

Web calculator exercise 3 essay sample

[Profession](#), [Student](#)



T test for independent groups and dependent groups (Two-group designs)

1. An LU professor is interested in whether there is a difference between undergraduate students and graduate students in the amount of time spent praying each day. The professor gathers information from random samples of undergraduate and graduate students on the LU campus. The amount of time praying is normally distributed and is measured on an interval/ratio scale.

a. What statistical test should be used to analyze the data?

The statistical test to be used is unpaired t-test

b. Is this a one- or two tailed test?

It is a two-tailed test

c. Identify H_0 and H_a for this study.

H_0 of the study is that there is no difference between undergraduate students and graduate students in the amount of time spent praying each day.

H_a of the study is that there is a difference between undergraduate students and graduate students in the amount of time spent praying each day.

d. Conduct the appropriate analysis. Should H_0 be rejected?

$p = 0.00262$

<http://studentsttest.com/>

$0.00262 < 0.05$, therefore we can reject H_0 .

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2. A teacher wants to investigate whether there is a difference between male and female students in the amount of time they spend studying for statistics. The table below shows the amount of time students spend studying statistics each week. The amounts of time spent studying are normally distributed.

a. What statistical test should be used to analyze the data?

The statistical test to be used is unpaired t-test

b. Is this a one- or two tailed test?

It is a two tailed test

c. Identify H_0 and H_a for this study.

H_0 for the study is that there is no difference between male and female students in the amount of time they spend studying for statistics.

H_a for the study is that there is a difference between male and female students in the amount of time they spend studying for statistics.

d. Conduct the appropriate analysis. Should H_0 be rejected?

$p = 0.33588$

<http://studentsttest.com/>

Since $0.33588 > 0.05$, we accept the null hypothesis.

3. A researcher is interested in whether listening to music helps or hinders test-performance. To control for differences in cognitive level, this researcher decides to use a within-participants design. He selects a random sample of participants and has them study different material of equal difficulty in both

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the music and no music conditions. Participants take a 20-item quiz on the material. The table below shows the scores on the quiz. The study is completely counterbalanced to control for order effects. The scores obtained are measured on an interval-ratio scale and are normally distributed.

Music

No Music

a. What statistical test should be used to analyze the data?

Unpaired t-test

b. Is this a one- or two tailed test?

It is a two tailed test

c. Identify H_0 and H_a for this study.

H_0 for the study is that listening to music does not help or hinders test-performance

H_a for the study is that listening to music does helps or hinders test-performance

d. Conduct the appropriate analysis. Should H_0 be rejected? What should the researcher conclude?

$p = 0.12446$

<http://studentsttest.com/>

since $0.33588 > 0.05$, we accept the null hypothesis.

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The researcher should, therefore, conclude that listening to music does not help or hinders test-performance.

e. Calculate the 95 confidence interval.

$$\text{Confidence interval} = 18 - 15 = 3$$