

Communicating effectively with graphics

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Charts and graphs can be a powerful communication tool; after all, "A picture is worth a thousand words". Just as it takes time and "literacy" to write clearly, creating clear graphics takes effort as well. This session will cover basic principles of communicating with graphics, and show some practical tips for creating lucid, comprehensible charts.

1. I know about communicating effectively with charts/graphs because my work at the Washington Utilities and Transportation Commission includes:
 - a. Publishing a 'Balanced Scorecard' that shows agency performance graphically.
 - b. Coaching managers on presenting performance data graphically for their government management accountability and performance (GMAP) presentations.
 - c. Getting trained on graphic communication skills. The most influential seminars I've attended, and from which I'm borrowing and sharing today:
 - Barbara Felver, an analyst with the DSHS and OFM, has developed some great tips and techniques.
 - Edward Tufte, the father of "information design".
 - Steve Marshal's "Communicating with Data" classes from state Dept. of Personnel (DOP).
2. What makes an effective chart or graph?
 - Graphic communication has the same goal as written or verbal communication: **Focus the user on the message, with minimal "noise" to distract them.** A good design is invisible.
 - Good charts lead to good conversations, clear understanding, better decisions.
 - According to Barbara Felver, effective graphics:
 - Are readily understood by the reader,
 - Are relevant to the world we live in,
 - Are timely,
 - Are formatted with a sense of balance, proportion, and clarity of design,
 - Have integrity (data/analysis),
 - And answer some predictable, fundamental questions.

3. The Message in effective charts. Summary:

- a. “Compared to what?” = give context, meaning
- b. Choose the best type of chart for the type of comparison
- c. Think of your audience – what do they want to know
- d. Authenticity and trust

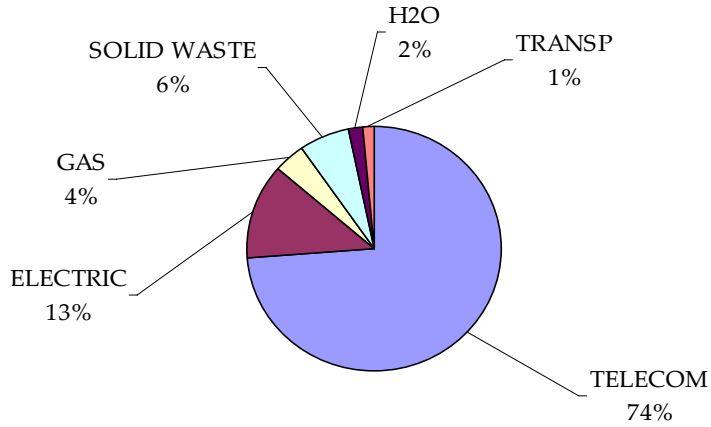
In more detail:

- a. “Compared to what?” = give context, meaning
 - Graphic data acquires meaning when it has context.
 - Context can come from comparison, to and among . . .
 - Benchmarks or averages,
 - Categories,
 - Parts of the whole,
 - Time periods,
 - Geography.
 - “Small multiples” make comparison easy. See handout: “Avoiding the Dark Side of Performance Management”.
 - Each of these has a type of chart best suited to showing it!
 - Pie charts = parts of the whole
 - Line charts = performance through time
 - Bar charts = compare categories
 - Maps = spatial information
 - Flow charts = “how does it work”
 - More on each of these below

b. Choose the right type of chart for your data or message.

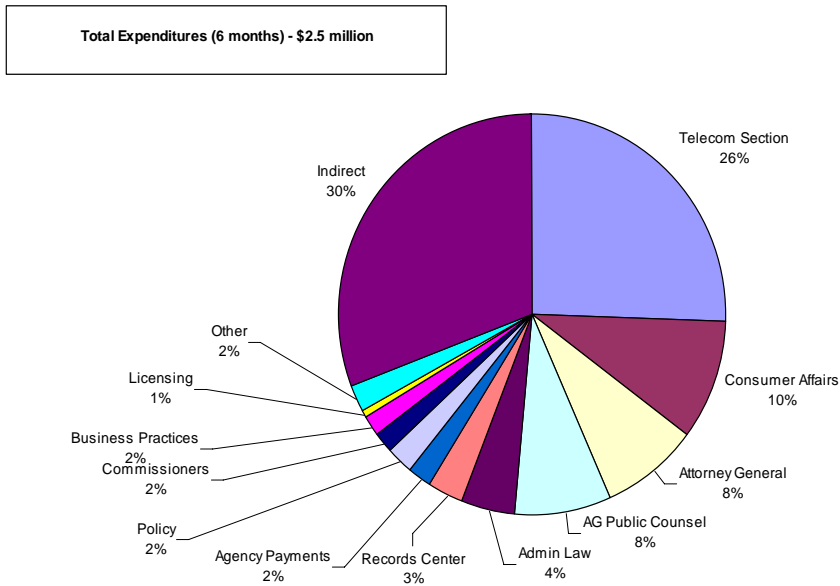
Pie charts show percentages of the whole.

Consumer Complaints by Industry 2004

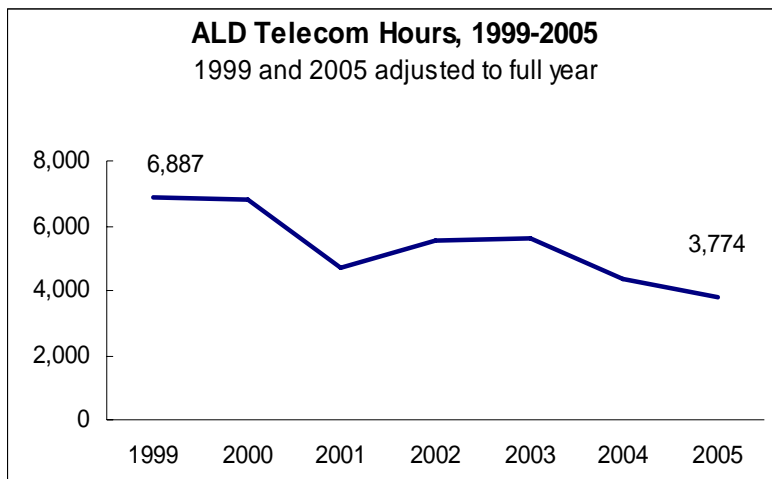


Avoid pie charts if you have over six categories (or so), or if any categories have zero value. Just use a simple table instead.

Expenditures on Telecom Regulation, By Section July-December 2003



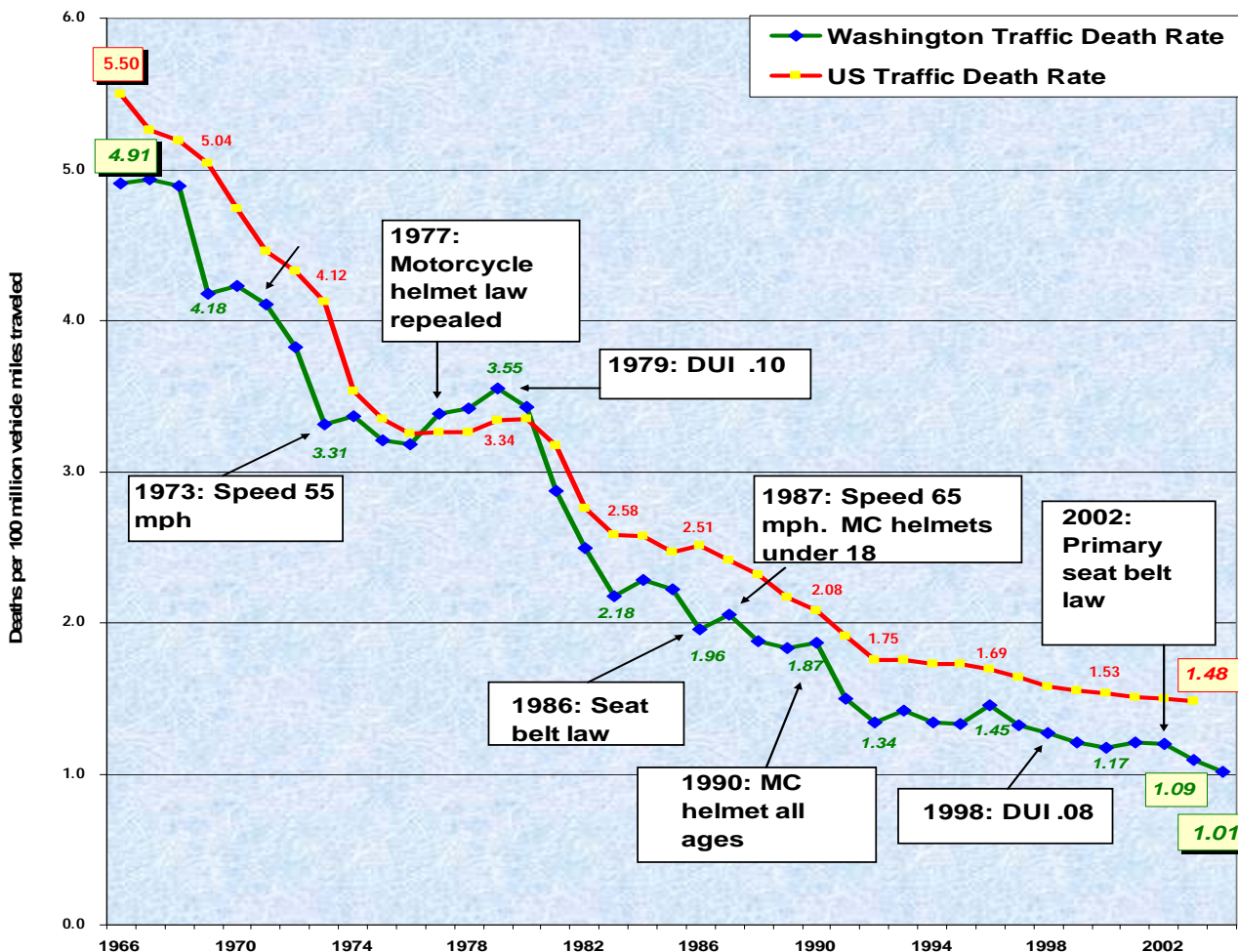
Line graphs show variation over time.



The line graph below is from Gov. Gregoire's Sept. 8 Public Safety Accountability Forum by the State Patrol, Traffic Safety Commission and Dept. of Licensing

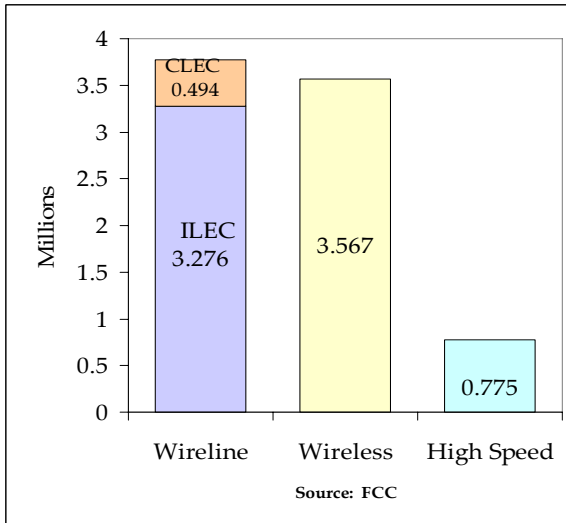
Traffic Death Rates Continue to Decline

*Traffic deaths per 100 million Vehicle Miles Traveled**

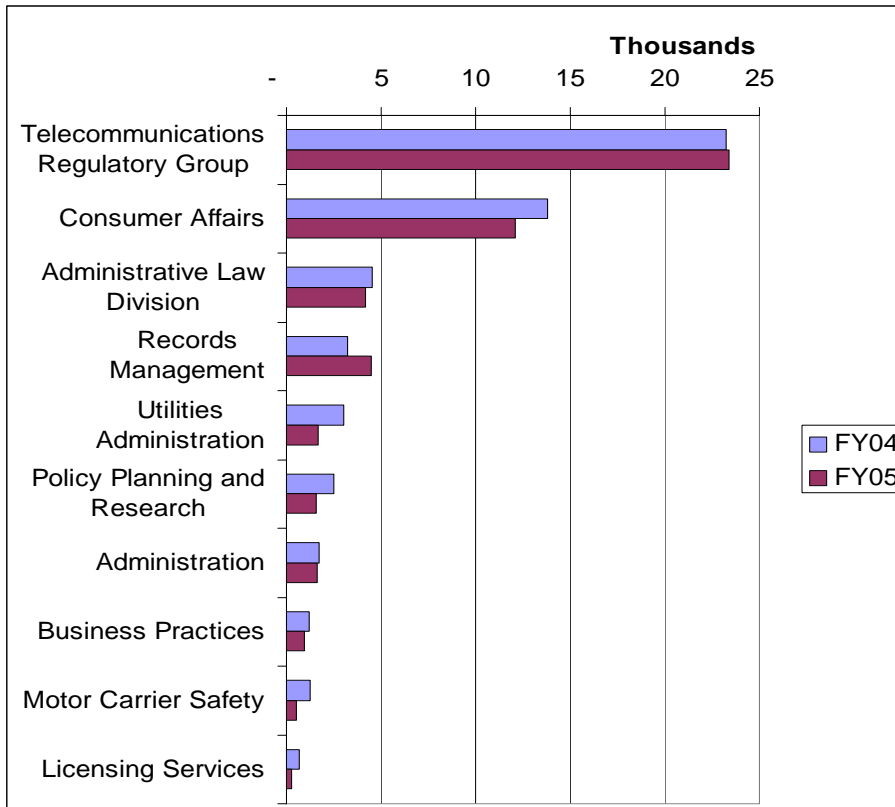


Source: FARS, WSP, WSDOT, NHTSA

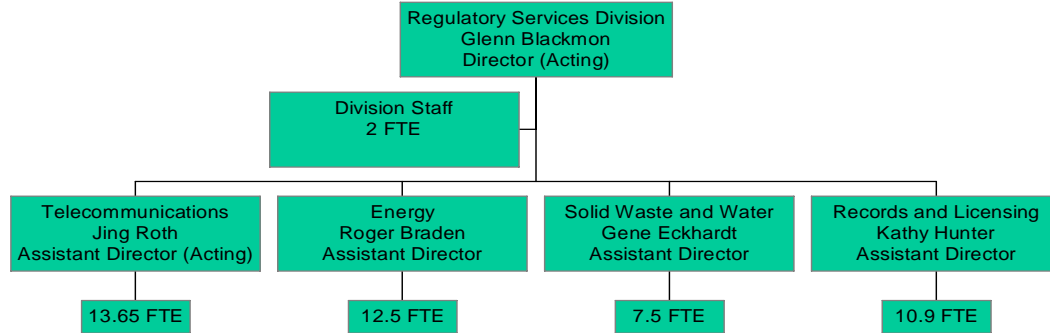
Bar charts show comparisons among categories.



For long lists of categories, though, use a table or horizontal bars.



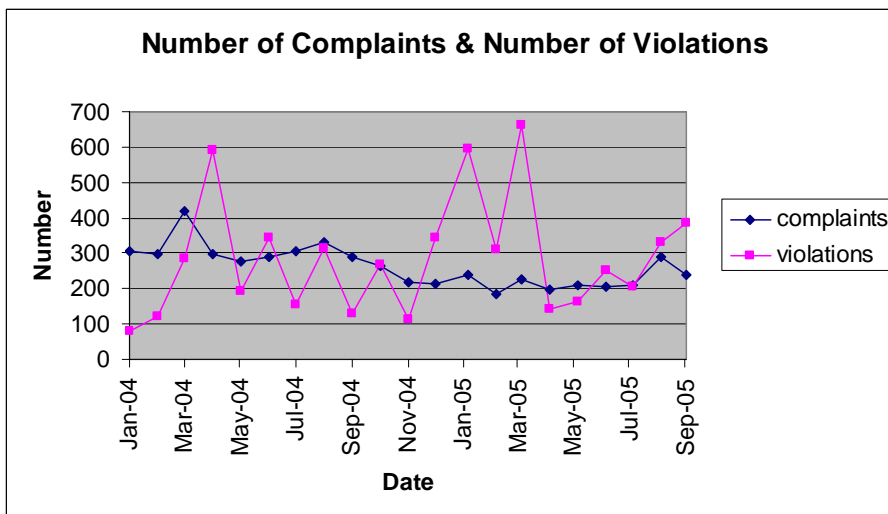
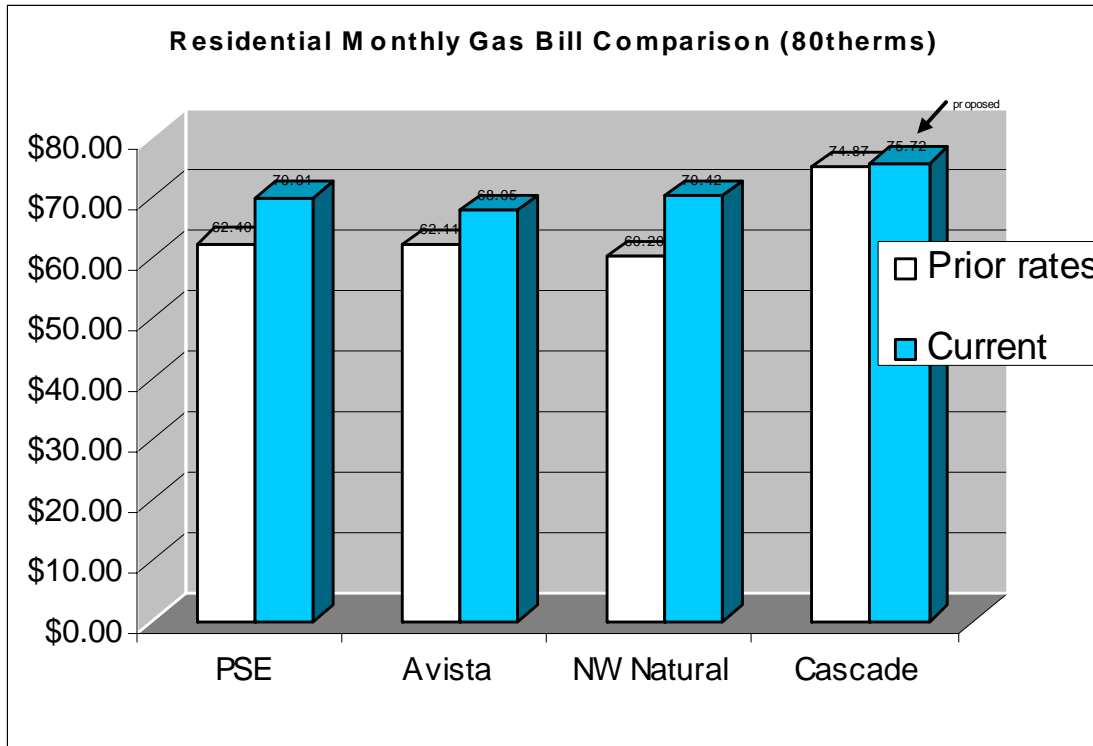
Flow charts show how processes work, steps involved, hierarchies.



Other chart types:

- **Maps** for geographic and spatial data.
 - **Pareto charts** (combination of line and bar) show contribution of parts
- c. Back to the message: Think of your audience - What do users want to know?
- Tufte - Don't talk down to your audience.
 - Felver – Decision makers want answers to typical questions (see handout “Questions typically asked by policy makers”.)
- d. Authenticity and honesty – adds trust in message, quality control.
- State data sources.
 - Provide footnotes and explanatory text.
 - Sign your work.

4. **Noise** can come from a variety of things in charts (and Excel puts almost all of them into charts by default). Examples of “noise” that distract from message:
- a. Colored or shaded background.
 - b. “Codes” that force the viewer to consult a “decoder” for meaning
 - c. “Chartjunk” – borders, tick marks, grid lines, 3-D effects. “1 + 1 = 3”
 - d. Superfluous words, letters, symbols, ‘000’s on currency, etc.



5. Practical tips

- a. People are more interested in what's happened recently. Consider putting most recent data at the top of a chart or table.
- b. The eye is attracted to dark color. Draw attention to your message with this.
- c. Think about how a chart will reproduce in black and white printing.
- d. Creating a chart in Excel is easy – clean up takes just a little more time. See Barbara Felver/JS examples of cleaning up a pie chart or bar chart.
- e. The key to cleaning up a chart is the **right mouse button** (RMB).
 - Put your cursor on the part of the chart that bothers you, then . . .
 - Click the right button on the computer mouse,
 - Choose a menu option to either remove (Clear) or Edit it.
 - Explore the tabs available for editing the chart.
 - If you mess up, use “Edit – Undo,” and save early, save often.
- f. To label a column:
 - Put your cursor on a line and hold it there until you get a single point.
 - RMB click to “Edit Data Point”
 - Choose “Labels” to show value or series, either one.
 - Save, then go back to the label and click on it to edit
 - Change the number or text to what you want, and save.
 - Click on that, then move it to where you want.
- g. To put in a benchmark or target line:
 - Create a data column with the benchmark value in each cell.
 - Include it when you create the chart.
- h. To import a chart into a text document (see Barbara Felver):
 - Use tables in your Word document to organize the text and create a spot for your chart.
 - Create a chart in Excel, then copy and paste it into the Word document. See tip below:
- i. When creating a chart, have Excel put it in the same worksheet as the data.
 - If it's in a separate worksheet, Excel makes it default to a full page, landscape format (11" x 8 1/2"). If you resize this, the font gets too small to read.
 - However, a chart placed in the same worksheet as the data will be smaller in size, so the font is more likely to be readable if you resize it.
 - Also, it's easier to edit if the chart and data are on the same page.

6. Literacy ideas?

- a. Sign up for a Tufte Seminar – they're pricey (\$350) but give good value. They're offered regularly, and come with copies of his books.
- b. For state workers, take a "Communicating with Data" class from DOP
- c. Look at examples from publications that present lots of graphic data, especially financial industries (Wall St. Journal, Investors Business Daily, and annual reports by companies and mutual funds).
- d. Start a "Good graphics" folder and toss ideas into it.

7. "Information Design" Resources

- o Edward Tufte - <http://www.edwardtufte.com/tufte/>
- o "PowerPoint Is Evil" - Tufte in *Wired*, Sept. 03
<http://www.wired.com/wired/archive/11.09/ppt2.html>
- o "Graphics and Web Design based on Tufte" - UW computer class:
<http://www.washington.edu/computing/training/560/zz-tufte.html>
- o "The Data Artist", March, 1997 *Salon*
<http://archive.salon.com/march97/tufte2970310.html>
- o Presentations from Governor Gregoire's Accountability Forums
<http://www.governor.wa.gov/gmap/forums/default.htm>,