Name: KEY

Standard Twenty-two: Quiz Seven – Sampling Distributions – Proportions

According to a Harris Poll, seventy four percent of US adults say they believe in God. To investigate this claim I plan on polling a random sample of one hundred US adults. If the Harris Poll correctly estimates the population what can I expect my sample to look like? That is, find the sampling distribution of the sample proportion.

a. Find the sampling distribution of the sample proportion.

$$\mu_{\hat{p}} = p = .74$$

Do you have enough information to conclude that the sample proportion follows the Normal distribution? (A yes or no answer here will be marked incorrect)

$$\sigma_{\hat{p}} = \sqrt{\frac{p(1-p)}{n}} = \sqrt{\frac{.74(1-.74)}{100}} = \sqrt{.001924} = .0439$$

Standard Twenty-three: Quiz Seven – Sampling Distributions – Means

According to a Gallup poll the average American spends $69 a day with a standard deviation of $15. To investigate this claim I plan on polling a random sample of thirty six Americans. If the Gallup Poll correctly estimates the population what can I expect my sample to look like?

a. Find the sampling distribution of the sample mean.

$$\mu_{\bar{x}} = \mu_x = 69$$

b. Do you have enough information to conclude that the sample mean follows the Normal distribution? (A yes or no answer here will be marked incorrect)

$$\sigma_{\bar{x}} = \frac{\sigma_x}{\sqrt{n}} = \frac{15}{\sqrt{36}} = \frac{15}{6} = 2.5$$

Standard Thirteen: Quiz Seven – Long-run Behavior of Random Outcomes

http://www.quinnipiac.edu/news-and-events/quinnipiac-university-poll/iowa/release-detail?ReleaseID=2291

On October 22nd a Quinnipiac poll showed that Ben Carson topped Donald Trump for the first time in Iowa. Quinnipiac's sampling details showed that they reported a random sample of 574 from 2,833 likely caucus goers that they interviewed.

Iowa has a population of 3.1 million and there were 121,501 primary voters in 2012. If you were Donald Trump and you wanted to make an argument that maybe the poll wasn't entirely accurate what argument could you make using probability in the long run?

The Law of Large Numbers states that as our sample size increases our sample estimates approach the population values. Donald Trump could cite this rule and claim that the poll considered too few people to be accurate.