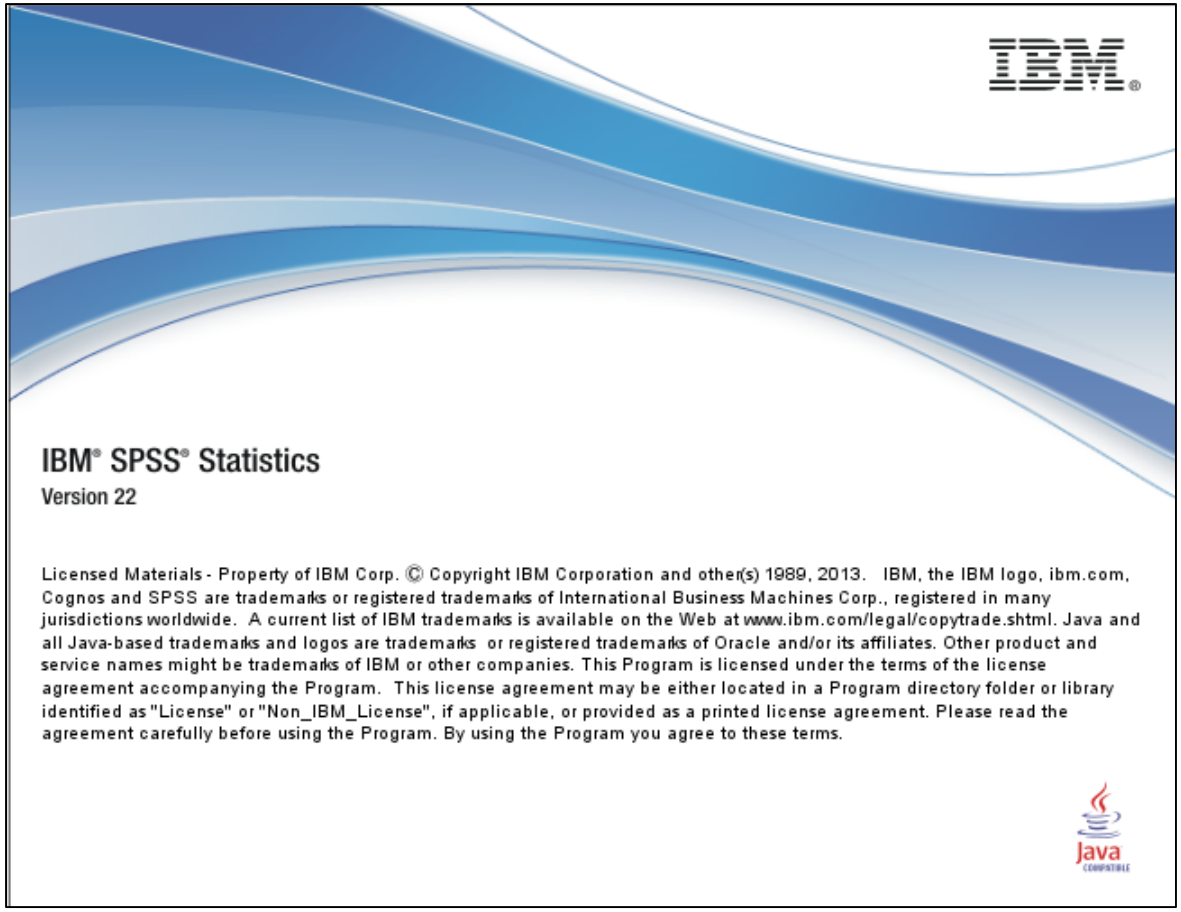


Psyc 381
Independent Samples *t* test
A brief how-to guide

Data Entry

- An independent samples *t* test requires the use of two variables (predictor and outcome), thus two columns will be used. In either order, the predictor should be entered using numbers (e.g., 0, 1 or 1, 2 – be sure to add in the necessary value labels in the variable view) to represent the different groups (only two groups can be compared at one time in this test), and the outcome should be entered using the measured values.

07 - Independent Samples t-test Data.sav [DataSet1] - IBM

File Edit View Data Transform Analyze Direct Mark

	NumCavities	ToothpasteBrand	var
1	3.00	1.00	
2	2.00	1.00	
3	3.00	2.00	
4	2.00	1.00	
5	2.00	2.00	
6	1.00	1.00	
7	.00	1.00	
8	2.00	1.00	
9	4.00	2.00	
10	2.00	2.00	
11	1.00	2.00	
12	3.00	1.00	
13	1.00	1.00	
14	2.00	1.00	
15	1.00	1.00	
16	3.00	1.00	
17	4.00	1.00	
18	5.00	2.00	
19	.00	2.00	
20	4.00	2.00	
21	4.00	2.00	
22			

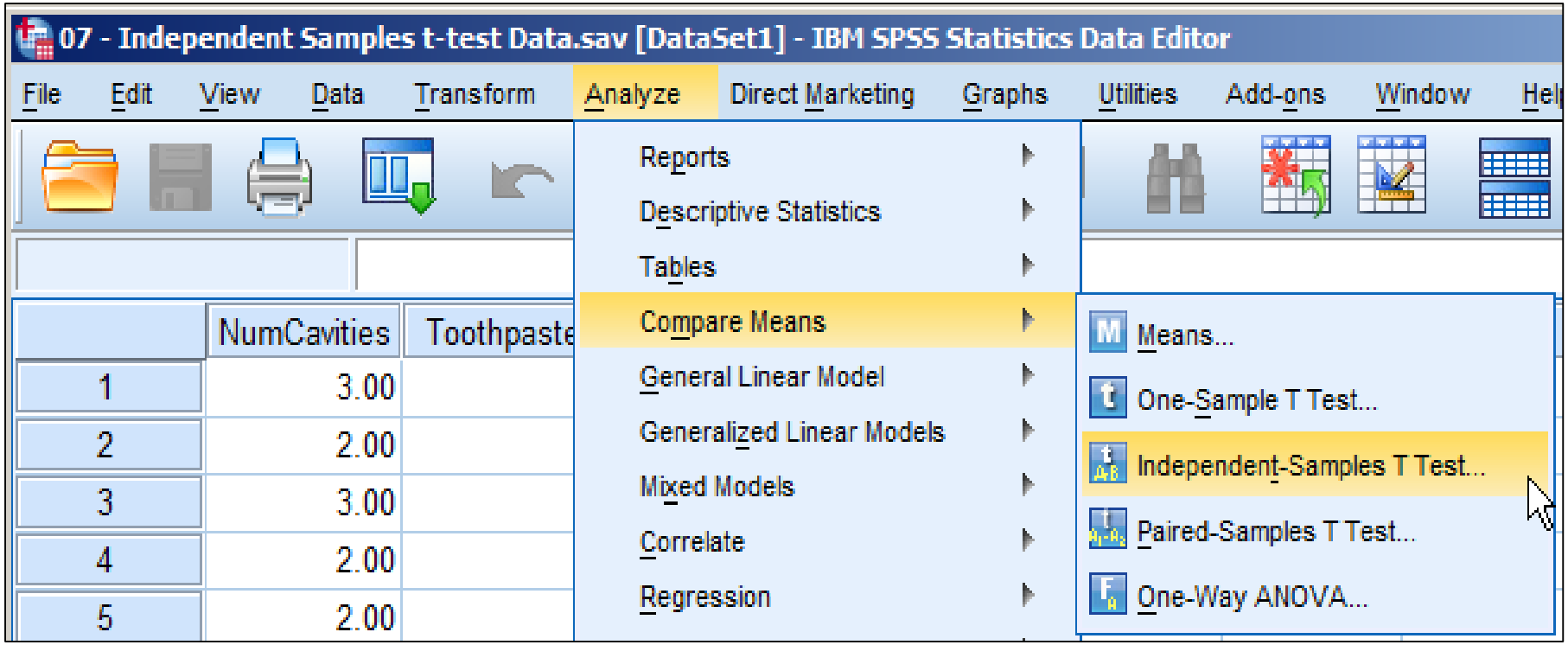
07 - Independent Samples t-test Data.sav [DataSet1] - IBM

File Edit View Data Transform Analyze Direct Marke

	NumCavities	ToothpasteBrand	var
1	3.00	Colgate	
2	2.00	Colgate	
3	3.00	Crest	
4	2.00	Colgate	
5	2.00	Crest	
6	1.00	Colgate	
7	.00	Colgate	
8	2.00	Colgate	
9	4.00	Crest	
10	2.00	Crest	
11	1.00	Crest	
12	3.00	Colgate	
13	1.00	Colgate	
14	2.00	Colgate	
15	1.00	Colgate	
16	3.00	Colgate	
17	4.00	Colgate	
18	5.00	Crest	
19	.00	Crest	
20	4.00	Crest	
21	4.00	Crest	
22			

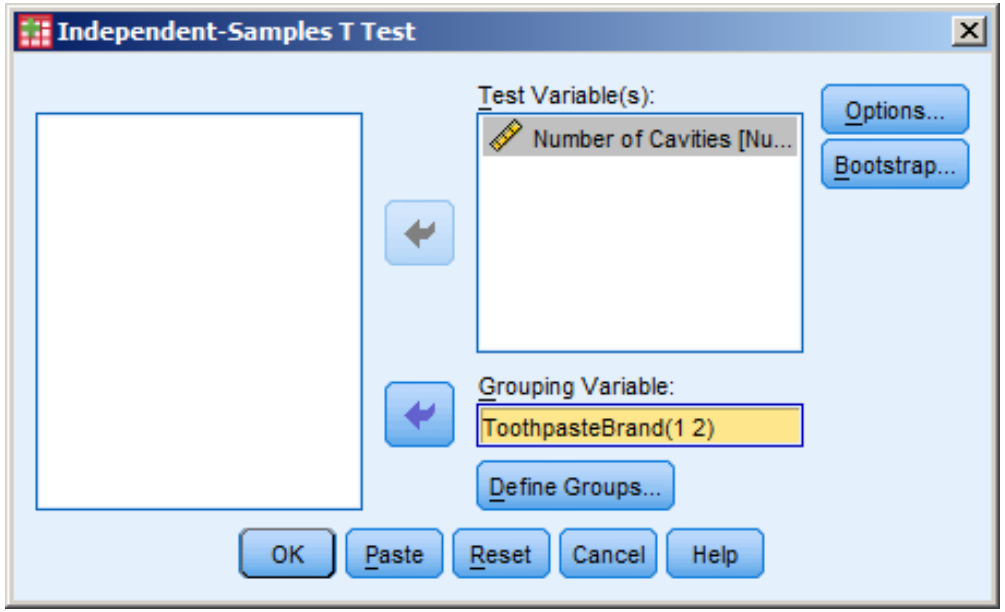
Start the analysis

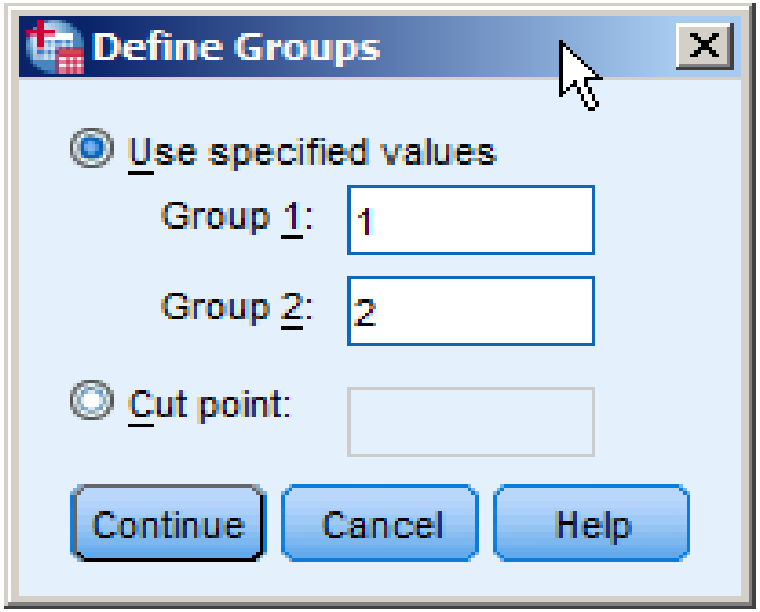
- To request an independent samples *t* test in SPSS, navigate to the following menu option:



Selecting the variables

- Once you have selected the correct analysis, you need to identify the variables you want to use in the analysis using the menu below.
  - The predictor (or independent variable) needs to be moved to the "Grouping Variable" box. Then, you need to press the "Define Groups" button and enter in the values associated with the two groups that are being compared – these values are the ones you used to enter in the data entry phase.
  - The outcome variable needs to be placed into the "Test Variable" box – any variable in this box will be compared between the two selected groups.





Reading the output

- You will be given two pieces of output in the separate output window.
  - The first piece (see below) contains a general set of descriptive statistics for the outcome variable (for each group separately in each row) that are typically reported when describing your results.
  - Keep in mind that these values for “std deviation” and “std error of the mean” were created using the N - 1 correction (or estimated values) for use with sample-based data.

Group Statistics

	Brand of Toothpaste	N	Mean	Std. Deviation	Std. Error Mean
Number of Cavities	Colgate	12	2.0000	1.12815	.32567
	Crest	9	2.7778	1.64148	.54716

Reading the output

- You will be given two pieces of output in the separate output window.
  - The second piece (see below) contains the results of your analysis.
    1. You can see there are two rows of nearly identical values. This is because SPSS will report the *t* test results under two conditions (equal variances or not); most likely you will be using the top row of values (see next note).
    2. The first two columns (under Levene's Test) represent the analysis of the *homogeneity of variance* assumption. Typically, it is desirable to have a *p*-value greater than .05 here (i.e., not statistically significant); if so, use the top row of values. **Keep in mind that this is NOT the *p*-value for the *t* test you've conducted.**
    3. The remainder of the output window from left to right is the observed *t* value, the degrees of freedom (df), the *p*-value for the *t* test (non-directional), the unstandardized difference between means, and the standard error of the difference between means.

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
Number of Cavities	Equal variances assumed	2.532	.128	-1.289	19	.213	-.77778	.60322	-2.04033	.48477
	Equal variances not assumed			-1.221	13.445	.243	-.77778	.63674	-2.14877	.59321