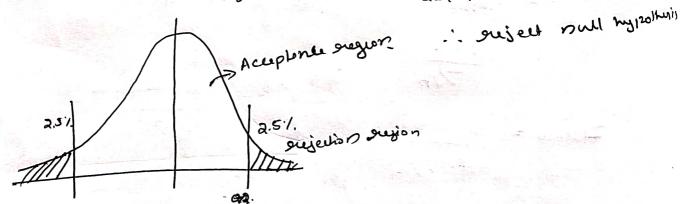
In the population, the average 19 is 100 with standard deviation of 15. A team of scientists want to test a men new medication to see If It has either a positive on negative effect on intelligence, on not effect at all.

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

Ans

Ho
$$\Rightarrow \mu = 100$$

H₁ $\Rightarrow \mu + 100$
 $\sigma = 15, \alpha = 5\%$
 $\tau = 140$
 τ



It lies in the susection sugion. There we are suject the new hypothesis. ie, the medication has positive effect on in intelligence.

2, A can manufacturer claims that the average fuel efficiency of 118 new model is 30 mpg. To test this claim, a sundom sample of 35 cars is scholed, and their average fuel efficiency sample is found to be 29.2 mpg with a standard deviation of 2.5mpg perform Z-test at a 5%. Significance level to determine IP the manufacturer's claim is supported. Significan level to determine IF the claim is 3-pposted.

Ans

Ho -> H = 30 mpg.

H1 > H + 30 mpg.

0=2.5,

2 = 29.2

a: 5.1.201, n=35,5

201 = 365

000F=>H 6 0H 11 3 H >3000 JE 20, 021 = 0

Railio 1 value = - 1.960015 = x

10 10 2 - 1 = 29.2-30 20189 000 Zool sou is Palm in the - I

Standard normal dustailbution = 0.02938

Acerplane oregion coincal value. (greatellon gragion Milliand parcon beabasts 0.025 .112 sitagin liva il 119/02 000

The Standard normal distribution lies in Aughener negion. ie, the company claim of the company is valid.

3. A company claims that their new marketing company will listerear website traffic by at least 20%. Belove the company the average daily traffic of 2000 visitors, with a standard deviation of 150 visitors, perform a Affler the company, a render somple of 30 days shows an average daily traffic of 2100 visitors with a standard deviation daily traffic of 2100 visitors with a standard deviation 150 visitors, perform a one sample 2-451 at 9 5%.

Ans:

Ho -> M < = 2000

H, -> H >2000

0 = 150, x = 5.1.

x = 2100 81 0 = 30

Z-lest

HO-> H = DO MPG.

c = 2.5

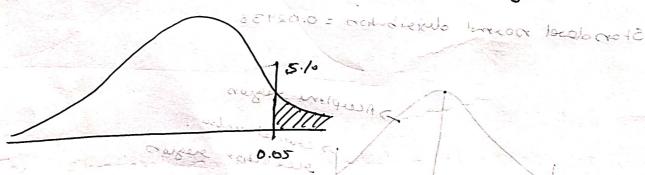
Z with 6 1.65

Zcel = 3.65

2 = 2 - H = 2100-2000 = 3.65 00-07201 > Zoihicil

OH word also / 30

Teller is a region mult hypothesis



standard normal distaibulion is 0.00013, 11 is in suscessors engines: we susject the new hypothesis. The new onegan income of the ment of compaign incomes, the website taking compaign incomes, the website taking compaign incomes, the website taking contained with

is, the constraint claim of the company is vehild.

4, A suscarcher works to test IF the average 19 score of a group of students is different from the national average 10 Score of 100. A sendom sample of 40 students is taken and this average 10 score is 102 with a standard divideor of 15. perform a one semple z-test at a 1% significance level to determine if the groups average 10 score is significant antly different from national average.

001: H & oH

Ars.

Ho -> H = 100

Zentel Tool # M C. H

of alking and of

2 = 102, n=40

. : The allept on!

Zi-haltan

001 £ H 6 1H

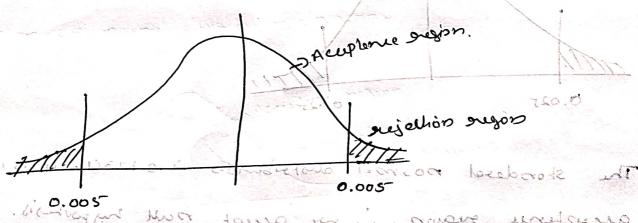
Zien 28:0 12:20

Zwinal = 2,57

· we aller! Ho 1-P.O-

23. 2= 97.65

 $7 = \frac{2^2 - 4}{2\sqrt{6}} = \frac{102 - 100}{15\sqrt{40}} = 0.84$



Standard normal distribution is D. a: 11 lies in acceptance

region. .. we allest the sull hypothesis. The groups everege 10 score is not different from. national greeage.

5, you know that the stendered deviation of 100 in the general population 13 15. You tor your dang on 36 patients and obtain a men 10 00 97.650 rusing en alpha value of 0.05, 18 this 19 signification different ather Manne de minored 151 10 the population men of Equare wit the microstile of level orthy olutional From potional An: Ho -> M=100 H1 -> H +100

0=15 , 2=97.65 a: 51., n: 36

Z-141

001 = H & OH Zoinel =-1.96

Zcolember Pally in the I which I so reader · : we allept null mypothesis.

H8-0 = 001-201 = H-x = 2 0.025

The standered normal distributions 13 0.17361. IF & in acceptence origins. .. we accept foull hypothesis.

There is no charge in population meen. have an beabout seve appage ut excitoged than it bein in hoper

month supplies of the state of states introverse & 1, In the can of blood donation town of document

Ho! The person does not contain toxin in the blood.

Ha: The person confair toxing in the blood and

Type 1 everon: The persons also blood is elean and and contain.

any toxins. but It says the persons blood contain. his out there is pret to have to type 2 evens it The new exercise head of the both hospital is concluded

Type 2 evers: The persons. blood contains tomin but 11 conclude - Loca est it does not donner level site is a series

insposes shalp test seesagai

2. A company believes that their new paoduct increases Costomer satis Feetion, walo barren gritort and i of

Ho: The new persolver does not increan enstormer satisfaction.

Hi: The new pareluct incresses customer satisfaction.

Type I erows: Actually the the new product does not mercan vacque la vale bours o mer solis haution, but it reor dude 1th menes su customer salifection.

Type 2 ears : Actually the product merenses enshormer satisfaction evergon: but concludes that It does not increase customer satis Fection the shedest his surse by the workingly

far wal 11

3 A suser warm to more grand perogram leads to weight loss and boold to we with Ho! The new extersise perogeom does not lead to weight loss. Hi! The new exercise perogram leads to weight loss. and Eype 1 decrops: The new exercise does not heed to weight how but and the second to see the loss of the constraint of the second to see the second to s type 2 earnor! The new exercise heads to weight hoss. But 11 conclud demoral il trai a mailtendre not. Type 2 ensure: The pursons. 4. A school district warsh to determine IF a new teaching method imposes shalent test score. 2. A compost believes that their new product increases Ho: The new teaching method does not inspouve student Hi: The test seems teaching method impoves Student test mpe 1 essens: Advally the the personal day of Imp Type 1 weren the new teching method does not impount The Student test scoons, but it wooden It does. Type 2 escusa: 11 th other the 1270 days moreons a scholar scholar Type 2 ever : The new Leathing method imperores the student test scores, but 14 concludes

14 does not.

5, A company claims that their new advertising compaign

Ho! The new advertising does not incream sales.

Ha! The new advertisions compaign increases sales.

Type 2 evenon: The new temps advertising compaign doesnot incream sales. but concludes It as in cream sales.

Type 2 ears: The new concludes it does not.