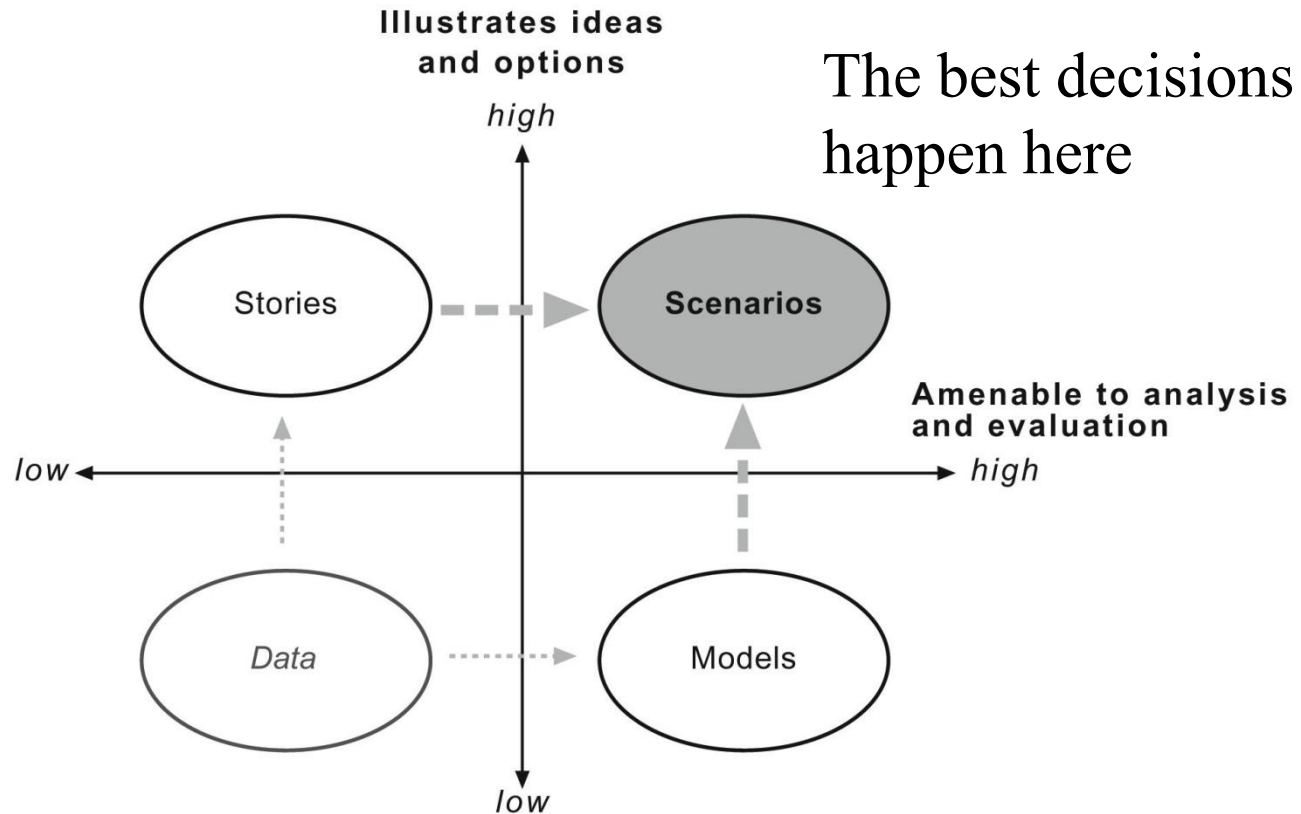
Don't forget the decision maker

- Who is making the decision?
- Understand that person's
 - *Training*
 - *Experience*
 - *Attitudes*
 - *Biases*
- Tell a story that reflects that understanding

Tell a good story: Use the Pyramid Principle

- Creating analysis is not the same as communicating about it effectively
- Knowledge generation: Scientists start with details and build to a conclusion
- Story telling: Journalists start with the conclusion, then give supporting details
- Be like a journalist!

Structured storytelling improves the decision making process



Present key results, not details

- Understand your audience
- Think about what your analysis says about the decision
- Boil down the key results to a few most important lessons
- Lead with those lessons

Writing advice

- Write short reports focusing on
 - *the key lessons*
 - *what the analysis says about the decision at hand*
- Attach appendices with details as needed
- Send report out for review well before it needs to be finalized.

Speaking advice

- Practice your talk (get feedback!)
- Speak briefly, focusing on what the analysis says about the decision
- Let audience follow up with questions
 - *Anticipate questions*
 - *Be prepared with backup materials*

Documentation

- Documentation is important for
 - *giving credit where credit is due*
 - *leaving a trail for you to remember*
 - *creating a trail for others to follow*
 - *checking your work*
- If the documentation is bad, the work probably is, too.

Documentation (p. 2)

- Give complete references to identify sources.
- Spell out the methodology so that any competent analyst in the field (especially you or someone you work with) can recreate it
- The very best people in every field (e.g., George Carlin) are fanatics about documentation, and you should be also.

Display the results in tables and graphs

- Break up graphs and tables into two categories
 - *Those that give you insights*
 - *Those that help you tell your story to others*
- The two categories may not contain all the same items
- Tailor each graph/table to the specific purpose and audience at hand

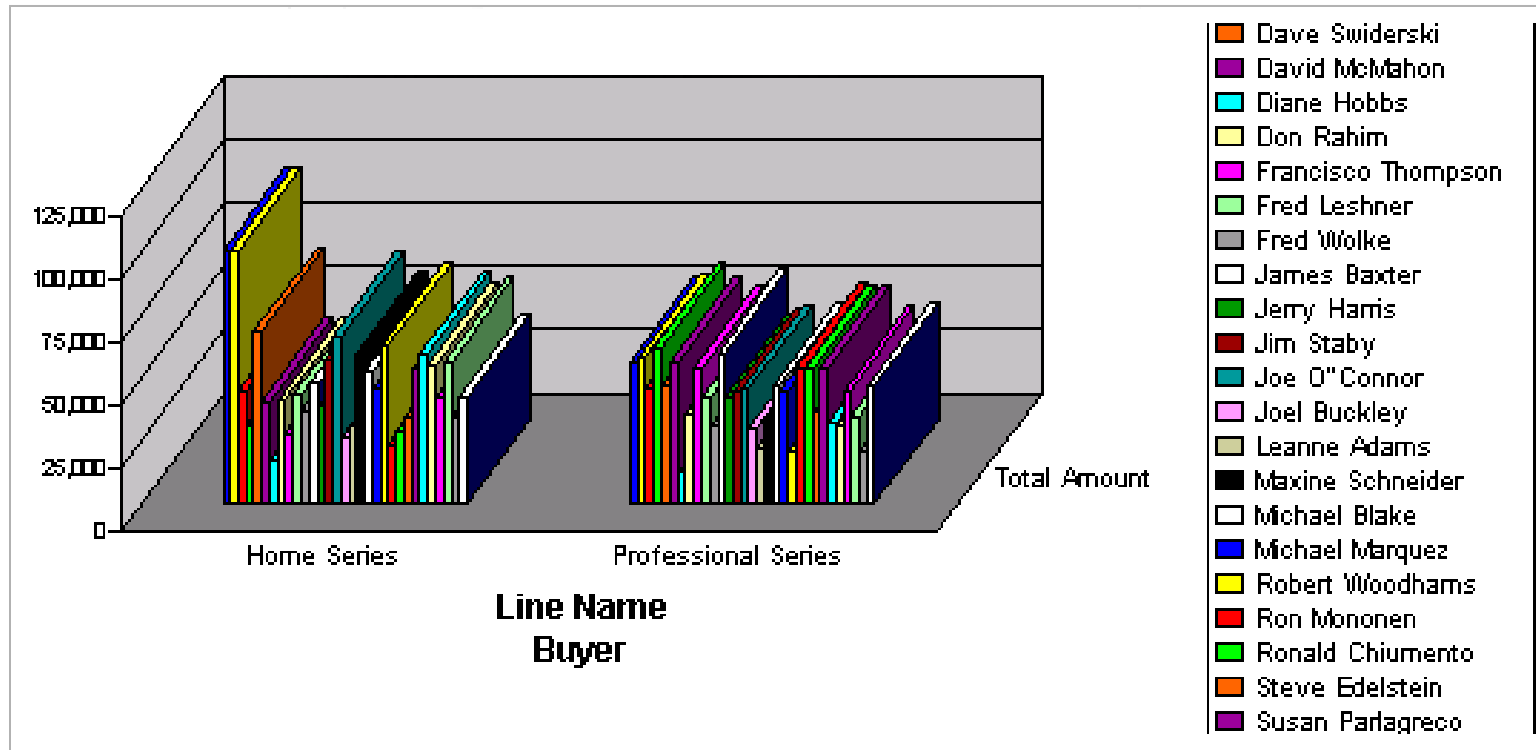
Creating compelling figures

- Edward Tufte is the modern master, so read his books. Also see *Show Me the Numbers*, by Stephen Few (Analytics Press, 2004)
- Always focus on the data, not on fancy tricks.
- Maximize the data ink to non-data-ink ratio
- Eliminate chart junk (3d bar charts, distracting patterns)

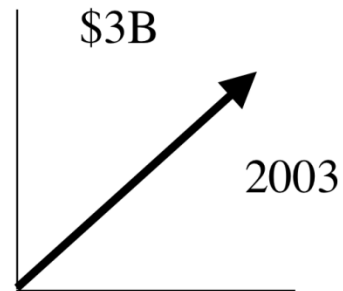
Making compelling figures (p. 2)

- Maximize data density (avoid low data density)
- Use small multiples
- Revise and edit
- Make figures stand alone (supply a full reference on the page where they appear so that readers can track down the full report)

Example #1: Purchases by product line and buyer

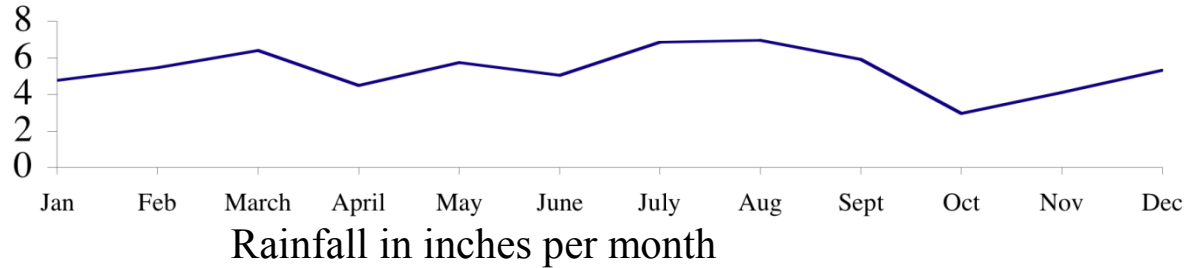


Example #2: Avoid low information density

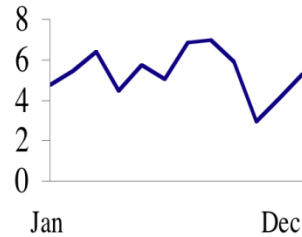


Example #3a: Use small multiples (e.g., rainfall)

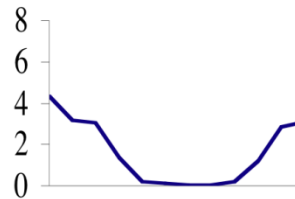
Mobile, AL



Mobile, AL



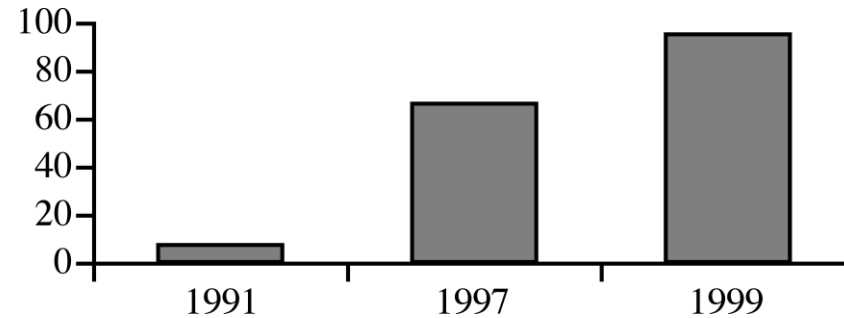
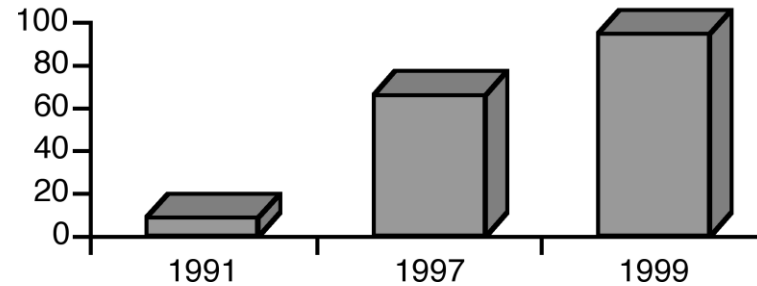
SF, CA



Washington DC

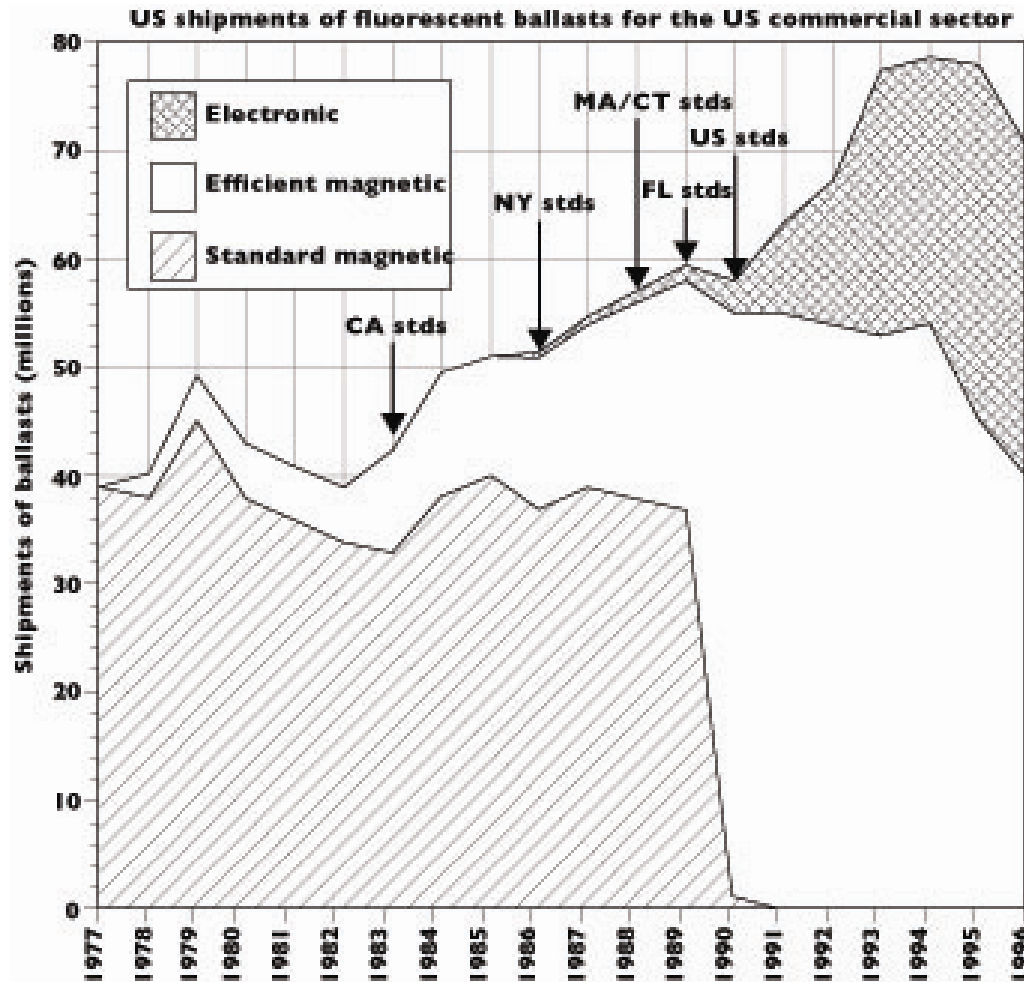


Example #4: Bar charts, bad and good

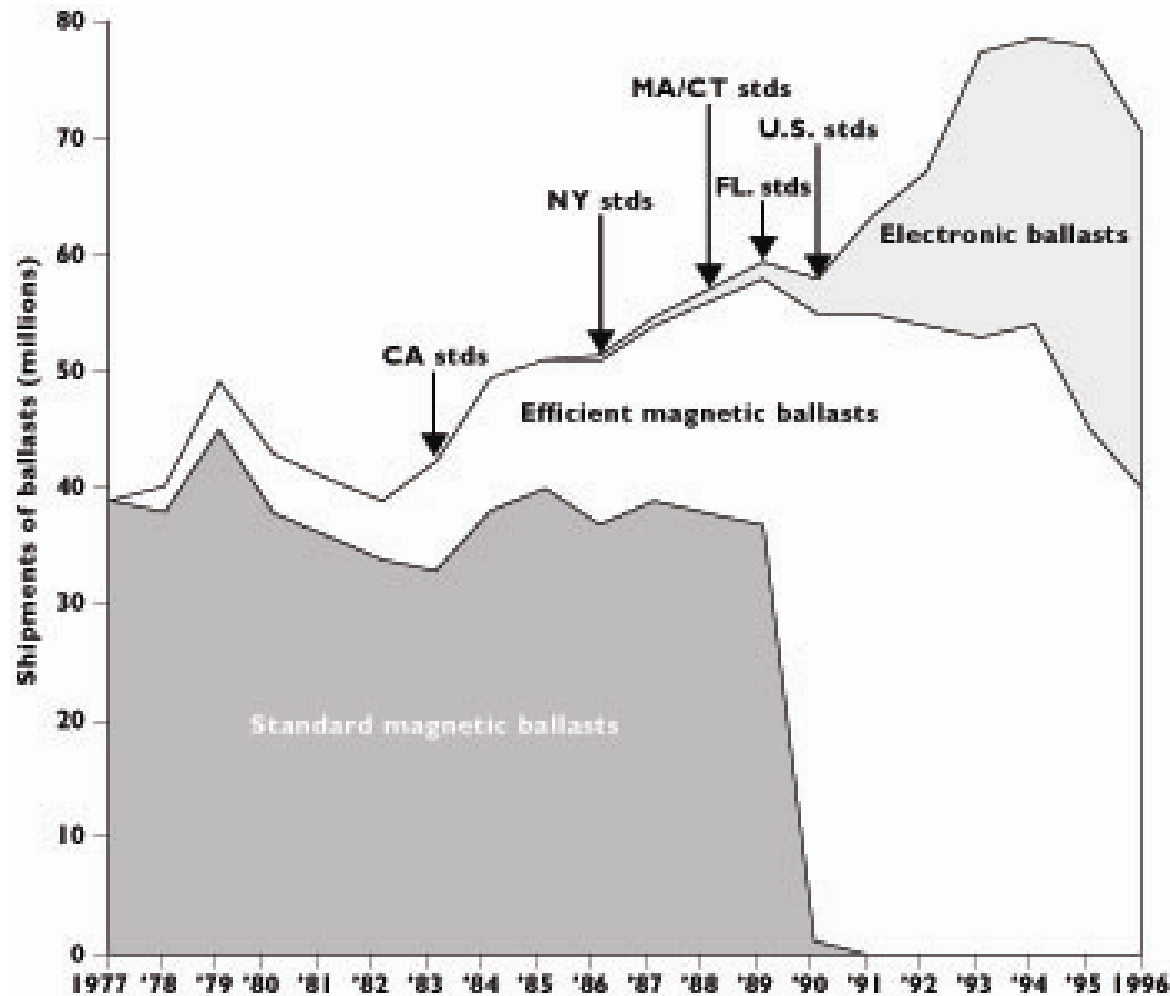


Example #5: Not so good

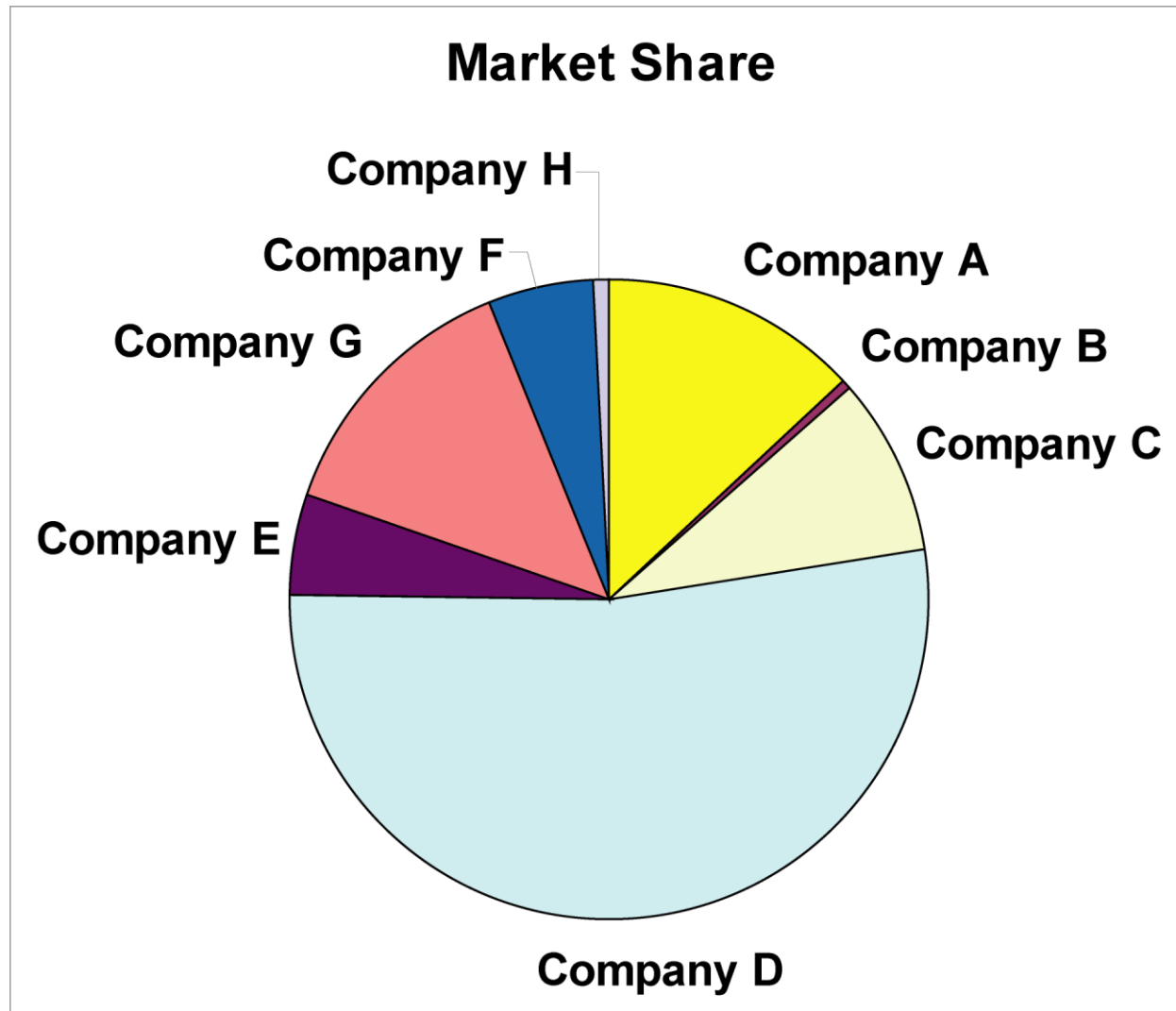
Graph shows sales of fluorescent ballasts in the US.



Example #5: much improved

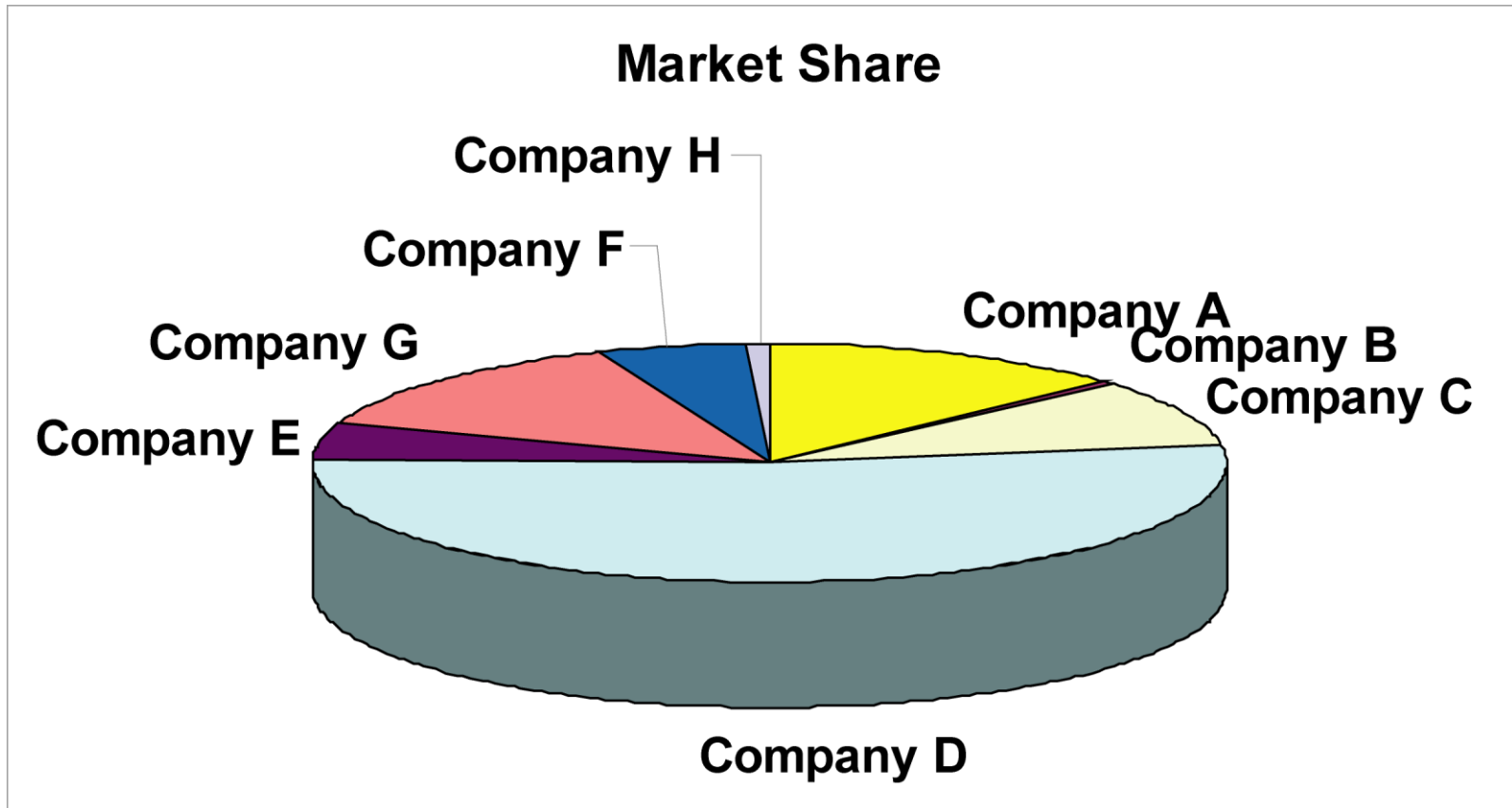


Example #6 - Poor



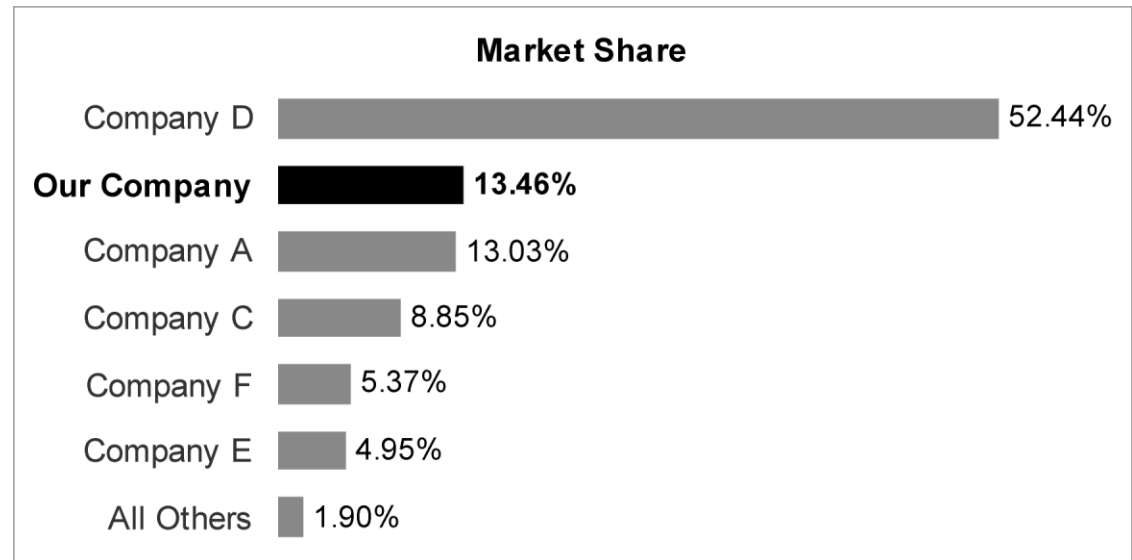
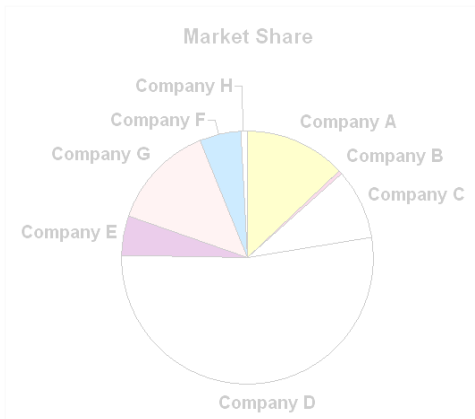
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Example #6 - Worse



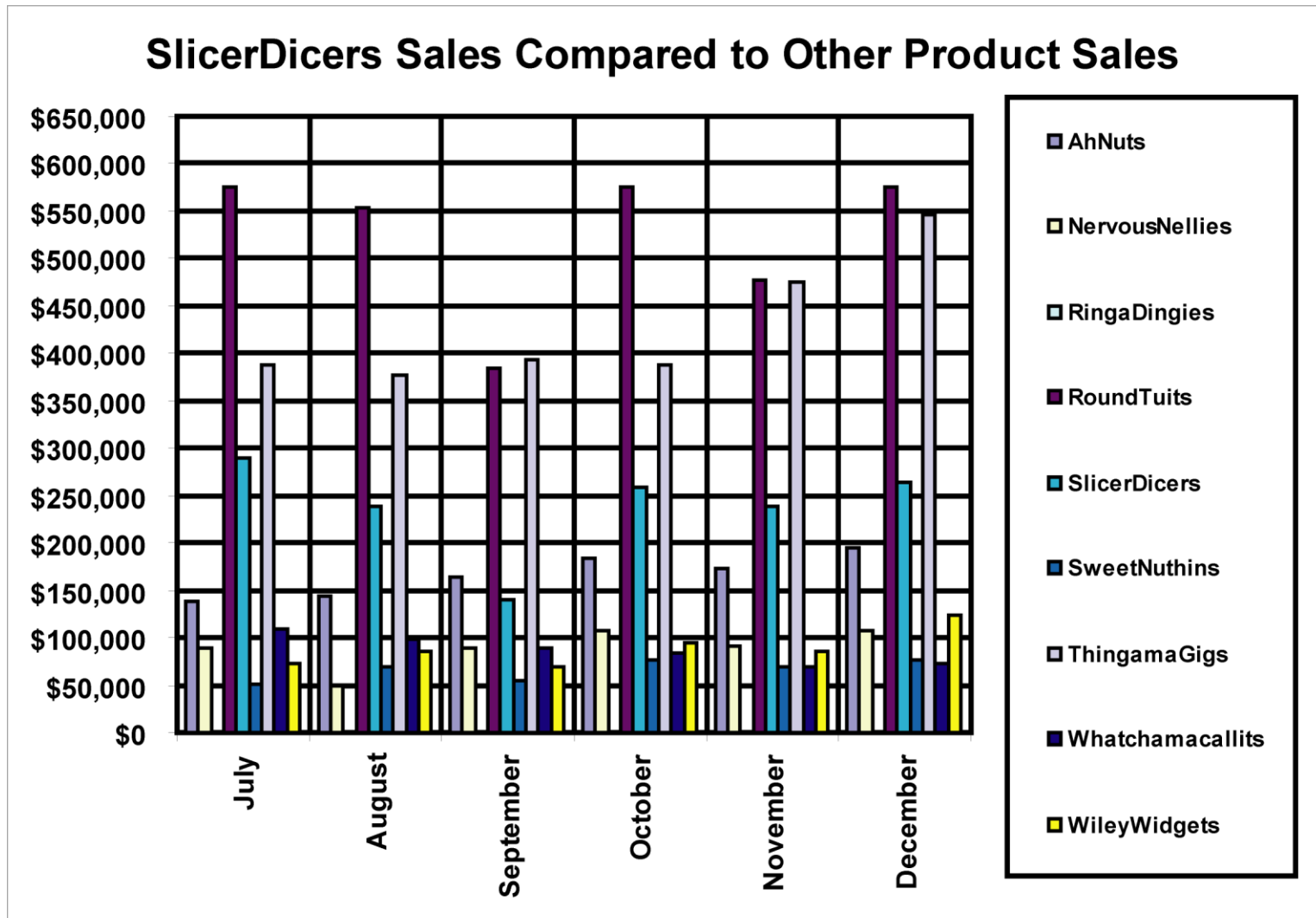
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Example #6 - Good



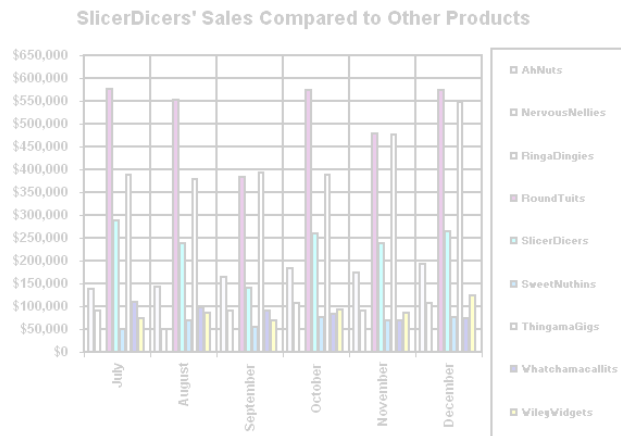
But there's one more thing to fix on this graph. What is it?

Example #7 - Poor



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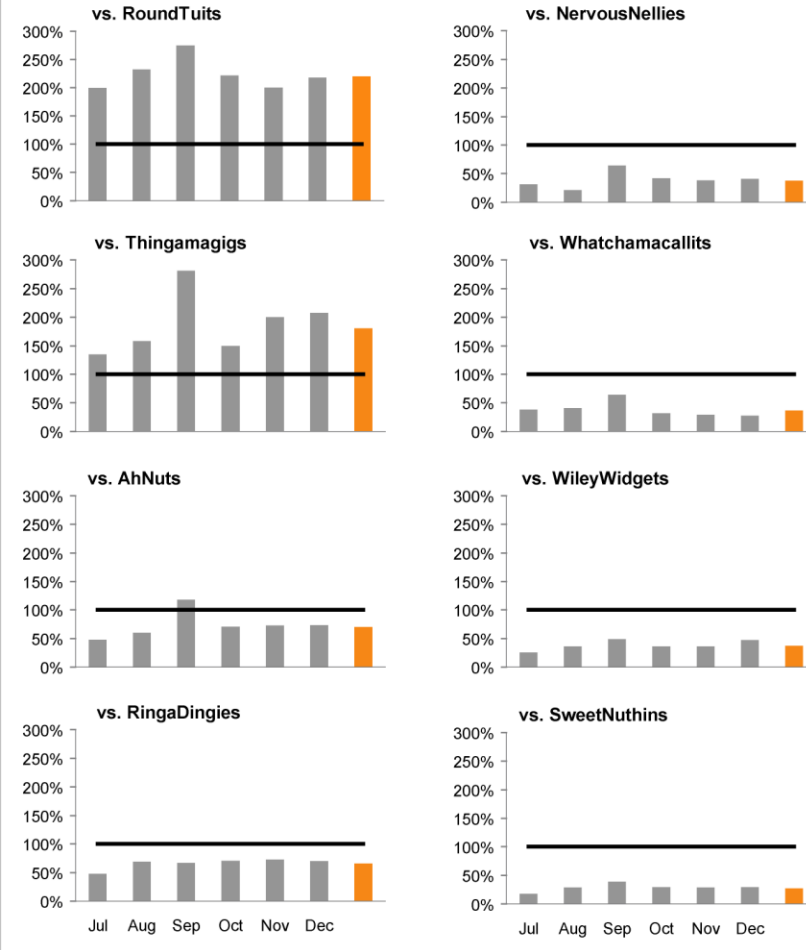
Example #7 - Good



Sales of SlicersDicers Compared to Sales of Other Products

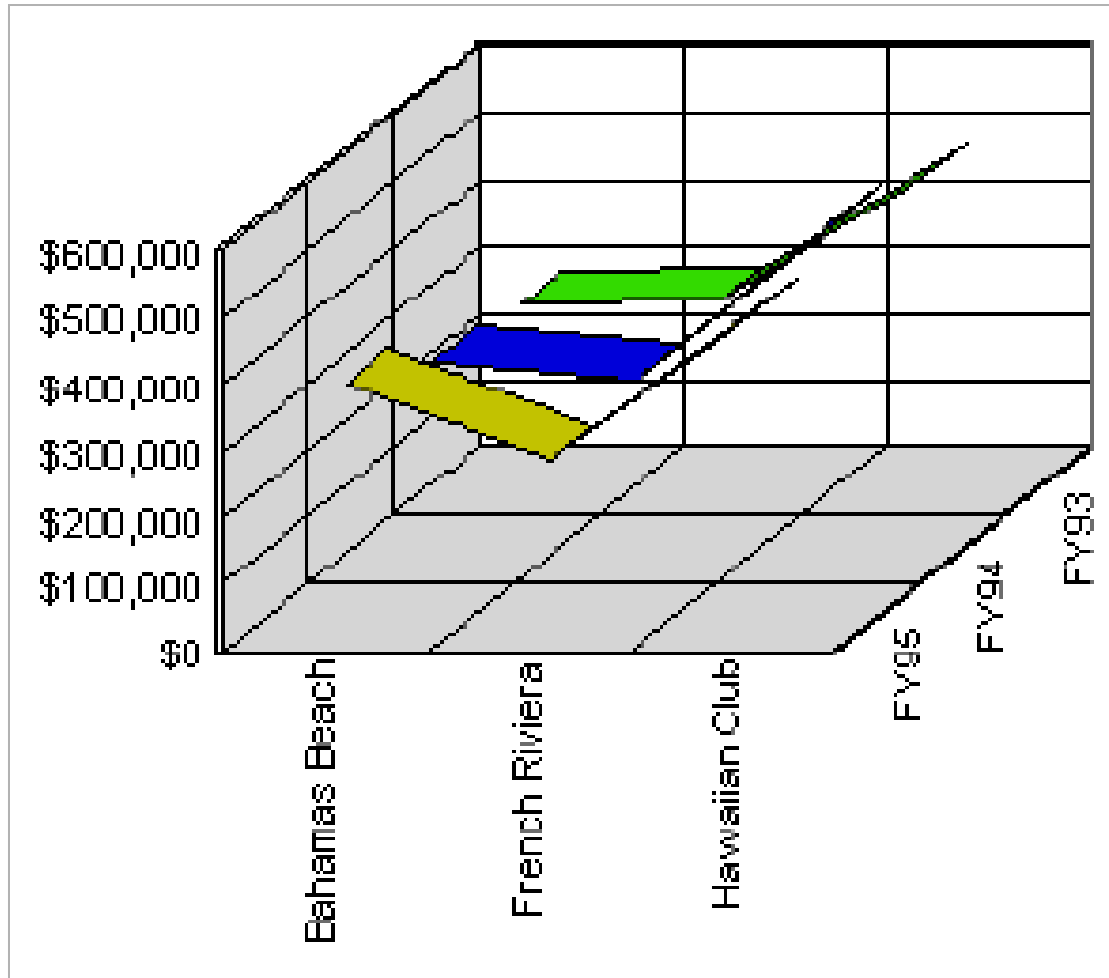
July - December, 2003

(SlicersDicers' sales are displayed as black reference lines of 100%; the orange bars represent the average monthly sales percentage for July through December.)



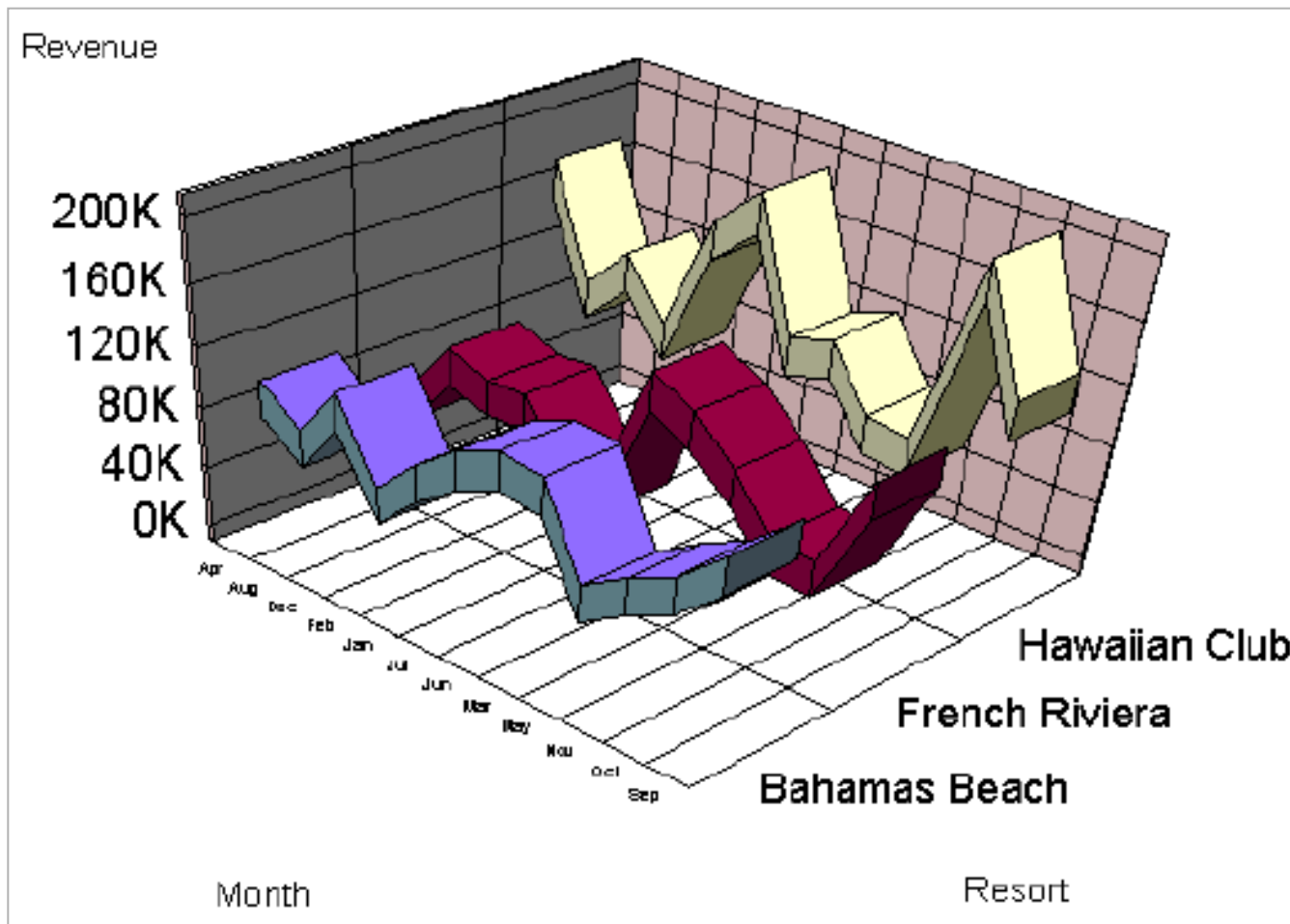
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Example #8: ?
 (Revenue by resort and year)



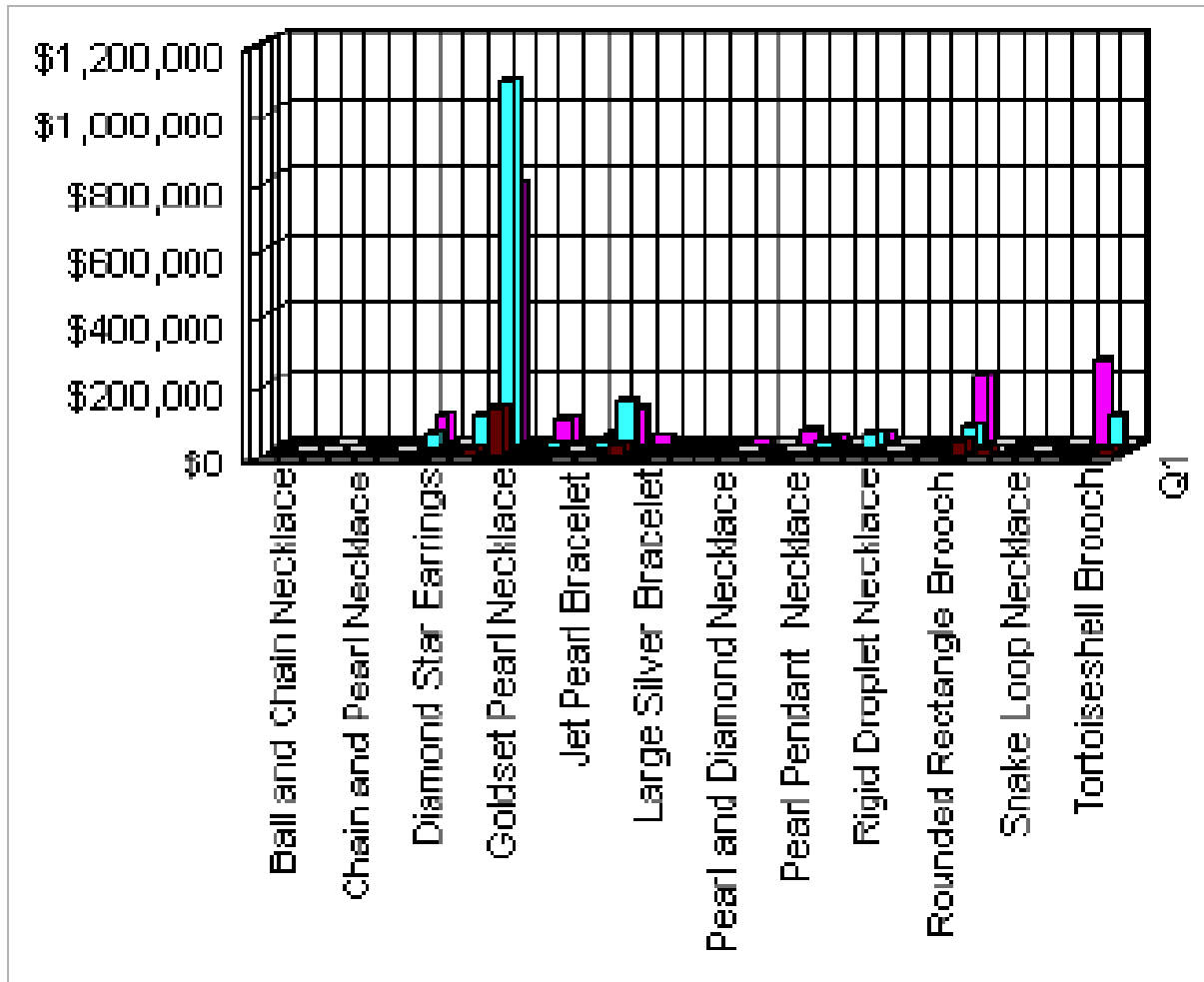
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Example #9: ?
(Revenue by resort and month)



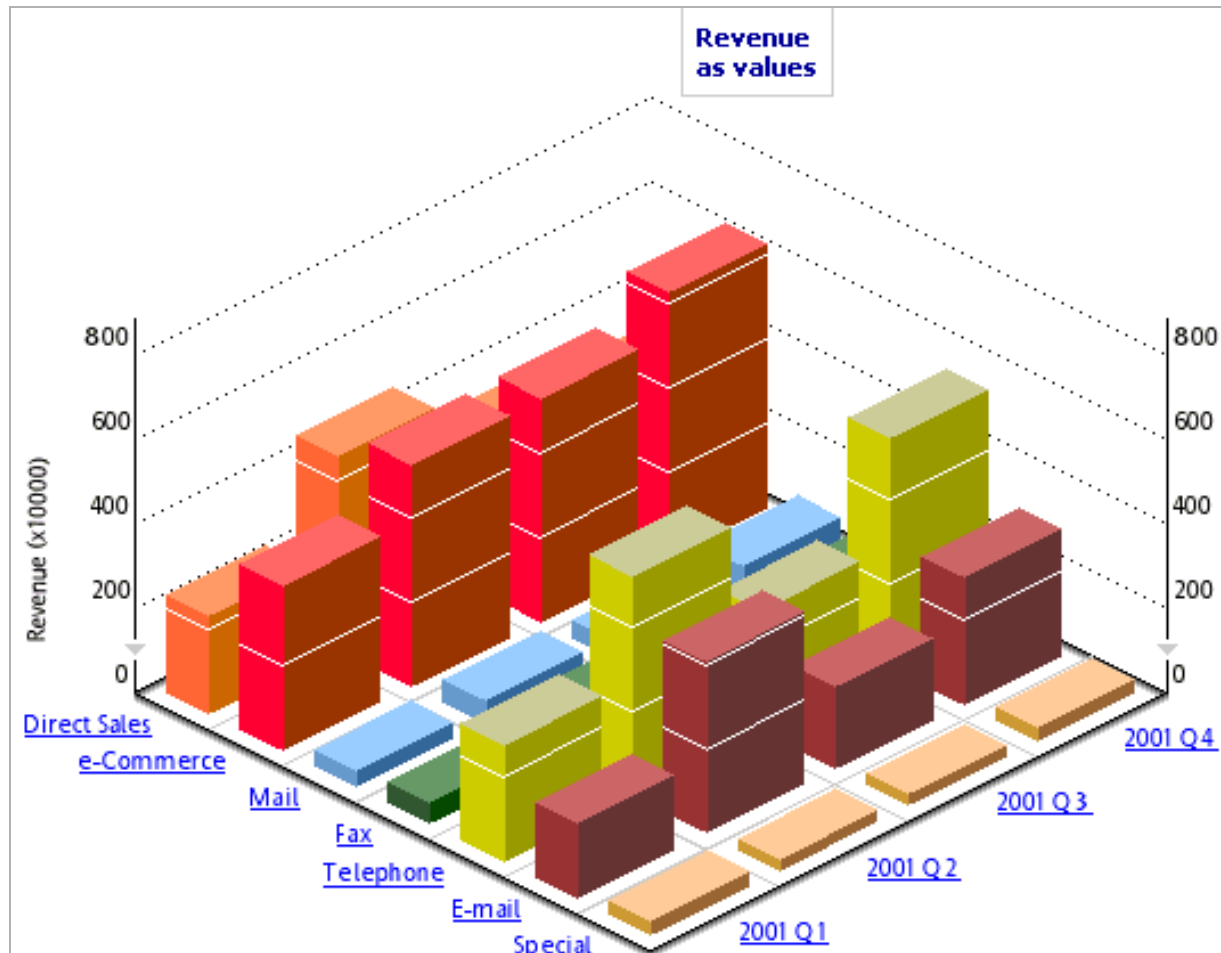
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Example #10: ? (Revenue by product and quarter)



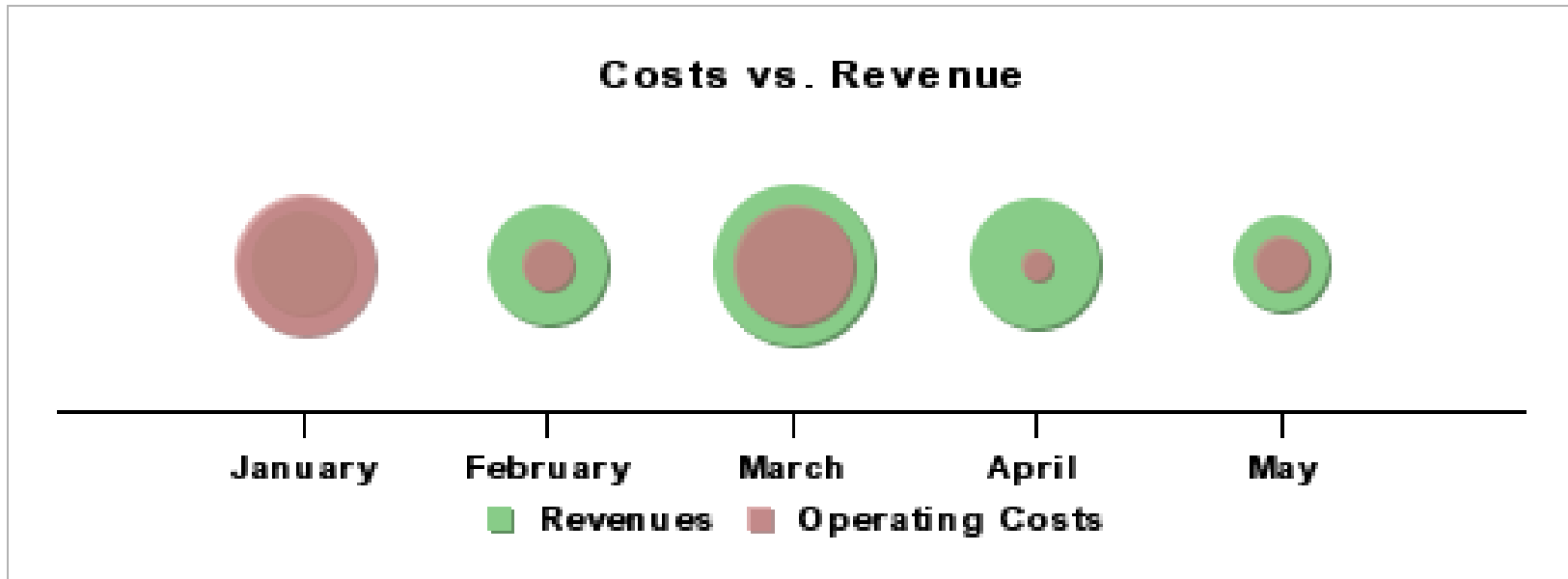
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Example #11: ? (Revenue by sales channel and quarter)



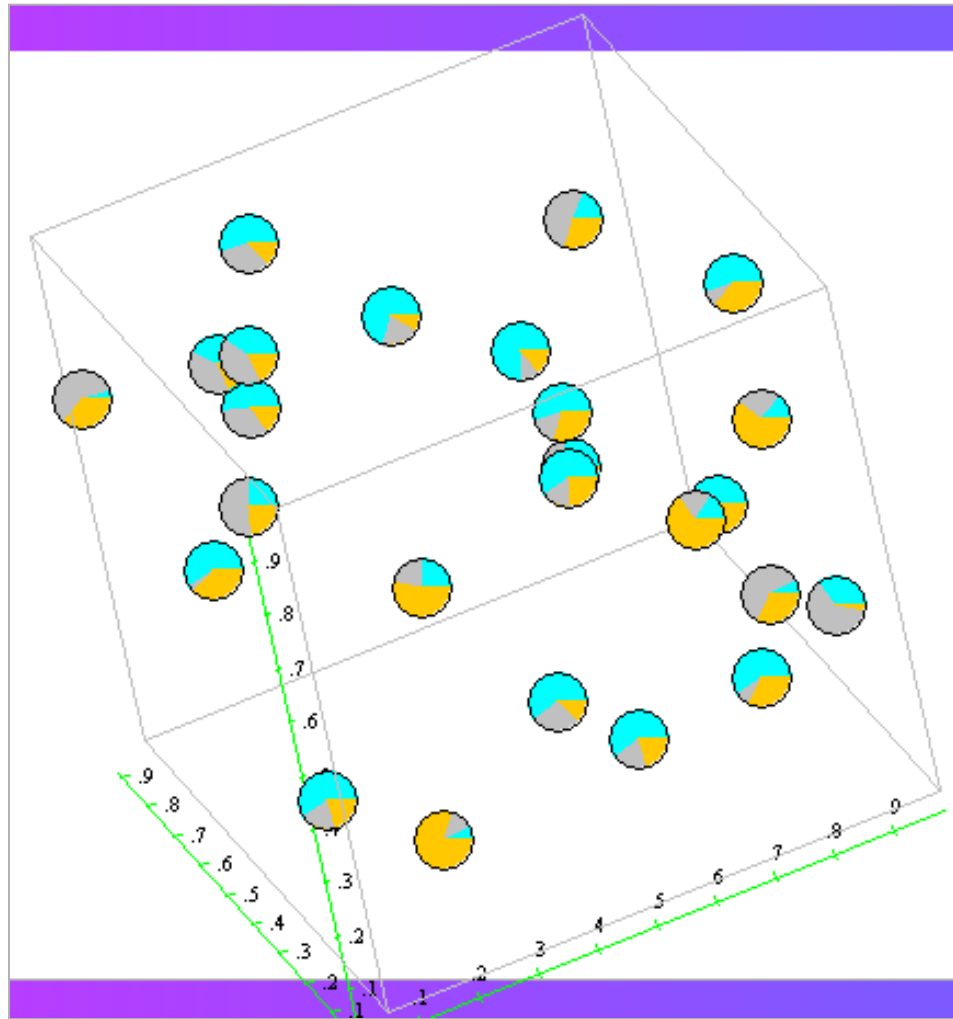
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Example #12: ?
 (Revenue vs. costs per month)



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Example #13: ?
 (Your guess is as good as mine)



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Creating compelling tables

- Lessons are similar to making good graphs.
- Know your audience
- Make tables stand alone
- Create extensive footnotes
- Maximize the data ink to non-data-ink ratio (avoid extraneous gridlines)
- Some redundancy is good (subtotals)

Creating compelling tables (p. 2)

- Enhance readability with font, style, and orientation choices
- Use indices relative to totals and subtotals and normalize data per capita or per GDP to facilitate comparisons
- Avoid spurious precision
- Revise and edit (check for typos!)

A table that needs work

U.S. Shipments and Imports of Lamps, 1983-1994

Year	U.S. Shipments (millions of lamps)	Imports (millions of lamps)
1983	3615.9	560.9
1984	3723.4	748.7
1985	3472	862.7
1986	3421.3	920.6
1987	3399.4	999.8
1988	3510.2	1130.8
1989	3429.5	1024
1990	3318.5	1051
1991	3297.5	Data unavailable from Census Bureau
1992	3422.1	Data unavailable from Census Bureau
1993	3564.3	1372.6
1994	3563.3	1577.8

Note: "U.S. shipments" refers to total shipments by manufacturers located within the U.S., including units to be exported. Cold-cathode fluorescent lamps are excluded from the U.S. shipment data; Christmas tree lights are excluded from U.S. shipments as well as imports.

Source: Census Bureau current industrial reports MQ36B, various years.

An improved table

U.S. Shipments and Imports of Lamps, 1983-1994

<i>Year</i>	<i>U.S. Shipments</i>		<i>Imports</i>		<i>Imports as a percentage of U.S. shipments</i>
	<i>Millions of lamps</i>	<i>Index 1983 = 1.00</i>	<i>Millions of lamps</i>	<i>Index 1983 = 1.00</i>	
1983	3,616	1.00	561	1.00	16%
1984	3,723	1.03	749	1.33	20%
1985	3,472	0.96	863	1.54	25%
1986	3,421	0.95	921	1.64	27%
1987	3,399	0.94	1,000	1.78	29%
1988	3,510	0.97	1,131	2.02	32%
1989	3,430	0.95	1,024	1.83	30%
1990	3,319	0.92	1,051	1.87	32%
1991	3,298	0.91	NA	NA	NA
1992	3,422	0.95	NA	NA	NA
1993	3,564	0.99	1,373	2.45	39%
1994	3,563	0.99	1,578	2.81	44%
Average annual percentage change 1983 through 1994	-0.1%		9.9%		10.0%

Note: "U.S. shipments" refers to total shipments by manufacturers located within the U.S., including units to be exported. Cold-cathode fluorescent lamps are excluded from the U.S. shipment data; Christmas tree lights are excluded from U.S. shipments as well as imports.

NA = Not Available

Source: U.S. Census Bureau current industrial reports MQ36B, various years

Contact: Jonathan Koomey, JGKoomey@lbl.gov. <http://enduse.lbl.gov/>

Filename: shipmentsandimports.xls

Date of creation: February 1996

Date of last modification: November 1997

Using graphs and tables in oral presentations

- Presenting only tables and graphs that will be engaging to the relevant audience. Don't make your listeners figure it out, and NEVER present tables the audience can't read.
- Data are dull only when chosen poorly and presented badly.
- Revise and edit (check for typos-make sure your data are correct, for credibility's sake!)

Conclusions

- Know your audience
- Focus your writing and presentations on specific decisions
- Tell a good story, focusing only on a few key points
- Carefully design tables and graphs
- Get feedback along the way

Further reading

- Few, Stephen. 2004. *Show Me the Numbers: Designing Tables and Graphs to Enlighten*. Oakland, CA: Analytics Press. <<http://www.analyticspress.com>>
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- Wall Street Journal Number Guy (Carl Bialik): <<http://blogs.wsj.com/numbersguy/>>



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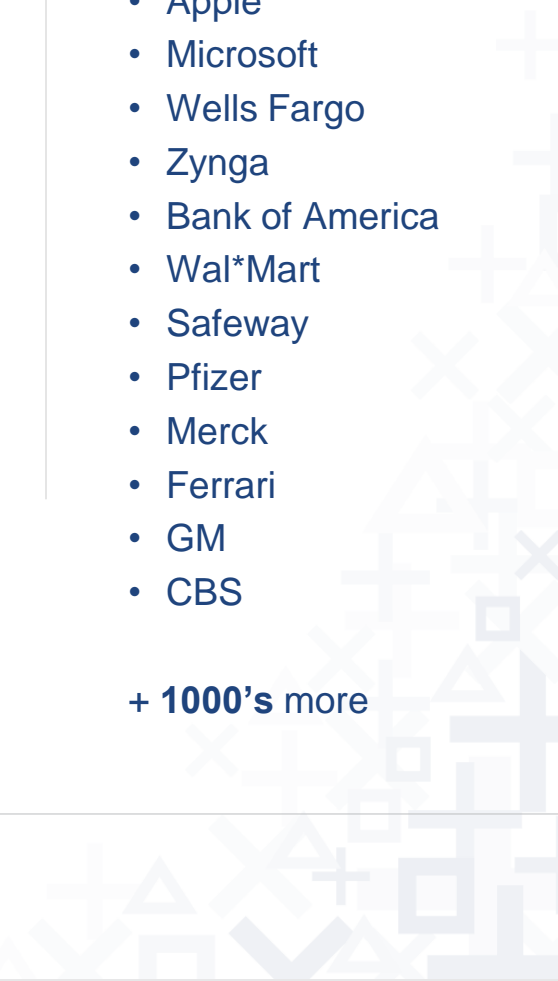
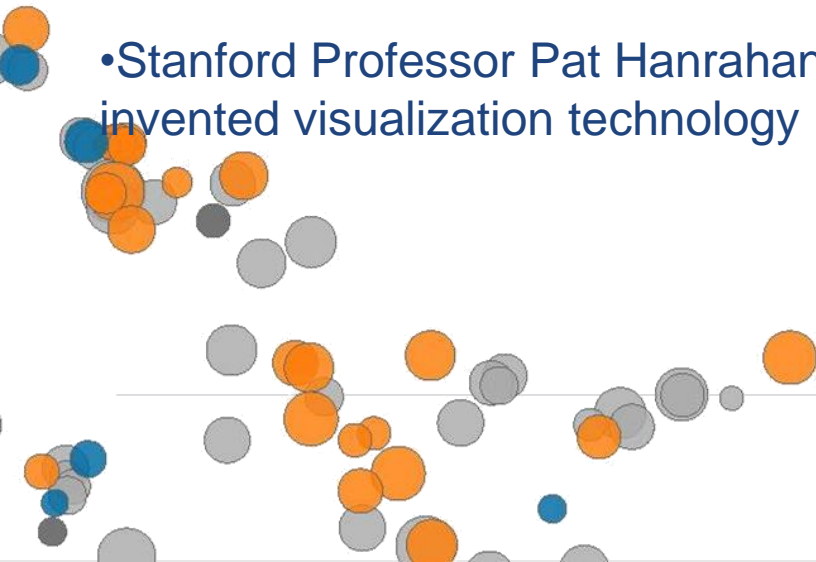
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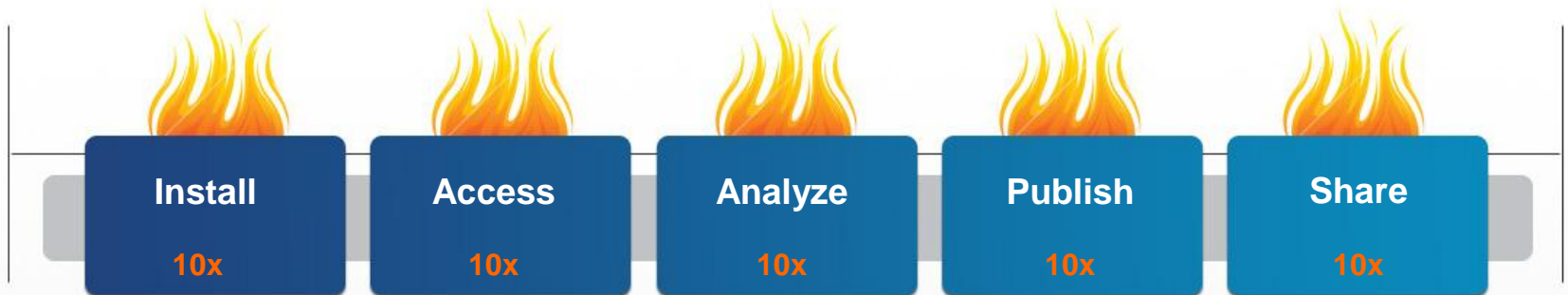
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Demo

Questions??



Contact Information

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