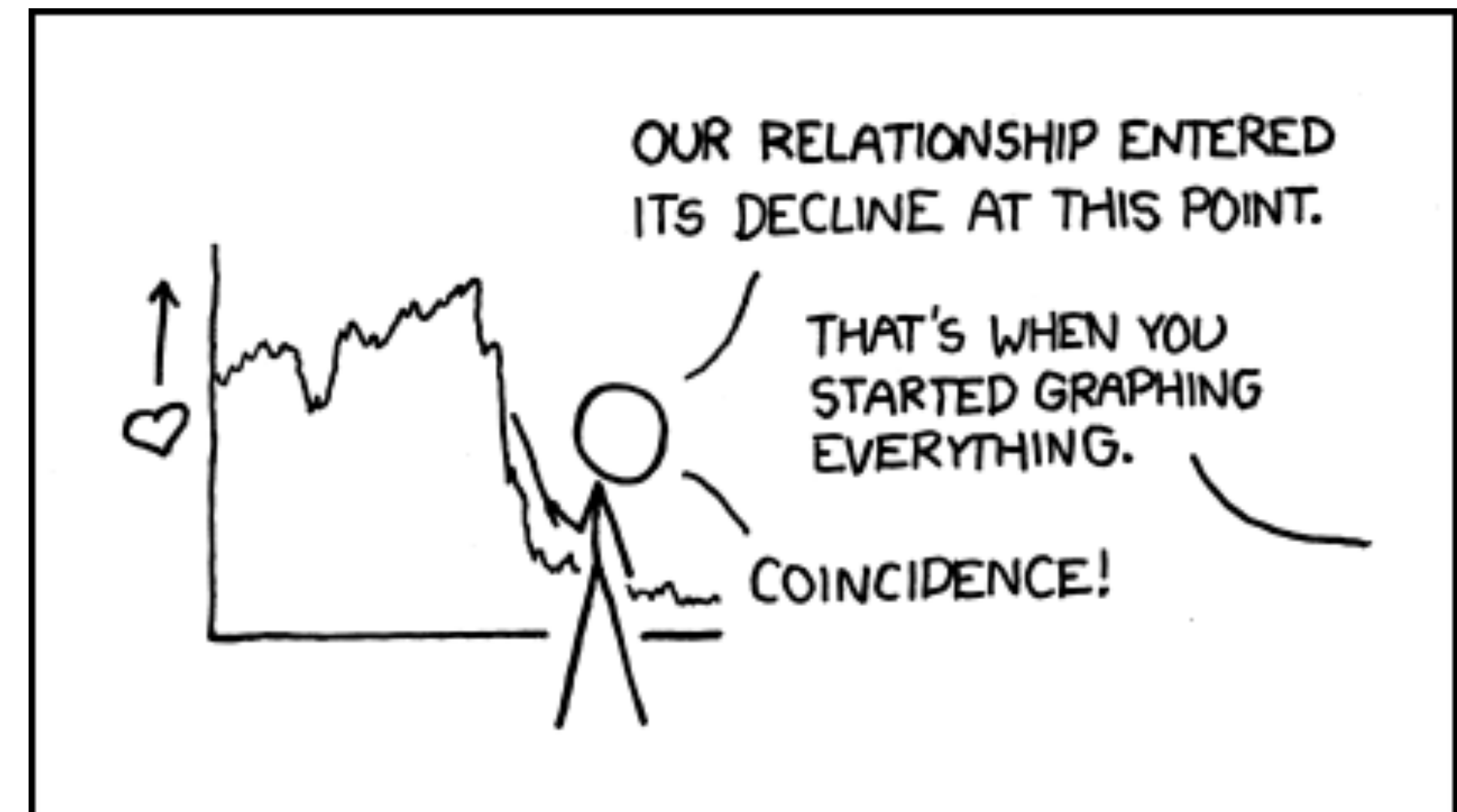


CS-5630 / CS-6630 Visualization for Data Science

How to Critique a Vis and Exam Review

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Exam

Theory Questions

What's bad about a rainbow color scale?

Which channels are good for quantitative data?

Design Critique

Given a vis, analyze what's good/bad and redesign.

Conceptual questions about HTML/D3/JavaScript

How does data binding work? How do you access data? Where is the bound data stored in the DOM? What is the DOM?

Find the bug question.

Grads: Question about readings (Crowdsourcing, Interaction)

1. Identify Data, Tasks / Intentions

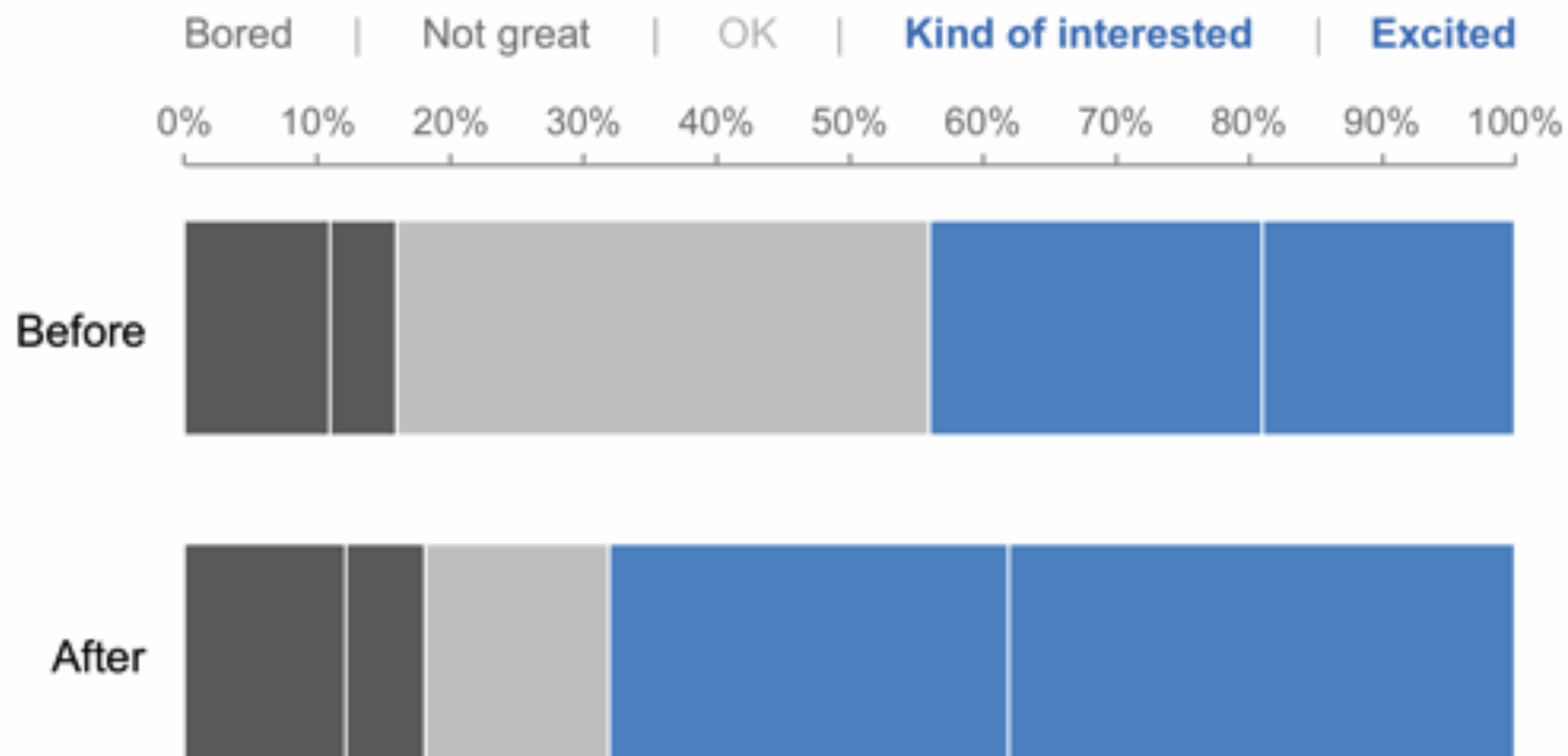
E.g., quantitative, time-series -> change over time

qualitative labels (often supplementary)

quantitative, two conditions -> compare

....

How do you feel about science?



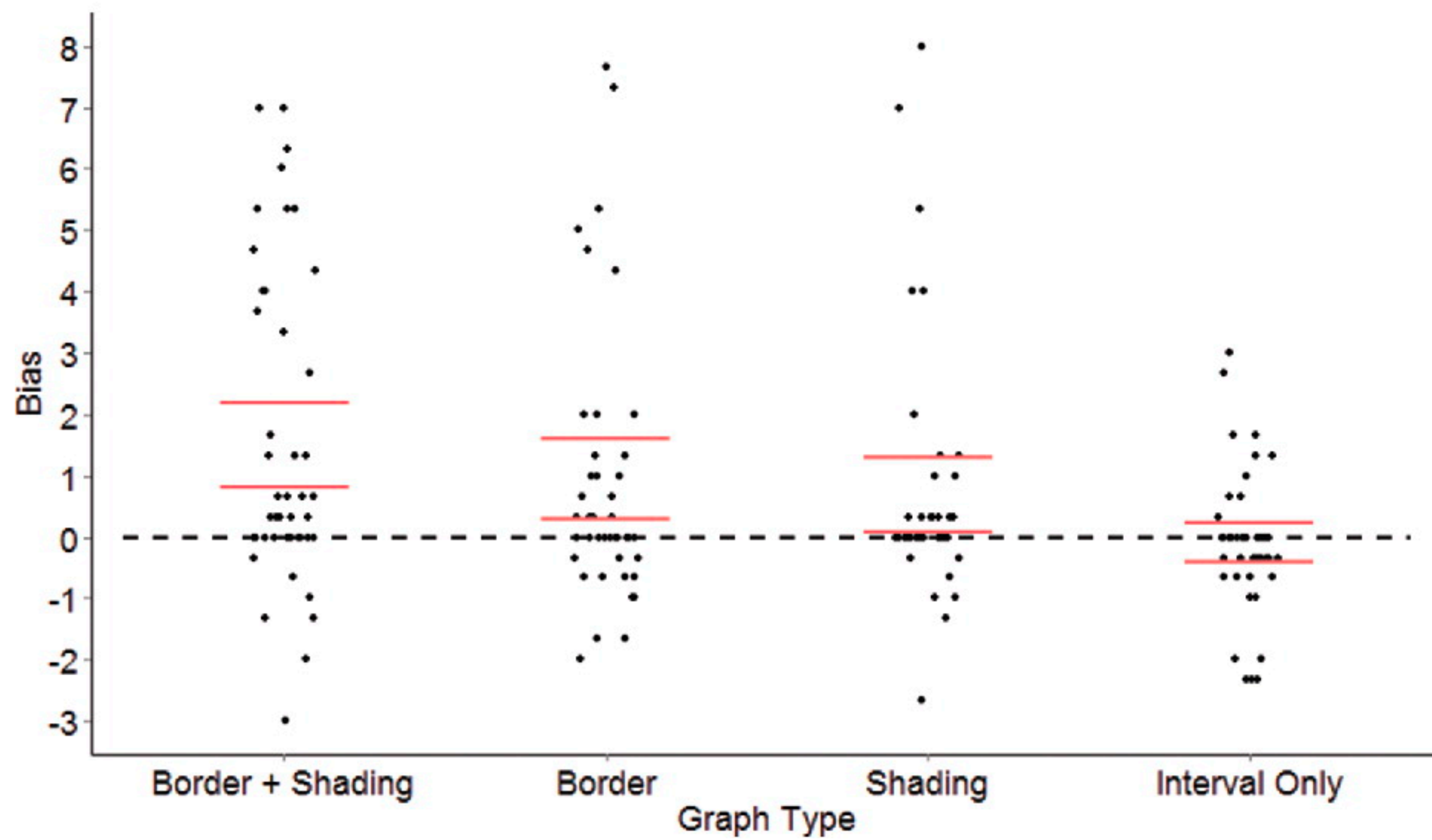
2. Identify Marks, Channels

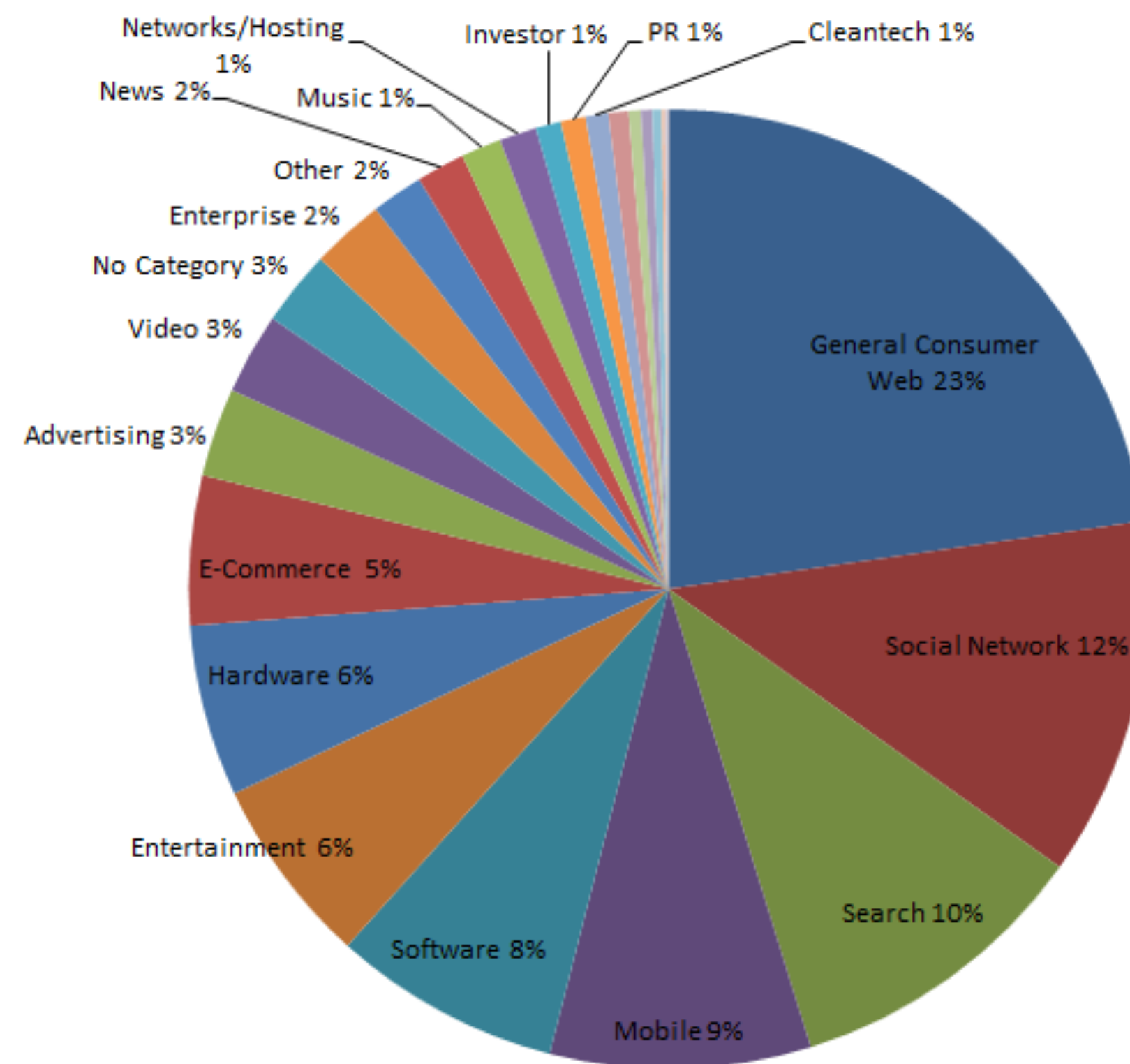
Mark: encodes “existence” of item

point, line, shape, ...

Channels: encodes “magnitude of dimension associated with an item”

position, size, saturation, color, ...

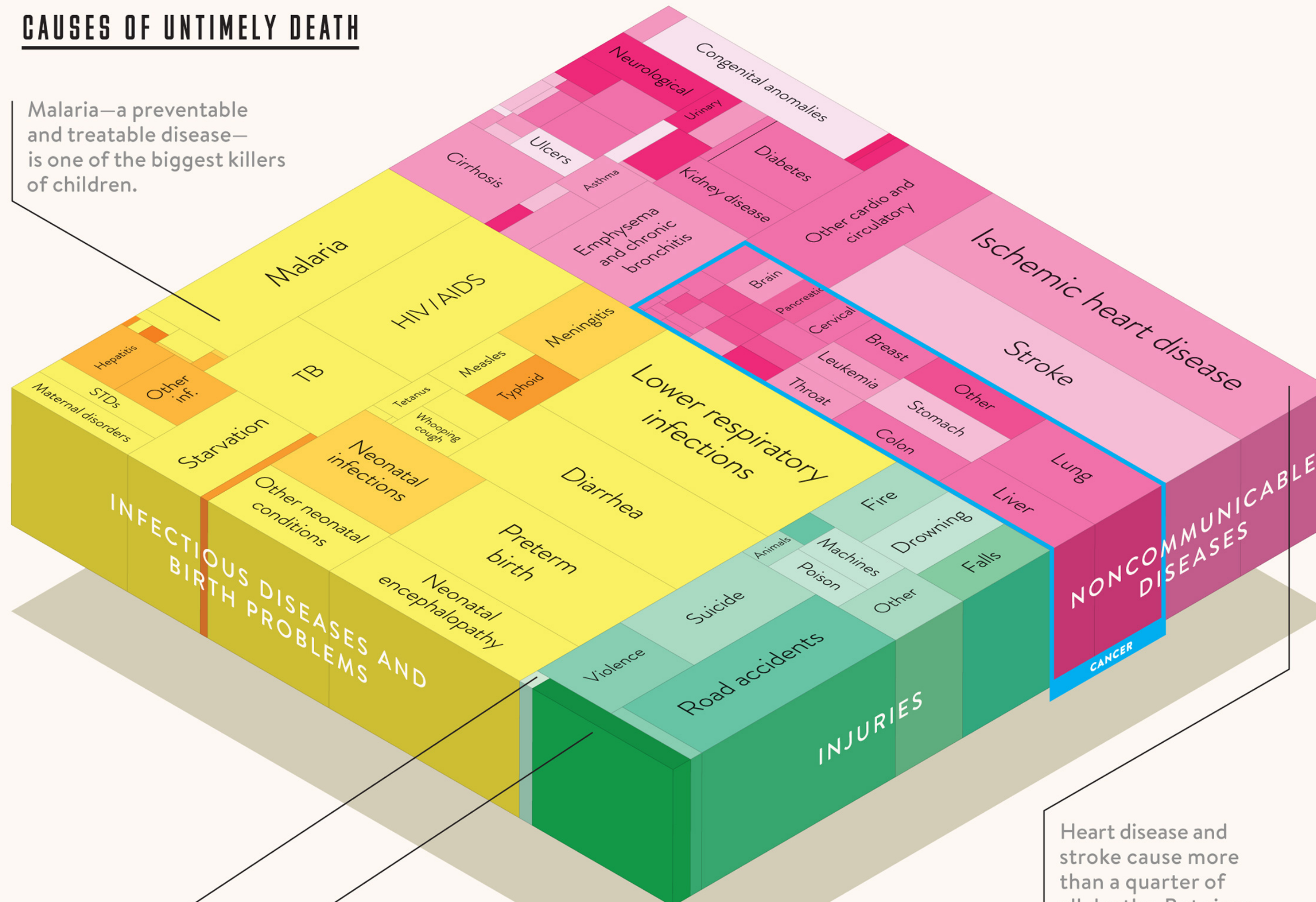




Share of coverage on TechCrunch

CAUSES OF UNTIMELY DEATH

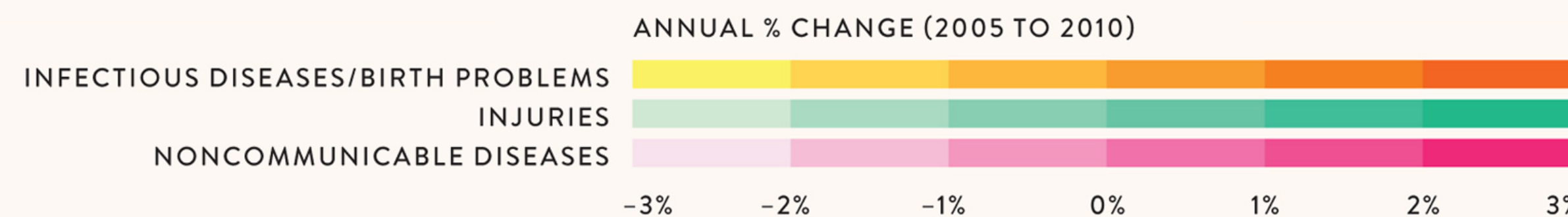
Malaria—a preventable and treatable disease—is one of the biggest killers of children.



War casualties account for just 0.05 percent of total life-years lost annually.

Natural disasters are by far the fastest-growing contributor to the death toll.

Heart disease and stroke cause more than a quarter of all deaths. But since they hit mainly older people, the cost in years of life lost is relatively small.

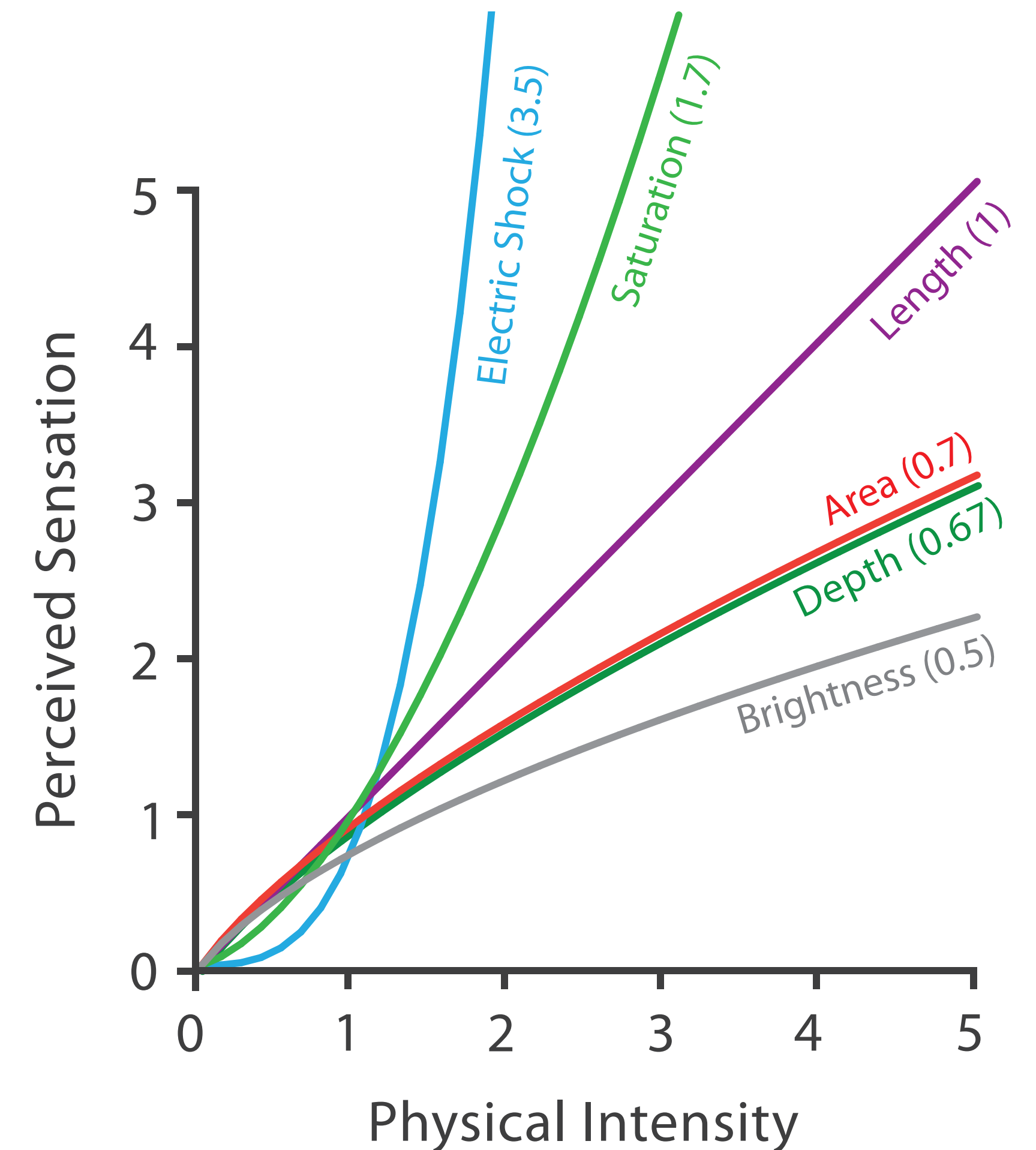


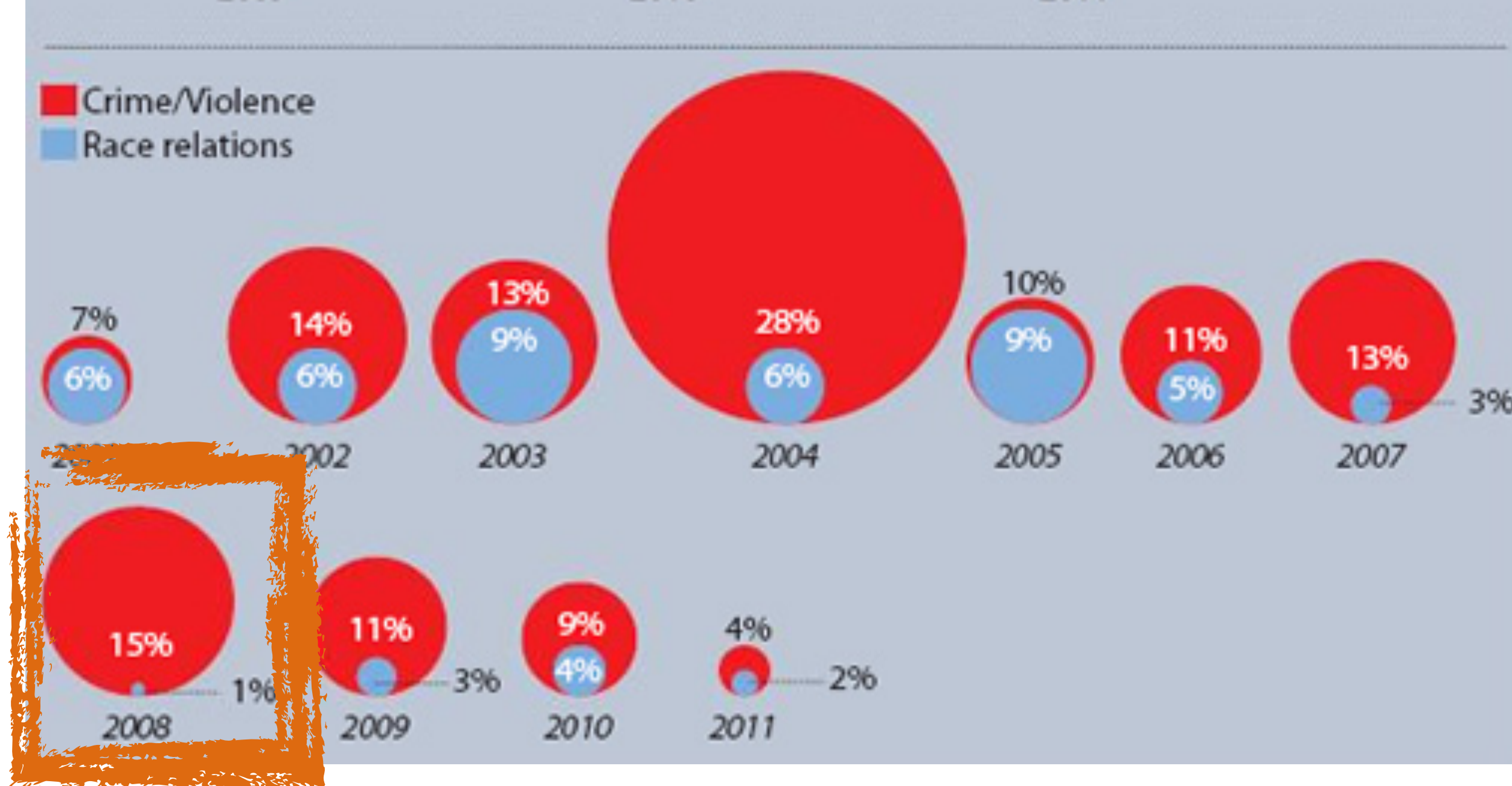
3. Is Effectiveness Principle Followed?

Use the Best Visual Channel Available
for the Most Important Aspect of your
Data

Are all visual channels appropriate?

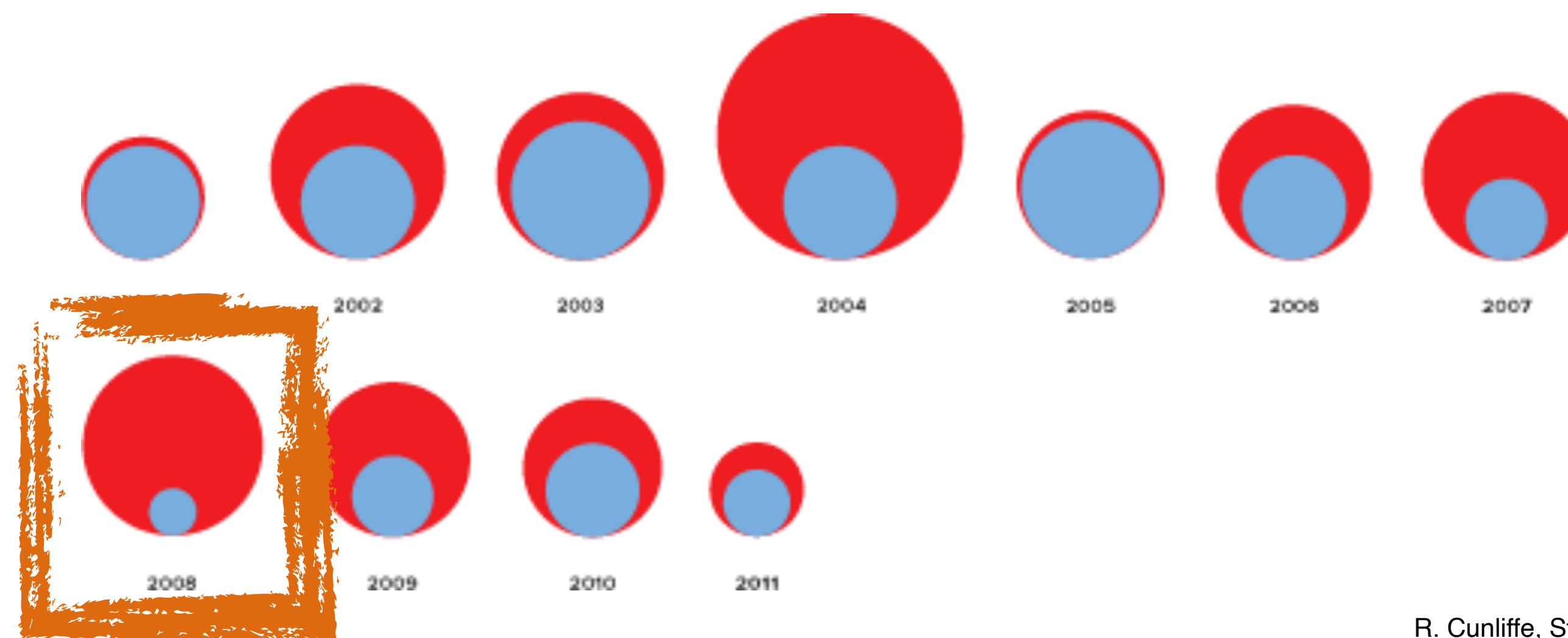
Steven's Psychophysical Power Law: $S = I^N$

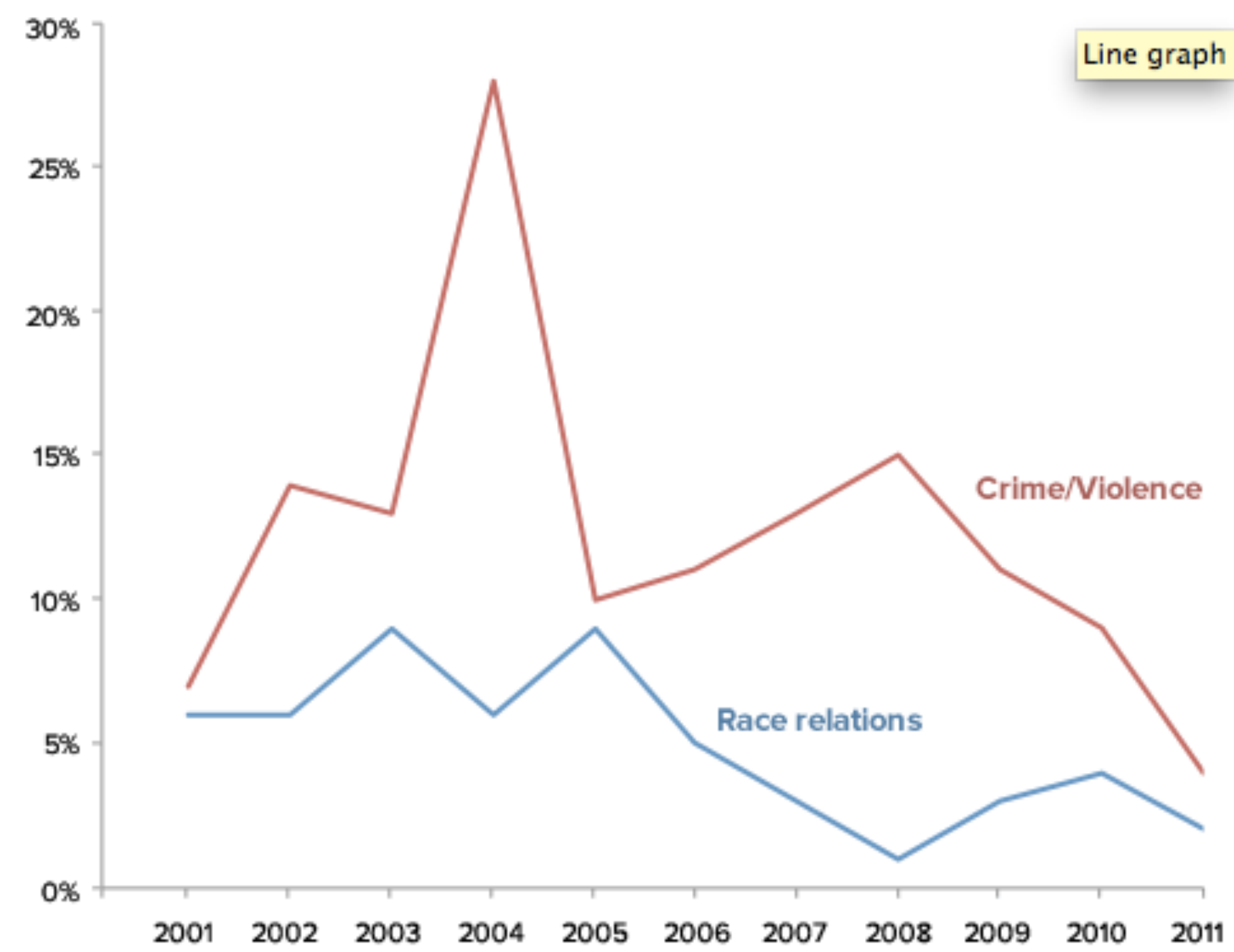




Quantity encoded by diameter, not area!

Fixing that:



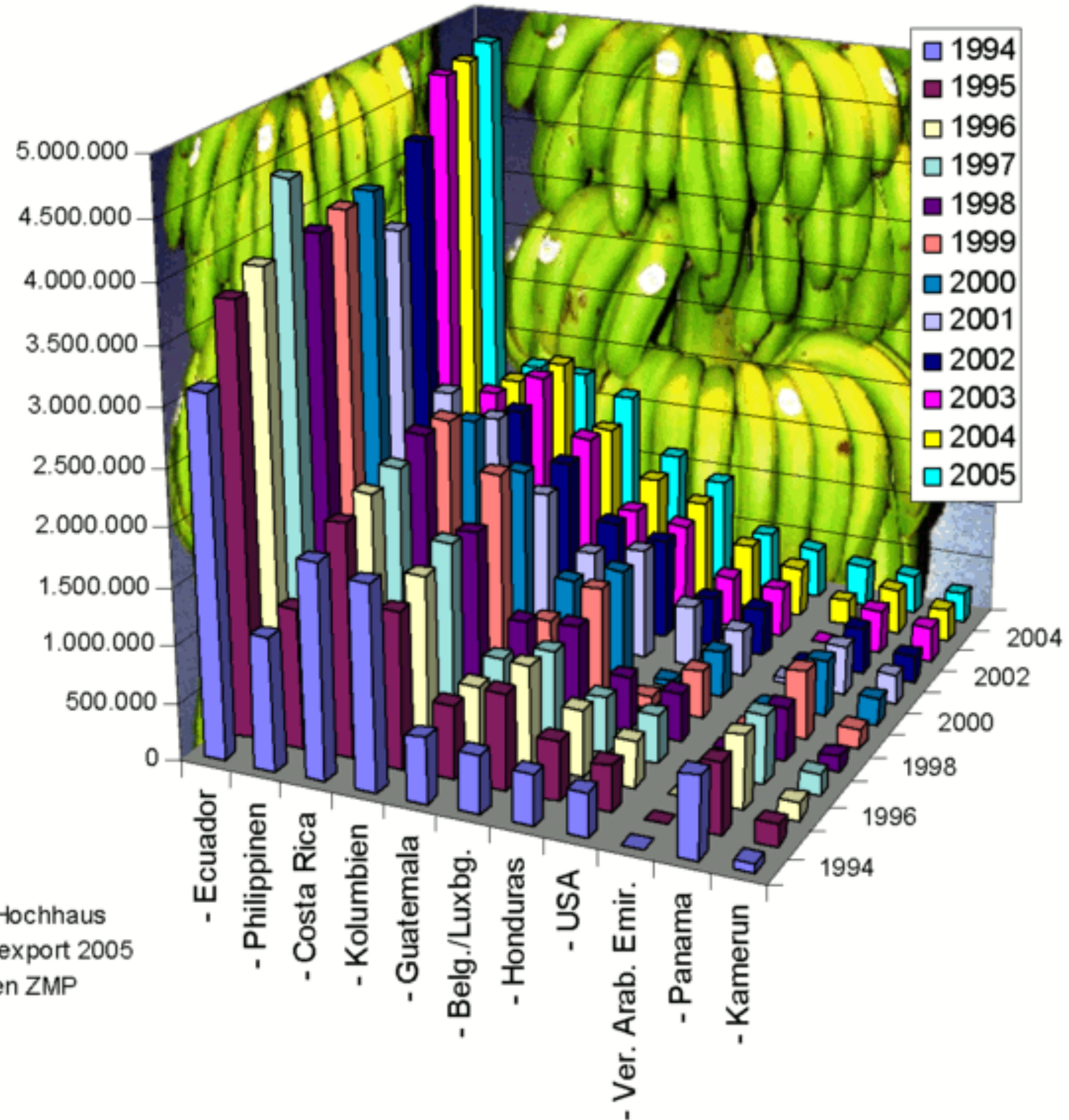


4. Is the Expressiveness Principle Followed?

The visualization should show all of the data,
and only the data

If there are violations, are they justified (useful chart junk)?

Export von Bananen in Tonnen von 1994-2005



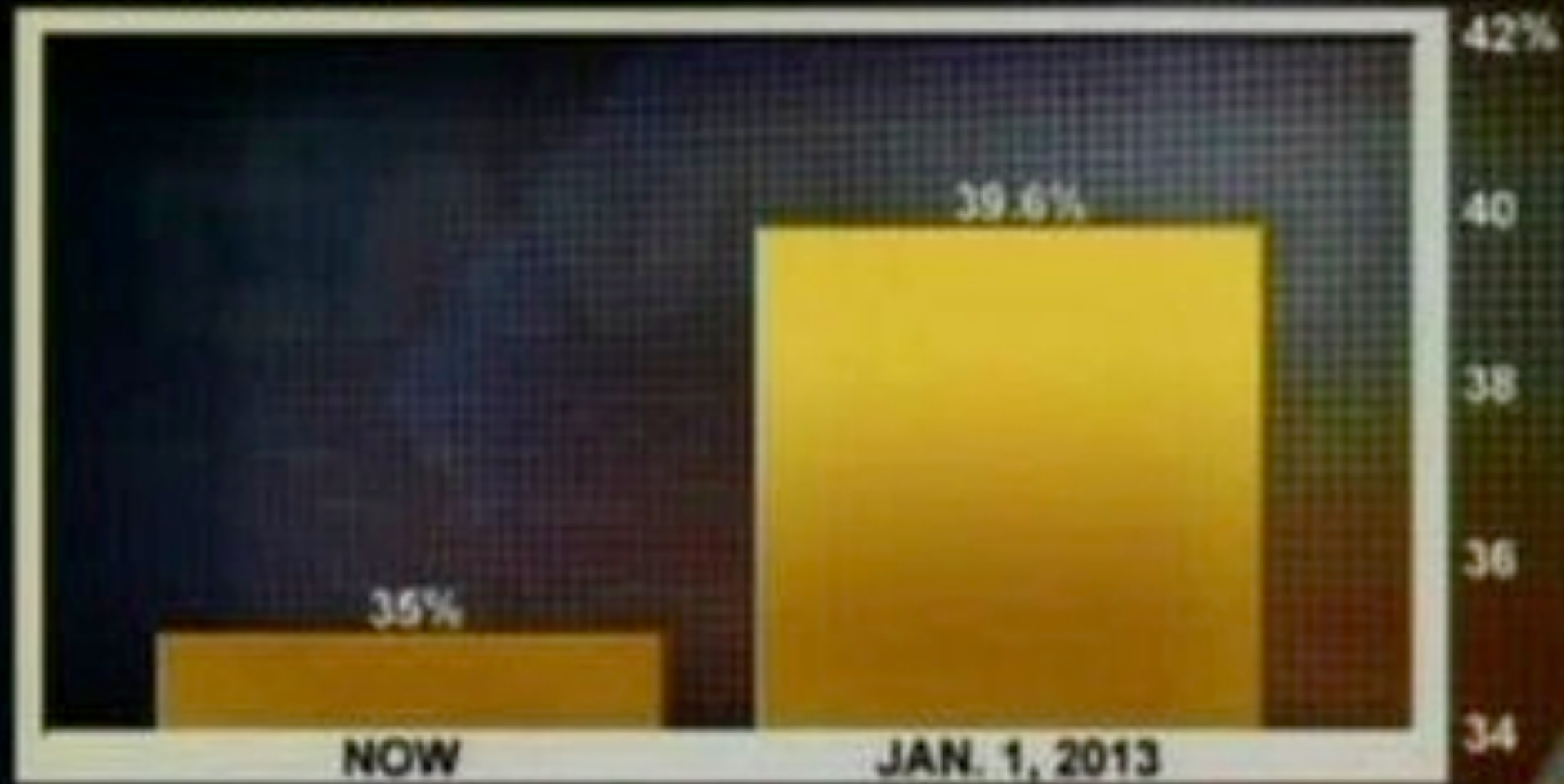
Dr. Hochhaus
Banexport 2005
Daten ZMP

5. Scales

Are the scales appropriate

IF BUSH TAX CUTS EXPIRE

TOP TAX RATE



8:01 p ET

FOX
BUSINESS

TOP STORIES

TECHNOLOGY

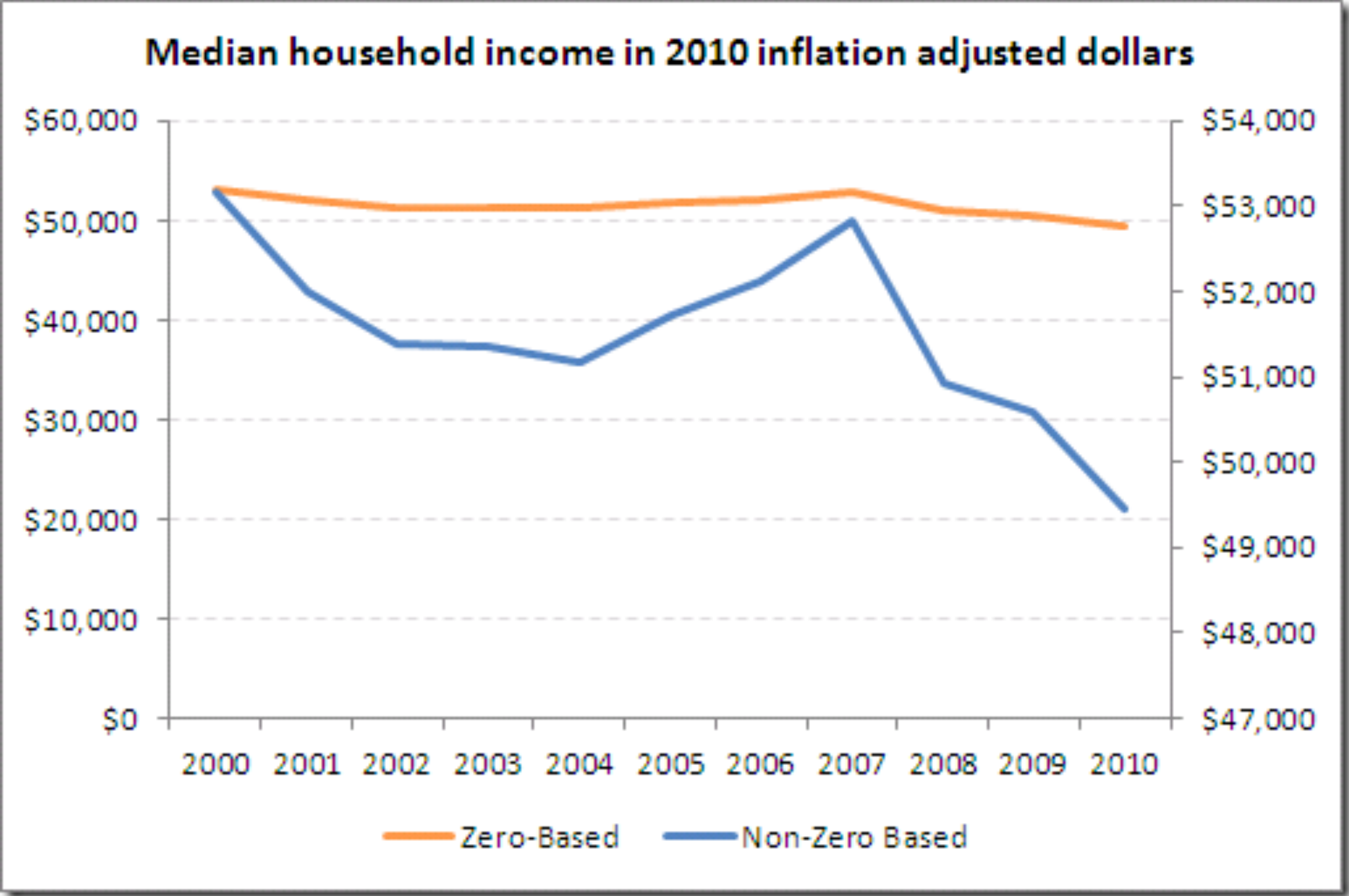
CONSUMER

WITH THE JUSTICE DEPARTMENT AND ACQUIRES FULL T

DOW 13008.68 ▼ 64.33

S&P 1379.32 ▼ 5.98

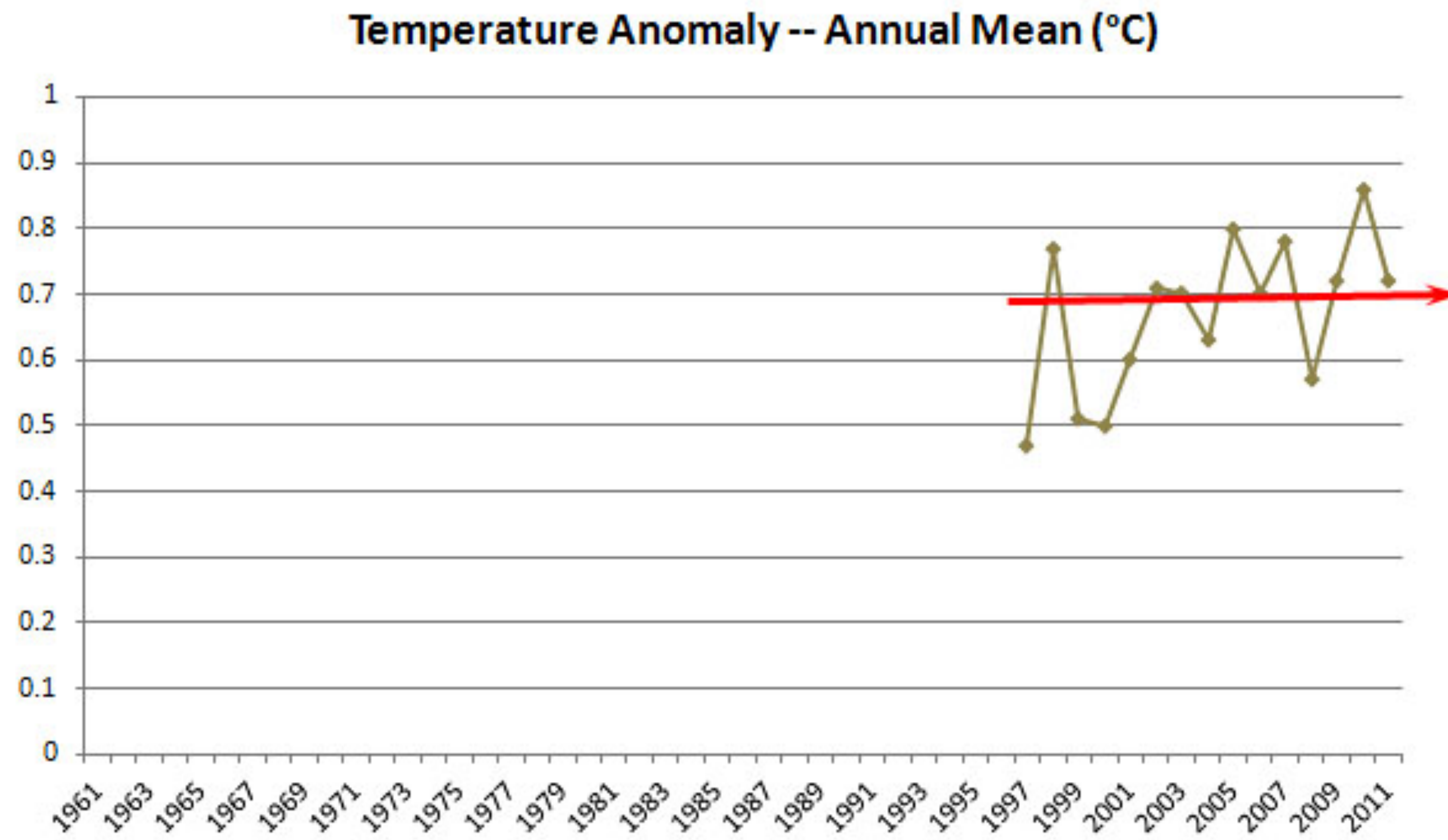
NASDAQ 2939.52 ▼ 6.32



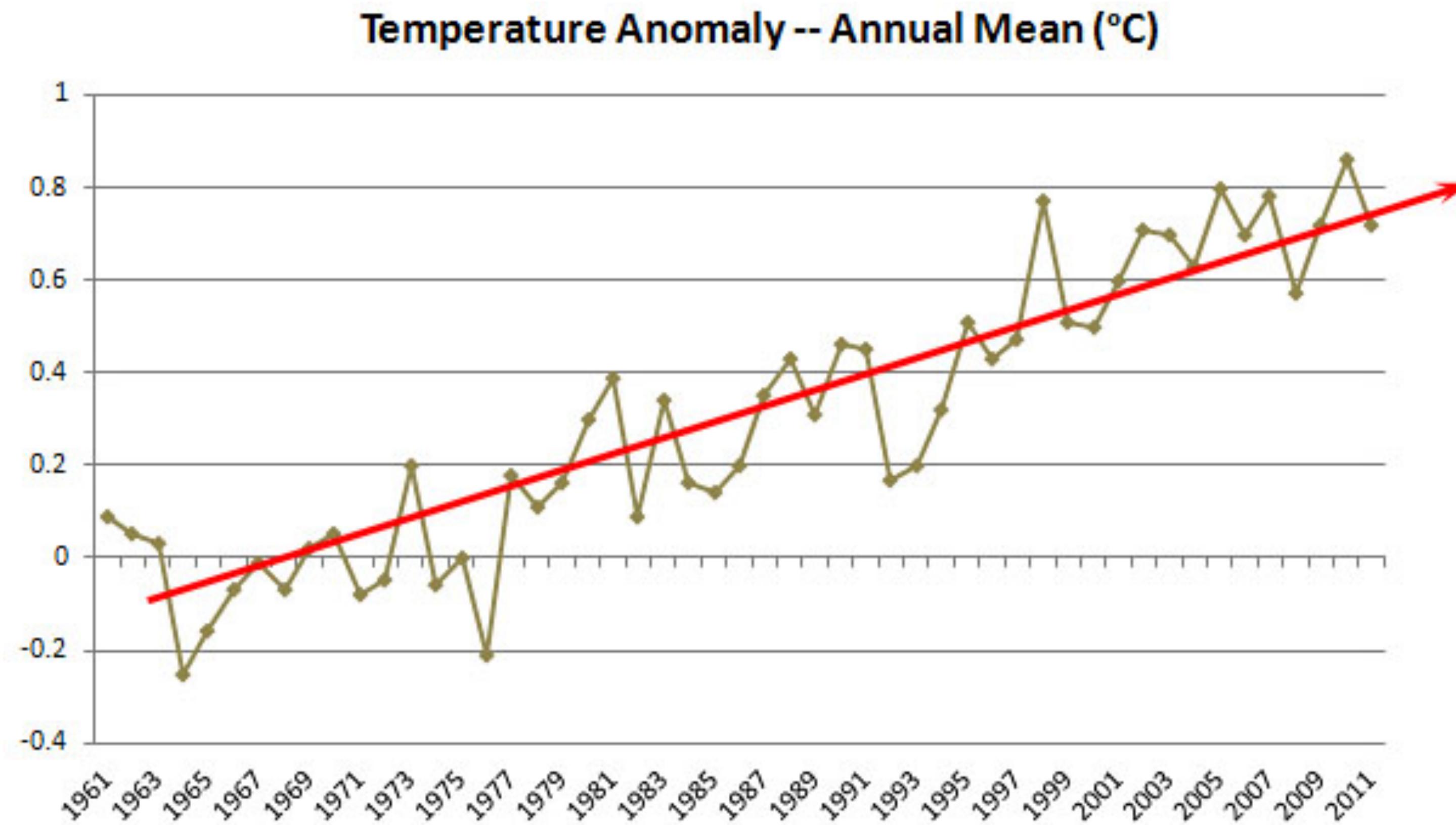
6. Context

Is the data shown in the appropriate context

Global Warming?



Global Warming - Frame the Data



7. Would derived data be better?

E.g., show change instead of absolute values

Show distribution instead of data points

8. Other Guidelines

No Unjustified 3D

Time progresses linearly

Perception: color, colorblindness, shadows, etc.

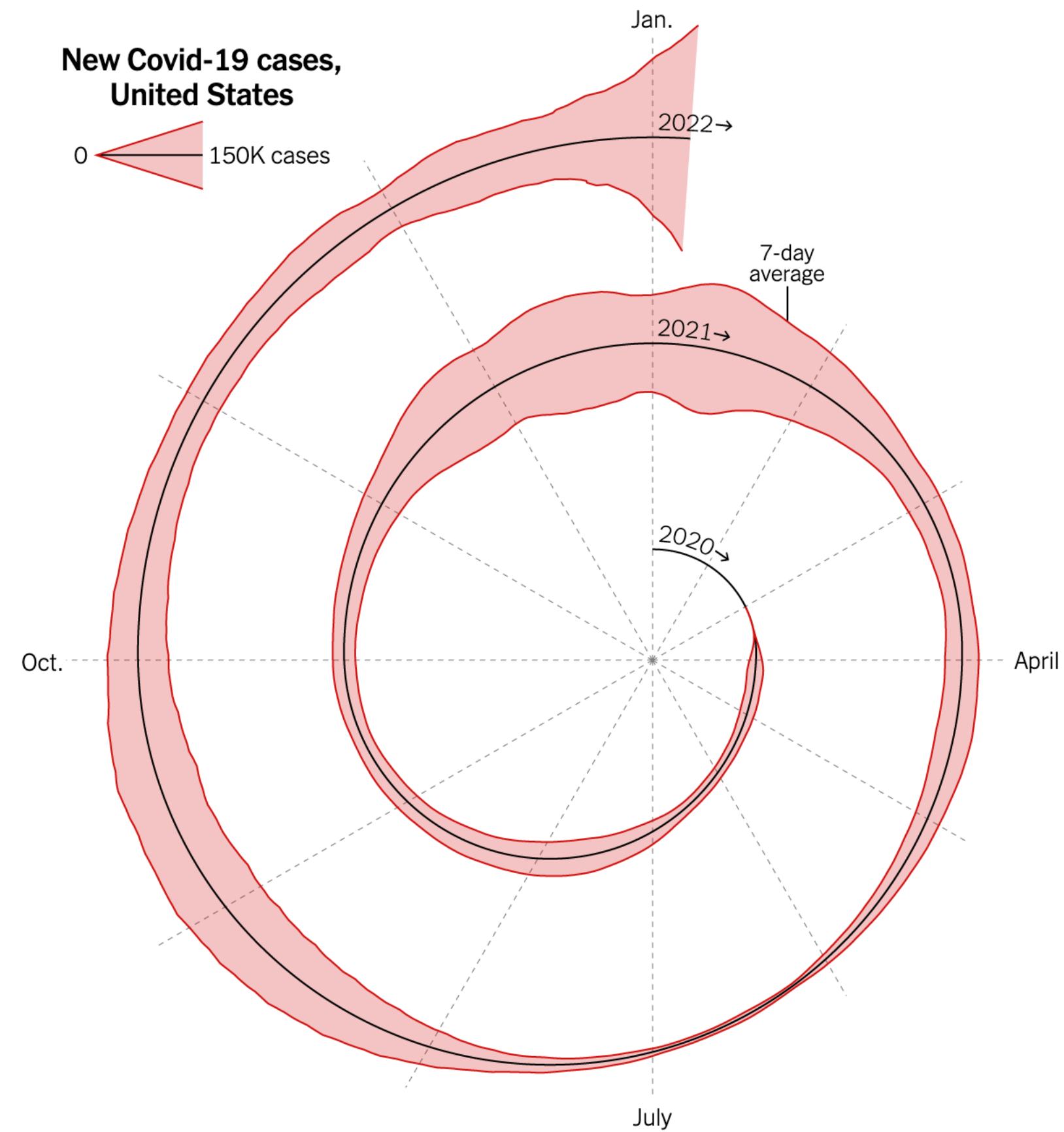
Use of gestalt principles

Use of popout

Use of interaction / animation

Appropriate legends, labels

Design Critique: COVID Spiral



Questions

1. What is the data shown in this visualization?
2. What might be the intention of the author?
3. What are the marks, what are the channels?
4. Is the Effectiveness Principle Followed? (best visual channel used?)
5. Is the Expressiveness Principle Followed? (just data, or also useful embellishments?)
6. Are the scales / legends appropriate?
7. Is the context appropriate?
8. Is the spiral layout appropriate?
9. What about color?
10. Why do you like / dislike this visualization?
11. Can you suggest any improvements? How would you redesign it?