

7.1b

Sampling Distribution: The distribution of values taken by the statistic in all possible samples of the same size.

(ideally want ALL possible samples of the same size)

To get an approximation of the sampling distribution:

- Take many samples
- Calculate the statistic of interest for each (\bar{x} , \hat{p})
- Graph the statistics
- examine SOCS shape
outlier
center
spread

Center: biased or unbiased

A statistic is unbiased if the mean of its sampling distribution is equal to the true value of the parameter.

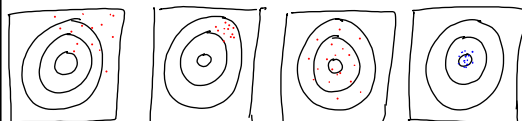
(called an unbiased estimator)

spread: lower is better!

Variability of a statistic \rightarrow spread of its sampling distr.

* larger samples = smaller spread

\hookrightarrow depends on sample size, NOT population size — as long as the population is at least 10 times larger



High bias
High variability

High bias
Low variability

Low Bias
High variability

Low Bias
Low variability

\uparrow
Want
this