Expected Value and Standard Error
For means (averages):

Expected Value of the Sample Mean	Standard Error of the Sample Mean
$EV_{avg} = E(\bar{X}) = \mu$	$SD_{avg} = SD / \sqrt{n}$

For percents: The formulas are the same as the formulas for averages, just remember to multiply by 100 to get your answers in percent form.

Expected Value of the Sample Percent	Standard Error of the Sample Percent
EV%=population percent=p	$SE\% = (SD / \sqrt{n}) * 100\%$

Also, to calculate the SD of a population with yes's and no's (1s and 0s) where p is the proportion of 1's in the population, and 1-p is the proportion of 0's in the population, use this formula: $\sigma = \sqrt{p(1-p)}$

Next, we will talk about **inference**: drawing conclusions about the population from what's known about the sample.

Puzzle #1: Percents

In February of 2019, a CNN Poll of 1,011 adults nationwide asked the following question: "Do you think the government should provide a national health insurance program for all Americans, even if this would require higher taxes?" 54% answered 'Yes'. The 1,011 adults were chosen as a *simple random sample*.

a) Estimate the percentage of all American adults who would favor a national health insurance program.

b) Obviously, our best estimate of the percentage of people in the general population who favor a national health insurance program will be the sample percent. But give or take what amount? What is the SE of the sample percentage?