# How do I report t-test results, including examples?

Authored by

**stats writer**

April 30, 2024

Reporting t-test results is a crucial aspect of statistical analysis, as it allows researchers to accurately communicate the findings of their study. The t-test is a statistical test used to determine whether there is a significant difference between the means of two groups. When reporting t-test results, it is important to include the t-value, degrees of freedom, and p-value. The t-value represents the difference between the two groups, while the degrees of freedom indicate the number of observations in the sample. The p-value indicates the probability of obtaining the observed results by chance. Additionally, it is important to provide a brief interpretation of the results, such as whether there is a significant difference between the two groups or not. Including examples of the t-test results can further clarify the findings and make them more easily understandable for the reader. Overall, reporting t-test results accurately and clearly is essential for the proper communication and understanding of the statistical analysis.

## Report T-Test Results (With Examples)

## We can use the following general format to report the results of a :

## A one sample t-test was performed to compare against the population mean.

## The mean value of (M = , SD = ) was significantly than the population mean; t(df) = , p = .

## We can use the following format to report the results of an :

## A two sample t-test was performed to compare in and .

## There a significant difference in between (M = , SD = )

**and (M = , SD = ); t(df) = , p = .**

**We can use the following format to report the results of a :**

**A paired samples t-test was performed to compare in and .**

**There a significant difference in between (M = , SD = ) and (M = , SD = ); t(df) = , p = .**

**Note: The "M" in the results stands for sample mean, the "SD" stands for sample standard deviation, and "df" stands for degrees of freedom associated with the t-test statistic.**

**The following examples show how to report the results of each type of t-test in practice.**

### Example: Reporting Results of a One Sample T-Test

**A botanist wants to know if the mean height of a certain species of plant is equal to 15 inches. She collects a random sample of 12 plants and performs a one sample-test.**

## The following screenshot shows the results of the test:

**T-Test**

**One-Sample Statistics**

| | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|
| height | 12 | 14.3333 | 1.37069 | .39568 |

**One-Sample Test**

Test Value = 15

| | t | df | Sig. (2-tailed) | Mean Difference | 95% Confidence Interval of the Difference | |
|---|---|---|---|---|---|---|
| | | | | | Lower | Upper |
| height | -1.685 | 11 | .120 | -.66667 | -1.5376 | .2042 |



## Here's how to report the results of the test:

**A one sample t-test was performed to compare the mean height of a certain species of plant against the population mean.**

**The mean value of height (M = 14.33, SD = 1.37) was not significantly different than the population mean; t(11) = -1.685, p = .120.**

### Example: Reporting Results of an Independent Samples T-Test

**Researchers want to know if a new fuel treatment leads to a change in the average miles per gallon of a certain car. To test this, they conduct an experiment in which**

**12 cars receive the new fuel treatment and 12 cars do not.**

**The following screenshot shows the results of the independent samples t-test:**

**T-Test**

**Group Statistics**

| | group | N | Mean | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| mpg | .00 | 12 | 21.0000 | 2.73030 | .78817 |
| | 1.00 | 12 | 22.7500 | 3.25087 | .93845 |

**Independent Samples Test**

| | | Levene's Test for Equality of Variances | | t-test for Equality of Means | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | 95% Confidence Interval of the Difference | |
| | | F | Sig. | t | df | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower | Upper |
| mpg | Equal variances assumed | .034 | .855 | -1.428 | 22 | .167 | -1.75000 | 1.22552 | -4.29157 | .79157 |
| | Equal variances not assumed | | | -1.428 | 21.362 | .168 | -1.75000 | 1.22552 | -4.29597 | .79597 |

**Here's how to report the results of the test:**

**A two sample t-test was performed to compare miles per gallon between fuel treatment and no fuel treatment.**

**There was not a significant difference in miles per gallon between fuel treatment (M = 22.75, SD = 3.25) and no fuel treatment (M = 21, SD = 2.73); t(22) = -1.428, p = .167.**

## Example: Reporting Results of a Paired Samples T-Test

**Researchers want to know if a new fuel treatment leads to a change in the average mpg of a certain car. To test this, they conduct an experiment in which they measure the mpg of 12 cars with and without the fuel treatment.**

**The following screenshot shows the results of the paired samples t-test:**

**T-Test**

**Paired Samples Statistics**

| | | Mean | N | Std. Deviation | Std. Error Mean |
|---|---|---|---|---|---|
| Pair 1 | mpg1 | 21.0000 | 12 | 2.73030 | .78817 |
| | mpg2 | 22.7500 | 12 | 3.25087 | .93845 |

**Paired Samples Correlations**

| | | N | Correlation | Sig. |
|---|---|---|---|---|
| Pair 1 | mpg1 & mpg2 | 12 | .604 | .037 |

**Paired Samples Test**

| | | Paired Differences | | | | | t | df | Sig. (2-tailed) |
|---|---|---|---|---|---|---|---|---|---|
| | | Mean | Std. Deviation | Std. Error Mean | 95% Confidence Interval of the Difference Lower | Upper | | | |
| Pair 1 | mpg1 - mpg2 | -1.75000 | 2.70101 | .77971 | -3.46614 | -.03386 | -2.244 | 11 | .046 |

**Here's how to report the results of the test:**

**A paired samples t-test was performed to compare miles per gallon between fuel treatment and no fuel treatment.**

**There was a significant difference in miles per gallon between fuel treatment (M = 22.75, SD = 3.25) and no fuel treatment (M = 21, SD = 2.73); t(11) = -2.244, p = .046.**

**Use the following calculators to automatically perform various t-tests:**