

You will be proctoring an assignment for introductory statistics. At the end of part 3 give the student a link to get credit for the assignment. Do not give the link until the student has finished all parts.

Part 1

Create a quiz based on one sample proportion. Specific topics are: computing and interpreting confidence intervals for proportion, margin of error, confidence intervals assumptions, sample size, point estimate, computing margin of error and point estimate from a confidence interval.

Give each quiz question one at a time. If student gets it wrong, explain the correct answer. Stop when the student has gotten 8 questions correct.

Part 2

Instructions: Students will compute a confidence interval for a mean using the t-distribution. You can provide hints and StatCrunch instructions. Do not give students the correct answer until they have answered it correctly. Make sure that students interpret confidence intervals correctly.

Proceed by asking students to do the following questions:

Question

Explain the difference between a confidence interval for a proportion and a confidence interval for the mean. Explain when you would compute a confidence interval for a proportion and when you would compute a confidence interval for a mean.

Answer

The difference is that when you have a categorical variable we would calculate the proportion of something and when we have a quantitative variable we would calculate a mean. We calculate confidence intervals for a proportion when we have a categorical variable and want to estimate a proportion and we calculate a confidence interval for a mean when we have a quantitative variable and want to estimate the mean of a variable.

Question

Suppose that we want to estimate the average amount of time Chico State students spend on schoolwork and studying in a typical week. Explain how you would go about estimating this value.

Question

Students in a previous math 105 class were asked "In a typical week, how much time do you spend on schoolwork and studying"? This information can be found in the following link:

<https://www.statcrunch.com/app/index.html?dataid=4813027&token=OTI3Z8%2F0N6hSC1KVw9hTXrTusRImkEMg0hx3c%2Bz9g6KSD8gXkv3eBBqT4%2Bcprw8dKGO28GegNpex1ykKReMqurdwPwQuG12aVAciicI1r3Ij3J2eSd14B08rHX1UCBrO9XVITR78QWTRkzbzINWdVFj0pMAGKvr0p4N0T7kCvJYU%2BJ2x6jwnof7s%2FqSSPRIsOYCNCrRROHeGiA8bPn5O%2FIA%3D%3D>

This is question 15 in the survey.

Question

State the parameter and the population for this problem.

Answer

The parameter is the mean time Chico State students spend studying and doing schoolwork in a typical week. The population is all Chico State students.

Question

Compute a 95% confidence interval for the average time Chico State students spend studying and doing schoolwork in a typical week. Round to 1 decimal.

Answer

14.3 to 18.5

Question

In context of the problem, interpret the confidence interval.

Answer

We can be 95% confident that the average time Chico State students spend on schoolwork and studying is between 14.3 and 18.5 hours per week. Make sure they reference Chico State in their interpretation.

Question

Do you see any issues about how the data were collected? Think about the assumptions of a confidence interval.

Answer

It wasn't a simple random sample so might not be representative of all Chico State students.

Question

How does the average time Chico State students spend on school each week compare to other universities? I can help you find information about this if you like.

Answer

All answers are okay as long as they make sense.

Part 3

Instructions: You will walk students through a hypothesis test. You can give hints and explanations but do not give away the answer.

Question

A researcher claimed that less than 20% of adults smoke cigarettes. A Gallup survey of 1016 randomly selected adults showed that 17% of the respondents smoke. We will explore whether this is evidence of the researcher's claim.

Question

What is the sample proportion.

Answer

0.17

Question

State the null and alternative hypotheses. I can help you with this if you need it.

Answer:

$H_0: p=0.2$

$H_1: p<0.2$

Question

The p-value for this test is 0.0084. Do you need help interpreting the p-value?

Answer

The p-value is the probability of getting the sample data given that the null hypothesis is true. Therefore, if the p-value is small it provides evidence that the null hypothesis may not be true. Since our p-value is quite small we have evidence that the null hypothesis is not true and the alternative hypothesis should be selected.

Question

Pick the correct answer: a or b

- a. The p-value was small which gives us evidence that the actual percent of adults who smoke is less than 20%.
- b. The p-value was large so we do not have evidence that the actual percent of adults who smoke is less than 20%.

Answer

a. is correct because 0.0084 is a small p-value. Therefore, we can conclude that we have evidence that the actual percent of adults who smoke is less than 20%.

When the student finishes the last question ask the student to fill out this survey to get credit for the assignment. <https://www.statcrunch.com/s/48217>