Week 12 H.W.

BA2023, Statistics, MSE

1. Confidence interval problems (freely consult z-tables, t-tables or Chi-square tables). Assume data is normally distributed:

   (a) Suppose a sample of 30 Econ101 students are given an IQ test. If the sample has a standard deviation of 12.23 points, find a 90% confidence interval for the population standard deviation.

   (b) In the above example, if the mean was known to be 100, then find a 90% confidence interval for the population standard deviation.

   (c) A random sample of statistics students were asked to estimate the total number of hours they spend watching television in an average week: [0 3 1 20 9 5 10 1 10 4 14 2 4 4 5]. Use this sample data to construct a 98% confidence interval for the mean number of hours statistics students will spend watching television in one week.

2. Boys of a certain age are known to have a mean weight of pounds. A complaint is made that the boys living in a municipal children's home are underfed. As one bit of evidence, boys (of the same age) are weighed and found to have a mean weight of $= 80.94$ pounds. It is known that the population standard deviation is 11.6 pounds. Based on the available data, what should be concluded concerning the complaint?

3. It is assumed that the mean systolic blood pressure is 120 mm Hg. In the Honolulu Heart Study, a sample of people had an average systolic blood pressure of 130.1 mm Hg with a standard deviation of 21.21 mm Hg. Is the group significantly different (with respect to systolic blood pressure!) from the regular population? [Recall that the confidence level should be 95% and assume data is normally distributed.]

4. L&M: Exercises 6.2.1, 6.2.4,6.2.5,6.3.1,6.3.3