BUS 173: Applied Statistics

Chapter 9

Worksheet 1

Complete Examples 9-3 and 9-4 from the Chapter 9 slides.

**Complete problems A and B below and submit them as Assignment 1 on 7th February.**

1. Suppose a sociologist wants to establish that the mean retirement age is greater than 67*(μ > 67)*. It is assumed that retirement age is normally distributed with a known population standard deviation σ of 9 years. Let a random sample of 25 retirees produce an average retirement age of 71, or = 71. Test the sociologist's belief using 5% significance level.
2. At a particular university, the historical mean entrance exam score for students has been 900, with a standard deviation of 180. The school is interested in whether this year’s incoming students are at the same level are previous years’ students. A random sample of 200 students attains an average score of 922. Conduct a test at significance level 10% to determine whether there is evidence that this years’ students score differently on average from the historical mean.
3. For the following statements, set up the hypothesis test (i.e. identify the null and alternative hypotheses) and interpret the effect of Type 1 Error and Type II Error.

According to a study several years ago by the Personal Communications Industry Association, the average wireless phone user earns $62,600 per year. Suppose a researcher believes that the average annual earnings of a wireless phone user are now higher and he sets up a study to prove his theory.

A survey of the morning beverage market shows that the primary breakfast drink for 17% of Americans is milk. A mild producer in Wisconsin, where milk is plentiful, believes the figure is higher for Wisconsin.