

What is the paired sample t-test and how is it used in statistical analysis?

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The paired sample t-test is a statistical analysis method used to compare the means of two related groups or data sets. It is often used to determine if there is a significant difference between the means of two dependent variables, such as before and after measurements or two different treatments on the same group of subjects. This test takes into account the correlation between the two groups, making it more powerful and accurate than the independent sample t-test. It is commonly used in research studies and experiments to assess the effectiveness of a treatment or intervention. The results of the paired sample t-test can provide valuable insights into the relationship between variables and aid in decision making.

Paired Sample T-test

In this section, we will learn about Paired Sample T-test. A Paired sample t-test is also known as a correlated sample T-test or dependent sample T-test. So it is presumed that either repeated measure design had been used in the study or we are taking the same subject across two different situations. So it is a very useful test to conduct repeated measure inference analysis and that often we do. For example, suppose the researcher wants to understand whether a student by a particular method leads to significant improvement in his performance. For that, he takes 10 students or 15 students or 30 We will take at least 30 students because that is recommended for doing a parametric test. So we took 30 students and measured their performance at the beginning of training without any administration of training. Now we administrate a training program, and after the training, we again measure their performance.

Now we want to compare the performance of students before the training program and after the training program. In that case, he can use a paired sample t-test. Similarly, a Government can use a Paired sample t-test for measuring the effect of a tourism promotion for the tourist. So tourists come to the country, and when they are in the country, we can measure how they feel about the country, do they like the country and they are familiar with the country's culture. After measuring the attitude towards the country or destination, once they have been through the country and they are living in the country. At that time, we can again ask them to fill a survey. Now we can find out whether there have been significant differences in tourist's attitude when they arrived in the country and when they are living in the country. Similarly, when we visit the hotels or go for a party or picnic, we want to know whether going to a picnic or party or visiting a hostel leads to any improvement in our mood. So we can measure our mood at the beginning, and once we are there, we finished our vacation and again rate our mood and find out whether there have been any significant improvements in our mood. Hospitals or hostel can use them. It can be used at any place where we measure the

difference in the same individual's condition after they have undergone some training or experiences.

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