DATA STORIES: THE STORY MACHINE

Same numbers. Different stories. Better questions.

An educational companion to datastories.sahilwho.online
By Sahil Tayal · October 2026

A chart is an argument you can see. It chooses a measurement, comparison, scale, time window and visual form. Those choices can help a reader notice something important—or disguise the limits of what is known.

What this guide will help you do: interrogate a chart without becoming cynical, distinguish accurate data from misleading presentation, build three interpretations from one small table, and communicate uncertainty responsibly.

Evidence label: The library records in this guide and on the website are completely fictional examples invented for instruction. They are not observations about a real community, venue or population. The reading list contains externally published material.

01 / The six questions before the story

What is being counted?

A visit, a person, a session, a click and a registration are not interchangeable.

Compared with what?

Ask for an appropriate denominator: per person, per hour, per day, per opportunity.

Which dates are included?

A start date can create or conceal a trend; inspect a larger window when possible.

What does the axis do?

Bars communicate magnitude using length; a nonzero baseline exaggerates differences.

What is missing?

Consider categories, people, uncertainty, counterexamples and measurement errors.

What would establish cause?

An association or trend alone does not prove the mechanism that produced it.

02 / One table, three interpretations

This is a miniature excerpt of an invented example dataset. For all 12 months, open the site and choose “Show exact values” or download its CSV. Do not use this table as evidence of real library activity.

Month	Visits	Open hours	Visits / hour	Event attendees
January	860	104	8.27	68
April	1,110	144	7.71	91
August	1,320	174	7.59	118
December	1,530	188	8.14	143

Interpretation A — optimistic but incomplete

“Library visits grew from 860 in January to 1,530 in December—a 77.9% increase.” Mathematically true for the invented endpoints, but it says nothing about visits per hour, whether the periods are seasonally comparable, or whether the counts are unique individuals.

Interpretation B — correction to the story

“The library opened for 104 hours in January but 188 in December. Visits per opening hour shifted from approximately 8.27 to 8.14.” Also true for these invented endpoints; the normalization changes what we notice.

Interpretation C — calibrated and fair

“The fictional library records more monthly visits toward year-end, while a changing schedule complicates interpretation. Visits per open hour are slightly lower at the endpoints; more evidence would be needed to explain why.”

03 / Why a cropped bar chart is deceptive

In a bar chart, the height of each bar represents an amount measured from its baseline. If the baseline is cut from 0 to 800, a bar at 860 appears small and one at 1,530 appears dramatically taller—even though both remain positive totals. This changes the visual impression without changing the numbers.

Better alternative: use a zero baseline for bars, or switch to a clearly labelled line/dot chart when the objective is to show variation within a narrow range. A line chart is still required to label its axis and disclose any crop.

04 / A five-minute chart audit

1. Read the title as a claim

What does it imply, and is the headline supported by the displayed quantity?

2. Name the unit

Is this a count, percentage, rate, average, total or model estimate?

3. Inspect the baseline and interval

Check both axes, missing tick marks and date boundaries.

4. Find the denominator

Who or what is eligible to be counted, and has that changed?

5. Write the strongest alternative explanation

What else besides the headline explanation could produce the pattern?

6. Find the provenance

Where did numbers come from? What were the definitions, collection methods and limitations?

05 / Two headlines, one dataset

Choose any two months from the fictional dataset. Write three sentences below: a dramatic positive headline, a dramatic negative headline, and a cautious statement that includes relevant context. You may change framing but may not alter the underlying data.

Positive headline:

Negative headline:

Balanced and transparent headline:

06 / Discussion exercise

Pair up. Each person chooses one of the three headlines. Trade headlines and identify: (1) the exact numerical claim; (2) what the wording insinuates beyond the data; (3) the fairest revision. The objective is epistemic humility, not winning a debate.

KEEP / EXPLORE / VERIFY

07 / A guide to responsible data stories

Evidence

The measurements, documented definitions, methods, source records and known errors.

Interpretation

The meaning you think the evidence supports. Alternate explanations belong here.

Hypothesis

A possible cause or mechanism worth testing, not a confirmed explanation.

Illustration

Fictional or synthetic data used to demonstrate an idea. Label it on the visual itself.

Speculation

An idea beyond what existing observations support; never disguise this as a result.

08 / Research reading

The following external sources were checked for existence during production. They inform the general principles and do not validate the synthetic library numbers.

UK Office for National Statistics. “Axes and gridlines.” Recommends zero baselines for bar and area charts, with nuance for line and scatter displays.
service-manual.ons.gov.uk/data-visualisation/guidance/axes-and-gridlines

Datawrapper Academy. “Why our column and bar charts start at zero (or below).” Explains why cropping bars can mislead, with suggested alternatives.
datawrapper.de/academy/why-our-column-and-bar-charts-start-at-zero

William S. Cleveland & Robert McGill (1984). “Graphical Perception: Theory, Experimentation, and Application to the Development of Graphical Methods.” Journal of the American Statistical Association, 79(387), 531–554.
doi.org/10.1080/01621459.1984.10478080

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