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?

Ans

The null hypothesis is μ ≥ 260. Begin with computing the test statistic.

xbar = 230 # sample mean

μ 0 = 260 # hypothesized value

sigma = 10 # population standard deviation

n = 100 # sample size

z = (xbar− μ 0)/(sigma/sqrt(n))

= -30

As there is no significance level given and if we take it as 0.05 or even 0.10 which is highly unlikely the we can’t accept the company claim of being on Indian roads is affecting the top speed .

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?

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

Ans

1. If we take avg (μo) = 110/50 = 2.2

Now μx = μ = 2 L

z = (xbar− μ 0)/(sigma/sqrt(n))

= 2.2-2/ (0.7/(unrt 50 )) = 2.02

P(z= 2.02 ) = 0.9783

1. Now if we take Significance level of 5 %

Z(0.05) = 1.645

Which fall outside our probability so we can say that yes we will run out of water .