Using SPSS, Chapter 8:
Hypothesis Testing - One Sample

- ## Chapter 8.2 - Hypothesis Tests About a Proportion

  SPSS doesn't do this the same way it is done in the book.
  Click here for online calculators that work well.

- ## Chapter 8.3 - Hypothesis Tests About a Mean: σ Not Known (t-test)

  SPSS does this really well but you do need the raw data.
  If you are working with summary statistics use one of the online calculators found *here.*

- ## Chapter 8.4 - Hypothesis Tests About a Mean: σ Known

  SPSS doesn't do this the same way it is done in the book.
  Click here for online calculators that work well.

- ## Creating and Importing Data

Chapter 8.3 - Hypothesis Tests About a Mean: σ Not Known

1. Open or create your data. It must be in the form of rows=cases and columns=variables. SPSS can not be used with only the summarizing statistics (mean, standard deviation, sample size).
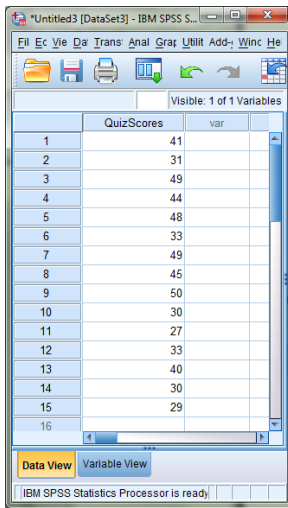   Below left is the sample data. The sample mean is 38.6 and the sample standard deviation is 8.5.

2. **Example:** Suppose we want to test the claim that the population mean is larger than 35 (Or the mean score of 38.6 is significantly more than 35).
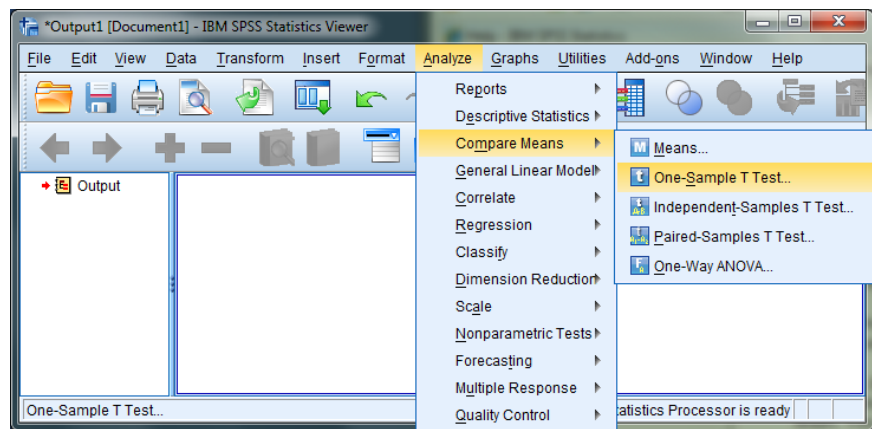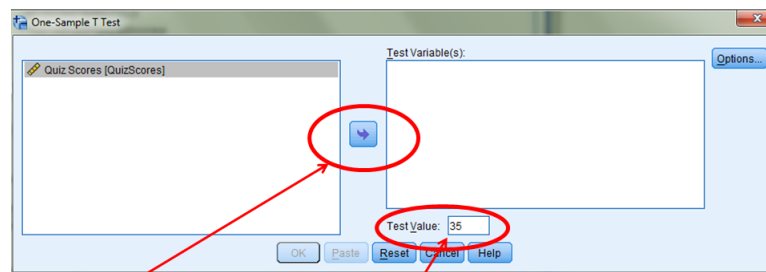
   $H_0 : \mu = 35$ $H_1 : \mu > 35$

3. In the Statistics Viewer choose $\boxed{\texttt{Analyze}} \rightarrow \boxed{\text{Compare Means}} \rightarrow \boxed{\text{One-Sample T Test} \ldots}$
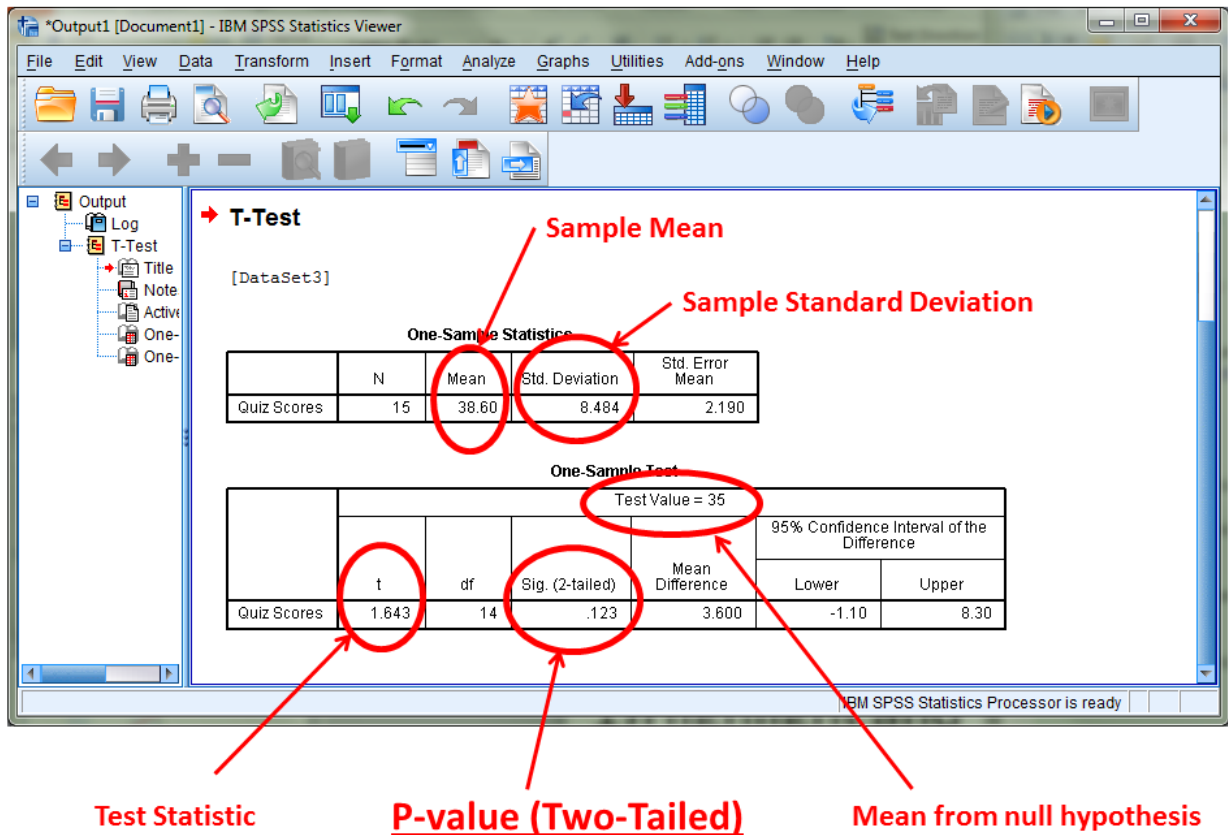

4. This opens another dialogue box.

1)Highlight and Transfer the Appropriate Variable.
   This is the sample data

2) Set the Test Value.
   This comes from the null hypothesis.

5. The results of this test are displayed in the Statistics Viewer.

6. Here, the two-tailed P-value is 0.123. Since we are conducting a one-tailed test, the P-value is $0.123/2 = 0.0615$. Whether or not you reject the null hypothesis depends on the level of significance you have. I.e., How willing are you to make a Type I error?

Creating and Importing Data

- There are two ways to get data into SPSS.

  - You can enter the data by typing it directly into the data editor.
  - You can open an existing data file by selecting the `File` tab, then `Open`, then `Data...`. Then select the type of file from the list of options. If it is not already an SPSS (`.sav`) data file, you will be prompted to answer some questions. For example, if you open an Excel file it may ask which worksheet and whether or not the first row contains labels.

- Make sure your data is formatted as described below.

  - <u>Rows = Cases</u>
    Each row represents a case such as each respondent to a questionnaire.
  - <u>Columns = Variables</u>
    Each column represents a variable being tracked or measured. For example, the answers to a specific question on a questionnaire defines it's own variable (column). As such, each row represents an individual case for all variables.
  - <u>Cells contain values</u>
    Each cell contains a single value of a variable for a case.

  It is possible to enter data in the form of a frequency table but then you must do some alterations before analyzing such data.

- Once you have the data opened in the data editor, click the `Variable View` tab at the bottom of the data editor. In this view, each variable is now a row and you must make sure all your variables are defined appropriately. The most important distinctions are

  - `TYPE`: The most common types are
    * `Numeric`: Used for quantitative data. These are numbers with no commas and a period delimiting the decimal places. SPSS will not allow you to enter non-numeric characters into a cell of numeric type.
    * `Date`: Used for dates or times from a menu of formats.
    * `String`: Used for qualitative data. Avoid symbols such as *, -, +, ?, etc.
  - `Measure`: There are three levels of measurement.
    * `Scale` is for ratio or interval levels of measurement.
    * `Ordinal` is for ordinal or ranked data.
    * `Nominal` is for qualitative data.
  - `Values`: If you have numeric values representing qualitative data such a 1=male and 0=female, you will probably want this to be labelled accordingly in graphs and outputs. Click on the cell in the `Values` column for that variable and assign labels for each value.