STAT 110 – Chapter 3 Definitions

parameter – a number that describes the population
→ a parameter is a fixed number, but in practice, we don't know it's value

statistic – a number that describes a sample
→ the value of a statistic is known when we have taken a sample, but it can change from sample to sample
→ we often use a statistic to estimate an unknown population parameter

bias – consistent, repeated deviation of the sample statistic from the population parameter in the same direction when we take many samples
→ closeness to the truth on average

variability – describes how spread out the values of the sample statistic are when we take many samples.
→ scatter around the truth (plus bias)

"Margin of error plus or minus three percentage points" is shorthand for this statement:

> If we took many samples using the same method we used to get this one sample, 95% of the samples would give a result within plus or minus 3 percentage points of the truth about the population.

We say we are 95% confident that the true value of the parameter lies within the margin of error.

confidence statement – made up of a margin or error and a level of confidence

The margin of error measures how close the sample statistic lies to the population parameter.

The level of confidence says what percent of all possible samples satisfy the margin of error.