



## IBM® SPSS® Statistics Version 22

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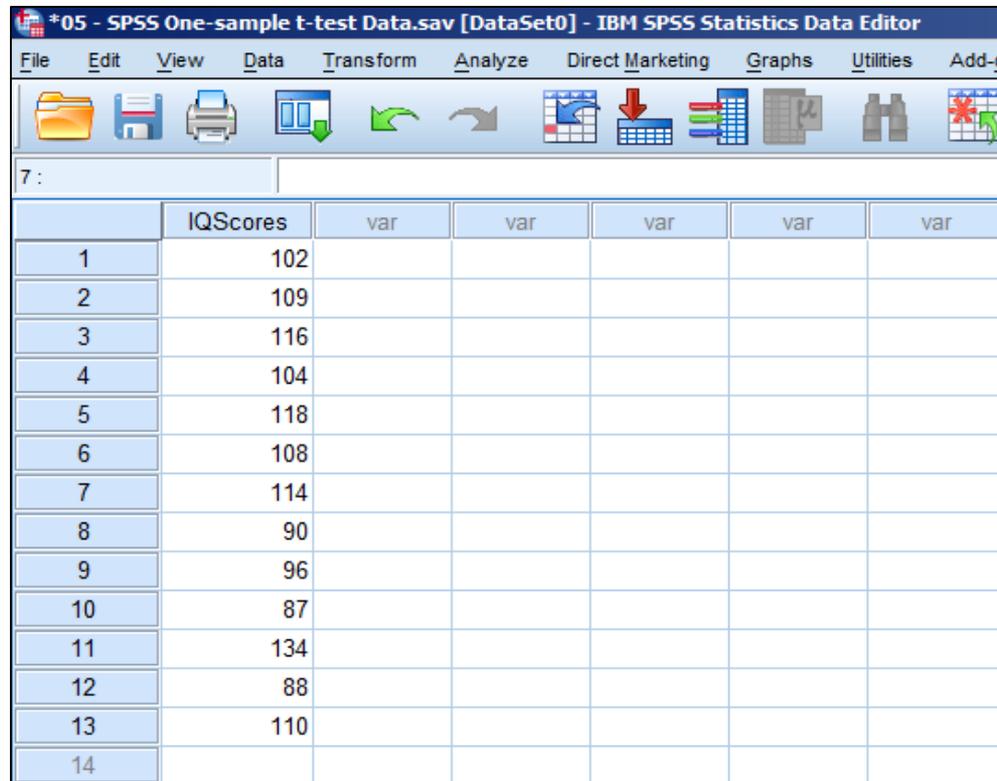
# Psyc 381

## Conducting a one-sample $t$ test

### A brief how-to guide

# Data Entry

- A one-sample  $t$  test is used to compare the mean of the collected data to the expected (or hypothesized) mean of the population. SPSS will need to calculate the mean using your collected data; as a result, entering data into SPSS will require the use of one column of data points. See the example below:

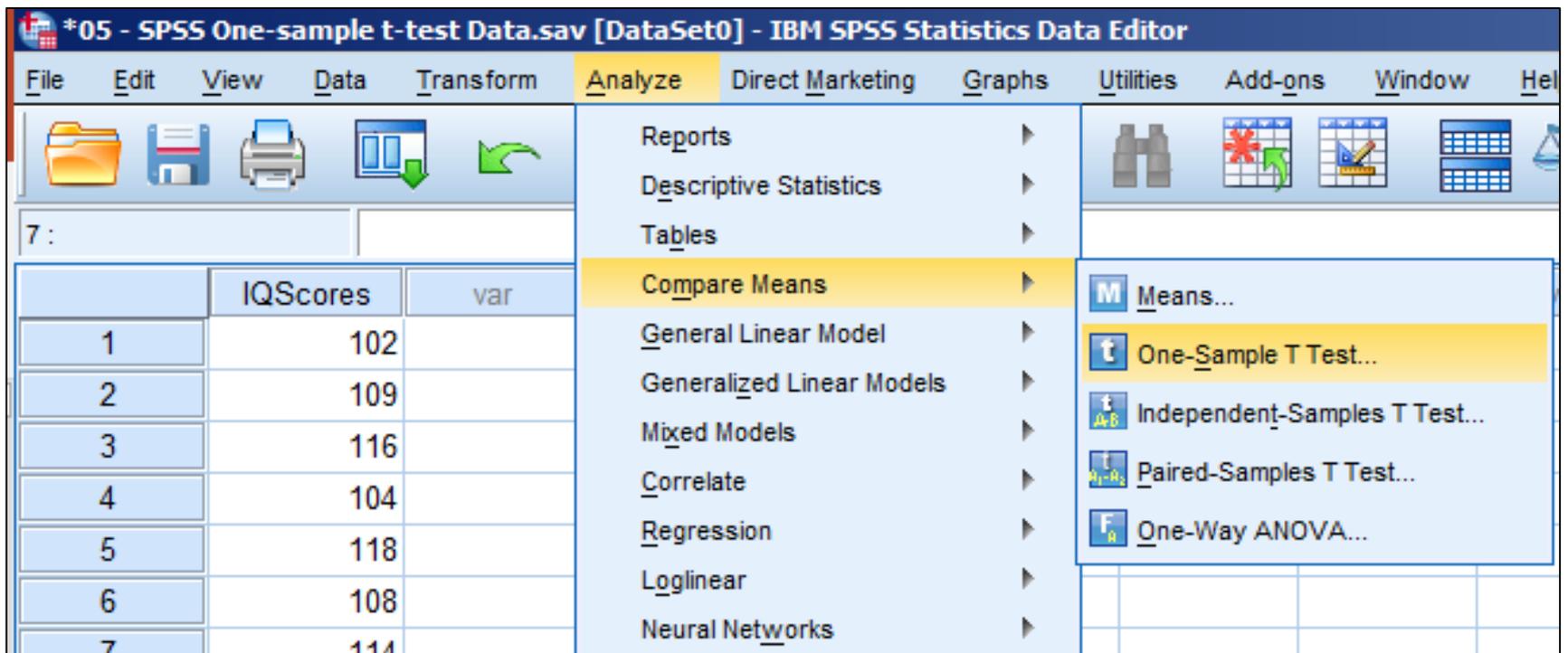


The screenshot shows the IBM SPSS Statistics Data Editor interface. The title bar reads '\*05 - SPSS One-sample t-test Data.sav [DataSet0] - IBM SPSS Statistics Data Editor'. The menu bar includes File, Edit, View, Data, Transform, Analyze, Direct Marketing, Graphs, Utilities, and Add-on. The toolbar contains icons for file operations, data manipulation, and analysis. The data grid shows a single column named 'IQScores' with 14 rows of data. The first row is highlighted in blue.

	IQScores	var	var	var	var	var
1	102					
2	109					
3	116					
4	104					
5	118					
6	108					
7	114					
8	90					
9	96					
10	87					
11	134					
12	88					
13	110					
14						

# Start the analysis

- To request a one-sample  $t$  test in SPSS, navigate to the following menu option:

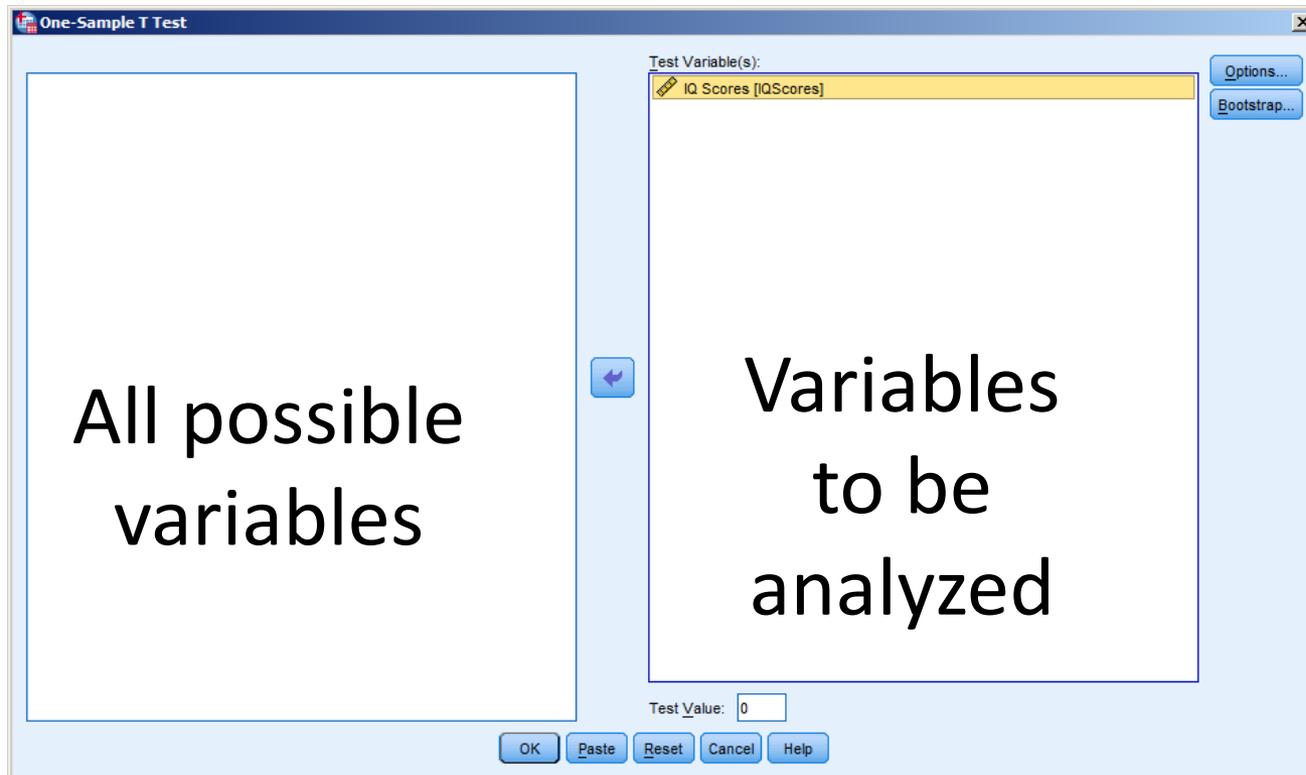


The screenshot displays the IBM SPSS Statistics Data Editor window. The title bar reads '\*05 - SPSS One-sample t-test Data.sav [DataSet0] - IBM SPSS Statistics Data Editor'. The menu bar includes File, Edit, View, Data, Transform, Analyze, Direct Marketing, Graphs, Utilities, Add-ons, Window, and Help. The 'Analyze' menu is open, showing options like Reports, Descriptive Statistics, Tables, Compare Means, General Linear Model, Generalized Linear Models, Mixed Models, Correlate, Regression, Loglinear, and Neural Networks. The 'Compare Means' option is selected, and its sub-menu is open, showing 'Means...', 'One-Sample T Test...', 'Independent-Samples T Test...', 'Paired-Samples T Test...', and 'One-Way ANOVA...'. The 'One-Sample T Test...' option is highlighted. In the background, a data table is visible with columns 'IQScores' and 'var', and rows numbered 1 through 7.

	IQScores	var
1	102	
2	109	
3	116	
4	104	
5	118	
6	108	
7	114	

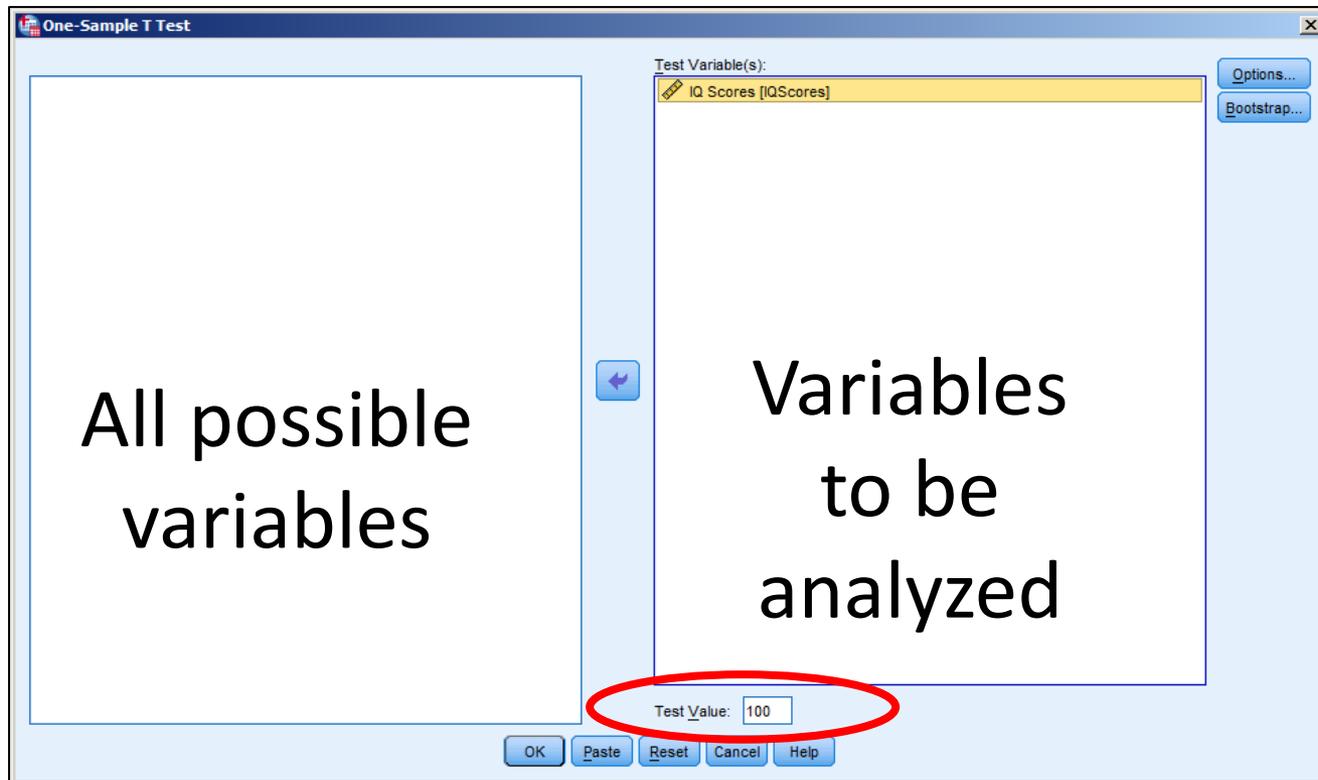
# Selecting the variable

- Once you have selected the correct analysis, you need to identify the variable you want to analyze using the menu below. The variables on the left are all those available in the data set; the variables on the right are the current ones that will be analyzed by SPSS.



# Choosing the test value

- You then need to indicate the appropriate “Test value” at the bottom – this is the comparison (or expected from  $H_0$ ) value specific to the research scenario under examination. There is no universal value that applies here so make sure you change this value as needed.



# 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 that will need to be reported when summarizing 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.

## One-Sample Statistics

	N	Mean	Std. Deviation	Std. Error Mean
IQ Scores	13	105.85	13.484	3.740

# Reading the output

- You will be given two pieces of output in the separate output window.
- The second piece of output contains the results from the one-sample  $t$  test analysis. Of importance is the observed  $t$  value, the degrees of freedom (df), the  $p$ -value (note: this is two-tailed; divide the  $p$ -value by 2 to obtain a one-tailed  $p$ -value).
- You should also look to make sure the test value was correctly entered as a mistake here will produce inaccurate test statistics.
- SPSS will not provide the value of Cohen's  $d$ ; this value can be computed by hand (or using a web-based app) using the values contained in the SPSS output.

## One-Sample Test

	Test Value = 100					
	t	df	Sig. (2-tailed)	Mean Difference	95% Confidence Interval of the Difference	
					Lower	Upper
IQ Scores	1.563	12	.144	5.846	-2.30	13.99