

HW Ch. 13.1 p. 791

(10) μ_B = the true mean percent change in bone mineral in spines of breast feeding women for 3 months

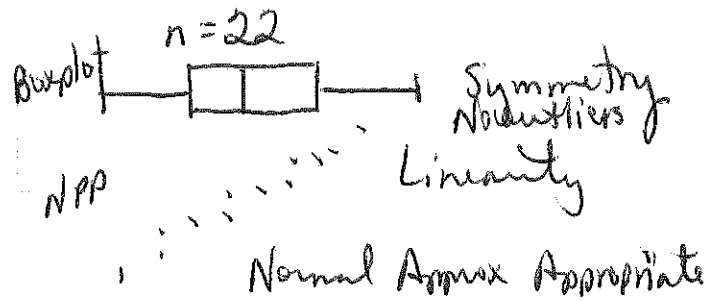
μ_C = the true mean percent change in bone mineral in spines of non-breast feeding women for 3 months

- 2 sample t-test for means
- Conditions B C

SRS - no reason to assume otherwise

no reason to assume otherwise

Normality $n \geq 30$
 $47 \geq 30$
 CLT - sample size large enough



- Independence - all breast feeding women ≥ 10 (47) all non breast feeding women ≥ 10 (22)

Hypothesis:
 H_0 : there is no difference in mean bone mineral lost in breast feeding women and non breast feeding women
 H_a : breast feeding women lose more mean bone mineral than non-breast feeding women

$H_0: \mu_B = \mu_C$
 $H_a: \mu_B < \mu_C$

• Calculations: $n_B = 47$ $n_C = 22$ $df = 66.2$
 $\alpha = .05$ $\bar{x}_B = -3.59$ $\bar{x}_C = 0.31$
 $s_B = 2.57$ $s_C = 1.30$

$$P\left(t < \frac{(-3.59 - 0.31) - 0}{\sqrt{\frac{(2.57)^2}{47} + \frac{(1.30)^2}{22}}}\right) = P(t < -8.51) = 1.66 \times 10^{-12}$$

Since our p-value of 1.66×10^{-12} is much smaller than our significance level $\alpha = .05$, we have evidence to reject the null hypothesis. We have evidence to conclude that the mean bone mineral lost for nursing women may be more than that lost for other women.

0802
16)

$$a) t = \frac{70.37 - 68.45}{\sqrt{\frac{6.1509^2}{10} + \frac{7.091^2}{9}}} = 0.5143$$

because SAS printed 2-sided!

$$b) 2P(t > 0.5143) = 0.6165 / 2 = 0.30825$$

Since p-value $0.30825 > 0.05$, we cannot reject H_0 .
There is no evidence to support a significant difference in room counts for skilled and novice nurses.

17)

- a) 2 sample t-test
- b) Paired t-test
- c) Paired t-test
- d) 2 sample t-test
- e) Paired t-test

18)

Group	Treatment	n	\bar{x}	s
1	IDX	10	116	17.71
2	Untreated	10	86.5	6.01

Control: 86.5 ± 1.9 days $1.9 = \frac{s}{\sqrt{n}} = 6.01$

IDX: 116 ± 5.6 days $5.6 = \frac{s}{\sqrt{n}} = 17.71$

b) $df = 10 - 1 = 9$

c) Assign digits 1 to 20 to baskets; randomize
10 digits 1 to 20 assigning IDX to these baskets, remaining
10 baskets as control.

