



Insufficient and weighted evidence

1. Biased samples

The *Fallacy of the Biased Sample* occurs whenever someone draws an inference from evidence that is not representative of the population being researched. In other words, the group from which the evidence has been collected is not representative of the whole.

Examples

1. A recent study carried out by the Ministry of Transport has revealed that 72% of those living in Oldshire are in favour of building a new motorway connecting the towns of Newington and Medford.

Unfortunately the report doesn't say anything about those who were polled. If they were motorists who were traveling between the two towns and who regularly experience delays, then the results are unlikely to be representative of the overall population. They provide an unreliable basis for the conclusion that this represented the opinion of 72% of those living in Oldshire.

2. 'In a recent study it was found that 68% of residents in New Hampshire watched cooking programmes on TV. As a result, the local broadcaster has decided to invest \$22 million on a new series of programmes on cooking to satisfy the demand and increase its viewing figures.'

Unfortunately, we have no information about the group of residents that were polled. They may have been largely wives and mothers, who tend to take on most of the responsibility for cooking the family's meals. If this is the case, the figures are unrepresentative of the total viewing population and are, therefore, unreliable.

In cases like these we are examining the evidence to see whether the instances represent a fair sample. To make our decision we have to ask:

- Are they typical?
- Are there special conditions prevailing?
- Are there any exceptions?

Exercises

1. Read the following and explain why it might be unreliable.

In a recent survey of its members *The Association of House Repairers* found that 84% were opposed to the government's plan to increase taxes on building materials. Clearly, there is going to be strong opposition from the electorate to this increase in the next general election.

Please turn to the next page for Exercise 2



2. What kind of evidence would you need to be convinced that the following claims were true? How difficult would it be to gather and assess such evidence?

- 1 The increase in out-of-town shopping centres has seriously damaged the viability of shops in town centres.
- 2 The tendency for twin births runs in certain families.
- 3 Jane's supposed 'hay fever' is, in fact, just an allergy caused by eating tomatoes.
- 4 Smoking marijuana is no more harmful than drinking a pint of beer. Therefore, like drinking beer, it should be legal.
- 5 The four men who have most influenced the thinking of mankind over the last two centuries have been Darwin, Marx, Freud and Einstein.¹

2. Insufficient samples

In the Biased Sample those who are polled are drawn from a group that is not representative of the whole. In contrast, the *Fallacy of the Insufficient Sample* occurs when not enough people are polled to amount to a statistically significant result – they do not amount to an adequate sample to justify the conclusion reached.

Over the years I have moved over 30 times, each time buying and selling a property. In all that time I have never found a real estate agent who I felt I could trust. All real estate agents are out to line their own pockets; you cannot trust them.

Although moving 30 times amounts to considerable experience of real estate agents, it is too small a sample on which to base a generalization that extends to 'all' real estate agents: the thousands of agents that might operate in any one country.

Exercise

Read the following passage and decide whether this generalization is safe.

All season there has been growing unrest at Newtown Football Club with average attendances at home games falling from 15,000 to 10,000. At the last home game of the season around 2000 supporters lifted banners demanding that the manager be fired and then left the match before the final whistle. The majority of fans clearly want to see changes before the beginning of the next season.

¹ Some of these have been adapted from Richard D. Altick's book, *Preface to Critical Reading* (New York: Holt, Rinehart and Winston, 1969), pp. 318-20.