

Chapter 0

Introduction to SPSS

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Chapter 0 Introduction to SPSS

The purpose of this manual is to teach you how to solve statistical problems using the statistical software program **SPSS 16.0 for Windows**. SPSS is a research quality statistical software program that is easy to learn and use. SPSS has versions available for IBM compatible and Macintosh personal computers as well as several mainframe systems. This manual is specifically designed to work with **SPSS 16.0 for Windows**. If you are using a different version of SPSS or using SPSS on a computer not using Windows, you will still find this manual helpful since the different versions of SPSS are very similar.

This manual is designed to accompany *Elementary Statistics*, 11/e or *Essentials of Statistics*, 4/e both by Mario F. Triola¹. This manual is structured to help you work through the examples and homework that appear in *Elementary Statistics* and *Essentials of Statistics*. The best way to learn anything is to do it. You should have your textbook with you and be at a computer with SPSS running while you read this manual.

This chapter is a brief introduction to SPSS. The rest of the chapters in this manual correspond to the chapters in your textbook. This manual has been written with *Elementary Statistics* as the primary reference since all the material in *Elementary Statistics* is included in *Essentials of Statistics*. It is best if you have read the corresponding chapter in your textbook prior to beginning the chapter in this manual. The current chapter may be begun immediately because it does not require any statistical knowledge.

This chapter discusses some of the basic menus and commands in SPSS. You will learn how to create, edit, and save data files. Further, you will learn how to get help from SPSS and how to print. We assume that the reader is familiar with the basics of using Windows including the use of a mouse, and being familiar with menus and dialog boxes. In this manual, SPSS commands and actions will be shown in boldface font (e.g. choose **File**, then choose **Open...**). Key terms will be shown in boldface fonts (e.g. **Case** or **Data Editor**) and variable names will be shown in boldface and italics (e.g. *Var1* or *Salary*).

SPSS 16.0 is based on point-and-click technology. In this manual, it is understood that “choose **File**” means move the cursor  over the word **File** and then click the left mouse button. Sometimes, after choosing something (e.g. choose **File**) a new list of choices will appear. In this manual, the shorthand notation “choose **File** > **Exit**” will be used to indicate, move the cursor over the word **File**, click the left mouse button, then move the cursor over the word **Exit**, and click the left mouse button again.

¹ Published by Pearson Addison-Wesley, Boston.

Section 0-1 Starting SPSS

There are many different computer systems (IBM compatible PC, Macintosh, mainframe computers, etc.) that SPSS runs on, it might be necessary to ask your computer administrator how to start the SPSS program. To start SPSS 16.0 for Windows on a machine running the Microsoft Windows XP (32-bit version) or Vista (32-bit and 64-bit versions) operating system, click the **Start** button and then move the mouse to **Programs**. After a few seconds a list of the computer programs on your machine will appear. Browse the list of programs that appear until you locate SPSS for Windows and choose **SPSS 16.0 for Windows**. When **SPSS 16.0 for Windows** starts the window shown in Figure 0 - 1 will appear on your computer screen.

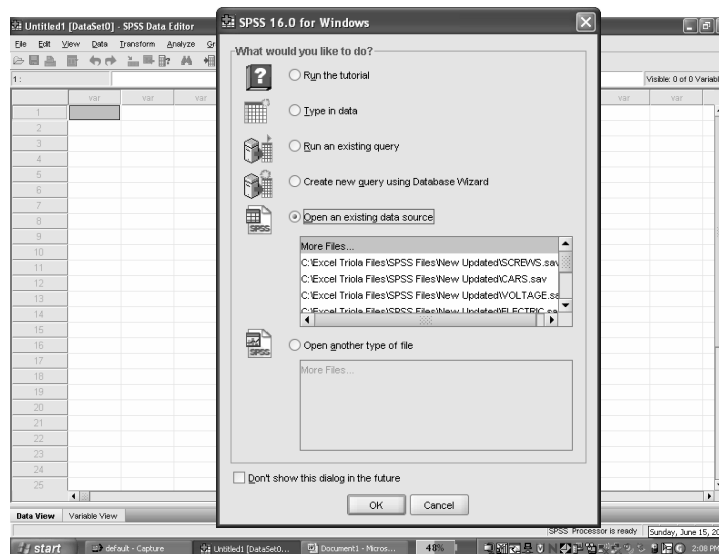


Figure 0 - 1

If you are unfamiliar with SPSS, it is best to become acquainted with SPSS by going through the tutorial. The tutorial will take about an hour; you can cancel the tutorial and restart it later should you change your mind. To begin the tutorial, choose the bullet for **Run the Tutorial**. Click the **OK** button and then follow the instructions in the **Tutorial**.

If you want to enter data into a new SPSS data file, choose the bullet for **Type in data**. If you want to open a file on your computer, choose the bullet for **Open an existing data source**. The box below “Open an existing data source” lists some recently used SPSS data files. The box you see may differ than shown in Figure 0 - 1. It may have a list of SPSS files depending on what files have been recently opened in SPSS on your computer. Clicking on a filename in the list and then clicking the **OK** button will quickly open the selected file. We will not discuss the other options (Run an existing query, Create a new query using Database Wizard,

or Open another type of file) in this manual, as it is unlikely you will need to use them.

When you are ready, choose the bullet for **Type in Data**. Along the top of the SPSS window is the menu bar (Figure 0 - 2) where all the commands used in this manual can be found. The menu bar has eleven menu items (**File, Edit, View, Data, Transform, Analyze, Graphs, Utilities, Add-ons, Window, Help**) above a row of icons that are shortcuts for many of the common commands, such as opening or saving data files and printing. Each of these menu items has sub-menus that can be accessed by choosing the menu item.

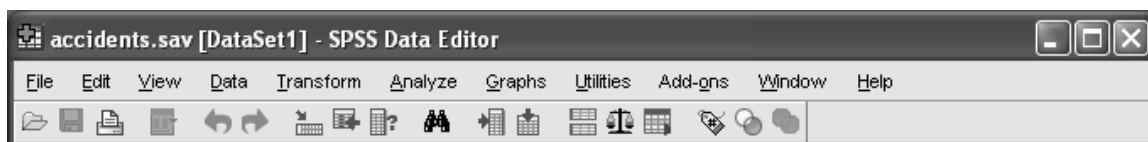


Figure 0 - 2

Choosing a sub-menu item will usually open a **dialog box** but sometimes will open a sub-sub-menu. Dialog boxes are used to select variables and options for analysis. Each dialog box associated with a statistical procedure or chart (for example Figure 0 - 3) has three basic components: a **source variable list**, a **target variable list**, and some **command buttons**.

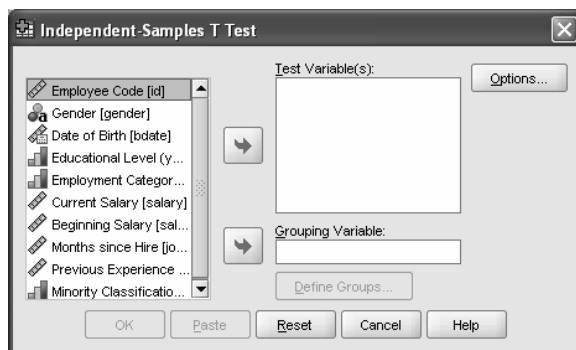


Figure 0 - 3

The **source variable list** is a list of variables in the data file that can be used by the procedure. The left-most box in Figure 0 - 3 contains the source variable list for this procedure. Only variable types that are allowed by the procedure are displayed in the source variable list. **Target variable list(s)** are one or more lists indicating the variables chosen for the analysis. Both the **Test Variable(s)** box and the **Grouping Variable** box in Figure 0 - 3 are target variable lists.













Measurement Level	Data Type			
	Numeric	String	Date	Time
Scale		n/a		
Ordinal				
Nominal				

Figure 0 - 4

SPSS uses different icons to provide information about the variable type and measurement level. Notice that by referring to Figure 0 - 4 that the variable *gender* is nominal string data, *date of birth* is scalar date data, *educational level* is ordinal numeric data, and *current salary* is scalar numeric data (see Section 1-1 of this manual for more information about level of measurement).

The **variable paste**  button is used to paste a variable from the source variable list to the target variable list. The **command buttons** (**OK**, **Paste**, **Reset**, **Cancel**, **Help**, **Define Groups...**, and **Options...**) are buttons that instruct the program to perform an action, such as run a procedure, display Help, or open a sub-dialog box to make additional specifications. Buttons that are grayed out (e.g. **OK**, **Paste**, and **Define Groups...** in Figure 0 - 3) are disabled and cannot be used. These buttons will be available once variables have been selected into the target variable list.

There are six standard buttons (**OK**, **Continue**, **Paste**, **Reset**, **Cancel**, and **Help**) in most dialog boxes. After you select your variables and choose any additional items in the dialog box, click the **OK** button and the dialog box will close and run the procedure. Pressing the **Enter** key is equivalent to clicking the **OK** button. In sub-dialog boxes, there is a **Continue** button. The **Continue** button is similar to the **OK** button except it does not run the procedure. Clicking the **Continue** button will save any changes you have made, close the sub-dialog box, and return to the original dialog box. Clicking the **Reset** button will deselect any variables in the target variables list(s) and reset all specifications in the dialog box and any sub-dialog boxes to their default state. Clicking the **Cancel** button will close the dialog box and cancel any changes in the settings since the last time the dialog box was opened. Clicking the **Help** button will open a context-sensitive dialog box that contains information on the current dialog box. Clicking with the right mouse button (right-clicking) in many of the individual dialog box controls will open a context-sensitive help window containing information about that control.

Section 0-2 Opening an Existing Data File

Many data files already exist on your computer. The twenty-four SPSS data files listed in **Appendix B: Data Sets** of your textbook are saved on the data disk, which comes with the textbook. Another one hundred fifty-eight data files come with **SPSS 16.0 for Windows**. In this section, we will learn how to open these existing data files. SPSS can open data files stored in many different formats. For example, it can open data files created by Microsoft Excel, dBase, Lotus 1-2-3, Systat, and SAS. SPSS can also open data files that are stored in SYLK (symbolic link) format that is used by some spreadsheets. It can also read data from text files.

The **Employee data.sav** data file comes with SPSS. This data file has information on 474 employees hired by a Midwestern bank between 1969 and 1971. The bank was subsequently involved in EEO litigation. For additional information about this data file, see “Statistical bases in the measurement of employment discrimination” by H. V. Roberts (1979). In: *Comparable Worth: Issues and Alternatives*, E. R. Livernash, ed., Washington, D.C.: Equal Employment Advisory Council.

We begin by opening this SPSS data file. To open an existing SPSS data file, choose **File > Open > Data...** (i.e. choose **File** from the menu, then choose the sub-menu item **Open**, next choose the sub-sub-menu item **Data...**) and the **Open File** dialog box (Figure 0 - 5) will open. The dialog box shows a list of folders and SPSS data files.

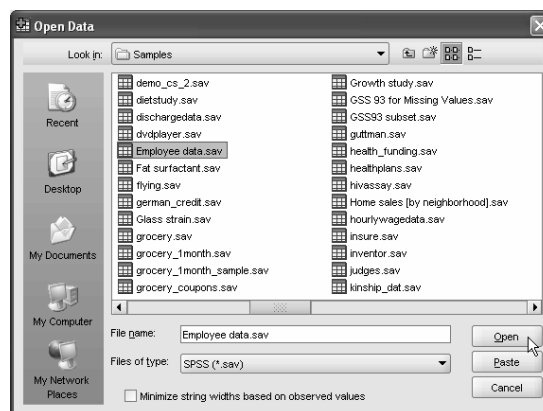




Figure 0 - 5

By default SPSS data files (.sav extension) are displayed in the **Open File** dialog box. Files of other data formats can be displayed using the **Files of type** box. Click the **down arrow** button  at the right of the **Files of type** box to see the different formats that SPSS can open. In this case, **Employee data.sav** is stored in SPSS format therefore we do not want to change this option. If you select a different format then no data files will be showing in the window since this folder contains only SPSS files.

The data files are listed alphabetically. If **Employee data.sav** is not showing in the dialog box, scroll through the data files by clicking the  button until **Employee data.sav** is showing. Open the data file named **Employee data.sav** by clicking on its name and then clicking the **Open** button.

The **Employee data.sav** data file will appear in the **Data Editor** (Figure 0 - 6). If the **Data Editor** opened in the **Variable View** then click on the **Data View** tab near the bottom of the window. SPSS is now ready to perform statistical calculations on this data.

	id	gender	bdate	educ	jobcat	salary	salbegin	jobtime	preve xp	minority
1	1	m	02/03/1952	15	3	\$57,000	\$27,000	98	144	0
2	2	m	05/23/1958	16	1	\$40,200	\$18,750	98	36	0
3	3	f	07/26/1929	12	1	\$21,450	\$12,000	98	381	0
4	4	f	04/15/1947	8	1	\$21,900	\$13,200	98	190	0
5	5	m	02/09/1955	15	1	\$45,000	\$21,000	98	138	0
6	6	m	08/22/1958	15	1	\$32,100	\$13,500	98	67	0
7	7	m	04/26/1956	15	1	\$36,000	\$18,750	98	114	0
8	8	f	05/06/1966	12	1	\$21,900	\$9,750	98	0	0
9	9	f	01/23/1946	15	1	\$27,900	\$12,750	98	115	0

Figure 0 - 6

The data displayed in your Data Editor may look different from those shown here since there are several different options available to customize the view. The next section discusses some of these options. Before doing any calculations let's explore the features of the **Data Editor**.

Section 0-3 The Data Editor

The **Data Editor** provides a convenient, spreadsheet-like display for creating and editing data files. The Data Editor window opens automatically when you start a session. SPSS provides two views of the data file in the **Data Editor**, the **Data View** and the **Variable View**. The variables and data values (or defined value labels) are displayed in the **Data View**. The **Variable View** displays variable definition information, including defined variable and value labels, data type (for example, string, date, and numeric), measurement scale (nominal, ordinal, or scale), and user-defined missing values.

Cases, **variables**, and **cells** are basic concepts in SPSS data files. In this data file, each **case** (each row in the data file) corresponds to a different employee. A case (sometimes referred to as an observation) is an employee, a person, or anything that is being studied. **Variables** (each column) are different pieces of information collected on the cases.

The **Employee data.sav** data file has 10 variables and 474 cases. The variables are the ten different measurements *id*, *gender*, *bdate*, *educ*, *jobcat*, *salary*, *salbegin*, *jobtime*, *prevexp*, and *minority* made on each employee. Each variable-case combination denotes a **cell** in the data file. For example, the intersection of case 4 and variable 3 (*bdate*), denotes the cell which has the date 04/15/1947 in it. There are 4,740 cells (474 cases · 10 variables) in this data file.


Click the **Variable View** tab near the bottom of the **Data Editor** (Figure 0 - 6) to see the **Variable View** (Figure 0 - 7) for this data file. This view shows information about each of the variables. If you click the **Data View** tab, the **Data Editor** window will return to the **Data View**.

	Name	Type	Width	Decimals	Label	Values	Missing	Columns	Align
1	id	Numeric	4	0	Employee Code	None	None	8	Right
2	gender	String	1	0	Gender	{f, Female}...	None	1	Left
3	bdate	Date	10	0	Date of Birth	None	None	13	Right
4	educ	Numeric	2	0	Educational Lev...	{0, 0 (Missi...	0	8	Right
5	jobcat	Numeric	1	0	Employment C...	{0, 0 (Missi...	0	8	Right
6	salary	Dollar	8	0	Current Salary	{\$0, missing...	0	8	Right
7	salbegin	Dollar	8	0	Beginning Salary	{\$0, missing...	0	8	Right
8	jobtime	Numeric	2	0	Months since H...	{0, missing}...	0	8	Right
9	prevexp	Numeric	6	0	Previous Experi...	{0, missing}...	None	8	Right
10	minority	Numeric	1	0	Minority Classif...	{0, No}...	9	8	Right

Figure 0 - 7

SPSS limits variable names to eight characters or less and the name cannot include any spaces or special characters. This can make it difficult to tell what the variable is describing. For example, consider what the variables *id* or *jobtime* might be measuring in **Employee data** data file. To solve this problem SPSS allows each variable to be associated with a label. **Labels** can be up to 256 characters long and can therefore be more descriptive than variable names. The column named **Label** in the **Variable View** shows the labels for the variables. SPSS uses the variable labels in the output from statistical procedures.

Variables in SPSS can have eight different **data types**. The variables *id*, *educ*, *jobcat*, *jobtime*, *prevexp*, and *minority* are all numbers with no decimal points showing and have data type, *Numeric*. The variable *gender* is character data and has data type, *String*. The variable *bdate* is a date and has data type, *Date*. The variables *salary* and *salbegin* are currency and have data type, *Dollar*.

Click in the cell that reads **Date**, in the row for *bdate* and the column labeled **Type**. Click on the dots icon  that appears and the **Variable Type** dialog box (Figure 0 - 8) will open.

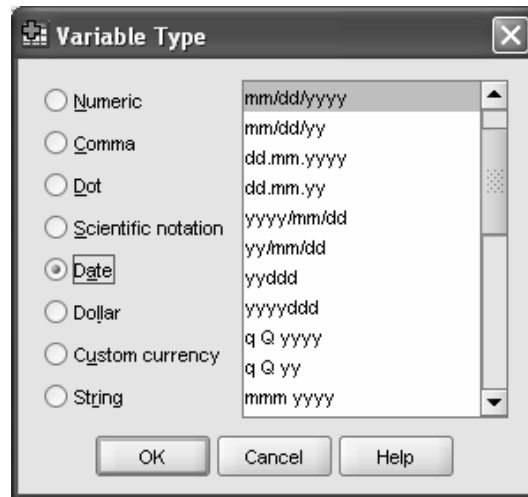




Figure 0 - 8

Click on **mm/dd/yy** as the variable type and then click the **OK** button. SPSS will now use the two-year date format. We can undo the change we have just made by choosing **Edit > Undo Modify Variables** from the **Edit** Menu. The **mm/dd/yy** format requires 8 columns whereas the **mm/dd/yyyy** format requires 10 columns to show it properly. Scroll to the right in the **Variable View** window (Figure 0 - 7) by clicking the  button until the column labeled **Columns** is displayed. The number in the column shows the width of the column in characters that will be displayed in the **Variable View** and can be changed to match the selected format requirements for *bdate*.

Notice that in Figure 0 - 6 the column displaying the variable *gender* is very narrow. Change the column width for gender to 8. Now the variable *gender* will be displayed using eight columns.

Just as a variable can have a label that identifies the variable, **value labels** up to 60 characters long, can be assigned to the values of a variable to help identify the values. The variables *gender*, *jobcat*, and *minority* use **value labels**. To see how the **value labels** for *jobcat* are defined click in the cell that reads **{0,0 (Missing)}...** in Figure 0 - 7. This cell is in the row for *jobcat* and the column corresponding to **Values**. Click on the dots icon  that appears and the **Value Labels** dialog box (Figure 0 - 9) will open.

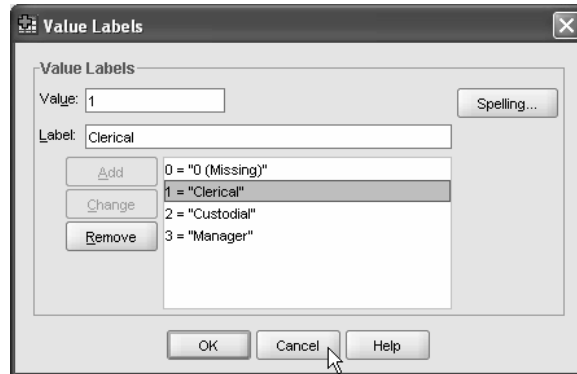


Figure 0 - 9

Click on **1 = “Clerical”** to observe how the value label is defined. This dialog box can be used to add, change, or remove value labels. We do not want to change the value labels, therefore click the **Cancel** button to return to the **Variable View**.

Change to the **Data View** by clicking on the **Data View** tab. To display the **Value Labels** in the **Data View**, choose **View > Value Labels** from the **Data View** menu. Compare the current **Data View** (Figure 0 - 10) with original **Data View** (Figure 0 - 6). This setting is a toggle, which means that choosing **View > Value Labels** again will display the data values.

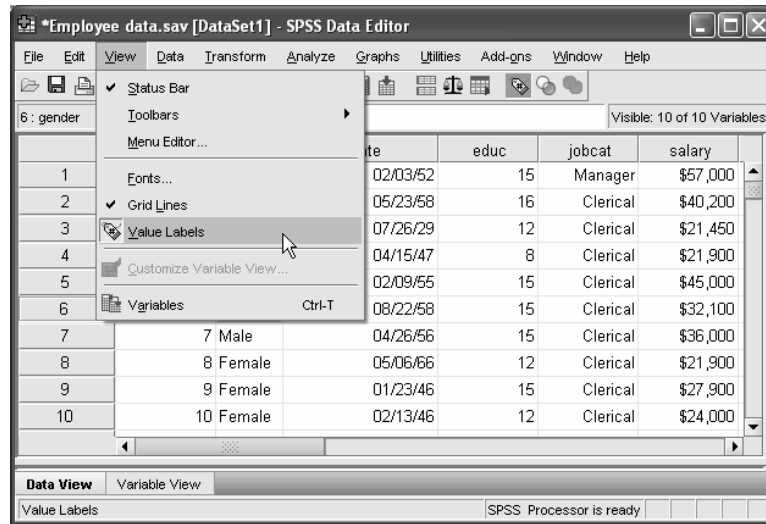


Figure 0 - 10

Section 0-4 Typing in a New Data File

It is often necessary to enter data into a data file in SPSS before doing any analysis. Consider the data in Problem 17 of Chapter 3.2 of the textbook, **Customer Waiting Times**. When investigating waiting times required for customer service, the

following results (in minutes) are obtained. The times in minutes are given in Table 0 - 1.

Jefferson Valley Bank:	6.5	6.6	6.7	6.8	7.1	7.3	7.4	7.7	7.7	7.7
Bank of Providence:	4.2	5.4	5.8	6.2	6.7	7.7	7.7	8.5	9.3	10.0

Table 0 - 1

To create a new data file with these values in it, choose **File > New > Data**. If there is data in the Data Editor, SPSS might ask if you want to **Save the contents of data editor**, click the **Yes** button to save the data or click the **No** button to clear the **Data Editor** and not save the data. The **Data Editor** is empty and SPSS is ready to have new data entered.

This data has 20 cases (10 times from Jefferson Valley Bank and 10 times from Bank of Providence) and two variables, *minutes* and *bank*. Choose the **Variable View** tab if the **Data Editor** is in **Data View**. In this view, the first column is labeled **Name**. To create a new variable named *minutes*, you need to type *minutes* into the first row of the column labeled **Name**. When you press the enter key, the new variable *minutes* is created. SPSS automatically sets the **Type** of new variables to *Numeric*. SPSS also automatically sets **Width** to 8 and **Decimals** to 2 for new variables. SPSS sets the level of measurement to **Scale** (see Section 1-1 of this manual for more information about level of measurement). SPSS does not automatically define a **Label** or **Value Labels** for new variables. Figure 0 - 11 shows how the **Data Editor** records this information.

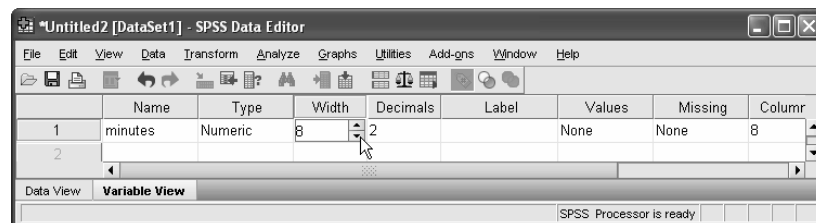



Figure 0 - 11

Notice the times, in minutes, in Table 0 – 1 are all between 4.2 and 10.0. The values are numeric consequently it is not necessary to change the **Type** setting. **Width** controls the number of digits that are displayed. The data values might be displayed incorrectly if the value for **Width** is too small. Regardless of the choice for **Width**, the data values are stored correctly in the **Data Editor**. **Width** for this data should be at least four; use **Width 5**. To set the **Width** to the value 5, click in the cell for **Width** and some arrows will appear (see Figure 0 - 11). Click the arrows up or down to change the value. Alternatively, you can simply type the number 5 into the cell. **Decimals** controls the number of decimals displayed in the **Data Editor**. Since the data values have one decimal place, use **Decimals 1**. This data format is referred to as *Numeric5.1*.

Click in the cell for **Label** and type in *Minutes required for service* to create an appropriate label for this variable. The label can be up to 256 characters long.

The next variable is an indicator of whether the bank is Jefferson Valley Bank or Bank of Providence. Create the variable *bank* by typing *bank* into second row of the column labeled **Name**. When we enter the data for *bank*, we will use *J* to indicate that the bank is Jefferson Valley Bank and *P* to indicate Bank of Providence. The values *J* and *P* are characters; therefore, the data **Type** should be *String*. To change the variable type of the variable *bank*, click in the cell for **Type** in the row for *bank*. Click the  icon and the **Variable Type** (Figure 0 - 12) dialog box will open.

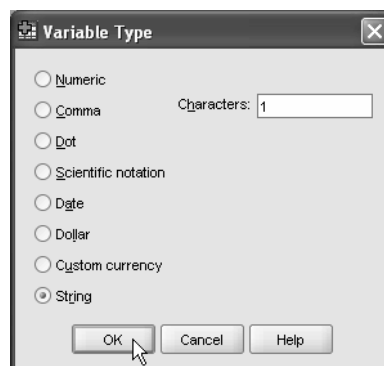


Figure 0 - 12

Choose the bullet for **String**, and then click in the box for **Characters** and type in *1*. Click the **OK** button to return to the **Variable View**. The data type of the variable *bank* is *String* and the **Width** is set to *1*. This data type is referred to as *String1*. Notice that the value in the cell for **Decimals** is grayed out. The graying indicates that this option is not available (strings do not have decimals).


To create **Value Labels** for *bank*, click in the cell for **Values** (the cell currently displays **None**). Click the dots  icon and the **Value Labels** dialog box (Figure 0 - 13) will open.




Figure 0 - 13

To create the value label **Jefferson Valley Bank** for **J**, click in the **Value** box and type *J* (this box is case sensitive, that is be sure to type *J* and not *j*), then click in the **Value Label** box and type **Jefferson Valley Bank**, finish by clicking the **Add** button. Create the value label **Bank of Providence** for **P** in the same way. When done click the **OK** button to return to the **Variable View**.

We are now ready to enter the data. Click the **Data View** tab and notice there are now two variables, *minutes* and *bank*, showing in the **Data Editor** with no data. Click in the first row of the variable *minutes* and type 6.5 (the first data value in Table 0 - 1) and press the enter key or the down arrow key. You are now in the second cell, type 6.6 (the next time), and repeat until all 20 times have been entered.

The order in which the data values for the variable *minutes* are entered does not matter. I entered the 10 Jefferson Valley Bank times followed by the Bank of Providence times. The times could have been entered in any order. For example, I could have alternated Jefferson Valley Bank times and Bank of Providence times (e.g. 6.5, 4.2, 6.6, 5.4, and so on). What is required is that each case of the two variables corresponds to the correct bank. Therefore, the order in which *bank* is entered *must be the same as the order* in which *minutes* was entered. The cases of the variables *minutes* and *bank* are linked.

When you are ready to enter the data values of *bank*, click in the first row of the column for *bank* and type *J* and then press the enter key. Continue in this way until you have entered all the values. If the **View > Value Labels** toggle is set to **Value Labels**, SPSS will display a **down arrow** button  which you can click and select *Jefferson Valley Bank* or *Bank of Providence*. The column width may not be wide enough to display Jefferson Valley Bank or Bank of Providence. If this is the case, go to the **Variable View** and for the variable *bank*, click in the column labeled **Columns** and change the current value to a number greater than 21 (the number of characters in Jefferson Valley Bank).

Section 0-5 Editing and Transforming Variables

If a mistake is found after entering data, it is a simple matter to edit the data. Click in the cell with the incorrect data value, type the new data value, and press the enter key. For example, to change case 4 of the variable *minutes* from 6.8 to 7.0, click in the cell with 6.8, type in 7.0, and press the enter key. This data file may be used later therefore let's change the 7.0 back to 6.8. To undo the last change made in the **Data Editor**, choose **Edit > Undo**.

Sometimes it is necessary to create new variables from existing variables in the data file. In statistics, this is referred to as transforming a variable. SPSS provides a way to compute the values for a new variable based on numeric transformations of other variables.

In the Jefferson Valley Bank/Bank of Providence data, we could be interested in computing a new variable that measures the number of seconds that the customer had

to wait. Choose **Transform > Compute...** to open the **Compute Variable** dialog box (Figure 0 - 14).

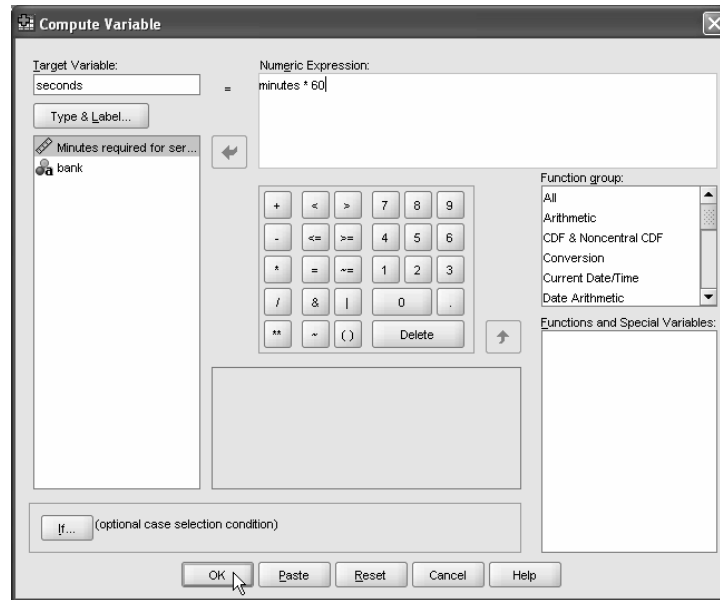


Figure 0 - 14

Since the new variable measures the number of seconds spent waiting, name the variable *seconds* by typing, *seconds* into the **Target Variable** box. Click in the **Numeric Expression** box and type the formula that defines the new variable, *minutes* * 60. When finished, click the **OK** button and the new variable *seconds* will be added to the data file.

The variable name *seconds* is not very descriptive. To create a label for *seconds* click the **Variable View** tab and then click in the cell corresponding to **Label** for the variable *seconds*. In this cell, enter the label *Seconds required for service*. The label could also have been set in the **Compute Variable** dialog box (Figure 0 - 14) by clicking the **Type&Label...** button.

Section 0-6 Printing and Saving a Data File

Sometimes a printed copy of the data file is wanted. For example, a printed copy may be required for a report or other document. In addition, it is easier to check the accuracy of data from a printed copy than from the computer screen. It is always a good idea to double-check the accuracy of recently entered data.

The data file is printed exactly as it appears in the **Data Editor**. If you want to print the data values, make sure the **Data Editor** is in **Data View**. If you want to print the information about the variables then choose the **Variable View** tab prior to

printing. To obtain a printed copy of a data file, choose **File > Print...** and the **Print** dialog box will open.

SPSS has two options that can affect the appearance of the **Data Editor**. Choosing **View > Grid Lines** from the menu will hide the grid lines. This is a toggle, which means that choosing **View > Grid Lines** again will make the grid lines reappear. If the data file has value labels, then choosing **View > Value Labels** toggles between displaying data values and displaying value labels.

After typing in a new data file or editing an old data file, the contents of the data editor should be saved. This preserves the data file for future use. To save the contents of the **Data Editor** decide on a name for the data file. The current data refers to the times spent waiting for service at two banks thus the name **Customer waiting time** seems an appropriate choice for this data. To save the contents of the **Data Editor** to the data file named **Customer waiting time**, choose **File > Save As...** and the **Save Data As** dialog box (Figure 0 - 15) will open.

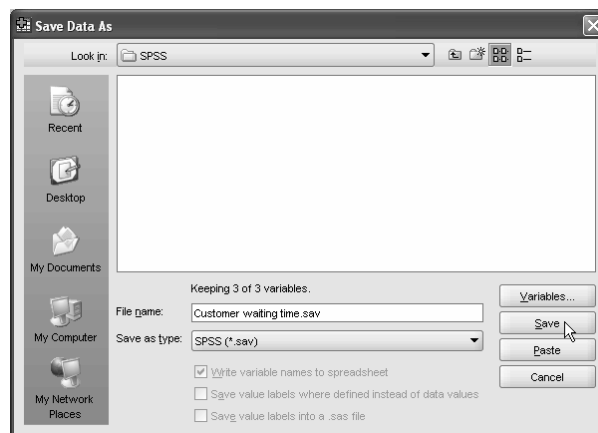



Figure 0 - 15

Enter the name **Customer waiting time** into the **File name** box and click the **Save** button. The data file will be saved as **Customer waiting time.sav** in the selected folder. If you want to save the data file in a different format then click the  button at the right of the **Save as type** box. A list of available data format types (Microsoft Excel, Lotus 1-2-3, dBase, and text among others) will appear.

Section 0-7 Help in SPSS

SPSS 16.0 for Windows provides several ways to obtain help about how to use SPSS. Every window has a **Help** menu on the menu bar.

Choose **Help > Topics** on the menu bar to open the help window. The help window has tabs for **Contents**, **Index**, **Search**, and **Favorites**. Click the **Contents** tab and double-click the book icons to expand or collapse the contents. Click the **Index** tab to search for a term in the index. Click the **Search** tab to search **Help** for a word or words in Help topics.

Choose **Help > Tutorial** from the menu bar to access the introductory tutorial. The tutorial is displayed using the web browser on your computer. The files were installed on your computer when SPSS was installed and so you do not need an Internet connection to access the tutorial.

Most dialog boxes have a context-sensitive **Help** button. Clicking the **Help** button opens a **Help** window containing information about the current dialog box.

Choose **Help > Statistics Coach** from the menu bar to get general assistance for many of the commonly used statistical techniques. The **Statistics Coach** asks simple questions, uses nontechnical language, and provides visual examples to help select the basic statistical and charting features that are appropriate for your data. The **Statistics Coach** is not a replacement for taking a statistics course or reading this manual but it can be very helpful at times.

Section 0-8 Exiting SPSS

To exit or quit the SPSS program, choose **File > Exit** from the menu. If you have made changes to the contents of the **Data Editor** since the last time you have saved the data file, SPSS will open a dialog box asking if you want to save the contents of the **Data Editor**. Click the **Yes** button to save the contents of the **Data Editor** prior to SPSS closing; click the **No** button and the contents of the **Data Editor** window will **not** be saved before SPSS closes; and click the **Cancel** button to remain in SPSS (the data file will not be saved and is still available). If the data in the **Data Editor** had already been saved then SPSS closes immediately.

Section 0-9 SPSS Student Version

SPSS Student version is ideal for students who are just beginning to learn statistics. The SPSS Student Version provides affordable, professional statistical analysis and modeling tools to students. The easy-to-learn interface and comprehensive online help system enable students to learn statistics, not software. The SPSS Student Version has a four-year license code and is for student home use only. It allows up to 50 variables and 1,500 cases. This software is unable to read SPSS command syntax, which is used in a couple of the examples in this manual, and scripting and automation capabilities are unavailable. Add-on modules cannot be used with this package.

Section 0-10 Exercises

1. Data from a Chemistry class experiment designed to measure the **Boiling temperature** of water in degrees Centigrade is displayed in Table 0 - 1. Enter the data into the Data Editor.

Boiling Temperature	Gender of Student	Age of Student	Grade on Experiment
99	M	18	B
103.1	F	22	B
97.4	M	23	C
140	F	19	C
101.2	F	24	A

Table 0 - 1

- Name the variables anything you prefer, but their labels must be the headings used above.
 - Give the variable **Boiling temperature** data type *Numeric5.2*, the variable **Gender of Student** data type *String1*, the variable **Age of Student** data type *Numeric5.0*, and the variable **Grade on Experiment** data type *String2*.
 - Create value labels for **Gender of Student**. The value label for **M** should be **Male**, and the value label for **F** should be **Female**.
 - Create a new variable named *error* using the definition

$$\text{Squared Error} = (\text{Boiling Temperature} - 100)^2 .$$
2. Open the SPSS data file, **Growth study.sav** (this data file comes with SPSS 16.0 for Windows).
- How many variables are in this data file?
 - How many cases are associated with each variable in this data file?
 - Create a new variable *months*, which is twelve times the variable *age*.
3. The actor, Sean Connery, has played James Bond in seven films. The name of the film and the year the film was released are given Table 0 - 2.

Film	Year
Dr. No	1962
From Russia with Love	1963
Goldfinger	1964
Thunderball	1965
You Only Live Twice	1967
Diamonds are Forever	1971
Never Say Never Again	1983

Table 0 - 2

- a. How many cases are there in this data?
 - b. What would be an appropriate format for the variable *Film*?
 - c. What would be an appropriate format for the variable *Year*?
4. Data from an Ecology class experiment designed to measure the water temperature of a lake in degrees Fahrenheit is displayed in Table 0 – 4. Enter the data into the Data Editor.

Month	Fahrenheit Temperature
January	37.4
February	33.9
March	41.6
April	50.8
May	53.0
June	61.5

Table 0 - 3

- a. How many variables are in this data file?
- b. How many cases are there in this data?
- c. Create a new variable named *centigrade* using the definition

$$C = \frac{5}{9}(F - 32).$$