



M5-06: Confidence Intervals for Percents

Part of the "Polling, Confidence Intervals, and the Normal Distribution" Learning Badge

Video Walkthrough: <https://discovery.cs.illinois.edu/m5-06/>

Confidence Intervals for Percentages

Puzzle #1: 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*.

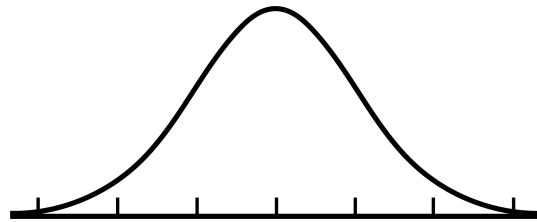
We got a sample percentage of 54% favoring a national health insurance program. The SE was estimated to be about _____%.

***How confident are we that our estimate is right?** How sure are we that if we really polled all US adults we'd get $54\% \pm$ _____% saying they favor a national health insurance program?

We can use the normal curve to answer that question because we know the probability histogram for the sample percent follows the normal curve (Central Limit Theorem).

a) Suppose we wanted to be about 80% sure that the true population % lies in our confidence interval, how many SE's do we need to attach to our estimate of 54% favoring a national health insurance program?

This means:



b) Find the following confidence intervals for the % of all US adults who favor a national health insurance program.

68% confidence interval= $54\% \pm$ _____ * _____ % = (_____ % - _____ %)

90% confidence interval= $54\% \pm$ _____ * _____ % = (_____ % - _____ %)

95% confidence interval= $54\% \pm$ _____ * _____ % = (_____ % - _____ %)

c) Which of the following statements is true?

i) Our 95% confidence interval can be applied to all adults worldwide.

ii) Our 95% confidence interval can be applied to all adults nationwide.

iii) Our 95% confidence interval can be applied to all US females.

*****A sample is ONLY representative of the population it was drawn from.
(no subgroups or wider populations)**