

Keeping it simple: Four myths on data presentation

Numeric information often puzzles councillors, managers and others. Readers frequently blame this confusion on their own innumeracy, but management and public documents rarely demand more than basic arithmetic. As Professor ASC Ehrenberg noted: *"Most data are badly presented, and so the cure lies with the providers of the data."*¹

People find numbers persuasive, and well presented data saves time and promotes good decision making. In this article by Sally Bigwood and Melissa Spore² they present their views in the form of four 'common myths' about presenting numerical information. They suggest that these customs are misguided and widespread, despite some excellent charts³ and tables dating from the eighteenth century. A number of sources, especially the work of Professor Ehrenberg and *British Standard 7581: The Presentation of Tables and Charts*, suggest best practices in data presentation.

Myth 1: Gridlines help the viewer

Rather than helping, gridlines erect barriers that interfere with comparisons. In the following illustration, the vertical lines in 1a block the rows. The horizontal lines add clutter, not information. Lines make displays appear darker, heavier and unnecessarily complex. In 1b the blank spaces guide the eyes to the important comparisons.

* Illustration 1a: Gridlines add clutter

	Apples	Pears	Kiwi	Average
2002	21	14	6	14
2003	15	11	4	10
2004	23	16	9	16
2005	27	19	14	20
Total	67	47	27	

✓ Illustration 1b: Use blank space to guide the eyes

	Apples	Pears	Kiwi	Average
2002	21	14	6	14
2003	15	11	4	10
2004	23	16	9	16
2005	27	19	14	20
Total	67	47	27	

- The blank rows give the table a more relaxed look and guide the readers' eyes.
- Notice how the patterns and exceptions stand out - there is a steady increase, except for the sudden downturn in 2003.

¹ A.S.C. Ehrenberg: *"The Problem with Numeracy"*, The American Statistician, May 1981, Vol. 35 No 2.

² Sally Bigwood runs the CIPFA course: The Simple Communication & Presentation of Figures. Melissa Spore co-authored their book *Presenting Numbers, Tables, & Charts*, published by Oxford University Press, 2003.

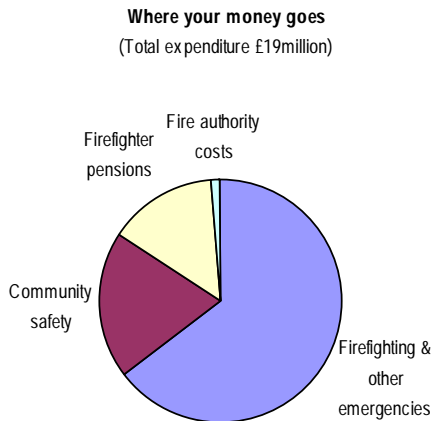
³ We use the words charts and graphs interchangeably.

Myth 2: People prefer pie charts

Pie charts present comparative data in a circle, although most of us think linearly. The only thing worse than one pie is two comparative pie charts, which demand that readers compare data both from within one circle and between two circles at the same time. In Illustration 2, a table better represents amounts and comparisons.

✗ Illustration 2a: Compare data in a circle

✓ Illustration 2b: A simple table



Where your money goes	£ (000)	%
Firefighting and other emergencies	12,000	64
Community safety	3,800	20
Firefighter pensions	2,800	15
Fire Authority costs	190	1

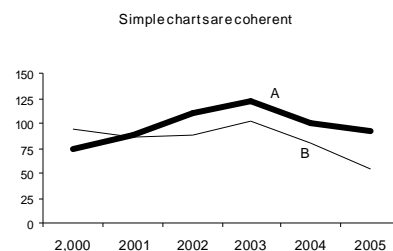
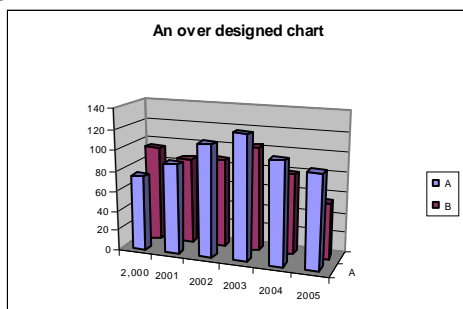
(Figures have been rounded)

Myth 3: Graphs can explain complex ideas

Graphs are essentially simple. They excel at showing trends and basic comparisons, but are less successful at explaining complex relationships. Bar charts only show that one item is bigger than another; line graphs that things change over time. Graphs that appear complex rarely communicate at all, as Illustration 3a shows. The best graphs — those that communicate with ease — make an explicit statement, as in Illustration 3b.

✗ Illustration 3a: Complicated graphs hide the information and present a puzzle to the reader.

✓ Illustration 3b: Graphs excel at simple messages



Myth 4: Rounded figures mislead

In fact, rounding to two effective digits is the single most useful step one can take to make data lucid. Compare the following statements:

- (a) Salary costs increased from £248,851 to £273,229.
- (b) Salary costs increased from £250,000 to £270,000.

The reader can mentally subtract one number from another in (b) but not in (a). Rounding makes numbers easier to take in, manipulate and recall. Often the detail isn't 'accurate' anyway: many numbers are best estimates or captured at a certain time, and precision over more than two digits rarely influences decision-making.

Of course there are times when rounding is inappropriate. Pharmacists, precision engineers, and cashiers need exactitude. But rounding management figures makes the data more comprehensible, memorable and persuasive. Decisions are made on overall figures, whether buying a used car or building a new hospital.

Conclusion

Avoiding these myths will mean readers will understand your tables and charts first time and that saves their time. You'll appear open and honest because your numbers are transparent and comprehensible. Simple measures - steering clear of gridlines and pie charts, using graphs appropriately and rounding - make a big difference to communicating numeric ideas.