

# NCEA Level 2 Mathematics (Homework)

## 20. Sampling

### Reading

Please read the following article on political polls in New Zealand prior to the last General Election:

<https://www.stuff.co.nz/national/politics/96793252/qa-what-should-we-make-of-political-poll-results>

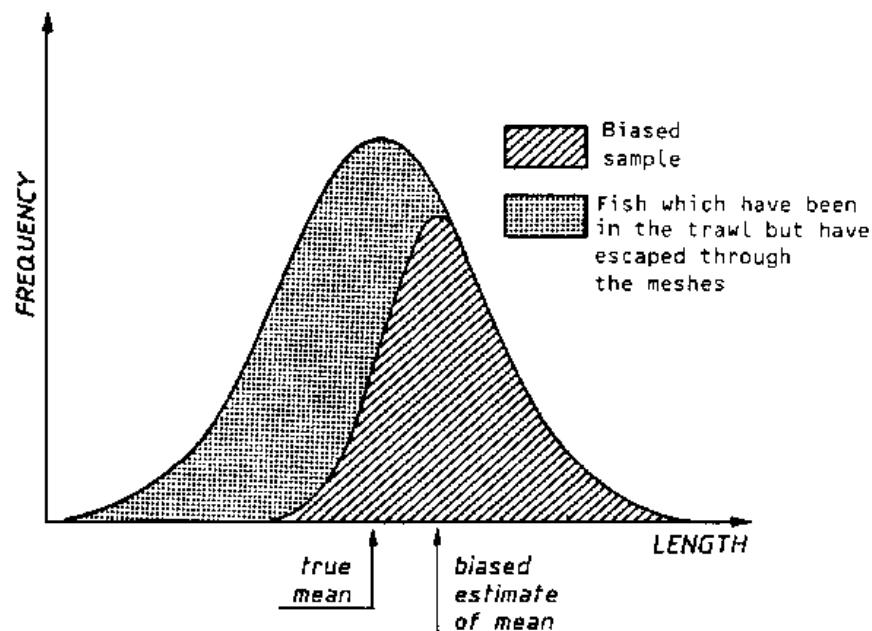
Think about how reasonable the sample methods used are. If you were given a couple of million dollars and asked to produce your own poll based on a sample of the population, how would you go about this?

Optional: Another interesting blog post on the problems with self-selected samples, and correcting for selection bias, can be found here:

<http://www.goodmath.org/blog/2016/09/29/polls-and-sampling-errors-in-the-presidential-debate-results/>

### Questions

1. Discuss how the data in the following graph might affect your interpretation of a survey, performed by a student in your biology class, which finds the average size of a particular species of fish in a given area.



2. Watch the following clip from the television series *Yes Prime Minister*: <https://www.youtube.com/watch?v=G0ZZJXw4MTA>. An upmarket toothpaste manufacturer has asked you to run a survey for a marketing campaign, comparing how many people use their toothpaste versus the product of a competitor who produces a cheaper toothpaste.
  - (a) Design a sampling method and survey questions that are likely to cast the products of the manufacturer in a good light.
  - (b) Design a sampling method and survey questions that are likely to cast the products of their competitor in a bad light.
  - (c) Design a sampling method and survey questions to fairly compare the products usage.