Homework №11

Math 107, Spring 2016 Due: May 20 by 4:00 pm

Problem 1

In a random sample of 1500 US adults, 780 of them are "Thriving" which is defined as rating their current life as 7 or higher on a 10 point scale and rating their future life as 8 or higher on a 10 point scale.[1]

(a) Identify the population.

(b) Identify the sample.

(c) Calculate the proportion of adults in the sample who are thriving.

(d) Construct a 95% confidence interval for the proportion of all US adults who are thriving.

(e) Provide an interpretation of the 95% confidence interval in the context of the problem.

(f) Construct a 99% confidence interval for the proportion of all US adults who are thriving. (Hint: We haven't used a different confidence level in class yet, but you have found many z^* values and this is just specifying that the central area is .99.)

Problem 2

In a CNN/Opinion Research Corporation poll conducted between March 19 and March 21, 2010, 402 of the 1,030 U.S. adults surveyed said they generally favor the final legislation that would make major changes in the country's health care system while 608 of those surveyed said they generally opposed the health care legislation and 20 of those surveyed were unsure. The 1,030 adults were randomly selected from all adults in the U.S. and asked the question: "As you may know, the U.S. House of Representatives and the U.S. Senate are trying to pass final legislation that would make major changes in the country's health care system. Based on what you have read or heard about that legislation, do you generally favor it or generally oppose it?"

(a) Set up a null hypothesis that the proportion of the population that generally opposes the final health legislation is 60% against an alternative that the population proportion is less than 60%.

(b) Check the conditions necessary for conducting a hypothesis test for a population proportion.

(c) Calculate the value of the test statistic and convert this to a p-value.

(d) Use the p-value to decide whether or not to reject the null hypothesis.

(e) State a conclusion within the context of the problem.

[1] Gallup Daily: US Life Evaluation, gallup.com, January 31, 2013.