Presentation Boot Camp
(aka Tufte in Twenty Minutes)

Tuesday, June 1, 2010

Objectives

- Provide an overview of Edward Tufte's teaching points
- Practice a different paradigm of meeting & discussion
- Provide information on the rest of the summer series

Agenda

- Introduction
- Overview of Edward Tufte
- Trailers for the summer blockbusters

Who is Edward Tufte?

Edward Tufte is Professor Emeritus at Yale University, where he taught courses in statistical evidence, information design, and interface design. He has written seven books, including *Visual Explanations*, *Envisioning Information*, *The Visual Display of Quantitative Information*, and *Data Analysis for Politics and Policy*. He writes, designs, and self-publishes his books on analytical design, which have received more than 40 awards for content and design. Tufte regularly travels around the country teaching his "Presenting Data and Information" one-day course.

Tufte laments the use of "chartjunk," which are the visual elements that distract from the information displayed in a graphic. Examples of chartjunk include unnecessary lines, overly ornate fonts, icons in graphs, 3D effects, and animated or blinking graphics. Tufte also criticizes the typical use of PowerPoint.

Data Rich Display

Tufte advocates the creation and sharing of data rich displays, including integrating images with text and the use of sparklines (text-sized graphs that display many data points). Tufte points out that sports pages and stock market pages in newspapers have hundreds of numbers. "Why does your page only have eight numbers? Did your audience get dumber? Just to hear you talk?" Tufte believes that the "single biggest threat to learning the truth is cherry-picking the data, hiding the data."

Data rich displays are not a new idea for the 21st century. In his course and books, Tufte points out several historical examples, including Euclid's pop-up pyramid as mathematical proof, Galileo's sketches of Saturn's rings in line with his text, and Charles Joseph Minard's flow map of Napoleon's Russian Campaign of 1812 (shown below). In one chart, Minard presents geography, troop size/casualties, and temperature/harsh weather.

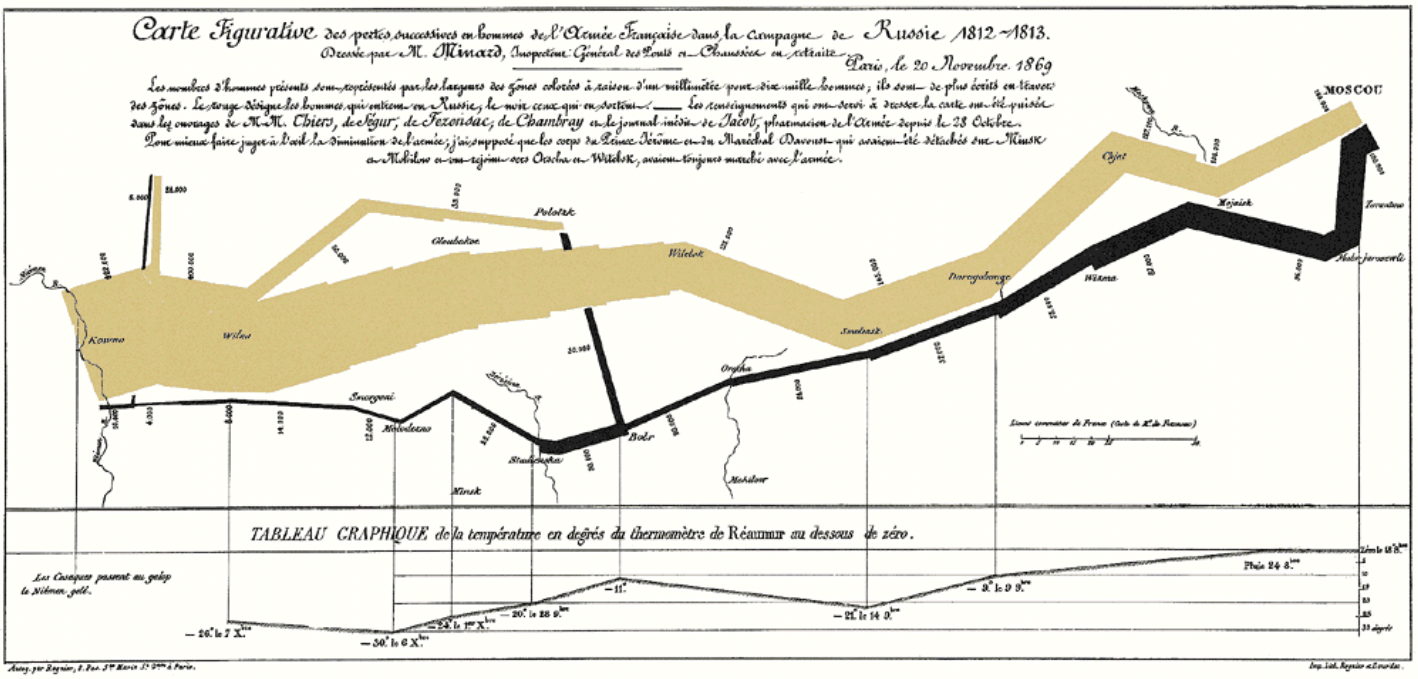
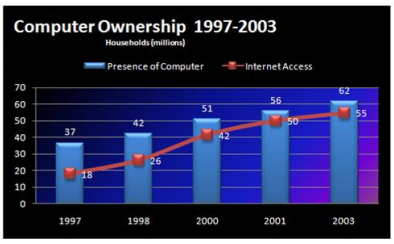
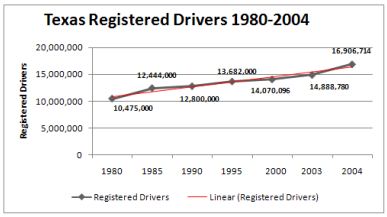
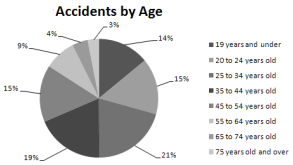


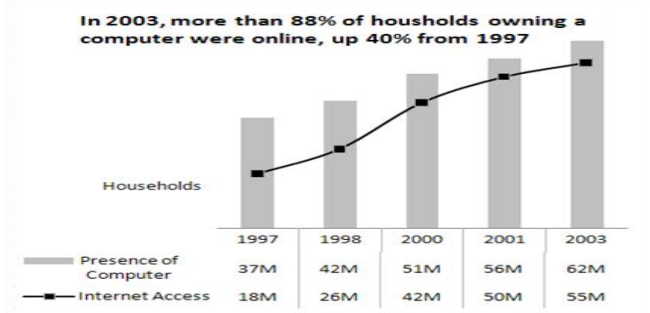
Chart Design Principles by Mike Alexander

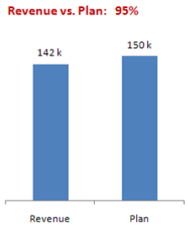
What to Avoid



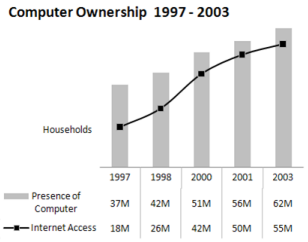


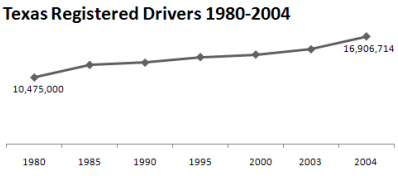


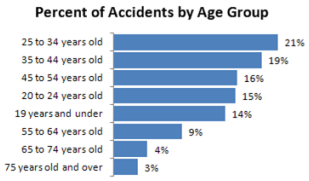


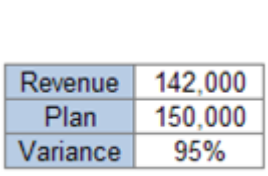


What to Attempt









Revenue	142,000
Plan	150,000
Variance	95%

Overall Tip & Why It Works

Avoid Fancy Formatting

- Don't apply background colors to the chart or plot area. Colors…should be reserved for key data points in your chart.
- Don't use 3D charts or 3D effects.
- Avoid applying fancy effects such as gradients, pattern fills, shadows, glow, soft edges, and other formatting.
- Don't try to enhance your charts with clip art or pictures.

Skip the Unnecessary Chart Junk

- Remove gridlines
- Remove borders
- Skip the trend lines
- Avoid data label overload
- Don't show a legend if you don't have to
- Remove axes that don't provide value

Sort Your Data Before Charting

Unless there is an obvious natural order such as age or time, it's generally good practice to sort your data when charting. By sorting, I mean sort the source data that feeds your chart in ascending or descending order by data value.

Limit the Use of Pie Charts

- Pie charts typically take up more space than their cousins the line and bar charts.
- Pie charts can't clearly represent more than two or three data categories.
- Bar charts are an ideal alternative to pie charts.

Make Effective Use of Chart Titles

You can use chart titles to add an extra layer of information, presenting analysis derived from the data presented in the chart.

Don't Be Afraid to Not Use a Chart

You typically use a chart when there is some benefit to visually seeing, trends, relationships, or comparisons. Ask yourself if there is a benefit to seeing your data in chart form. If the data is relayed better in a table, then that's how it should be presented.

Other Tips

Use Data Tables, Not Data Labels

A data table allows you to see the data values for each plotted data point, without overcrowding the chart itself. Although data tables increase the space your charts take up on your dashboard, they respond well to formatting and can be made to meld nicely into your charts. Data tables come in particularly handy if your clients are constantly asking to see the detailed information behind your charts.

Maintain Appropriate Aspect Ratios

A skewed aspect ratio can distort your charts, exaggerating the trend in charts that are too tall, and flattening the trend in charts that are too wide. Generally speaking, the most appropriate aspect ratio for a chart is one where the width of the chart is about twice as long as the height is tall.

Parse Data Into Separate Charts

A single chart can lose its effectiveness if you try to plot too much data into it. Step back and try to boil down what exactly the chart needs to do. What is the ultimate purpose of the chart?

Designing Effective Tables and Graphs by Stephen Few

The effective display of quantitative information comes down to two fundamental challenges:

1. selecting the right medium of display and
2. designing the individual visual components to display the information and message as clearly as possible.

A table works best when:

- It is used to look up individual values
- It is used to compare individual values
- The values must be expressed precisely

A graph works best when the message is contained in the shape of the data, such as patterns, trends, co-relationships, and exceptions to the norm.

Chart Smart by Dona M. Wong

Don't resort to a table unless a huge amount of data has to be included and space is limited. Rows of numbers do not have any visual impact. It requires a lot of work for the reader to compare and contrast the data. Expressing quantitative and descriptive information in a tabular form is often the simplest method of presenting copious amounts of data. However, it should be used judiciously and as a last resort in most cases. A chart is more memorable than a table of numbers.

Unhelpful Grids

A large table using grid lines or alternating gray to separate each entry can be very daunting. The busy grid lines distract the reader from the data.

In a small table, alternating a gray background or gridlines for every entry is unnecessary. The eyes can easily follow the numbers across the table.

Name	Fall 05	Fall 06	Fall 07	Fall 08	Fall 09
Business	564	573	594	583	609
Chemistry	797	820	804	768	795
Env. Design	665	657	668	651	609
Physical Sci.	481	429	506	541	570
Other	815	752	696	832	1018

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Optimal Visual Guides

Use thin rules after three to five entries to help the reader follow the numbers across a table. A wide table needs a rule every three lines. A narrow table with two columns of numbers does not require any guides. Shading can be used to highlight a column of data or an entry.

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Chart in a Table

Whenever space is available in a table, it is always helpful to chart the column of data that is the main message.

Name	Fall 05	Fall 06	Fall 07	Fall 08	Fall 09	Trend
Business	564	573	594	583	609	
Chemistry	797	820	804	768	795	
Env. Design	665	657	668	651	609	
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Tufte's Tips on Delivering Presentations

From course notes taken by Pamela Brown, Russ Acker, and Alfred Alipio Jocson and from notes posted on the web by Robin Hilp and Justin Wehr.

A Different Paradigm of Presentation & Discussion: Word, Not PowerPoint

Most presentations these days follow the same model. The presenter(s) in front of the room, controlling the dosing of data and the pacing of discussion, often by showing (poorly conceived) PowerPoint slide decks.

Edward Tufte believes the presentation system should be Word, not PowerPoint. Tufte guaranteed that meetings would be one-third shorter if you bring an 11x17 handout (technical report) and let attendees explore it with their own cognitive style, skipping over the details they're not interested in, and then asking you questions at the end. This handout holds the equivalent of 50 to 250 PowerPoint slides of information. In the technical report, you should lay out 1) the problem, 2) the relevance, and 3) the solution in a couple of sentences each.

More Tips on Delivering Presentations

- PGP (particular-general-particular)
  - Offer an immediate payoff for listening.
  - Generalize.
  - Give an informative example.
- Always supplement overheads with both verbal content and handouts.
- Audiences are automatically precious and deserving of respect:
  - Start from the opposite of KISS -- never assume your audience is either stupid or that they require simplicity for understanding.
  - Attendees have already come through a screening process: Interest in what you are presenting, and readiness to learn.
  - Speak at a "colleague" level of intelligence.
  - Be frank, although tactful.
  - Treat questions carefully and considerately.
- Tell them the following early in the presentation:
  - The problem
  - The evidence
  - The solution
- Your affect is carried by nonverbals. Communicate enthusiasm and develop rapport. Enthusiasm leads to credibility.
- Practice, practice, practice!
  - Rehearse in solitude.
  - Ask a friend to be your audience.
  - Use a video camera. Review on regular, fast, and slow speeds to pick up quirks. Review audio and video together and separately.
- Content is paramount. Always try to get better content.
- Finish early.

References

Edward Tufte. http://www.edwardtufte.com. Also check out his books: *Visual Explanations*, *Envisioning Information*, *The Visual Display of Quantitative Information*, and *Beautiful Evidence*.

Stephen Few. *Designing Effective Tables and Graphs.* http://www.perceptualedge.com/images/Effective_Chart_Design.pdf.

Jon Peltier (November 6, 2008). *Ten Chart Design Principles: Guest Post*. http://peltiertech.com/WordPress/ten-chart-design-principles-guest-post/.

Dona M. Wong (2010). *The Wall Street Journal Guide to Information Graphics: The Dos and Don'ts of Presenting Data, Facts, and Figures.* W. W. Norton & Company. Chapter 2.

Robin Hilp. *Review of Presenting Data and Information: A One-Day Course Taught by Edward Tufte*. http://www.stcwvc.org/galley/0201/c1.htm.

Justin Wehr. *Edward Tufte Course Notes and Reactions.* http://wehrintheworld.blogspot.com/2009/03/edward-tufte-course-notes-and-reactions.html.

This handout was prepared in May 2010 by Pamela Brown and Russ Acker of the Office of Planning & Analysis and Alfred Alipio Jocson of HR-Staff EEO Compliance.