



Interesting Quotes / Facts:

"It's easy to lie with statistics. It's hard to tell the truth without statistics."

– By Andrejs Dunkels

Assignment 9.1

Course Details

Statistics and Probability (DS/CS)

Topic Details

Testing of Hypothesis (t-tests)

Course Instructor

Dr. Umesh R. A.

Testing of Hypothesis: Small Sample Tests (t-tests)

Assignment 9.1

Statistics and Probability

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

1. The scores of a random sample of 8 students on a physics test are as follows: 60, 62, 67, 69, 70, 72, 75, and 78. Test to see if the sample mean is significantly different from 65 at the .05 level of significance.
2. The following data represents the BP of 5 persons before and after performing Dhyana. Can we conclude at 5% LOS that Dhyana reduces BP?

| Persons | A | B | C | D | E |
|------------------|----|----|-----|----|----|
| BP before Dhyana | 90 | 90 | 100 | 88 | 99 |
| BP After Dhyana | 88 | 90 | 95 | 86 | 96 |

3. Certain pesticide is packed into bags by a machine. A random sample of 10 bags is drawn and their contents are found to weigh (in kg) as: 50, 49, 52, 44, 45, 48, 46, 45, 49, 45. Test if the average packing can be taken to be 50 kg.
4. A soap manufacturing company was distributing a particular brand of soap through a large number of retail shops. Before a heavy advertisement campaign, the mean sales per week per shop was 140 dozen. After the campaign, a sample of 26 shops was taken and the mean sales was found to be 147 dozen with standard deviation 16. Can you consider the advertisement effective?
5. A group of 5 patients treated with medicine 'A' weigh 42, 39, 48, 60 and 41 kgs: Second group of 7 patients from the same hospital treated with medicine 'B' weigh 38, 42, 56, 64, 68, 69 and 62 kgs. Do you agree with the claim that medicine 'B' increases the weight significantly?
6. To test the desirability of a certain modification in typists' desks, 9 typists were given two tests of as nearly as possible the same nature, one on the desk in use and the other on the new type. The following difference in the number of words typed per minute were recorded as follows. Do the data indicate the modification in desk promotes speed in typing?

| Typists | A | B | C | D | E | F | G | H | I |
|-----------------------------|---|---|---|---|----|---|----|---|---|
| Increase in number of words | 2 | 4 | 0 | 3 | -1 | 4 | -3 | 2 | 5 |