

ECON 419: SAS INTRODUCTION

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Appendix 2: SAS Basics

Overview

SAS is a powerful statistical analysis tool that is used in many different industries and by many companies. SAS enables you to organize and analyze data using both graphical and analytical methods. The software is flexible, dynamic, and is frequently updated to include statistical and econometric features that are emerging in the professional fields.

Starting SAS (Windows OS)

Use the Windows **Start** menu to navigate to the SAS executable as follows:

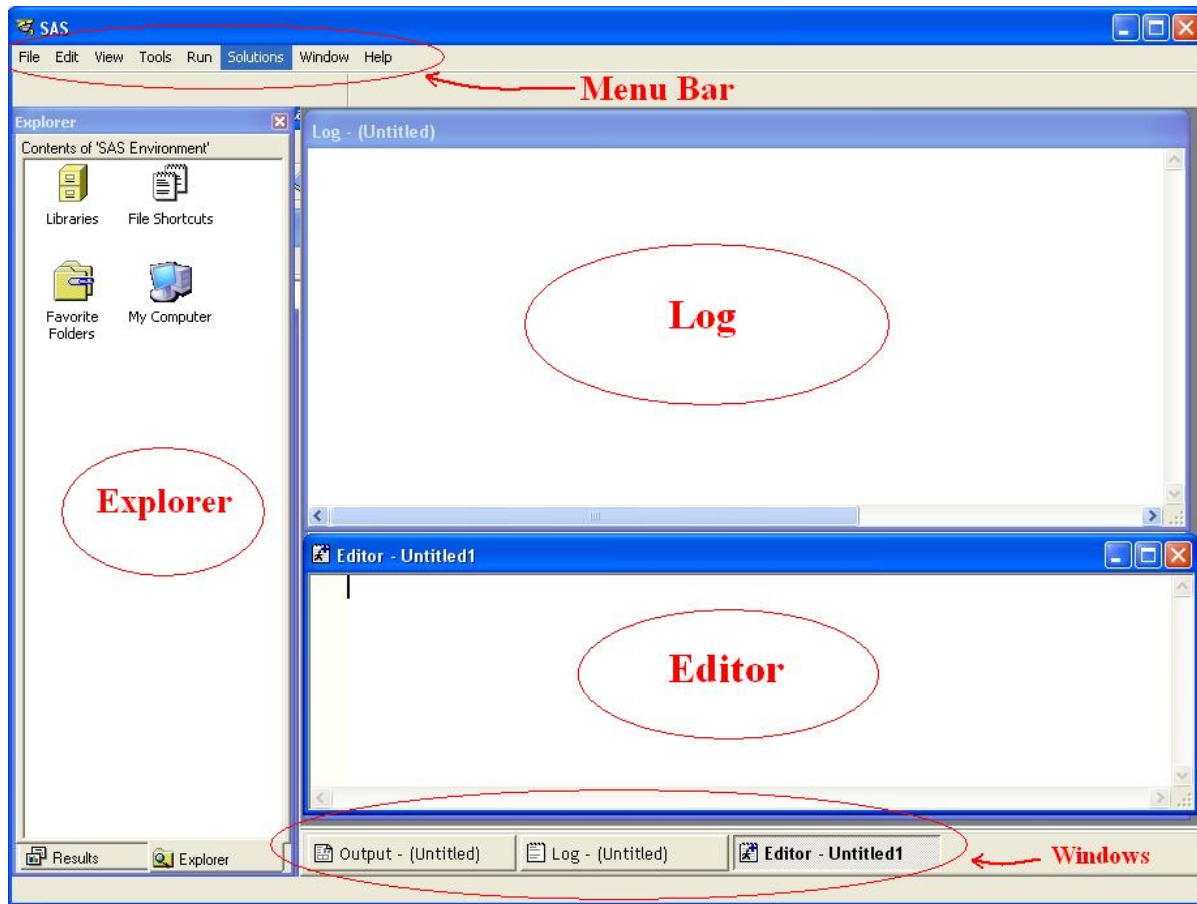
Start → All Programs → SAS → SAS 9.3

Initial View

When you launch SAS, you will see the initial view, shown in Figure A2.1.

- **Log:** Used to examine system messages. The log shows errors in and successful command execution.
- **Editor:** Used to enter programming commands, which tell SAS how the user wants to analyze the data.
- **Explorer:** Used to navigate among active data sets and results. Click the appropriate tab at the bottom of the Explorer panel.
- **Output (*on windows bar*):** Used to view the analytical results.
- **Menu Bar:** Used for purposes such as opening and saving files, opening various panels, and setting preferences.

Figure A2.1: Initial SAS View



NOTE: If you close any of the panels that are open in the initial view, you can do the following to re-open them:

1. Click **View** in the Menu Bar.
2. Select the appropriate panel:

Log	→	Opens the log panel
Enhanced Editor	→	Opens/focuses on the command editor
Output	→	Opens the output panel
Contents Only	→	Opens the Explorer panel

Importing Data

To import data, you can use the SAS Import Wizard as follows:

1. **IMPORTANT:** If you opened the data file in Excel and it was saved using an “xls” format, you need to close Excel before beginning the Import Wizard. Otherwise, you will receive a SAS error and the data will not be imported. If the file was saved using the newer “xlsx” format, then closing Excel is not necessary.
2. In SAS, click **File** in the Menu Bar and select **Import Data**. The Import Wizard window opens (as shown in Figure A2.2).
3. In the “Select a data source from the list below” field, select **Microsoft Excel 97, 2000 or 2002 Workbook** (this is the default). Then, click **Next**. The Connect to MS Excel window opens.
4. In the Connect to MS Excel window, click **Browse**. Navigate to the data file, select it, and then click **OK**.
5. In the “What table do you want to import” field, select the appropriate sheet. Then, click **Next**. **NOTE:** The data files that I provide will only have a single sheet.
6. In the “Library” field, select **WORK** (default).
7. In the “Member” field, enter a name for the data set. Make it something intuitive. For example, if analyzing a data set of wheat prices, name the data set *wheat_data*.
8. Click **Finish** to complete the Import Wizard. The Import Wizard window closes.

Checking Data Import

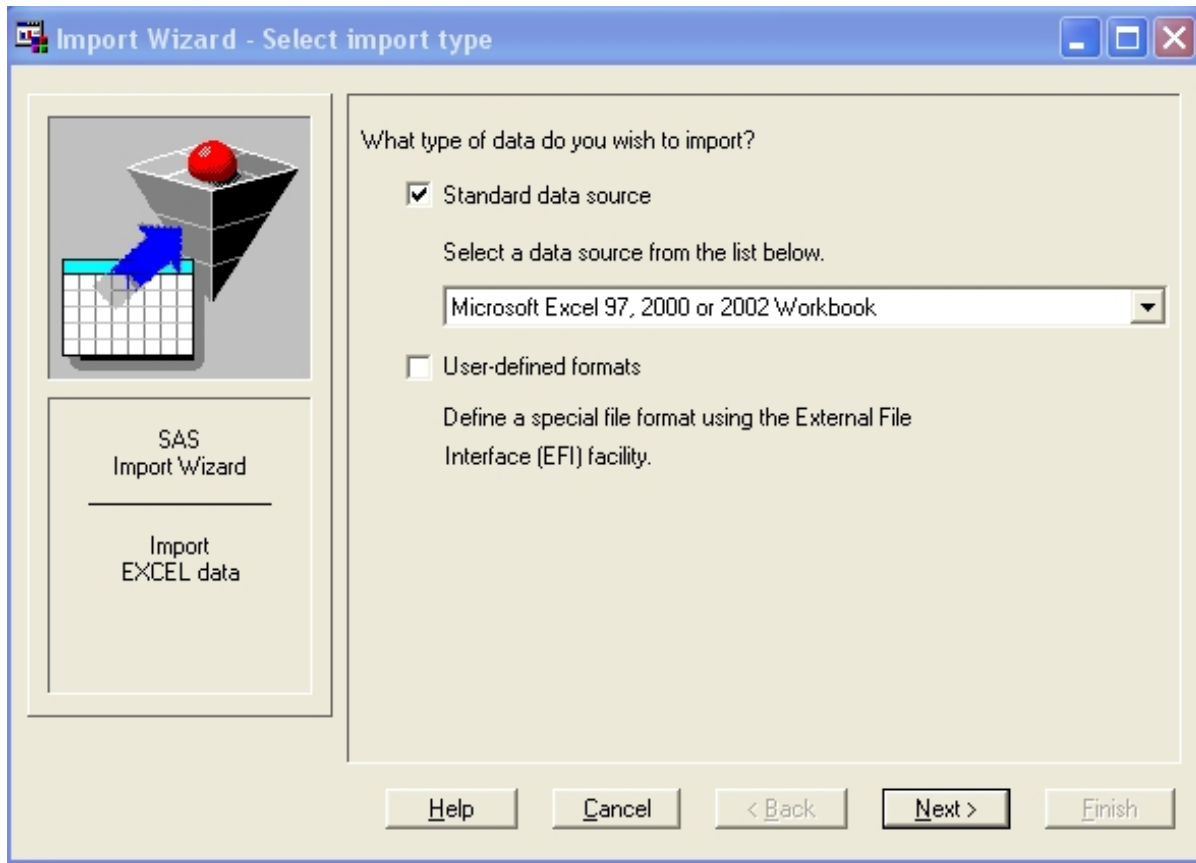
There are two ways to check whether the data was successfully imported and can be used for statistical analyses. These are as follows:

1. Check the Log panel. A successful import will result in the following log message:
NOTE: WORK.WHEAT_DATA was successfully created.
2. Check the Explorer panel.
 - (a) Click the **Explorer** tab at the bottom of the Explorer panel.
 - (b) Double-click the **Libraries** icon.
 - (c) Double-click the **Work** icon.



You should now see a data table icon  that is named with the designated data name. In this example, the icon would be named **Wheat_data**.

Figure A2.2: SAS Data Import Wizard



Coding in SAS

To successfully write code within SAS, you can follow these guidelines:

- All code is written in the Editor panel.
- The code is often color coded:

BLUE → Syntactically correct
RED → Incorrectly coded

- **Every** line of code must end with a semicolon (;) (Most errors will stem from users forgetting to end a line with a semicolon).
- Specify the data set that you are using by including the `data = your_dataset` statement following any `proc ...` statement. For example,

```
proc means data=wheat_data;
```

- After finishing writing a snippet of code, you must end the snippet with the **run;** statement. For example,

```
proc means data=wheat_data;  
run;
```

- To execute the written code, click the **Run** icon  found in the Icon bar, which is directly below the Menu bar.

NOTE: You can execute only a certain part of the written code. To do so, highlight the code that you would like to execute, and then click the **Run** icon.

Troubleshooting Tips

As a general rule, you should make a habit of checking the Log panel after you executed the code. In most cases, a successfully executed code will result in blue messages in the Log panel, as well as a message that indicates that the analysis was successfully completed.

- The Log panel has the following color scheme:

BLUE	→	Successfully executed analyses
RED/BURGUNDY	→	Errors and/or Warnings
GREEN	→	Warnings

- Check if you have placed a semicolon at the end of *every* line of code.
- Check for incorrectly spelled code (e.g. options, dataset name, variable names).
- Check that you have included a snippet of code with the **run;** statement.

The data in FERTIL2.CSV were collected on women living in the Republic of Botswana in 1988. The variable children refers to the number of living children. The variable electric is a binary variable set to one if the woman's home has electricity and zero if not.

Find the smallest and largest values of children in the sample. What is the average of children?

What percentage of women have electricity in the home?

Compute the average of children for those without electricity and do the same for those with electricity. Comment on what you find.

Can you infer that having electricity "causes" women to have fewer children? What statistics could you use when looking into this relationship. Use these statistics on the dataset and tell me what you find.