Independent Samples t-test

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1. An instructor for an animal learning course observes that some students are very comfortable working with rats during their animal training sessions. She suspects that these students may have experience with pets that gives them an advantage when training their rats. To test her hypothesis, she divides her students into two groups: those that currently have a pet at home, and those that don't. Below are the rats' performances for each group. Higher means indicate better performance.

R Tutorial Videos

Pre-Lab
Pre-Lab due May 03, 2016 at 17:00 UTC

Lab
Lab due May 03, 2016 at 17:00 UTC

Problem Set
Problem Set due May 03, 2016 at 17:00 UTC

Rats' scores for students with pets

n = 10

mean = 78

sd = 12.56

Rats' scores for students without pets

n = 15

mean = 66

sd = 12.04

(1/1 point)

1a. What is the alternative hypothesis for this test?

- ✔ $\mu_{pet\ owners} > \mu_{no\ pets}$
- $\mu_{pet\ owners} \leq \mu_{no\ pets}$
- $\mu_{pet\ owners} \geq \mu_{no\ pets}$
- $\mu_{pet\ owners} = \mu_{no\ pets}$

(3/3 points)

1b. Solve for each missing component of the t-test equation:

$$t = \frac{78 - A}{\sqrt{\frac{(12.56)^2}{B} + \frac{(C)^2}{15}}}$$

A=

66 ✔ **Answer:** 66

66

B=

10 ✔ **Answer:** 10

10

C=

12.04 ✔ **Answer:** 12.04

12.04

(1/1 point)

1c. What is the t-statistic **approximately**?

- 3.76
- 0.99
- 2.18 ✔
- -1.79

(1/1 point)

1d. What is the t-critical value for this test, assuming df = $n_{smallest}$ - 1 and $\alpha = 0.05$?

- 1.065
- 1.833 ✔
- 2.262
- 3.023

(1/1 point)

1e. What is the appropriate conclusion for this test?

- The sample size was too small to conduct a t-test, so we cannot draw a conclusion from these results.
- Having pets did not make a difference in how well students trained their rats.
- The rats of students with pets performed significantly better than the rats of the other students. ✔
- Students with pets at home were able to encourage their rats to perform better, probably because they had previously trained a dog.

(1/1 point)

1f. How would the p-value for this test be reported?

- $p > 0.05$
- $p < 0.025$
- $p < 0.05$ ✔
- $p > 0.025$