

Data and Chance notes

Chapters 3 and 4

Below are terms from the readings. Write definitions and examples in the spaces provided. Answer the questions where indicated.

Chapter 3: What do samples tell us?

Parameter:

Population proportion (p) (An example here would be good.):

Population mean (μ) (An example here would be good.) :

Statistic:

Sample proportion ($\hat{p}$) (An example here would be good.):

Sample mean ($\bar{x}$) (An example here would be good.):

The idea of sampling is to use a small group of the population to infer about the entire population. Because one sample differs from another, there is an inherent variability in sampling. Margin of error is what we use to describe this variability. We asked 100 adults if they ever shopped over the internet and 34 said yes. Give the value of $\hat{p}$ and the margin

of error (use formula $me = \frac{1}{\sqrt{n}}$ where n is the sample size).

Make a 95% confidence statement using the above statistic.

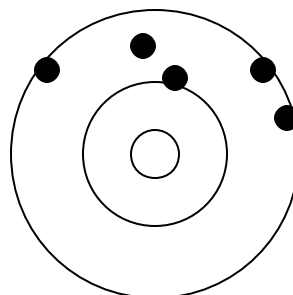
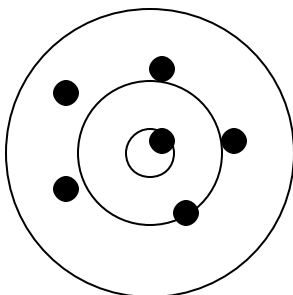
What does the “95%” of a confidence interval mean?

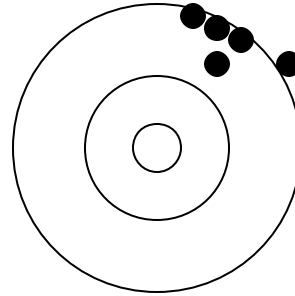
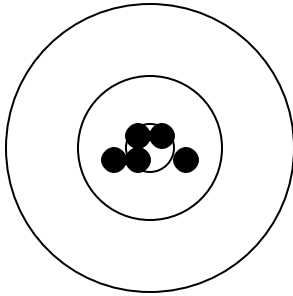
What happens to the margin of error if we increase the sample size?

Variability:

Bias:

The pictures below represent the four combinations for bias and variability of a study. The middle of the bull's eye represents the population parameter and the dots represent five different sample statistics. Label each picture below with small or large bias and small or large variability.





Chapter 4: Sample surveys in the real world

Sampling error:

Random sampling error:

Bad sampling methods:

Undercoverage:

Nonsampling error:

Nonresponse:

Processing error / Response error:

There are certain groups of people who have higher nonresponse rates than the general public. Name one.

Sampling frame:

Stratified sampling:

How you word questions can make a big difference in the results you get. Give an example of two questions, essentially asking the same thing, but worded so differently that the results would differ dramatically.

Every time you read about a study, you should ask yourself several questions. What are they?