Statistics

Lecture 17

Feb 19-8:47 AM

Class QZ 10

Given: $H_0: \mu \leq 75$, $n=40$, $\bar{x}=77$, $\sigma=12$

1) Give $H_1: \mu > 75$ RTT σ Known

2) Find CTS $Z = 1.054$

P-value $P = .146$

Z-Test

Name Your TI command.

Jul 29-7:04 PM

Class QZ 11

Given: $H_1: \mu > 85$, $n=12$, $\bar{x}=95$, $s=5$

σ unknown

1) write H_0. $H_0: \mu \leq 85$

2) Identify the type of Testing. $H_1: >$ RTT

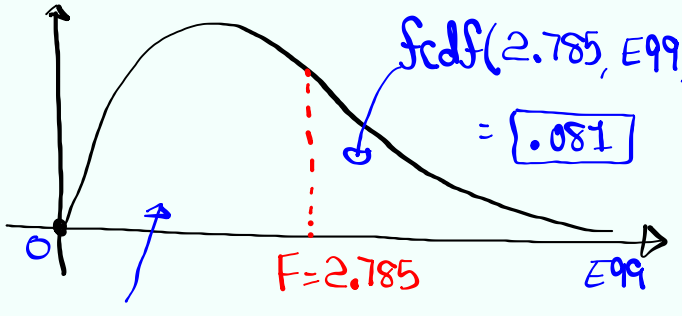
3) Find CTS & P-Value. Name TI Command. T-Test

CTS $t = 6.928$

P-value $P = 1.247 \times 10^{-5}$

Jul 30-3:15 PM

Given the drawing below with Ndf=6 & Ddf=9. Find the area on both sides of given F, then multiply the smaller area by 2.



fcdf(0, 2.785, 6, 9) = .919

2 · Smaller area = 2 · .081 = .162

Jul 30-4:43 PM

Given the chart below

Sample 1	Sample 2
$n_1 = 7$	$n_2 = 10$
$S_1 = 6$	$S_2 = 4$

1) $S_1 > S_2$ ✓

2) $Ndf = n_1 - 1 = 6$

$Ddf = n_2 - 1 = 9$

3) CTS $F = \frac{S_1^2}{S_2^2} = \frac{6^2}{4^2} = \boxed{2.25}$

4) use $\alpha = .01$ to test the claim that $\sigma_1 = \sigma_2$.

$H_0: \sigma_1 = \sigma_2$ claim

$H_1: \sigma_1 \neq \sigma_2$ TTT

CTS $F = 2.25$

P-value $P = .264$ ✓

P-value $>$ α

.264 $>$ .01

H_0 valid H_1 invalid

VALID claim FTR the claim

2-Samp F Test

$S_1 = 6$

$n_1 = 7$

$S_2 = 4$

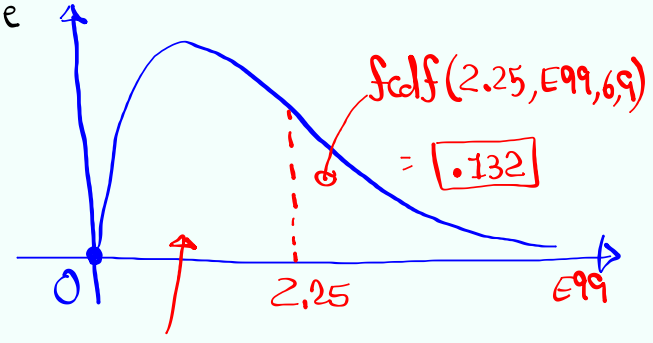
$n_2 = 10$

$\sigma_1 \neq \sigma_2$ TTT

Jul 30-4:49 PM

CTS $F = 2.25$ $Ndf = 6$, $Ddf = 9$ TTT

Find p-value



fcdf(0, 2.25, 6, 9) = .868

Sec 3.1

P-value = 2 · Smaller area

= 2 · (.132) = .264

Jul 30-4:57 PM

SG 35

Comparing at least 3 pop. means:

Method : ANOVA
Analysis of Variance

$H_0: \mu_1 = \mu_2 = \mu_3 = \cdots = \mu_K$

H_1: At least one mean is different. RTT

K → # of populations ⇒ Ndf = K − 1

n → Total Sample Size Ddf = n − K

CTS F STAT TESTS ANOVA(

P-Value P L1, L2, L3, ...

Enter

use Testing Chart with p-value Method
To determine the validity of H_0 & H_1

Draw final Conclusion about the claim.

Jul 30-5:44 PM

I randomly selected same exams from 3 different classes. Here are the Scores.

Morning			Evening		Online		
75	83	95	68	88	82	88	100
80	100	70	93	100	70	90	95
	90		78	90		80	

K = 3 ⇒ Ndf = K − 1 = 2
n = 7 + 6 + 7 = 20 Ddf = n − K = 17

Morning → L1, Evening → L2, Online → L3

use $\alpha = .1$ to test the claim that all Pop. means are equal.

$H_0: \mu_1 = \mu_2 = \mu_3$ claim

H_1: At least one mean is different. RTT

CTS F = .051 STAT

P-value P = .950 TESTS

ANOVA(L1, L2, L3

Enter

P-value > α

H_0 valid, H_1 invalid

valid claim ⇒ FTR The claim

Jul 30-5:50 PM

I randomly selected students from 4 schools. Here are their ages:

Mt.SAC			Citrus		chaffey		Cal Poly Pomona		
23	27	18	19	24	21	26	24	28	33
32	20	30	33	27	19	31	42	18	48
	25			30	30	28	20	50	

$K=4$

$n = 7+5+6+8 = 26$

$\Rightarrow$ Ndf $= K-1 = 3$

Ddf $= n-K = 22$

NV $\alpha \rightarrow .05$

Test the claim that not all pop. means are the Same.

$H_0: \mu_1 = \mu_2 = \mu_3 = \mu_4$

H_1: At least one mean is different. RTT claim

Mt.SAC $\rightarrow$ L1

Citrus $\rightarrow$ L2

chaffey $\rightarrow$ L3

Cal poly $\rightarrow$ L4

SL 35

ANOVA(L1, L2, L3, L4)

CTS F = 1.435

P-value P = .260

P-value $>$ α

.260 .05

H_0 valid, H_1 invalid

Invalid claim $\Rightarrow$ Reject the claim

Jul 30-6:01 PM

Class QZ 12

use the table below and ANOVA to find

Sample 1			Sample 2			Sample 3		
12	18	20	10	16	20	2	8	16
15	17			18		5	12	
L1			L2			L3		

CTS F = 4.755

P-value P = .032

ANOVA (L1, L2, L3)

Jul 30-6:28 PM