PRACTICAL AND FINANCIAL LITERACY

# Interpreting Graphs and Statistics in the News

### Difficulty level: Intermediate

### Practical and Financial Literacy

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## *Overview of the concept*

This is how you read past a flashy headline and check the graph behind it, so a cropped chart or a cherry picked number does not fool you. A headline can claim almost anything, but the graph it is based on often tells a different story once you look at the scale and the source. Knowing how to check a chart helps you judge news stories, ads, and social media posts, and it keeps you from sharing a claim that falls apart on a second look.



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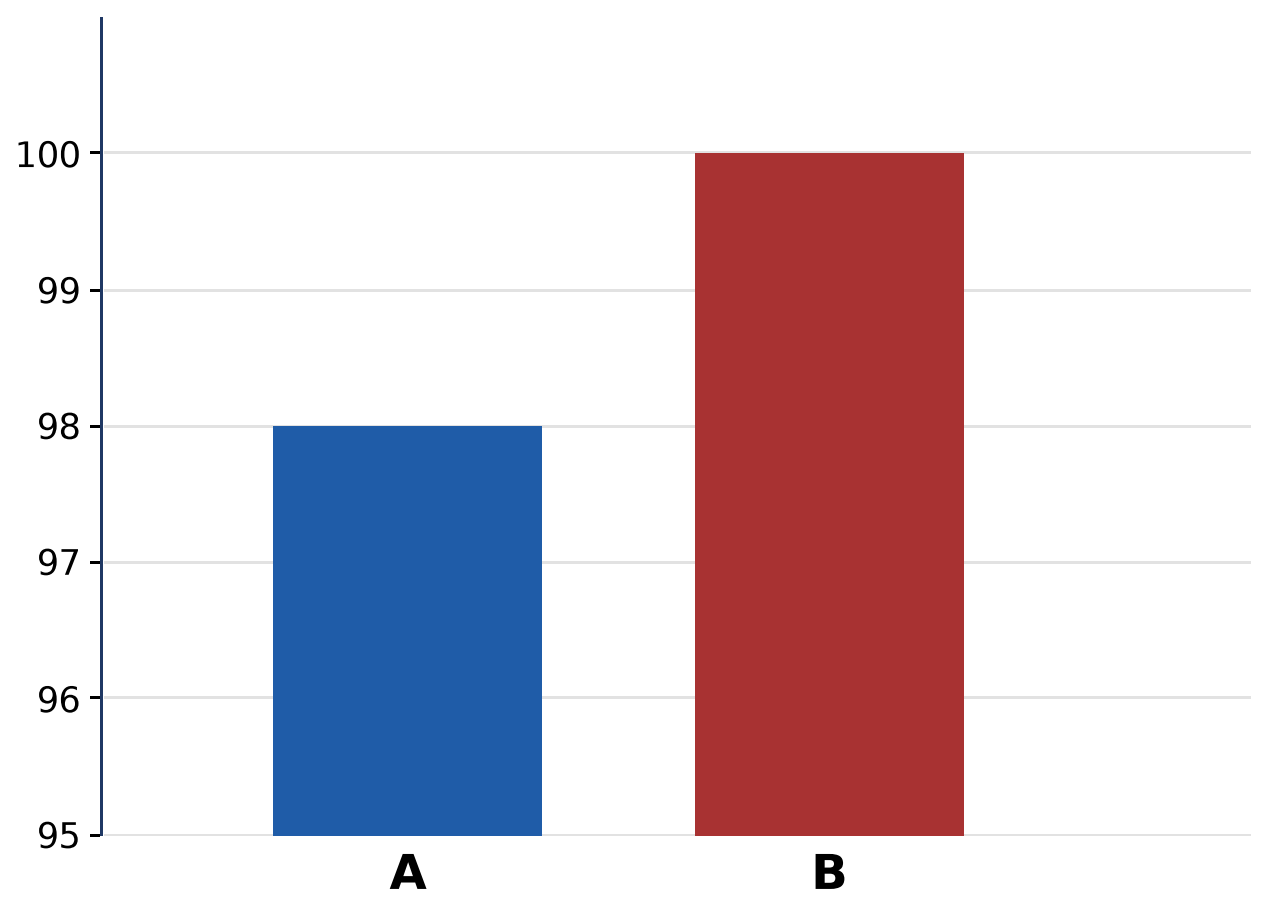
## Worked examples

EXAMPLE 1

**Q** A news chart shows two bars, A at 98 and B at 100, but the vertical axis starts at 95. The bars look very different. What is the real difference?




### SOLUTION

This is a misleading-graph question, and the one rule to remember is to ignore how tall the bars look and read the numbers instead.

The real difference is 100 - 98 = 2.

2 out of 98 is about 2%, so B is only about 2% bigger than A. The chart hides the bottom 95, which makes a tiny difference look huge.

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EXAMPLE 2

## Q A headline says 'Cases doubled!' The number went from 2 to 4. Should you be worried?

### SOLUTION

This is a small-base question. A percent sounds big until you look at the number it came from.

2 cases becoming 4 cases is a rise of 2 cases. That is a doubling, but the base is tiny.

Doubled from 2 to 4 still means very few cases. Always ask how big the starting number was.

## Practice questions

**1** Bars show 120 and 126 but the axis starts at 110. The taller bar looks twice as tall. What is the real difference?

- **A** 2, about 2% more
- **B** 6, about 5% more
- **C** 16, about 13% more
- **D** 26, about 22% more

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## A poll asks: “Do you agree our excellent mayor is doing a great job?” What is wrong with this poll?

- **A** The question is leading: it pushes people to agree
- **B** The sample is too small
- **C** The chart has no scale
- **D** The bars are drawn in 3D

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## Unemployment fell from 2010 to 2014 only, and the headline says unemployment is always falling. What is the trick?

A The bars are drawn in 3D, so the front looks bigger

B The sample is too small to trust

C Cherry-picking: only the falling years are shown; other years are left out

D The axis starts at zero, so the fall looks small

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## 4 Why does a cropped axis mislead?

- **A** Because bar heights no longer match the real values
- **B** Because the bars are the wrong colour
- **C** Because the chart has no title
- **D** Because the sample is too small

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## Headline: 'Cases doubled!' Cases went from 4 to 8. Why should you be careful?

A The headline is wrong: 4 to 8 is not a doubling

B Doubling from 4 to 8 means hundreds of cases

C The chart has no scale, so the change cannot be judged

D The base is tiny, so doubling still means few cases

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## A pie chart is drawn tilted in 3D, and the front slice looks bigger than the back slice although both are 25%. Why?

A. The front slice really is bigger than the back slice

B. The 3D tilt makes the front look larger; the slices are actually equal

C. The pie chart has no labels, so it cannot be read

D. The slices add up to more than 100%

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**7** **A pictogram uses a big dollar-bill picture for $100 and a small one for $50, but the big picture is twice as tall AND twice as wide. What is wrong?**

- **A** Its area is twice as big, matching the values
- **B** The small picture is drawn too big
- **C** Its area is four times as big, so the difference looks much larger than double
- **D** The pictogram has no scale, so it cannot be read

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## 8 A poll of 50 people claims a whole country agrees. What is the problem?

- **A** The sample is too small to represent a country
- **B** 50 people is plenty to represent a country
- **C** The poll asked the wrong question
- **D** The results were cherry-picked from falling years only

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## 9 What should you check first on any news chart?

- **A** The colours and the title only
- **B** The headline, which is always right
- **C** The number of bars, which must be even
- **D** The axes, labels, and source

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## A chart has no numbers on its vertical axis at all. Can you tell how big the change is?

A Yes, the shape of the line tells you exactly how big the change is

B No, without a scale the size of the change cannot be judged

C Yes, if the bars look twice as tall the change is double

D Yes, you can judge it from the colours

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## ANSWER KEY

**1.** 6, about 5% more

**2.** The question is leading: it pushes people to agree

**3.** Cherry-picking: only the falling years are shown; other years are left out

**4.** Because bar heights no longer match the real values

**5.** The base is tiny, so doubling still means few cases

**6.** The 3D tilt makes the front look larger; the slices are actually equal

**7.** Its area is four times as big, so the difference looks much larger than double

**8.** The sample is too small to represent a country

**9.** The axes, labels, and source

**10.** No, without a scale the size of the change cannot be judged

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