

Introduction to SPSS

Introduction The Statistical Package for the Social Sciences is usually referred to as *SPSS*. SPSS is a statistical software package that runs on PCs and Macs. It is widely used within psychology and is available in colleges and universities throughout the United States. This material is written for *SPSS, an IBM company*, Windows Version 19.

Your textbook contains one or two SPSS illustrative examples and at least two additional problems at the end of each relevant chapter, placed just before the *Notes* section. The illustrative examples provide detailed instruction on how to analyze the data that is appropriate for the chapter. The additional problems are intended to give you practice with what you have just learned.

Before moving ahead to analyze data using SPSS, it is useful to consider some general features that you will probably use, regardless of the data you are analyzing. If you have a question concerning something I have not covered, it is also worth consulting the *SPSS Help* function that SPSS offers located on the menu bar at the top right of the windows it displays. If it turns out that you want to learn about SPSS in more detail than I have presented here, I recommend reading L. A. Kirkpatrick and B. C. Feeney, *A Simple Guide to SPSS for Windows for Version 18*, Wadsworth/Cengage, Belmont, CA, 2011.

Basic Steps in Entering and Analyzing Data Using SPSS makes data analysis very easy. All that you need to do is:

1. **Enter the data into SPSS.** The two most common methods are to enter the data by typing it directly into the *SPSS Data Editor* (I will discuss the SPSS Data Editor in a moment), or to open a saved SPSS data file residing on your computer into the Data Editor. Since it is highly unlikely that you have any saved data files residing on your computer for the examples in our textbook, I have assumed that you will be entering the data by typing it into the Data Editor.

2. **Select a procedure.** Select a procedure (doing a statistical analysis or producing a graph), from the menu bar or tool bar at the top of the Data Editor.
3. **Interact with one or more dialog box(es).** Selecting a procedure produces one or more dialog boxes. Input from you to the dialog box(es) gives SPSS the information it needs to carry out the procedure you requested.
4. **Give SPSS the OK command to run the procedure and output the results.** Once the information is entered in the dialog box(es), clicking the **OK** button located on the appropriate dialog box gives SPSS the go-ahead and causes the procedure to be carried out. The results are then displayed in a window called the *Viewer* (more about the Viewer in a moment).

SPSS Windows SPSS has several windows it can present. We will discuss two of them, the *Data Editor Window*, and the *Viewer Window*. The Data Editor window displays the Data Editor. The Viewer window displays the output resulting from procedures usually initiated from the Data Editor. You can move from one to the other by clicking **Window** on the menu bar at the top of either window and then clicking either _____**SPSS Data Editor** or _____**SPSS Viewer** as appropriate. (The “_____” indicates variable material that precedes **SPSS Data Editor** or **SPSS Viewer** depending on several factors, like the name of the file, how many different data sets you have analyzed in a session, etc.)

SPSS Data Editor When you first open SPSS, you will see the Data Editor displayed, or a smaller screen, asking, “What would you like to do?” If you encounter the small screen, you can switch to the Data Editor by **clicking Type in data**, and then **clicking OK**. **Clicking** the **X** button in the upper right corner of the small screen will also put you in the Data Editor.

The Data Editor is a large table of rows and columns (similar to an Excel spreadsheet) where you enter, edit, save, analyze/graph, and print the data. The results of analyzing or graphing the data are output from the Data Editor to the Viewer. The Data Editor is presented when you first open SPSS because the first thing you will do is enter the data and specify variable information, such as the variable name. Once the data are entered, analysis or graphing can be carried out and the results sent to the Viewer for your consideration.

The Data Editor has two possible views, the **Data View** and the **Variable View**. Let’s discuss the Data View first.

Data View Figure E.1 shows the Data Editor displaying the Data View. The Data View is composed of a data table, a menu bar and a tool bar for performing various procedures and for getting help if desired. The tool bar is located under the menu bar; it allows procedures to be selected by clicking icons instead of using menus. Our discussion will proceed via menus rather than using the tool bar. When you open SPSS or obtain a new data table, the Data Editor table will be blank as shown in Figure E.1.

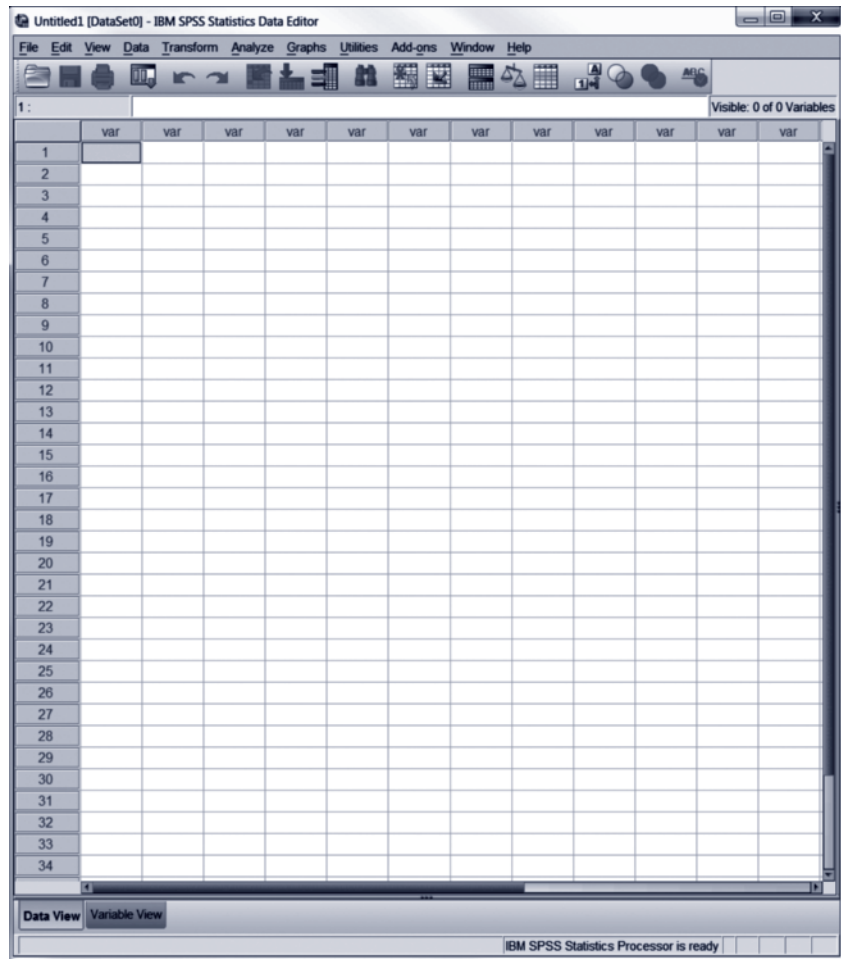
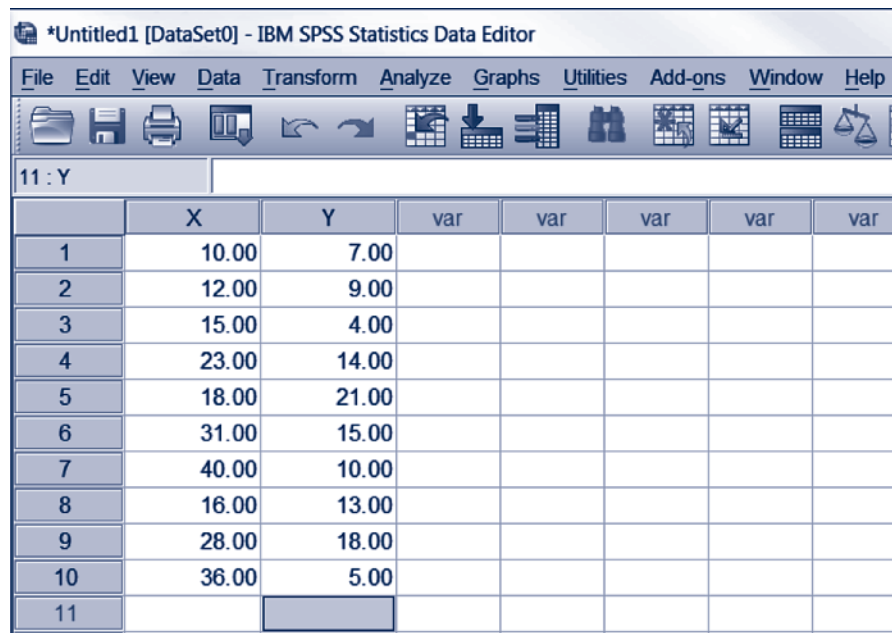


Figure E.1 Data Editor-Data View at start-up.

Figure E.2 shows the Data View of an untitled Data Editor in which I have entered the scores of **10, 12, 15, 23, 18, 31, 40, 16, 28,** and **36** for a variable named **X**, and **7, 9, 4, 14, 21, 15, 10, 13, 18,** and **5** for the variable named **Y**. SPSS automatically adds the **.00** after each score. You will get plenty of practice entering scores if you actually use SPSS as you work through the SPSS illustrative examples and problems contained in the textbook.



	X	Y	var	var	var	var	var
1	10.00	7.00					
2	12.00	9.00					
3	15.00	4.00					
4	23.00	14.00					
5	18.00	21.00					
6	31.00	15.00					
7	40.00	10.00					
8	16.00	13.00					
9	28.00	18.00					
10	36.00	5.00					
11							

Figure E.2 The Data View showing two variables, X and Y , and the scores for each variable

From Figure E.2, you can see that the Data Editor-Data View displays a table where each column pertains to a variable. In columns that contain data, each column displays a variable name that is specific to the column, and the scores for that variable. At the top of the screen, there is a menu bar that permits data entry, obtaining new (blank) Data Editor screens, editing, saving and printing, procedure selection (analyzing the data, graphing the data, etc), and getting help should you have questions. We will discuss some of these functions here, and the rest as appropriate in the textbook chapters, in conjunction with data from specific experiments or problems. I hope you will like and be excited by how easily, quickly, accurately and esthetically you can accomplish these functions using SPSS.

Variable View The Variable View of the Data Editor is shown in Figure E.3. It is obtained by clicking the **Variable View** tab at the bottom left of the Data View. Conversely, clicking the **Data View** tab when the screen is displaying the Variable View will produce the Data View. Like the Data View, the Variable View displays a table; only in this table each row represents a variable, giving its name and other important information about the variable. When you open SPSS or obtain a new data table, the table presented in the Variable View is blank. The default heading for each column is **VAR**. When you enter data into the Data Editor, SPSS gives the data a variable name, changing **VAR** to the new variable name. If the data are entered in the first column, the new column heading name is **VAR00001**. If the data are entered in the second column, the new heading is **VAR00002**, and so forth. You can also give the variables names of your own choosing. Generally, I believe it is better to name the variables yourself, because it avoids confusion when interacting with dialog boxes and when interpreting the results of an analysis. In the table displayed in Figure E.3, I have entered the names X , and Y . The other table entries are the default entries that SPSS gives to each numeric variable when it is entered into the table.

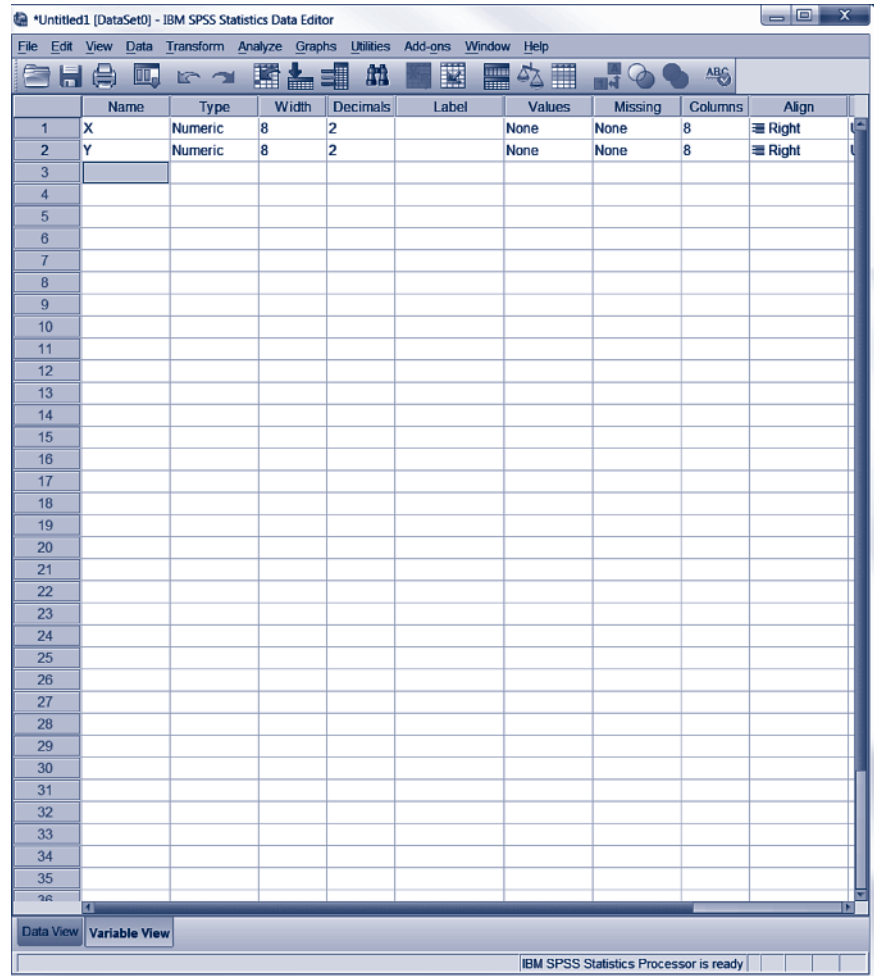


Figure E.3 Data Editor-Variable View showing the names of two variables, X and Y, along with other information concerning each variable.

Entering Data by Typing Directly into the Data Editor Data are entered via the Data Editor-Data View. Let's assume that you have the following *IQ* scores that you desire to enter.

IQ: 100, 105, 118, 120, 123.

I will assume SPSS is running and that a blank Data Editor-Data View screen is displayed, as shown in Figure E.1. If you have just opened SPSS and encounter the small screen mentioned above on p.616, you can switch to the Data Editor-Data View by **clicking Type in data**, then **pressing OK**, or by **Clicking the X** button in the upper right corner of the screen. Assuming a blank Data Editor-Data View is displayed, the cell located at row 1 of the first column of the Data View table should be highlighted. If not, **clicking** the cell will highlight it. I will assume the cell is highlighted in the ensuing discussion.

Next, let's see how to enter the data into the Data Editor

1. **Type 100** in the highlighted cell, then **press Enter**.

2. **Type 105**; then **press Enter**.

3. **Type 118**; then **press Enter**.

4. **Type 120**; then **press Enter**.

5. **Type 123**; then **press Enter**.

The value **100.00** is entered in the first cell of the first column. SPSS automatically gives the variable the name **VAR00001**, because the score is located in the first column, and the cursor moves down one cell. The SPSS default for numeric variables is 2 decimal places; so when the score of **100** was entered, SPSS automatically added **.00** to the score of **100**, resulting in the value **100.00**. To correct a score that was entered incorrectly, move the cursor to the cell containing the incorrect score, and type in the correct value.

The value of **105.00** is entered in the cell directly under **100.00**.

The value of **118.00** is entered in the cell directly under **105.00**.

The value of **120.00** is entered in the cell directly under **118.00**.

The value of **123.00** is entered cell directly under **120.00**.

Figure E.4 shows the Data Editor after the scores have been entered.

The screenshot shows the IBM SPSS Statistics Data Editor window titled '*Untitled3 [DataSet2] - IBM SPSS Statistics Data Editor'. The menu bar includes File, Edit, View, Data, Transform, Analyze, Graphs, Utilities, and Add. Below the menu bar is a toolbar with various icons. The main window displays a data grid with the following content:

6 : VAR00001					
	VAR00001	var	var	var	var
1	100.00				
2	105.00				
3	118.00				
4	120.00				
5	123.00				
6					

Figure E.4 Five scores entered into the Data Editor

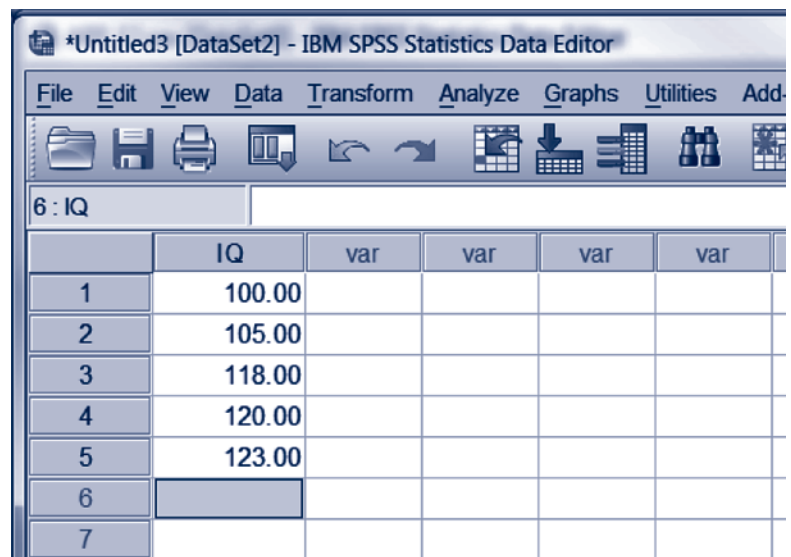
Let's now see how to assign our own name by changing **VAR00001** to **IQ**. To do so:

1. Click **Variable View**, next to *Data View* in the lower left corner of the screen.
2. Type **IQ** in the highlighted cell; then press **Enter**.

This causes the Data Editor-Variable View to be displayed, with the cell containing the name **VAR00001** highlighted.

IQ is entered as the variable name, replacing **VAR00001**.

Note that when you change the name of a variable in the Variable View screen, that name change is carried through in the Data View table as well. Figure E.5 shows the Data View.



	IQ	var	var	var	var
1	100.00				
2	105.00				
3	118.00				
4	120.00				
5	123.00				
6					
7					

Figure E.5 Data View showing the scores with **IQ** as the variable name.

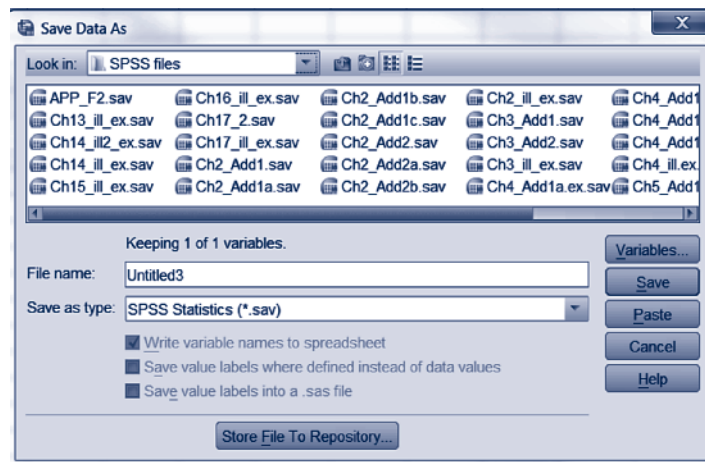
Saving Data Files It is a good idea when you have finished entering the data and naming the variable to save the data file. This is because any changes to data files made in a session, including initial data input, only last as long as the session, unless you save the file. Let's assume you have just entered the IQ data, and named the variable, IQ, and are in the Data View. Next, you want to save the file. You decide to name the file *IQexp*. To save this file on your computer with the name **IQexp**,

1. Click **File** on the menu bar at the top of the screen.
2. Click **Save** on the drop-down menu.

This produces a drop-down menu.

This produces the **Save Data As** dialog box shown below, with the cursor located in the **File name:** box. Note that the folders and files that are displayed in the large box contain material already saved and can vary widely from computer to computer.

The **Look in:** box at the top shows the directory in which the file will be saved. You can browse to another directory if you choose.



3. Type **IQexp** in the **File name:** box, replacing **Untitled3**; then **click** the **Save** button.

SPSS saves the file, adding the extension **.sav**. You are then returned to the Data View with the name of the data file, **IQexp.sav**, entered in the title bar at the top left of the screen.

Obtaining a New (Blank) Data Editor When you have finished analyzing the data for one problem or experiment, and you want to move on to another problem, it will be necessary for you to enter the data of the new problem. If the Data Editor already contains a data file and you are going to type the new data directly into the Data Editor, it is useful to obtain first a new or blank Data Editor into which you can enter the new data. To illustrate how to do this, we will assume that you are in the Data Editor, displaying the Data View, and you have the scores from a saved data file currently entered in the data table. To obtain a new (blank) Data Editor,

1. **Click File**, then **select New**; then **click** on **Data**.

SPSS displays a new Data Editor. Since this is a new Data Editor, the table is blank.

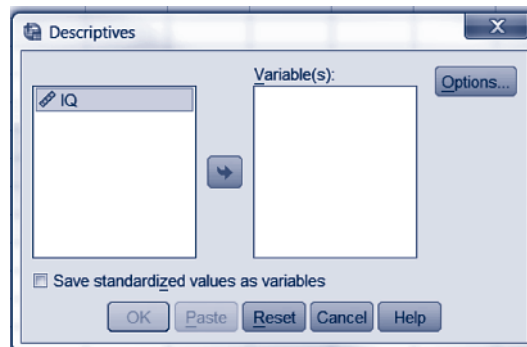
Analyzing Data Before presenting a specific example, it is worthwhile to discuss a general procedure that SPSS uses to analyze data. For any data set, you must tell SPSS the name of the variable you want analyzed. SPSS accomplishes this by displaying a dialog box. When you tell SPSS that you want a particular procedure done, such as computing the mean of a set of scores currently entered in the Data Editor, SPSS will display the appropriate dialog box to tell it the name of the variable to be analyzed. In our examples so far, there has been only one variable. However, often the Data Editor contains more than one variable. Whichever is the case for a specific data set, the dialog box will list all of the variables contained in the Data Editor for that set in a large box on the left. You must then move the variable(s) that you want analyzed into the designated blank box, which is usually on the right. This is accomplished by clicking the variable(s) and then clicking the arrow that is located next to the designated box. When this is

done, the variable(s) moves from the box on the left into the designated box. Please note, **SPSS only analyzes variables that are contained in the designated box.**

Let's now do an example to illustrate how SPSS analyzes data. You will see the above general procedure at work in this example. Assume that you want to compute the mean, standard deviation, and range of the **IQ** data shown in Figure E.5, and that these data are currently entered into the Data Editor. To compute the **mean, standard deviation** and **range** of the **IQ** scores,

1. Click **Analyze** on the menu bar at the top of the screen; then **select Descriptive Statistics**; then; **click Descriptives....**

This produces the **Descriptives** dialog box, shown below, that SPSS uses to do descriptive statistics. It also is the dialog box in which you tell SPSS the name of the variable(s) you want analyzed. Notice that **IQ** is located and highlighted in the large box on the left.

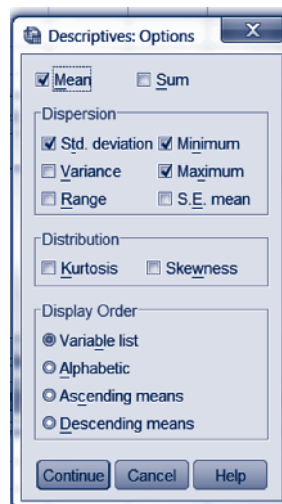


2. Click the **arrow** in the middle of the dialog box.

This moves **IQ** from the large box on the left into the designated **Variable(s):** box on the right, telling SPSS that you want to analyze the **IQ** scores.

3. Click **Options...** at the top right of the dialog box.

This produces the **Descriptives: Options** dialog box shown below. This dialog box allows you to tell SPSS which statistics you want to compute. Checked boxes indicate the default statistics that SPSS computes.



4. Click **Minimum** and **Maximum**; then click **Range**.

5. Click **Continue**.

6. Click **OK**.

This removes the default **checked** entries for **Minimum** and **Maximum**, and produces a **check** in the **Range** box. Since the **Mean** and **Std. deviation** boxes were already checked, the boxes for **Mean**, **Std. deviation**, and **Range** should now be the only checked boxes. SPSS will compute these statistics when given the **OK** command from the **Descriptions** dialog box.

This returns you to the **Descriptions** dialog box where you can give the **OK** command.

SPSS then analyzes the data and displays the results shown below.

Analysis Results

The results are displayed in the SPSS Viewer window as shown in E.6 below. From the **Descriptive Statistics** table, we note that **Range = 23.00**, **Mean = 113.2000**, and **Std. Deviation = 10.08464**. The **Descriptive Statistics** table also shows that **N = 5**.

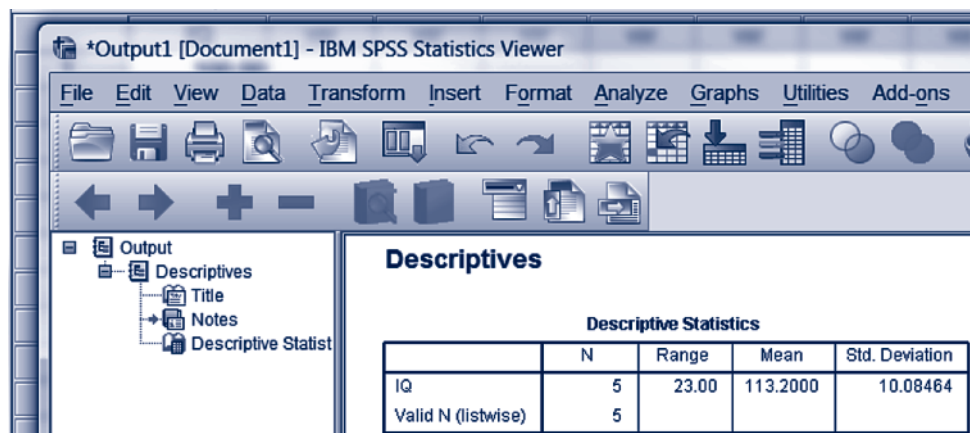
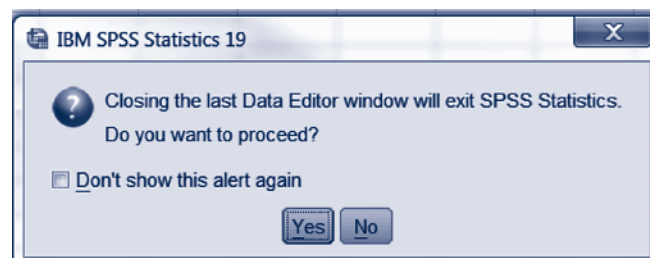


Figure E.6 SPSS Viewer showing the results of the analysis.

Exiting from SPSS There are several ways to exit from SPSS. One way is to click on **File** on the menu bar of either the Data Editor or Viewer. Then click **Exit** on the drop-down menu. Another way is to click the **X** (close) button in the upper right corner of either screen. If this is the last Data Editor window, SPSS will display the following screen



If you **click Yes**, and the data have been saved, SPSS will close. If you haven't saved your work (data, analyses, graphs, or output) you will be prompted about whether you want to save it. Answer the dialog box(es) as appropriate. After doing so, SPSS will close. If you have saved your work before exiting, when you **click Exit** or **click** the × button, SPSS will immediately close.