

Statistics Final Exam Review



Feb 19-8:47 AM

Test the claim that all means are equal.

$$H_0: \mu_1 = \mu_2 = \mu_3 = \dots = \mu_k \text{ claim}$$

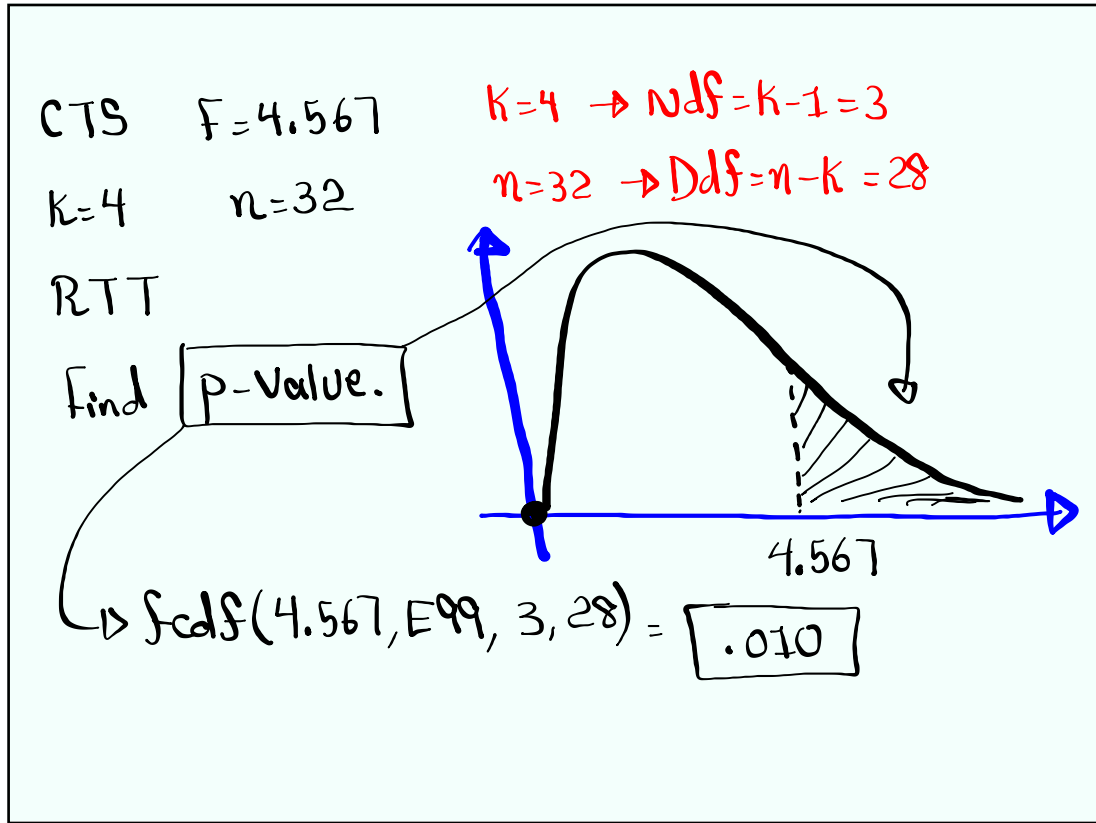
H_1 : At least one mean is different. **R**
T
T

Test the claim that not all means are the same.

$$H_0: \mu_1 = \mu_2 = \mu_3 = \dots = \mu_k$$

H_1 : At least one mean is different.
claim, **R**
T
T

Dec 10-8:51 AM



Dec 10-8:55 AM

Sample 1	Sample 2
$n_1 = 9$	$n_2 = 10$
$S_1 = 12$	$S_2 = 8$

$S_1 > S_2$

$Ndf = n_1 - 1 = 8$
 $Ddf = n_2 - 1 = 9$

Test the claim

that $\sigma_1 > \sigma_2$.

$H_0: \sigma_1 \leq \sigma_2$ \rightarrow No α
 $\rightarrow .05$

$H_1: \sigma_1 > \sigma_2$ claim, RTT

2-Samp F Test CTS $F = 2.25$
P-value $P = .124$

P-value $\left. \begin{array}{l} > \alpha \\ .124 > .05 \end{array} \right\}$

H_0 valid

H_1 invalid \rightarrow Invalid claim
Reject the claim

Dec 10-8:58 AM

Suppose $\bar{x} = 32$, $S = 5$, $n = 10$

Test the **claim** that **pop. standard dev.** is **below 8.** \rightarrow $\alpha = .05$ $\sigma < 8$

$H_0: \sigma \geq 8$ CTS

$H_1: \sigma < 8$ claim, LTT

$\chi^2 = \frac{(n-1)S^2}{\sigma^2} = \frac{(10-1) \cdot 5^2}{8^2} = 3.516$

$df = n - 1 = 9$

P-value = $\chi^2_{df}(0, 3.516, 9) = .060$

P-value $>$ α $.060 > .05$ H_0 valid H_1 invalid \rightarrow Invalid claim

If we choose α to be .07, .08, .09, .1, P-value $\leq \alpha$ H_0 invalid H_1 valid \rightarrow valid claim FTR the claim

Reject the claim

Dec 10-9:06 AM

Suppose $\bar{x} = 32$, $S = 5$, $n = 10$

Test the **claim** at $\alpha = .02$ that **pop. mean** is **35.** $\mu = 35$

$H_0: \mu = 35$ claim

$H_1: \mu \neq 35$ TTT

σ unknown

CV t TTT $\alpha = .02$

$df = n - 1 = 9$

CTS $t = -1.897$

P-value $P = .090$

T-Test

P-value $>$ α

CTS is in NCR

$t = \text{invT}(.99, 9)$

H_0 valid H_1 invalid \rightarrow Valid claim FTR the claim

Dec 10-9:14 AM

500 TKT Sold for \$10 each.
 one tkt randomly drawn
 Winner gets \$250

Find expected Value per tkt Sold.

Net	P(Net)
10 - 250	$\frac{1}{500}$
10 - 0	$\frac{499}{500}$

Net \rightarrow L1

P(Net) \rightarrow L2

1-Var Stats L1 & L2

$$E.V. = \mu = \bar{x} = 9.5$$

\$9.50

Dec 10-9:22 AM

class limits	class MP	class F
20 - 32	26	4
33 - 45	39	10
46 - 58	52	6

class MP \rightarrow L1

class F \rightarrow L2

1-Var Stats L1 & L2

$$\bar{x} = 40.3$$

$$s = 9.336$$

$$s^2 = \frac{8281}{95}$$

Reduced
Fraction

Dec 10-9:28 AM