1. $n_1 = 10$ $n_2 = 15$ $\alpha = .1$

$\bar{X}_1 = 45$ $\bar{X}_2 = 50$

$S_1 = 4.5$ $S_2 = 1.8$

Test if $\mu_2 > \mu_1$ ~~$\mu_2 \neq$~~

$\sigma_1 = \sigma_2$ vs $\sigma_1 \neq$

$$\frac{\frac{S_1^2}{\sigma_1^2}}{\frac{S_2^2}{\sigma_2^2}} \Rightarrow \left(\frac{S_1^2}{S_2^2}\right) = \left(\frac{S_1}{S_2}\right)^2 = \left(\frac{4.5}{1.8}\right)^2 = 6.25 = F$$

clarification

$F_{9,14} = 2.65$

$\frac{1}{F_{14,9}} \approx \frac{1}{3.01} \simeq .332$

$.332 < F < 2.65$ ∝ $\therefore \sigma_1 \neq \sigma_2$

IF F WERE THERE YOU SHOULD NOT REJ $\therefore$ TAKE $\sigma_1 = \sigma_2$

ACTUALLY $F > 6.25$ SO YOUR CONC IS CORRECT

H_0: $\mu_2 = \mu_1$

H_a: $\mu_2 > \mu_1$

$$\cancel{z} = \frac{(45-50) - 0}{\sqrt{\frac{4.5^2}{10} + \frac{1.8^2}{15}}}$$

3.75

$t = -3.34$

-3.34 THOUGH DOES NOT FOLLOW FROM PRECEEDING STATEMENT

rej if $|t_0| > t_{10}$ $3.34 > 1.319$

TOOK $v = 23$ THAT IS :D FOR $\sigma_1 = \sigma_2$

USED 5 FOR $\sigma_1 \neq \sigma_2$?

therefore rej. H_0.

There is sufficient evidence to conclude that $\mu_2 > \mu_1$ at $\alpha = .1$

should match

6.25

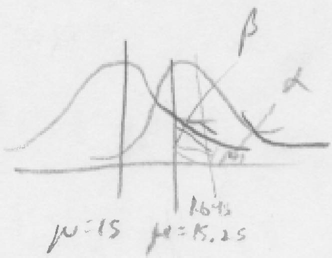
$$v = \frac{(\quad)^2}{(\quad)}$$

10

2. $H_0: \mu = 15$ $\quad n = 50$

$H_a: \mu > 15$ $\quad \bar{x} = 17$

$\alpha = .05$ $\quad S = 1.8$



a. $P(\text{fail to rej } H_0 \text{ given } \mu = 15.25)$

$P(Z > Z_{.05} \mid \mu = 15.25)$

$$P\left(\frac{\bar{x}-\mu}{\frac{S}{\sqrt{n}}} > 1.645 \;\middle|\; \mu = 15.25\right)$$

$$P\left(\bar{x} > 1.645\left(\frac{1.8}{\sqrt{50}}\right) + 15 \;\middle|\; \mu = 15.25\right)$$

$\bar{x} > 15.419$

$$Z \approx \frac{15.419 - 15.25}{\frac{1.8}{\sqrt{50}}} \approx .6639 \approx .66$$

P-value $\Rightarrow .2454 \Rightarrow .5 - .2454 = .2546 = \beta$

b. $\bar{x} - \mu = z\frac{S}{\sqrt{n}}$ $\quad z_{.1} = 1.28$ $\quad (.5 - .3997) \approx .1$

$\frac{\bar{x}-\mu}{z\,S} = \frac{1}{\sqrt{n}}$ $\quad \left(\frac{z\,s}{\bar{x}-\mu}\right)^2 = n$ $\quad z_{.25} = .67$

$$n = \left(\frac{(1.28 + .67)1.8}{\cancel{17}\,15 - 15.25}\right)^2 = 4.02 \Rightarrow 5$$

3.75

3.75

-3- $p_1 = .4$ $p_2 = .3$

$n_1 = 50$ $n_2 = 60$

$\alpha = .02$

$H_0: p_1 = p_2$ $\pi_1 = \pi_2$

$H_a: p_1 \neq p_2$

$(.4 - 2\sqrt{.4 \cdot .6/50}, .4 + 2\sqrt{.4 \cdot .6/50}) \subset (0,1)$

$(.2614, .538) \subset (0,1)$

$(.3 - 2\sqrt{.3 \cdot .7/60}, .3 + 2\sqrt{.3 \cdot .7/60})$

$(.182, .418) \subset (0,1)$

Which p will you use?

$$z \approx \frac{(.4 - .3) - 0}{\cancel{\sqrt{\frac{.4 \cdot .6}{50} + \frac{.3 \cdot .7}{60}}}} \approx 1.10$$

use STD DEV FOR TEST

5

rej H_0 if $|z_0| > z_{.01}$

$1.10 \not> 2.33$

$\therefore$ fail to reject H_0

There is insufficient evidence to conclude that $p_1 \neq p_2$ at $\alpha = .02$

we are suppos to use p-val when we use z

(TABLE IS BIG ENOUGH)

25

IF USING TABLE

DID YOU HAVE TI STAT STUFF WHEN YOU TOOK THIS?

25

5