



Scatter plots

Two measurements per person, one dot

- Today: what a cloud of dots can and cannot tell you.

One dot, two measurements

- Hours revised across. Test score up.
- Each student is one point.

Direction

- Both go up together: POSITIVE association.
- One up, other down: NEGATIVE association.
- No pattern: no association.

Shape is a **SEPARATE** question

- Roughly a straight line: LINEAR.
- A curve: NON-LINEAR.

**A pattern can be positive and non-linear at the same time.
Direction and shape are two answers.**

Outliers

- A point far from the pattern.
- Investigate it. Do not delete it.

An outlier is data. It is often the most interesting point on the plot.

Clustering

- Dots bunched in groups.
- Often two kinds of thing on one plot.

The big one: association is not cause

- Ice cream sales and drowning deaths rise together.
- Ice cream is not the cause. Hot weather drives both.

Always ask: what THIRD thing could explain both?

Your turn

- Describe the revision plot: direction, shape, outliers.
- Then: does revising CAUSE higher scores? What else could explain it?

Name a third variable, not a slogan.