Stroop Effect experiment data analysis

Project discription

This project analysed a dataset from a Stroop Effect experiment.
Detailed information about this experiment:
https://faculty.washington.edu/chudler/words.html#seffect
The dataset from:
https://drive.google.com/file/d/0B9Yf01UaIbUgQXpYb2NhZ29yX1U/view

Independent variable and Dependent variable

The independent variable is word condition(word congruency), either congruent or incongruent.
The dependent variable is the total time that participants used for a wordset.

Hypotheses

Null Hypotheses(H_0):$\mu_D = 0$
Time difference for Congruent wordset and Incongruent wordset is 0.

Aterlative Hypotheses(H_1) : $\mu_D \neq 0$
Time difference for Congruent wordset and Incongruent wordset is not 0.

Statistical test

This is a T-test because the population mean and standard deviation are unknow, also sample szie is small(n<30).
This is a dependent test because of the repeated measurements, participants take 2 test with different word condition orderly.
This is a 2 tailed test because no direction is predicted.

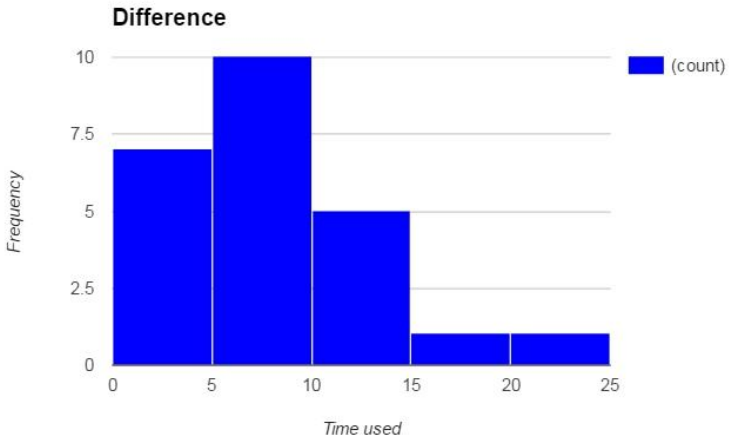
Descriptive statistics

Table 1
Results of Descriptive Statistics for Stroop Effect Experiment.

Congruent			Incongruent			Difference		
μ_c	SD	n	μ_I	SD	n	μ_D	SD	n
14.05	3.56	24	22.02	4.8	24	7.96	4.86	24

Figure 1

Histogram of time difference between Congruent test and Incongruent test.



This is a positive skewed distribution

T-test

Table 1

Results of T test for Stroop Effect Experiment.

Mean of Difference				
μ_D	SE	t-value	t-critical	df
7.96	0.99	8.02	2.069*	23

*p< .05

Results of the t-test show a statistically significant mean difference between Congruent test and Incongruent test, null hypothese rejected, participants tend to spend more time in naming colors for Incongruent wordset.

Reference

1. http://www.dummies.com/education/math/statistics/how-to-use-the-t-table-to-solve-statistics-problems/
2. http://lap.umd.edu/psyc200/handouts/psyc200_0812.pdf
3. http://www.differencebetween.net/miscellaneous/difference-between-z-test-and-t-test/
4. http://www.psychology.emory.edu/clinical/bliwise/Tutorials/TOM/meanstests/assump.htm