Homework 3

Solution

1.

(a).

\[ H_0: \text{placebo} - \text{new} \leq 0 \]
\[ H_a: \text{placebo} - \text{new} > 0 \]

(b).

\[ T = \frac{\bar{y}_1 - \bar{y}_2}{S_Y (\frac{1}{n_1} + \frac{1}{n_2})^{1/2}} \]

\[ S_Y = \frac{\sum_{i=1}^{n_1} (y_i - \bar{y})^2 + \sum_{j=1}^{n_2} (y_j - \bar{y})^2}{n_1 + n_2 - 2} \]

(c).

565

2.

(a).

\[ T = \frac{\bar{y}_1 - \bar{y}_2}{\sqrt{\frac{s_1^2}{n_1} + \frac{s_2^2}{n_2}}} \approx -3.002 \]

(b)

The p-value is 0.0013 thus the anti-hypertensive drug is effective.

(c)

ANCOVA(taking difference will increase the variance of estimator)

3.

(a).

968

(b)

964

4.
(a).

0.27

(b)

0.27

(c)

We fail to reject the null. There is no evidence that the proportion of responses of treatment 1 differs from that of treatment 2.

(d)

The sample size is too small to draw a valid conclusion. (less power)