BITM1213 / BAXU1233 2026/2027

NOTE 06

Interactive Visualization and Case Studies

Useful interaction and evidence-based critique

W14 + W15 critique 28 December 2026-8 January 2027

Learning outcomes

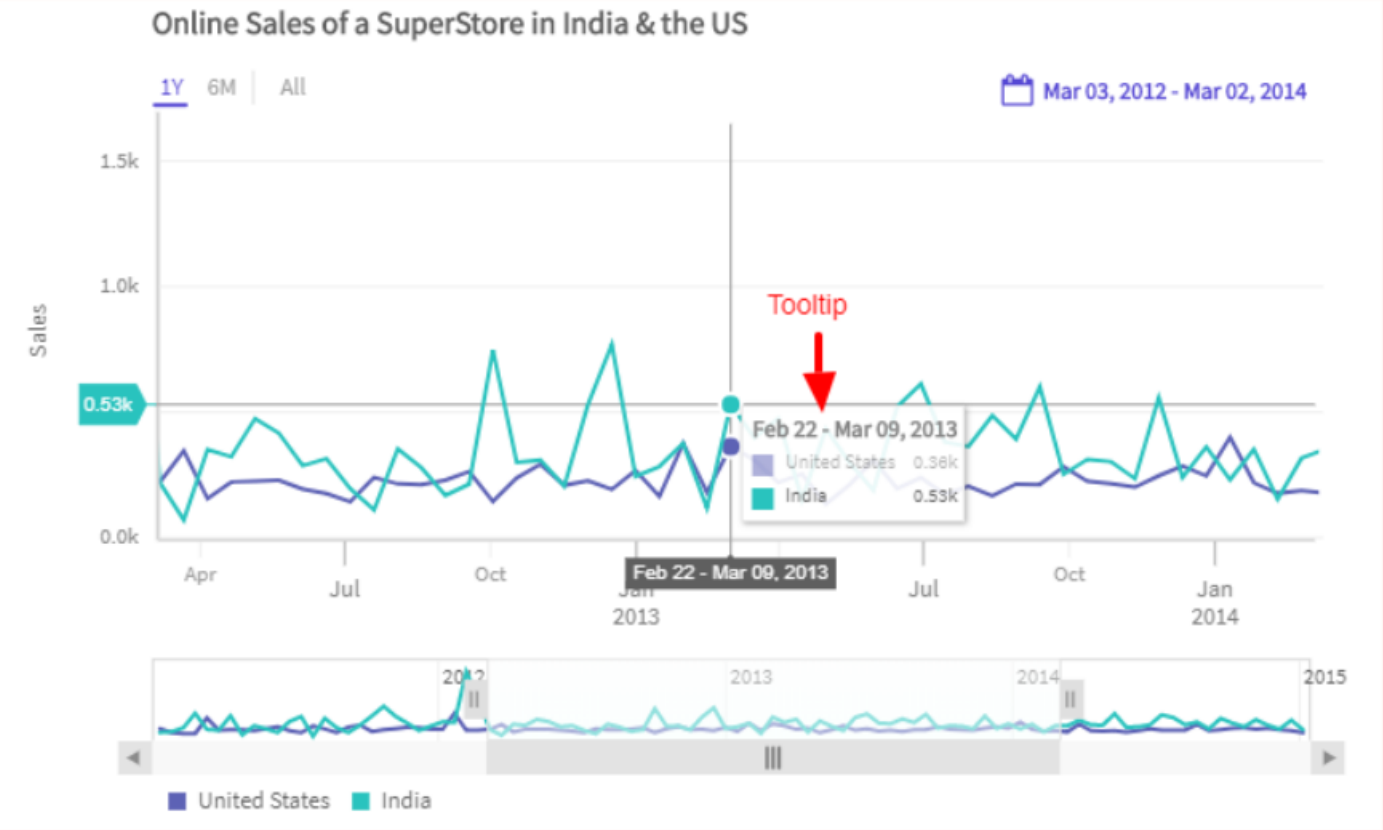
Distinguish static output from an interactive view.
Match an interaction to a user question.
Evaluate a chart using evidence from its data and design.
Propose a concrete, testable improvement.

Static and interactive views

Aspect	Static	Interactive
Reader action	Read selected view	Change view or reveal detail
Distribution	Print / PDF / image	Dashboard / app / web
Testing	Values and legibility	Values, controls and states
Fallback	Already fixed	Provide a static summary

Interactive: input changes the view or reveals detail. It supports exploration when the user needs several comparisons. It also adds controls and testing work.

Interaction with a purpose



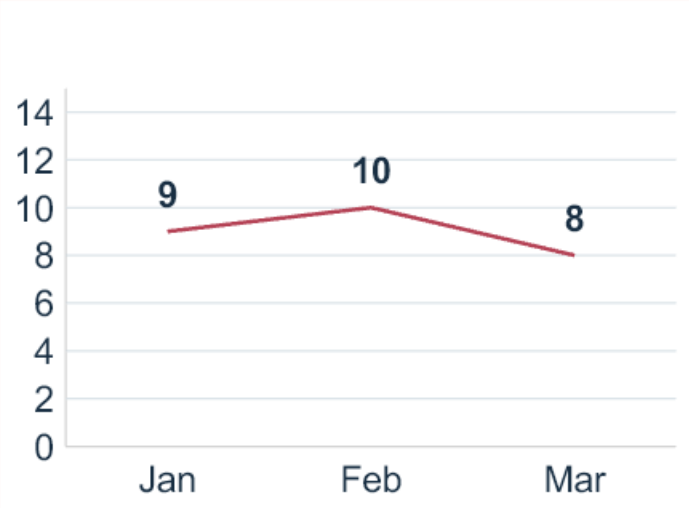
Details on demand in a chart interface

A tooltip reveals detail while the main trend stays visible.

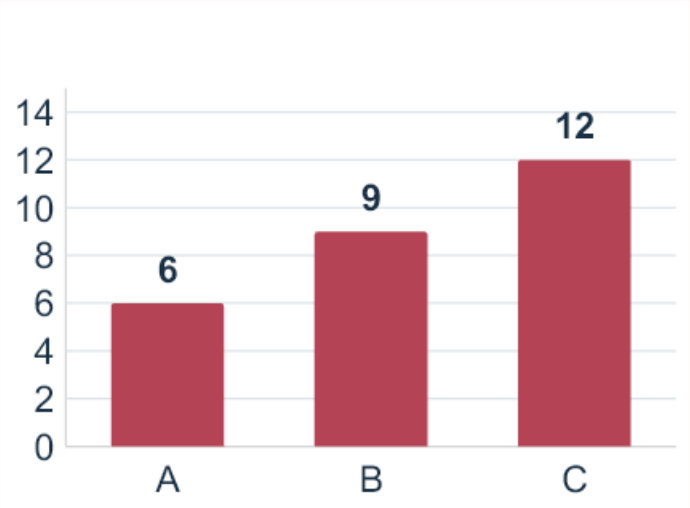
Discuss: which visible design choices help the reader?

Common interactions

Stall: ALL **Period: Jan-Mar**



Monthly total



By stall

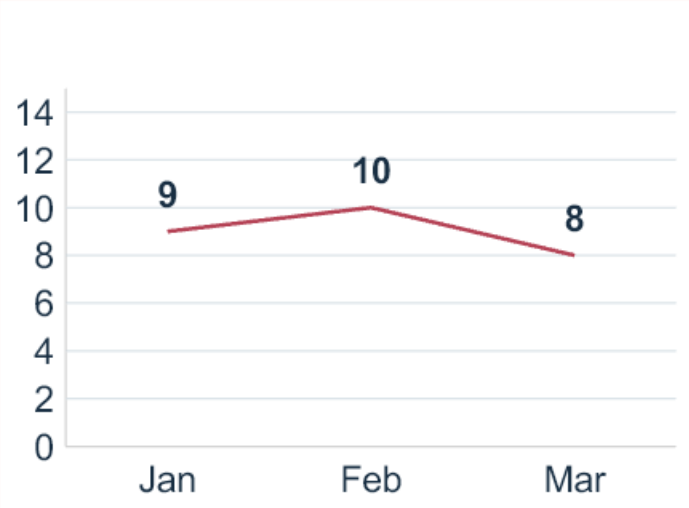
Selection highlights an item. A filter changes the subset. A tooltip reveals detail. Zoom changes the visible range.

Pan moves the view. Linked views coordinate a selection across charts. Label the action and show whether the dataset has changed.

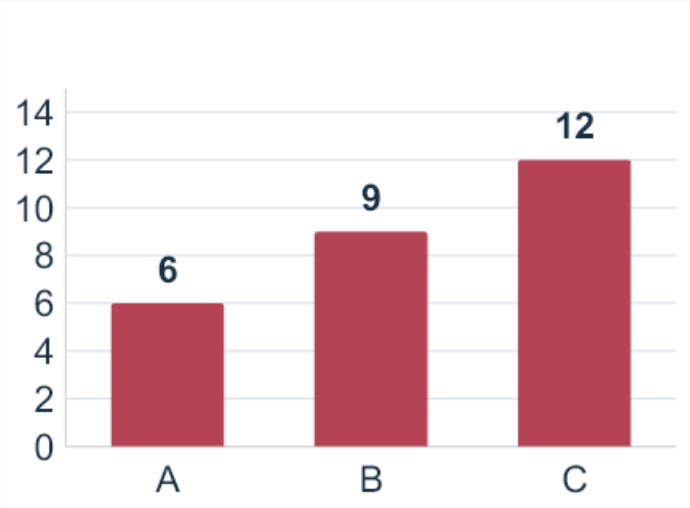
Static design example. Synthetic data. Controls are illustrative.

A dashboard specification

Stall: ALL Period: Jan-Mar



Monthly total



By stall

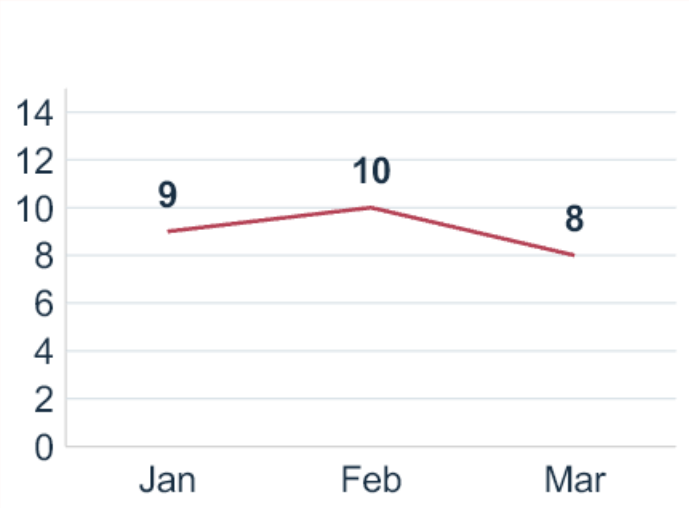
Static design example. Synthetic data. Controls are illustrative.

User: campus stall coordinator.
Decision: choose which stall needs a follow-up.
Views: monthly trend and stall comparison.

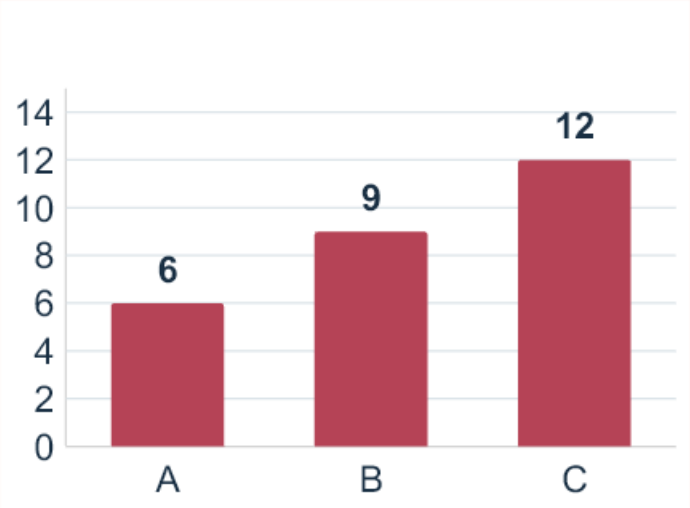
Controls: stall and month range.
State: selected period and included stalls.
Recovery: visible reset control.
This is a design specification, not a live dashboard.

Visible state and fair comparisons

Stall: ALL **Period: Jan-Mar**



Monthly total



By stall

Static design example. Synthetic data. Controls are illustrative.

A filter should show the active selection. Include the date range and count of included records when relevant.

When a filter changes the denominator, a percentage can change meaning. Show the updated scope. Keep scales stable when the user needs direct comparison.

Accessibility and feedback



A dashboard interface to inspect critically

Ask what a new user can read, control and recover from.

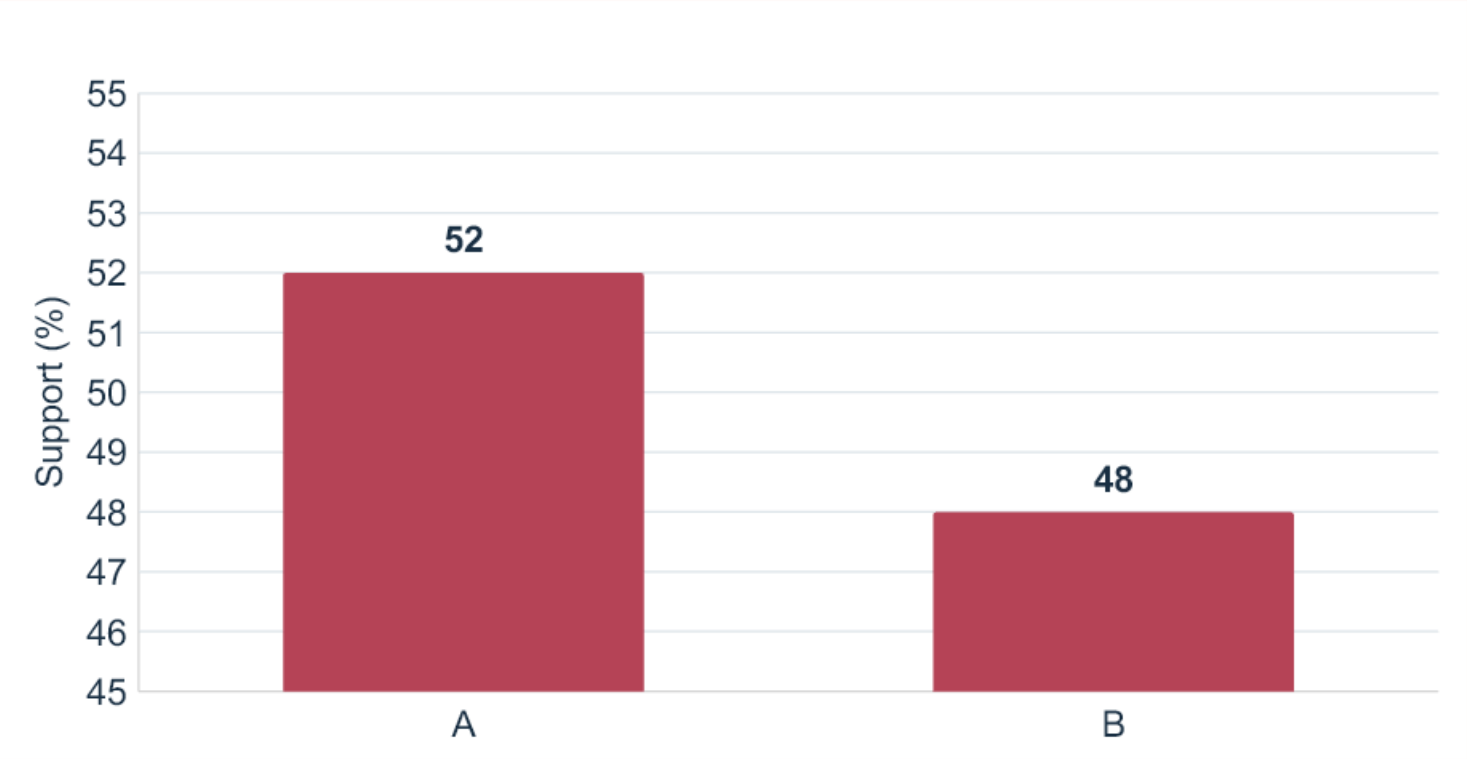
Discuss: which visible design choices help the reader?

Case study method

1. Identify the question and intended audience.
2. Inspect the source, variables and units.
3. Evaluate the chart choice and scale.
4. Check labels, emphasis and interaction.
5. Propose a specific improvement.

Separate verified facts from assumptions about the designer.

Case A: an exaggerated comparison

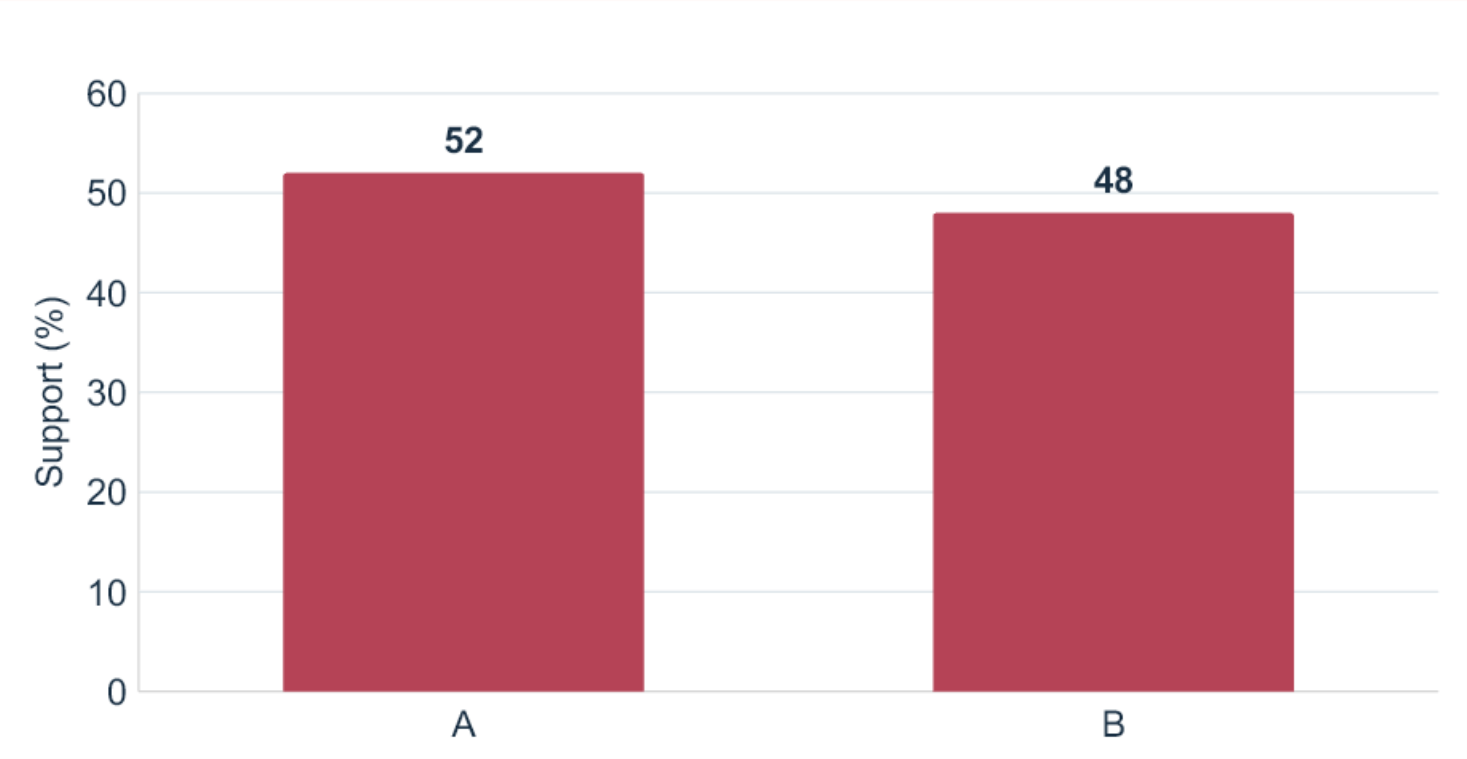


Synthetic classroom data

Synthetic poll: A = 52%, B = 48%. The truncated bars start at 45%. The actual difference is 4 percentage points.

Visible lengths are 7 and 3, a ratio of about 2.33. The data labels can be correct while the lengths exaggerate the comparison. Classify the perceptual problem as bad.

Case A: a transparent redesign



A shared zero baseline preserves the size comparison. Direct labels give the exact percentages.

52 is about 1.083 times 48. This is an 8.3% relative difference, or 4 percentage points. These descriptions use different denominators.

Synthetic classroom data

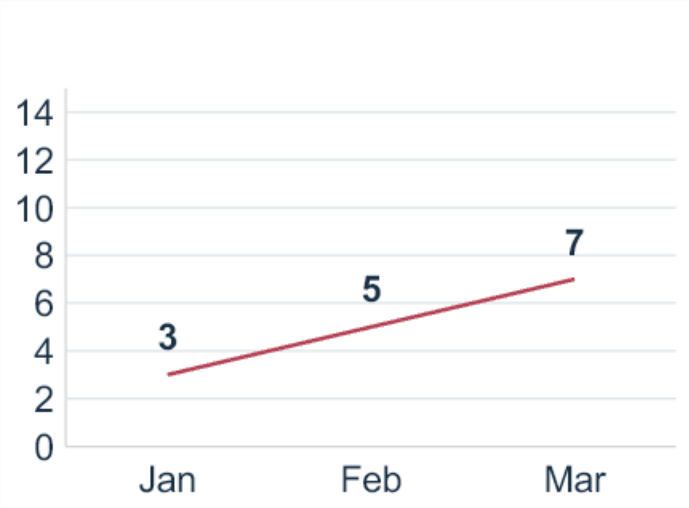
Case B: counts and rates

Zone	Requests	Households	Per 100 households
A	40	50	80
B	60	100	60

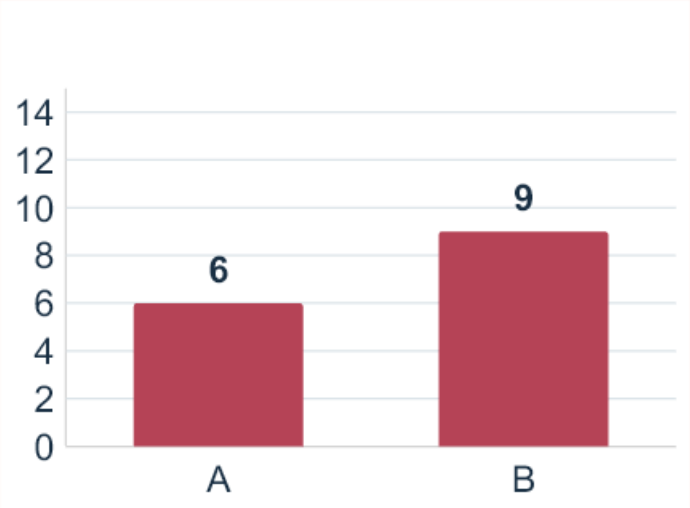
Per 100 households, A has 80 requests and B has 60. A rate chart ranks A higher. Choose based on the question and report the denominator.

Case C: a hidden filter

Included stalls: A and B



Monthly total



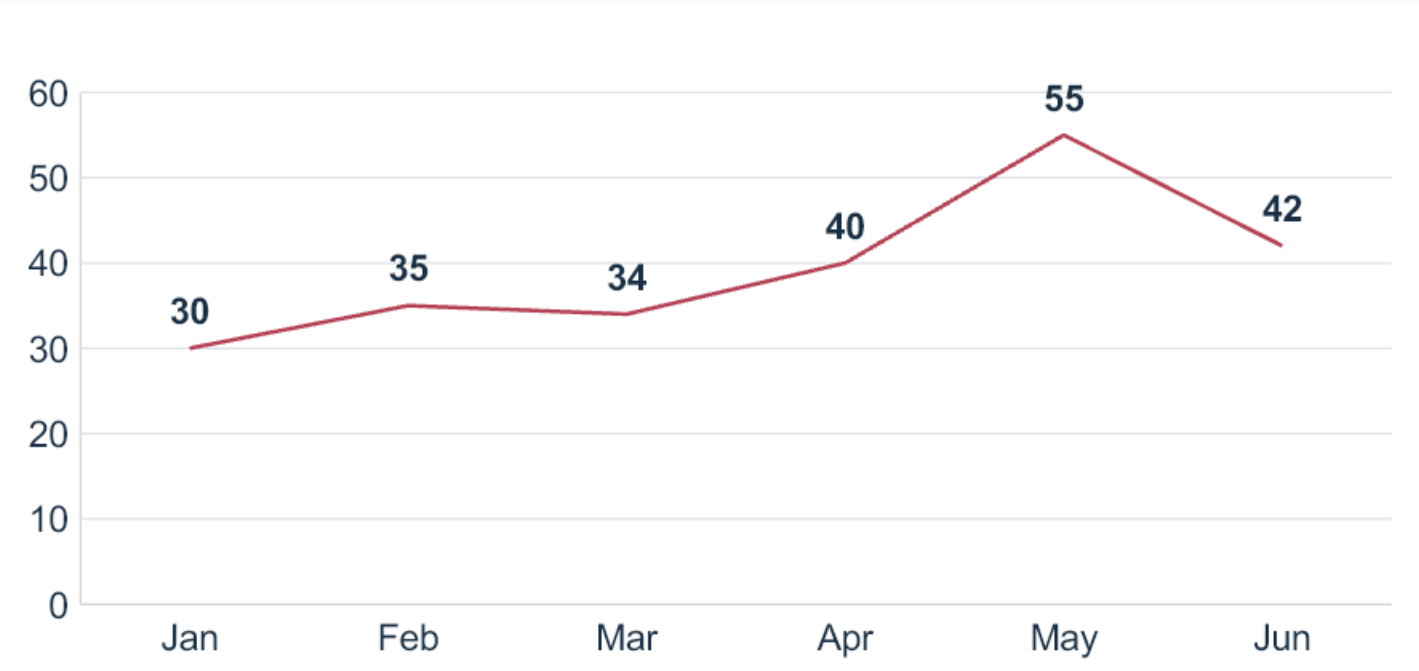
By stall

Static design example. Synthetic data. Controls are illustrative.

A dashboard headline says "All stalls", but the filter includes only A and B. A reader may assume that C is part of the total.

Improvement: show the included stalls in the title or state label. Test an empty selection and reset. Check whether exported snapshots preserve the filter context.

Case D: an unsupported explanation



The sales series rises in May, the same month a poster campaign begins. The chart alone shows timing and change.

It cannot isolate the campaign effect from holidays, weather or other factors. A defensible caption reports the increase and treats the explanation as a hypothesis.

May campaign begins. Timing alone does not prove cause.

A critique with evidence

Weak: "This chart is confusing."
Specific: "The bar axis begins at 45%, so the visible lengths exaggerate the difference between 52% and 48%."

Actionable: "Use a shared zero baseline, label the percentages and state the 4-point gap."
Then check that the redesign preserves the source values.

Activity: a complete critique

PRACTICE

Choose one public chart and record its URL, publisher and access date. Identify the question, unit, period and denominator.

Work for 20 minutes. Write a critique with one verifiable strength, one evidenced weakness and a redesign sketch. If data is unavailable, state what cannot be verified.

Explain the evidence behind your design decision

Self-check and answers

1. Is the 52%-48% gap 4% or 4 percentage points?
It is 4 percentage points. Relative to 48%, the difference is about 8.3%.

2. Does interaction guarantee understanding?
No. Controls need a purpose and usable design.

3. Does a correct label make a distorted scale acceptable?
No. The visual encoding still matters.

Six-note review

Question and audience.
Readable typography and layout.
Hierarchy and colour.
Chart choice and scale.

Verified tools and workflow.
Useful interaction and critique.
Use these checks for a chart, report or dashboard. Follow the current ULearn brief for assessment requirements.

References and learning context

Claus O. Wilke (2019), Fundamentals of Data Visualization. https://clauswilke.com/dataviz/

Course sources: 20252026 Edition and TBA Edition, rewritten for this sequence.
Teaching plan: GVCM TP 20262027-1 v1.0.
Numerical worked examples are synthetic.
Assessment instructions and dates: refer to current ULearn announcements.