

Statistics Assignments Using Excel®

Assignment #8: Single Sample *t* Tests

Part I –DRUG DATA

A researcher is interested in determining if THC affects short-term memory. He randomly assigns 28 participants to receive either a THC pill or a placebo before completing a memory test. Perform the appropriate *t* test with $\alpha = .05$ to find out.

- Calculate t_{obt} by creating a spreadsheet formula and use the TTEST function to determine p
- Create a bar graph depicting the means for the two experimental groups (with estimated standard error of the mean error bars displayed)
- Insert a textbox reporting your statistical and research conclusion in words.

| <u>THC</u> | <u>PLACEBO</u> |
|------------|----------------|
| 6 | 4 |
| 5 | 2 |
| 3 | 4 |
| 6 | 8 |
| 9 | 1 |
| 3 | 5 |
| 4 | 4 |
| 7 | 3 |
| 6 | 5 |
| 2 | 7 |
| 6 | 4 |
| 7 | 3 |
| 5 | 6 |
| 6 | 5 |

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The following textbook contains detailed instructions for using spreadsheets in an introductory statistics class:
Tagler, M. J. (2009). *Understanding basic statistics with spreadsheets*. New York, NY: Pearson Custom.

Part II TRAINING DATA

A researcher designs a new operant conditioning technique to train rats to press a bar. To determine if the technique is effective in increasing the number of bar presses, before administering it she first measures the baseline number of bar presses (pretest) per minute that the rats engage in, and then the number of bar presses after training. Perform the appropriate t test with $\alpha = .01$ to find out.

Perform the t test 2 ways:

- Calculate t_{obt} by creating a spreadsheet formula and use the TTEST function to determine p
- Create a bar graph depicting the means for the two experimental groups (with estimated standard error of the mean error bars)
- Insert a textbox reporting your statistical and research conclusion in words.

| <u>RAT#</u> | <u>Pretest</u> | <u>After Training</u> |
|--------------------|-----------------------|------------------------------|
| 1 | 1 | 3 |
| 2 | 4 | 4 |
| 3 | 3 | 6 |
| 4 | 5 | 5 |
| 5 | 2 | 1 |
| 6 | 1 | 1 |
| 7 | 2 | 3 |
| 8 | 3 | 4 |
| 9 | 4 | 5 |
| 10 | 5 | 4 |
| 11 | 1 | 3 |
| 12 | 0 | 5 |
| 13 | 3 | 4 |
| 14 | 4 | 6 |

Do a final save and submit your work

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