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Project Part 6

The purpose of a hypothesis test is to use sample data to evaluate the credibility of a hypothesis about a population. This means that we don't know for sure whether or not the hypothesis is true or false and if it should be rejected or not due to evidence found after testing.

1. The hypotheses: H-naught: p=.2, H1: p does not=.2
2. The conditions for performing hypothesis tests are that the data is from a simple random sample, that the number of Skittles (3551) is less than or equal to .05 times the number of all the Skittles in the world, and that it's normally distributed and/or n*p(p-1)>or equal to 10 {3551(.2)(1-.2)=568.16}. Not all of these conditions are met since we didn't use a random sample, we used a convenience sample.
3. After entering the values into the calculator doing 1-PropZTest for hypothesis=.2, x=716, and n=3551 with it not being equal to the hypothesis, the test statistic is .243328
4. The p-value is .807751
5. The appropriate decision about the null hypothesis and conclusion are as follows: Since the p-value is greater than the significance level (0.05), fail to reject the hypothesis because there is insufficient data to claim that not 20% of all Skittles candies are red.
6. The Type I error would be to reject that the red Skittles population is .2 when it actually is, and the Type 2 error would be to fail to reject that the red Skittles population is 20% when it actually is not.

I. The hypotheses: H-naught: mu=58, H1: mu> 58

II. The conditions for performing hypothesis tests are that the data is from a simple random sample, that the number of Skittles is less than or equal to .05 times the number of all the Skittles in the world, and that it's normally distributed and/or the number of Skittles is greater than or equal to 30. Not all of these conditions are met since I didn't use a random sample, I used a convenience sample.

III. After entering the values into the calculator doing T-Test for hypothesis=58, x-bar= 59.183, standard deviation =3.11, and n=60 with it being greater than the hypothesis (mu>mu0), the test statistic is 2.94646

IV. The p-value is .00230

V. The appropriate decision about the null hypothesis and conclusion are as follows: Since the p-value is less than the significance level (.01), reject the hypothesis because there is sufficient data to claim that the mean number of candies in a bag is greater than 58.

VI. The p-value is the probability of getting our sample results or more extreme ones if the null hypothesis is true. If the mean number of candies per bag is 58, there is a probability of .00230 of getting a sample mean of 59.183 or greater.