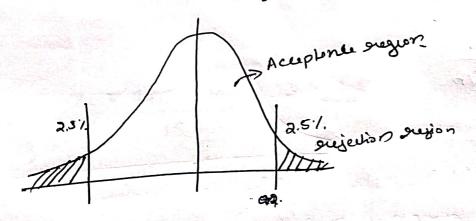
In the population, the average 19 is 100 with standard deviation of 15. A team of scientists want to test a new medication to see if it has either a positive on negative effect on intelligence, on not effect at all.

A sample of 30 pasticipants who have taken the medication has a mean of 140. Did the medication effect intelligence?

Ans

$$H_0 \rightarrow \mu = 100$$
 $H_1 \rightarrow \mu + 100$
 $\sigma = 15, \alpha = 5\%$
 $n = 30$
 $\pi = 140$

7e = 140 7e = 140 $2 = \frac{7e - 14}{6} = \frac{140 - 100}{15/30} = 14.6$



It lies in the susection sugion. The we can suject the null hypothesis. ie, the medication has positive effect on in intelligence.

A con manufacturier claims that the average ful efficiency of 11s new model is 30 mpg. To test this claim, a random sample of 35 cars is scheld, and this average fuel efficiency is found to be 29.2 mpg with a standard deviation of 2 smp perform Z-test at a 5%. Significance level to determine if the manufacturer's claim is supported.

Ans

Ho -> H = 30 mpg.

H1 -> H + 30 mpg.

0=2.5,

के = 29.2

a = 5.1. , n = 35

900F=>H C .H

11. 3 H >3000

J = 150 , 0€ = 51.

06 = 2100 = x

Z-test,

Z = \frac{2 - H}{5/\sigma_0} = \frac{29.2-30}{2.5/\sigma_5} = \frac{20.2-30}{2.5/\sigma_5} =

Standard normal dustribution = 0.02938

medellon segon

orealellon seg

The Standard normal distribution lies in supplier region.

ie, the company claim of the company is valid.

3. A company claims that their new marketing compaign will liberean enebsite traffic by at least 2011. Belove the compaign the average daily teathic of 2000 visitors with a mestandard, deviation of 180 visibar, perform a Aplex the compaign a sendon sample of 30 days shows an average daily traffic of 2100 visitors of Ation of Standard deviation 150 visilos, persosma on sample 2 mil and 5 year Significence level to determine IF the claim is supported.

Ans:

HO -> ME = 2000

H, -> H >2000

0 = 150, x = 5.1.

え = 2100 , の=30

Hongs = M & oll

P90008 # H C 1H

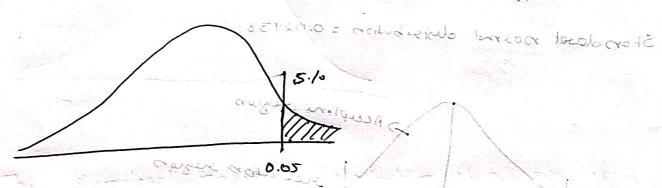
2.6=0

8-126 = K

5.1. 0:35

Z-lest

7-1021 Z = 21-M = 2100-2000 = 3.65 00-2.18 = M-30 = 5



Standard normal distaibulion is 0.00013, 12 is in suselion sugion... we sujed the soul hypothesis. The sew sugion. -marketing compaign incomessy the website traffic.

is the competed class of the company sevelity

4, A researcher worsts to test IF the average 19 score of a group of students is different from the national average 19 score of 100. A rendern sample of 40 students is taken and this average 19 score is 100 with a standard dividence of 15. perform a one semple z-test at a 1% significance level to determine If the groups average 19 score is significantly different from national average.

Ans.

Ho -> H = 100

H1 -> M + 100

0 = 15, a=1.1.

元=102,カラ40

1.60 - 92/21 - 6/2 = Z

DOLTH Gold

OOIFH FIH

4 = 51, 10 = 36

23. 7 - 97.65

Z- Lest

 $7 = \frac{2\hat{x} - 4}{6\sqrt{n}} = \frac{102 - 100}{16\sqrt{40}} = 0.84$ Acuplence guspin.

Acuplence g

Standard normal distribution is D.D. It lies in acceptance region. I we accept the null hypothesis. The groups everage 10 scar is not different From. national average.

5. You know that the short bevioled deviation close 100 in there A general population 1315. You terre your dange on 36 patients and obtain a men 10 op 97.65 wing an alpha value of 0.05, 18 this 19 signification dispents there or one of 21 to one the population mean of 100? with outleased brown actional An: Ho -> M=100 USI = H & OH H1 -> H \$100 0=15 , 2=97.65 OUITH E IH a: 51., n: 36 J.1 = 8 , 21 = = = Z-test ot = 103 ' 201 = x CO1-CO1 - H-X = Z H8.0 = 0.025 sejolnico suzoo The shandered normal distribution is 0.17361. It is in acceptence origins. .. we accept fresh hypothesis. There is no chings in population mess. homeon breboots regions. The sould him of igable in a region. specie topica mant true tib ton il mare al