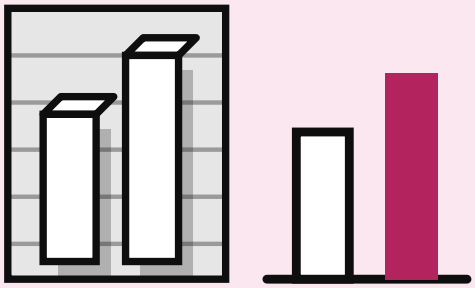
Concept

Data-ink ratio

The ink in a chart that shows data, divided by all the ink used. Tufte called decoration that doesn't inform chartjunk.



In Spanish
Proporción datos-tinta

Origin
Tufte (1983)

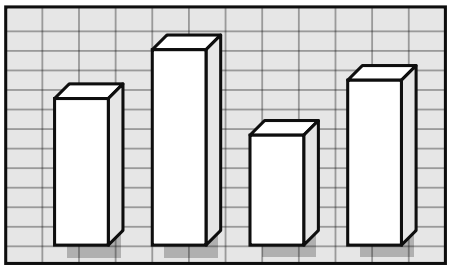
What problem it addresses

It explains why gridlines, shadows and drawings can hide the data. It gives design a question for every mark: does it inform or only decorate?

An example

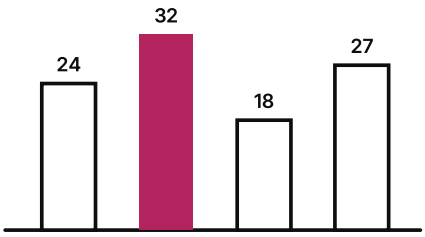
An illustrative example: the same bar chart, before and after cleaning it up.

With decoration



Background, dense gridlines, raised bars and shadows. **The data get lost in the noise.**

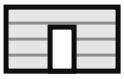
Data only



Flat bars, one axis and the numbers right beside them. **The differences show at once.**

Removing ink isn't removing information: it lets you see what was already there.

Why it happens

1 

Every mark asks for attention, even the one that says nothing;

2 

decoration competes for the eye with the bars, the lines and the numbers;

3 

when you erase what's extra, the data come to the front.

Applications in design

✓ Use it like this

Go over every element of the chart and remove whatever neither shows data nor helps read it.

✗ Avoid

3D effects, shadows, backgrounds and dense gridlines that only decorate.

Don't fall for it

Don't confuse plain with better: an image tied to the topic can help people remember, as long as it doesn't distort the data.

2–3 weeks

What the research says

In a study with 20 people, those who returned 2 or 3 weeks later remembered illustrated charts better than their plain versions, and had understood them just as well (Bateman et al., 2010).

●●○ **Debated evidence.** It is a small study, with charts by a single illustrator and general description tasks: it doesn't endorse decorating for its own sake. The authors themselves warn that images can bias the message.

Connections

Used in

- Data visualization

Related to

- Ten principles for good design
- Aesthetic-usability effect

Authors and works

1983	**Edward R. Tufte**	Defined the data-ink ratio, coined chartjunk and proposed erasing ink that doesn't show data.
2010	**Scott Bateman et al.**	Found that charts with illustrations were remembered better weeks later, without being understood worse.

Sources

Original sources

- Tufte, E. R. (1983). The visual display of quantitative information. Graphics Press.
- Bateman, S., Mandryk, R. L., Gutwin, C., Genest, A., McDine, D., & Brooks, C. (2010). Useful junk? The effects of visual embellishment on comprehension and memorability of charts. In Proceedings of the SIGCHI Conference on Human Factors in Computing Systems (pp. 2573–2582). ACM.

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