Lesson 3 — Statistics for Researchers: First Steps

Averages that tell the truth

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Statistics is the grammar of research evidence. This lesson, drawn from Statistics for Researchers I in the Library, teaches the three averages — and when each one lies.

The mean adds all values and divides by the count. It uses every observation, and it is dragged by extremes. The median is the middle value when data are ranked; half lie above, half below, and extremes cannot drag it. The mode is the commonest value — the only average available for categories.

Worked example: farm sizes of 2, 3, 3, 4, 5, 6 and 40 hectares. The mean is 63 ÷ 7 = 9 hectares — larger than six of the seven farms. The median is 4 hectares, the true middle farm. Reporting only the mean would describe a village that does not exist.

The rule: for the typical case in skewed data — incomes, farm sizes, land — report the median; give mean and median together and let their gap speak. And never report

an average without its spread: two varieties with the same mean yield differ completely if one is steady and the other swings.

Percentages must travel with their counts: '60 per cent' of five farms is three farms. A chart's bars must start at zero. These small honesties are what separate research from advertising.

Practise

1. Compute the mean and median of: 5, 7, 7, 9, 30. Which describes the typical value?
2. Why must a percentage travel with its count?
3. Give one dataset where the mode is the right summary.

Next steps

Continue in the Library: download the book named in this lesson and read its first chapter. Then leave your name at the enrollment door on the Online School page — classes are taught online by Nji Griphan, and a class holds at most 30 learners.