

chartjunk

the madness ends here.

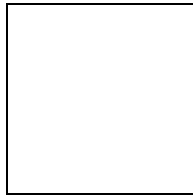
[a blog; by karmanaut]

Test Pattern

<http://chartjunk.karmanaut.com/2005/12/14/test-pattern/>

Here's an article from the [Sydney Morning Herald](#), my local broadsheet newspaper, from 6th July 2005 entitled [Too much TV a learning turn-off](#).

And here's the graph that accompanied the article.



The moment I saw it my alarm bells chimed distractingly. It's like it was put together intentionally as an example of [Tufte's chartjunk](#): Shiny 3D bars. Meaningless decoration. No clear relationship between what's being measured and what's shown. You see, what's being measured is:

- Educational test results in three subjects
against
- Four conditions:
 1. having a TV in a bedroom
 2. not having a TV in a bedroom
 3. having a home computer
 4. not having a home computer.

So the obvious thing to do is to put the test scores up the Y axis (OK great, the graph does this), and the four conditions along the X axis; but no, instead we have the three subjects along the X axis, as if this was a comparison between *them*... and then to facilitate the *real* comparison they've had to break it into two graphs, and...

This all seems kind of petty, I suppose. Sure, it's a weird choice of [abscissa](#), and the 3D bars aren't strictly necessary, and the stock photo of a mouse on a desk behind everything is a little distracting, but it's not like the data is actually being misrepresented, is it? After all, here's the relevant article text:

The research, published in the Archives of Pediatrics & Adolescent Medicine, found that those with a television in their rooms scored 53 in maths, 48 in reading and 51 for languages in a widely used educational test. Marks for those without a set were 63, 55 and 60 respectively.

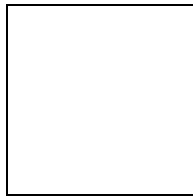
So the point is that having a TV in a kid's bedroom will lower their test scores, and the graph shows... Oh. This is where we discover that it's not a false alarm. The graph shows **the opposite**. The purple bars, representing Bedroom TV are showing high test scores, and the gold bars representing No Bedroom TV are showing low scores. And this isn't a one-off—the key has been reversed on the other graph as well. While the article says:

The American study found that computer use actually improved children's test scores.

The graph shows the opposite. It looks like the chartjunk all over this monstrosity was so distracting that no-one noticed that it was reversed. Not the designer, not the sub-editors, no-one.

This is in a paper of record; they would no more suffer a spelling error than they would put out their own eyes. Yet a graph that violates every basic principle of infographics and ends up showing **the opposite of what it purports to show** passes without comment. If you're going to inflict this kind of damage on your data, better to have no graphs at all.

[REVISED GRAPH] Here's a redrawing of the graph along sane principles.



The Computer/No Computer values weren't in the text of the article - I had to rely on the original graph, so I don't know if they're right. Why not? Because of the 3D bars. Here's the problem. Do you measure to the top of the colour bar (the 2D shape) or the curved edge of the bar (the 3D shape)? Fortunately we have a rosetta stone in the first graph. The values in the text are: *TV: 53, 48, 51 -versus- No TV: 63, 55, 60*. In the graph it's reversed, but the gold bars match 53, 48 and 51 - not at the top of the colour bar, but at the edge of the curve. OK, so they're treating the bars as 3D. If you read the entire colour bar you're giving the students 2 extra marks each. Let's double-check with the purple bars... we get 63, 55, 58. So those are all 3D bars except the last one, which you must read as a 2D bar if you want the correct number (60).

So - it looks like the designer doesn't know where the ends of the bars are either. For my graph I've taken the values as if they're all 3D bars, pretty much. But in the end, there is no reason to have any confidence at all in the data as portrayed by the original graph.

Comments are welcome - including further redrawings if you think you have a better idea how to portray this data. Stay safe, and don't believe anything you see in the paper.

3 Responses to "Test Pattern Retuned"

1. [andrea steinfl](#) Says:
[January 10th, 2006 at 3:47 am](#)

karmanaut, I would add just a few words, without a drawing, at the moment. If I find time I'll post one in the next days. Nevertheless, i believe it is possible (and necessary and important), to see the information design issue you present, also under a different point of view. A dramaturgic point of view, that comes out of the relation between the data and the text.

If I look at things this narrative way, the data tells: The best students are the ones that do not have TV in their bedroom. The survey in itself is not brilliant, because it is highly imprecise and doesn't tell anything really (ok, I don't have a TV in my bedroom but I have a computer, and then?), but nevertheless, let's play the game. The main question is (in this case): Who are the best students? And the graph should first of all answer this question, without hesitation.

So, (starting from your redesign) first of all, I would change the order on the X-axis and put them in ascending order of results. This way the order would be: a) no computer, b) bedroom TV, c) computer and d) no bedroom tv. this way, the impact of the graph will immediately tell the story.

This would be just the first of a series of small redesign issues that take into account the precision of visual representation of the data and the need to communicate effectively. I believe information design is first of all building conversations, between data, information and human beings. And we like stories that are well told and learn faster through them. I apologize for my poor English. All the best from Rome. ***[ASC added paragraph breaks for clarity on the handout.]***

2. [viveka](#) Says:

[July 4th, 2006 at 9:14 am](#)

Thanks Andrea, and welcome! I'm honoured to have such an accomplished designer visit my little blog. I like your point about the use of narrative in information design. I'm a little concerned it would tell a false story - from the article it sounds like we're dealing with four groups of children, measured all at once; not a single group measured over time as their conditions change. However I think that since there's no explicit time sequence, it wouldn't do any harm and would at least simplify the reading.

3. [viveka](#) Says:

[July 4th, 2006 at 4:20 pm](#)

OK, I've redrawn again as suggested. I also realised that my version above is not accessible to the colour-blind, so I've added some more distinguishing cues to the data points. I agree, this is more readable.

