
SOLUTIONS TO

TEST YOUR KNOWLEDGE: Two Sample t Test

1. A researcher is interested in comparing the wages of men and women doing the same type of job at a large company. The data is below:

Men: average wage (per hour) = \$18.95; standard deviation = \$4.44; $n = 18$

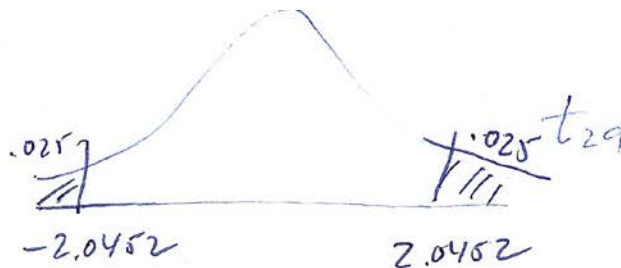
Women: average wage (per hour) = \$15.09; standard deviation = \$3.38; $n = 13$

Test whether the difference between the means of the two groups is significant at an alpha (significance level) of .05.

- What are the null and alternate hypotheses?
- Draw the picture of the distribution of the test statistic (under H_0). Include critical value(s) and region(s) of rejection.
- What is the calculated (computed) value of the test statistic?
- What is your conclusion?

$$H_0: \mu_1 = \mu_2$$

$$H_1: \mu_1 \neq \mu_2$$



$$s_p^2 = \frac{17(4.44)^2 + 12(3.38)^2}{29} = \frac{472.224}{29} = 16.28$$

$$t = \frac{18.95 - 15.09}{\sqrt{16.28 \left(\frac{1}{18} + \frac{1}{13} \right)}} = \frac{3.86}{\sqrt{2.157}} = \frac{3.86}{1.468} = 2.63$$

Reject H_0