

POINTS OF VIEW

Storytelling

Relate your data to the world around them using the age-old custom of telling a story.

A recent column made the analogy between creating figures and writing. These are similar processes that benefit equally from clarity, precision and restraint¹. Just as writing is made more compelling by a strong narrative, this principle also applies to the accompanying figures.

Stories have the capacity to delight and surprise and to spark creativity by making meaningful connections between data and the ideas, interests and lives of your readers. Science is “full of vexing questions, conflict, dead ends, insights and the occasional thrilling leap” and, as such, is “a story well told”². At the Story Collider (<http://www.storycollider.org/>), this approach to science reporting is exemplified by compelling narratives.

Familiar elements underpin most stories: introduction, question, conflict, buildup and resolution. These can also be applied to data graphics. For example, use the idea of a story arc and make your presentation episodic—unfold it, don’t dump it. In each part, make not only its content clear but its purpose easily discernible. This is particularly relevant when communicating to the general public, who may lack sufficient background knowledge to identify what is relevant or why it matters. At the same time, do not underestimate your colleagues’ desire to be presented with a cogent exposition of your findings.

Maintain focus of your presentation by leaving out detail that does not advance the plot. Distinguish necessary detail from minutiae; do not give in to the desire to show all your hard-won data. Provide sufficient support for your story, but stick to the plot. Inviting readers to draw their own conclusions is risky because even simple messages can hide in simple data sets (Fig. 1). Telling a story is as much a process as it is an art. To help you get started, consider the following: “If your study were reported in the newspaper, what would the headline be?”³.

An example of storytelling with data is shown in Figure 2. Targeted at a general audience, the information graphic motivates the effect of smoking rate on cancer statistics. The story begins with intrigue: cancer incidence is rising, but death rates are declining. The grimmer trend is presented first to immediately build tension. Insightful readers may expect that the primary reason is improved diagnostics and therapies, but the graphic surprises them by linking the inverse relationship to changes in smoking habits. The first two panels of

WHERE THERE’S SMOKE—THERE’S CANCER

Cancer rates are up, but mortality is down. New diagnostics and treatments are responsible for part of this trend. But the greatest single contributing factor is the decline in smoking—rates are at their lowest level in 50 years.

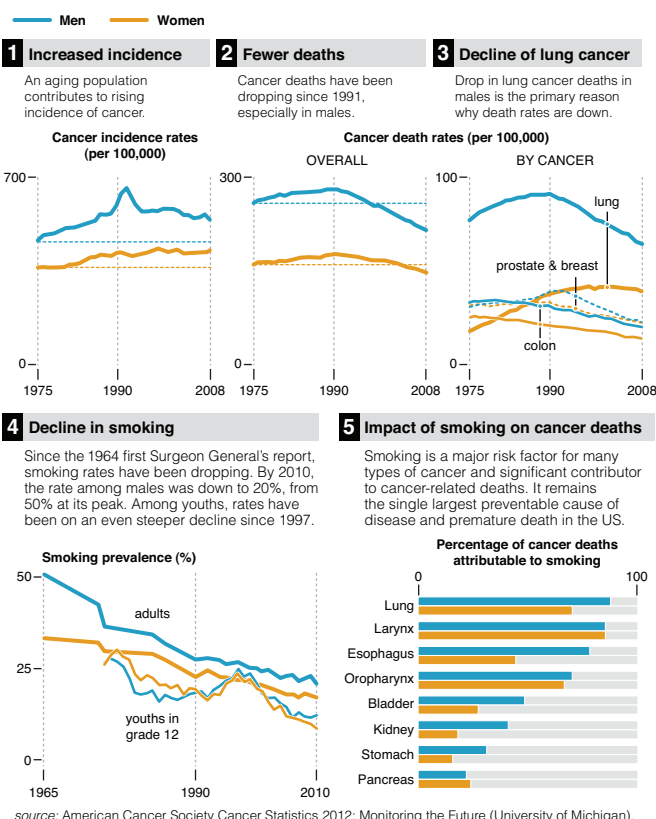


Figure 2 | A story adds meaning and clarity to complex statistics. Use multiple panels to establish flow, and use colloquial language when addressing a general audience. Light treatment of axes and grids maintains focus on data trends. Always be accurate, but balance qualitative and quantitative expositions. An occasional tangent (adult versus youth rates in panel 4) adds texture to the presentation without diluting the message. Make sure that figure and panel headlines satisfy journal style requirements.

the figure provide the background necessary for this plot twist to be appreciated. The vertical scale is chosen to accentuate the similarity of the death rates for males due to cancer in aggregate and to lung cancer in panels 2 and 3.

We have previously encouraged the use of practical graphic design principles to inform the content and layout of figure panels. Now we propose that you apply the structural principles of storytelling to integrate multiple panels into a cohesive whole. Instead of “explain, not merely show,” seek to “narrate, not merely explain.”

COMPETING FINANCIAL INTERESTS

The authors declare no competing financial interests.

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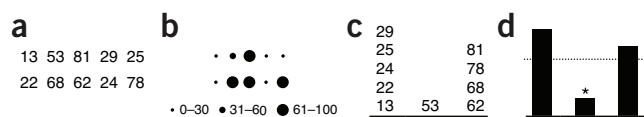


Figure 1 | Use aggregation to reduce data detail and emphasize the message: there are relatively few middle-range values. (a) Many interpretations are possible. Is it important that first- and second-row values are odd and even, respectively? (b) Establish the desired level of detail by binning. Is the order of values important? (c) Display of values and counts in each range can be combined, discarding original order. (d) Every element speaks to the core message, which is now clear. Use conventional notation and symbols (such as an asterisk for statistical significance).