Aegis
SCHOOL OF BUSINESS
SCHOOL OF DATA SCIENCE
SCHOOL OF CYBER SECURITY
SCHOOL OF TELECOMMUNICATION

Interesting Quotes / Facts:

"Without data you're just another person with an opinion."

Assignment 8.1

Course Details	Statistics and Probability (DS/CS)
Topic Details	Testing of Hypothesis (LST)
Course Instructor	Dr. Umesh R. A.

Testing of Hypothesis: Large Sample Tests

Assignment 8.1 Statistics and Probability

Task: Solve the following Questions. You can use python.

Problem 1
Suppose the manufacturer claims that the mean lifetime of a light bulb is more than 10,000 hours. In a sample of 30 light bulbs, it was found that they only last 9,900 hours on average. Assume the population standard deviation is 120 hours. At .05 significance level, test the claim by the manufacturer?

Problem 2
Suppose the food label on a cookie bag states that there is at most 2 grams of saturated fat in a single cookie. In a sample of 51 cookies, it is found that the mean amount of saturated fat per cookie is 2.1 grams. Assume that the sample standard deviation is 0.3 gram. At 0.05 significance level, can we reject the claim on food label?

Problem 3
In a referendum submitted to the 'student body' at a university, 850 men and 550 women voted. 530 of the men and 310 of the women voted 'yes'. Does this indicate a significant difference of the opinion on the matter between men and women students?

Problem 4
In a certain city 125 men in a sample of 500 are found to be self-employed. In another city, the number of self-employed are 375 in a random sample of 1000. Does this indicate that there is a greater population of self employed in the second city than in the first?

Problem 5
In a random sample of 400 persons from a large population 120 are females. Can it be said that males and females are in the ratio 5:3 in the population? Use 1% level of significance.

Problem 6
If 60 M.A. Economics students are found to have a mean height of 63.60 inches and 50 M.Com. students a mean height of 69.51 inches. Would you conclude that the commerce students are taller than Economics students? Assume the standard deviation of height of post-graduate students to be 2.48 inches.

Problem 7

An examination was given to two classes consisting of 40 and 50 students respectively. In the first class the mean mark was 74 with a standard deviation of 8, while in the second class the mean mark was 78 with a standard deviation of 7. Is there a significant difference between the performance of the two classes at a level of significance of 0.05?

Problem 8

A coin was tossed 400 times and the head turned up 216 times. Test the hypothesis that the coin is unbiased.