Table of Contents

1.Introduction ...............................................................................................................................................

2.Objective ....................................................................................................................................................

3.Prerequisites ..............................................................................................................................................

4.Associated Data Files .................................................................................................................................

5.Problem Statement ....................................................................................................................................

6.Expected Output ........................................................................................................................................

7.Approximate Time to Complete Task ........................................................................................................

**1. Introduction**

This assignment will help you understand the concepts learnt in the session.

**2. Objective**

This assignment will test your skills on the concepts of statistics.

**3. Prerequisites**

Not applicable.

**4. Associated Data Files**

Not applicable.

**5. Problem Statement**

1. BMW Company is testing the top speed of its new model X70

It has tested 100 units and found the avg top speed to be 230Km/hr with a std dev of 10km/hr

Whereas company believes the avg top speed to be 260Km/hr.

Company asks: Do you think being in Indian Road affects the top speed?

Solution:

For the above testing environment we have to check if significance threshold of 5% .

Or null hypothesis is H0 : µ = 260. We test this against H1 : µ < 260. Therefore our statistic is T = X¯−260 S √ n.

From the sample we get a t-value of T = 230−260 10/ √100 = -30

As the significance threshold of 5% we can say that being on Indian road affects the top speed of the car.

2. On an average, males drink 2L water per day with standard deviation σ = 0.7L. We are planning for a full day trip for 50 Men with 110L of water.

What is the probability that we will run out of water?

**Ans:** P (run out)

P (use more than 110 Ltr)

P (average value usage per man is >2.2L./m)(110/50=2.2L)

σ= 0.71

Sample distribution of the sample mean when n=50

Mean = 2/

SD of sample mean is =0.7/√50=0.099

Avg. Ltr-Mean =2.2l-2l=0.2l

=0.2l/0.099=2.020

P (sample mean) will =0.9783

Z table score of 2.02be more than 2.020 of SD above the mean

1-0.9783=0.0217

=2.17%

Comment: So it’s a 2.17% chance we run out of water

With a Significance level of 5 %, can we say that we will run of water?

Ans: - The significance level also denoted as alpha or α It is the probability of rejecting the null hypothesis when it is true.

For Eg: A significance level of 0.05 indicates a 5 % risk of concluding that a difference exists when there is no actual difference

**6. Expected Output**

N/A

**7. Approximate Time to Complete Task**