

Instructions: Answer each question as thoroughly as possible. Round answers to 4 decimal places as needed. Exact answers are best when possible. Be sure to answer all parts of each question.

1. Do people work longer with breakfast than without? Use the data in the table and conduct a permutation test of the paired data to see if the means are different.

Work hours with breakfast	Work hours without breakfast
8	6
7	5
9	5
5	4
9	7
8	7
10	7
7	5
6	6
9	5

$$H_0: \delta = 0$$

$$H_a: \delta \neq 0$$

See code file for associated code

one sided p-value is 1×10^{-4} , so 2-sided is $2 \times 10^{-4} < 0.05$

reject the null

there is reason ^{to} think breakfast changes # of hours worked

2. Use bootstrapping to construct a 95% confidence interval of the data above. Compare the result to using a t-interval of the mean differences.

t-interval for differences gives: 95% conf.

(1.1796, 3.0204)

using bootstrapping I got (1.4, 2.9)

which is similar but a little narrower

Your answers for the bootstrap may vary.