

EXCEL QUICKGUIDE 47

t-Test: Paired Two-Sample for Means

What the t-Test: Paired Two-Sample for Means Tool Does

The t-Test: Paired Two-Sample for Means computes a t value between means for two dependent measures on the same individuals or set of cases.

The Data Set

The data set used in this example is titled TTEST-PAIRED, and the question is “Does an intervention program reduce the number of cigarettes smoked each day?”

<i>Variable</i>	<i>Description</i>
Before	Number of cigarettes smoked before the intervention
After	Number of cigarettes smoked after the intervention

Using the t-Test: Paired Two-Sample for Means Tool

1. Select the Data Analysis option from the Data tab.
2. Double-click the t-Test: Paired Two-Sample for Means option in the Data Analysis dialog box, and you will see the t-Test: Paired Two-Sample for Means dialog box shown in Figure 47.1.
3. Click the RefEdit button in the Variable 1 Range entry box and select the data you want to use in the analysis. In this example, it is Cells A1 through A21. Click the RefEdit button again.
4. Repeat Step 3 for the Variable 2 Range entry box and select the data you want to use in the analysis. In this example, it is Cells B1 through B21. Click the RefEdit button again.
5. Be sure that the Labels box in the Input area is checked.
6. Be sure that an Alpha value of 0.05 is selected.
7. Click the RefEdit button and enter the Output Range. In this example, Cell C1 is selected. Click the RefEdit button again.
8. Click OK.

The Final Output

The result, shown in Figure 47.2, is a t value of 6.27, which is significant beyond the .05 level (the alpha value in Figure 47.1). This indicates that the intervention was effective and there was a difference in rate of daily cigarette smoking.

Figure 47.1 The t-Test: Paired Two-Sample for Means Dialog Box

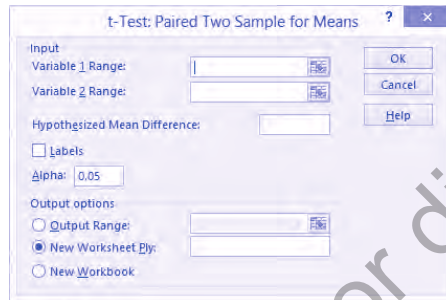


Figure 47.2 The t-Test: Paired Two-Sample for Means Output

	Before intervention	After intervention		Before intervention	After intervention
Mean				26.20	13.75
Variance				121.33	62.99
Observations				20	20
Pearson Correlation				0.61	
Hypothesized Mean Difference				0.00	
df				19.00	
t Stat				6.27	
P(T<=t) one-tail				0.00	
t Critical one-tail				1.73	
P(T<=t) two-tail				0.00	
t Critical two-tail				2.09	

Check Your Understanding

To check your understanding of the t-Test: Paired Two-Sample for Means tool, do the following two problems and check your answers in Figures A.13 and A.14 in Appendix A.

- QS47a. Compute the t value and evaluate it for significance for law school admission scores for the same group of 25 participants before and after a crash study course. Use Data Set 47a.
- QS47b. Compute the t value and evaluate it for significance for body mass index scores for 20 participants in a wellness program before and after the program. Use Data Set 47b.