STAT:1020 discussion - week 16

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April 22, 2019

Chap. 15 Testing Hypotheses

Problem 1. Perfect wheel

With a perfectly balanced roulette wheel, in the long run, red numbers should come up 18 times in 38 (47.37% of the time). To test its wheel, a casino records the results of 152 spins, getting 76 red numbers. Use a significance test to determine whether the wheel is balanced or not.

a) State the null hypothesis for a significance test.

b) Determine the value of $SD(\hat{p})$ Show your work.

c) Calculate the appropriate test statistic for this significance test. Show your work.

d) Determine the P-value for the test statistic.

e) What is your conclusion regarding the null hypothesis?

Problem 2.

In 1960, U.S. census data indicated that the average age at which American men first got married was 23.3 years. In order to determine whether the average age of first marriage for American men is higher now than it was in 1960, a random sample of 40 men who got married for the first time in 2014 was obtained. The average age of these men was 24.2 years, with an SD of 5.3 years.

a) State the null and alternative hypotheses for a test of significance.

b) Determine the SE of the average. Show your work.

c) Calculate the appropriate test statistic for this significance test.

d) Determine the P-value for the test statistic.

e) What is your conclusion regarding the null hypothesis?