Statistics

Lecture 25

Feb 19-8:47 AM

SG 25

Testing One Population Mean:

1) Set up H_0 & H_1: Always identify the claim

$H_0: \mu = \mu_0$	$H_0: \mu \leq \mu_0$	$H_0: \mu \geq \mu_0$
$H_1: \mu \neq \mu_0$	$H_1: \mu > \mu_0$	$H_1: \mu < \mu_0$
TTT	RTT	LTT

2) Critical Values

Case I: σ Known	Case II: σ unknown
invNorm	invT, df = n-1

Drawing, Labeling, Shading, Full TT Command required

3) Computed Test Statistic & P-Value

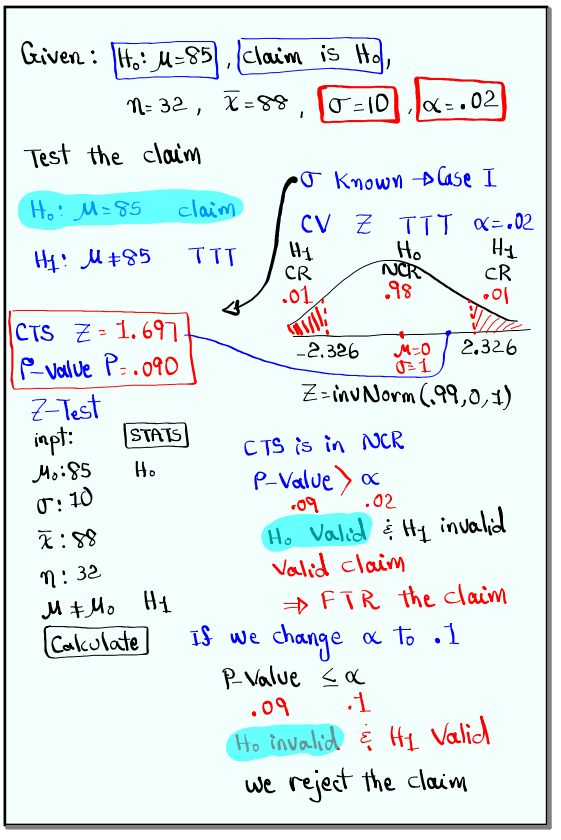
Case I: σ Known	Case II: σ unknown
STAT TESTS Z-Test	STAT TESTS T-Test
inpt: Stats	inpt: Stats

4) use Testing Chart To determine the validity of H_0 & H_1

5) Draw Final Conclusion about the claim

Reject the claim OR FTR the claim

May 19-1:53 PM



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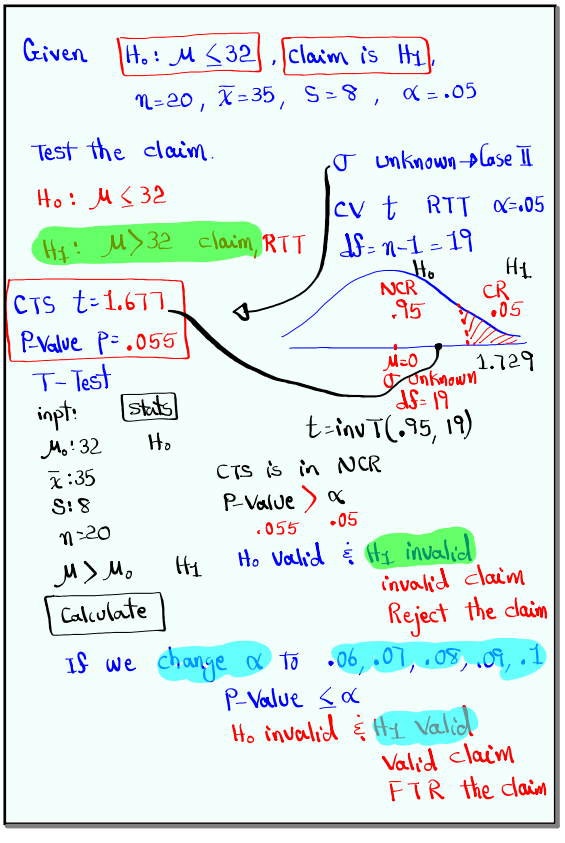

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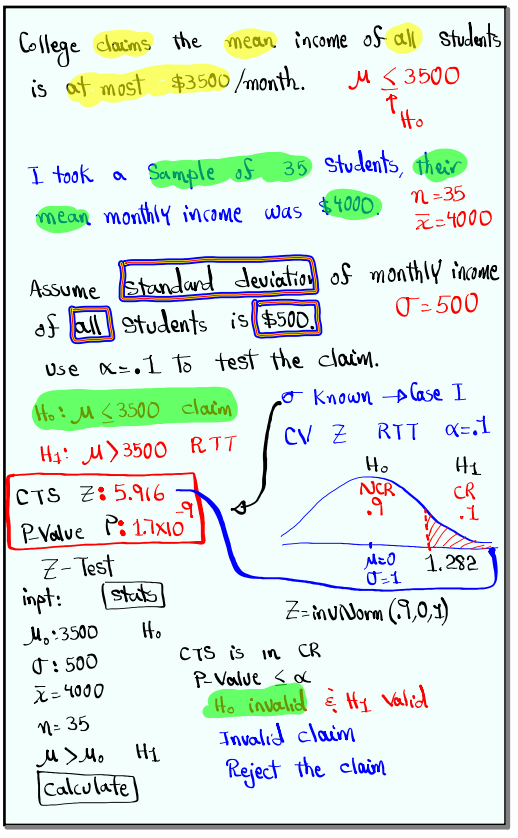

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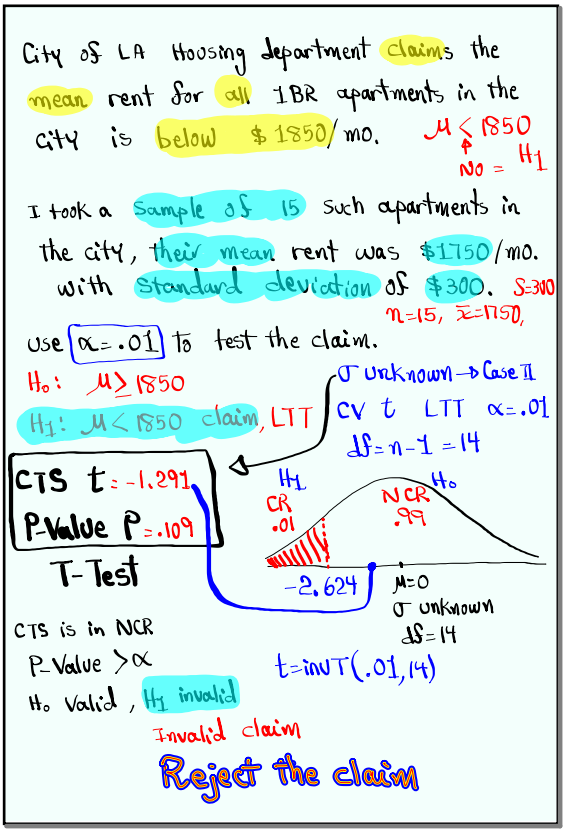

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I randomly selected 10 exams. Here are the Scores:

72	95	88	100	68
77	90	80	55	96

1) Find $\bar{x}$ & S. Round to whole #.

$\bar{x} \approx 82$, $S \approx 14$

2) Test the claim that mean of all exams is 85.

$H_0: \mu = 85$ claim

$H_1: \mu \neq 85$ TTT

σ unknown

Case II

CV t TTT

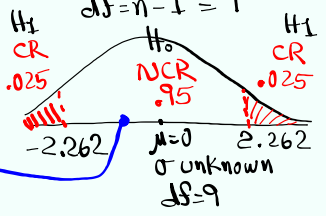
NO $\alpha \rightarrow .05$

$df = n - 1 = 9$

CTS $t = -.678$

P-Value $P = .515$

T-Test



$t = invT(.975, 9)$

CTS is in NCR

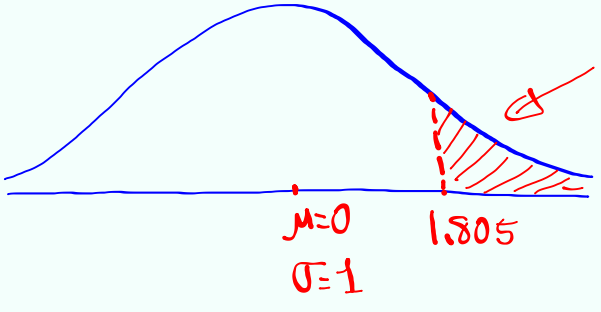
P-value $> \alpha$

H_0 Valid, H_1 invalid

Valid claim $\Rightarrow$ FTR the claim

May 19-3:03 PM

CTS $Z = 1.805$ RTT Find p-value.



normalcdf(1.805, E99, 0)

$= .036$

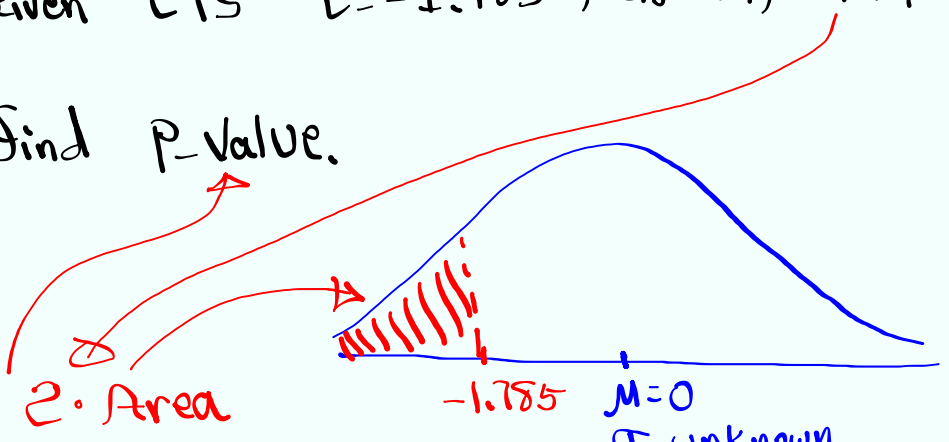
If it was TTT

P-Value $= 2(.036) = .072$

May 19-3:16 PM

Given CTS $t = -1.785$, $df = 14$, TTT

Find P-Value.



$2 \cdot tcdf(-E99, -1.785, 14) = .096$

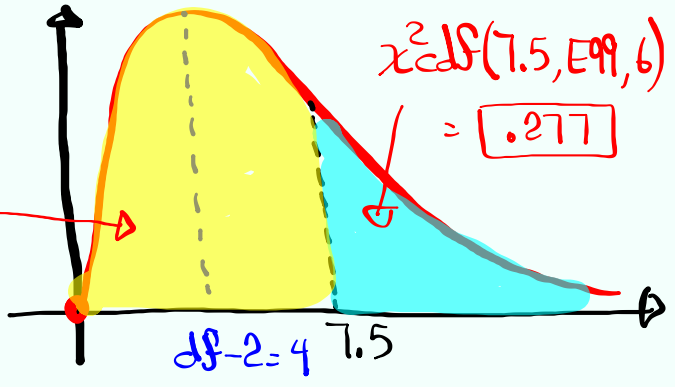
May 19-3:19 PM

Given CTS $\chi^2 = 7.5$ TTT $df = 6$.

Find P-Value.

$\chi^2cdf(0, 7.5, 6) = .723$

$\chi^2cdf(7.5, E99, 6) = .277$



P-Value = 2(.277) = .554

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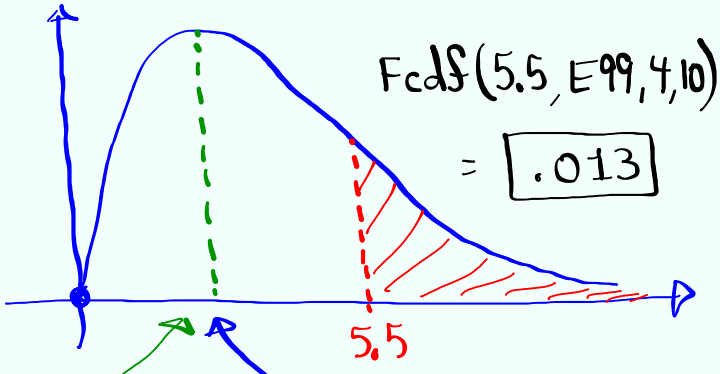
CTS $F = 5.5$ $Ndf = 4$ $Ddf = 10$ RTT

Find p-Value



Peak pt

$$F = \frac{(Ndf-2)\cdot Ddf}{Ndf\cdot(Ddf+2)} = \frac{(4-2)\cdot 10}{4\cdot(10+2)} = \frac{20}{48}$$

$\approx .417$

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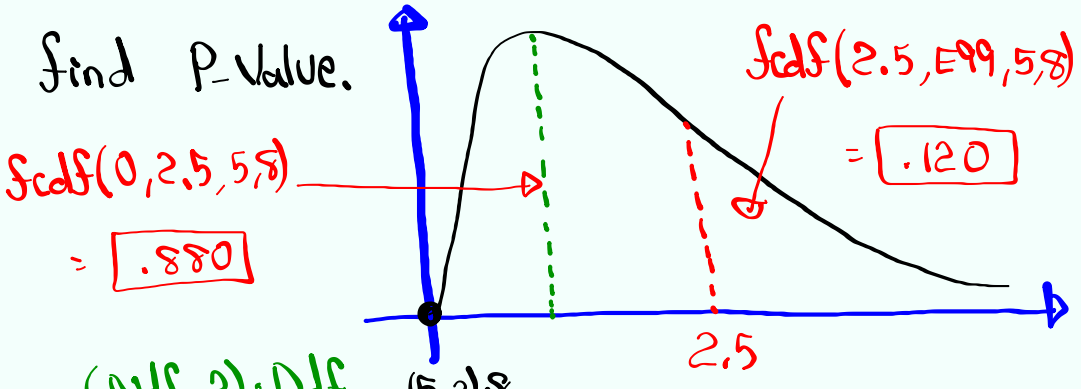
CTS $F = 2.5$ $Ndf = 5$, $Ddf = 8$ TTT

Find P-Value.



$$F = \frac{(Ndf-2)\cdot Ddf}{Ndf\cdot(Ddf+2)} = \frac{(5-2)\cdot 8}{5\cdot(8+2)} = \frac{24}{50} = .48$$

P-Value $= 2\cdot(.120) = .240$

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