Quick Start
&
Self Help Manual

NCSS
Statistical System

Published by
NCSS
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NCSS Quick Start & Self Help Manual

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Warning:

About This Manual

Congratulations on your purchase of the ***NCSS*** statistical package! The ***NCSS*** statistical package offers:

- Easy data entry.
- Statistical routines that provide high quality and accuracy yet are quick and easy to learn and use.
- Straightforward procedures for creating paper printouts and file copies of both the results of the statistical analyses and graphical representations of those results.

Our goal is that with the help of this ***NCSS Quick Start*** booklet, you will be up and running on the system in less than one hour. Specifically, you will quickly and successfully complete the following tasks:

- Enter a small set of data into ***NCSS*** (that is, create a database), label the variables, and print a hard copy of your data.
- Compute descriptive statistics on the data in the database that you created. Run a T-test and a regression analysis on your data.
- Print copies of the descriptive statistics reports and the other reports which you generate. Print graphical representations of those analyses. Export your text and graphic material to a word processing program such as Microsoft Word.

We believe you will find that this ***NCSS Quick Start*** booklet provides a quick, easy, efficient, and effective way for first-time ***NCSS*** users to get up and running. ***NCSS*** users needing details on how to execute particular tasks should find the self-help chapters in the second half of this booklet very useful.

I look forward to any suggestions you have to improve the usefulness of this manual and/or the ***NCSS*** system. Meanwhile, good computing!

Jerry Hintze, President

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Chapter 1

Installation and Basics

Before You Install

1. Check System Requirements

NCSS runs on 32-bit and 64-bit Windows systems. This includes Windows ME, Windows NT 4.0, Windows 2000, Windows XP, and Windows Vista. The recommended minimum system is a Windows XP or Vista-compatible PC.

NCSS takes up about 120 MB of disk space. Once installed, ***NCSS*** also requires about 20 MB of temporary disk space while it is running.

2. Find a Home for NCSS

Before you start installing, decide on a directory where you want to install ***NCSS***. By default, the setup program will install ***NCSS*** in the *C:\Program Files\NCSS\NCSS 2007* directory. You may change this during the installation, but not after. The example data, template, and macro files will be placed in your personal documents folder (usually *C:\…\[My] Documents\NCSS\NCSS 2007*) in appropriate subdirectories. The program will save all procedure templates and macros to these folders while the program is running.

3. If You Already Own NCSS

If ***NCSS*** is already installed on your system, instruct the installation program to place this new version in a new folder (e.g. *C:\Program Files\NCSS\NCSS 2007*). All appropriate files will be copied from your old ***NCSS*** directory or replaced by updated files.

What Install Does

The installation procedure creates the necessary folders and copies the ***NCSS*** program from the installation file, called *NCSS2007SETUP.EXE*, to those folders. The files in *NCSS2007SETUP.EXE* are compressed, so the installation program decompresses these files as it copies them to your hard disk.

The following folders are created during installation:

C:\Program Files\NCSS\NCSS 2007 (or your substitute folder) contains most of the program files.

C:\Program Files\NCSS\NCSS 2007\Pdf contains printable copies of the documentation in PDF format.

C:\Program Files\NCSS\NCSS 2007\Sts contains all labels, text, and online messages.

C:\…\[My] Documents\NCSS\NCSS 2007\Data contains the database files used by the tutorials. We recommend creating a sub-folder of this folder to contain the data for each project you work on. An empty subfolder called "My Data" is created within this folder for easy storage of your personal data files. You can save the data to any folder you wish.

C:\…\[My] Documents\NCSS\NCSS 2007\Junk contains temporary files used by the program while it is running. Under normal operation, ***NCSS*** will automatically delete temporary files. After finishing ***NCSS***, you can delete any files left in this folder (but not the folder itself).

C:\…\[My] Documents\NCSS\NCSS 2007\Macros contains saved macros.

C:\…\[My] Documents\NCSS\NCSS 2007\Report is the default folder in which to save your output. You can save the reports to any folder you wish.

C:\…\[My] Documents\NCSS\NCSS 2007\Settings contains the files used to store your template files. These files are used by the ***NCSS*** template system, which is described in a later chapter.

Installing NCSS

This section gives instructions for installing ***NCSS*** on your computer system. You must use the ***NCSS*** setup program to install ***NCSS***. The files are compressed, so you cannot simply copy the files to your hard drive.

Follow these basic steps to install ***NCSS*** on your computer system.

Step	Notes
1.	Make sure that you are using a 32- or 64-bit version of windows such as Windows Me, Windows NT 4.0, Windows 2000, Windows XP, or Windows Vista.
2.	If you are installing from a CD, insert the CD in the CD drive. The installation program should start automatically. If it does not, on the Start menu, select the Run command. Enter *D:\NCSS\NCSS2007Setup*. You may have to substitute the appropriate letter for your CD drive if it is not *D*. If you are installing from a download, simply run the downloaded file (*NCSS2007Setup.exe*).
3.	Once the setup starts, follow the instructions on the screen. ***NCSS*** will be installed in the drive and folder you designate.

If Something Goes Wrong During Installation

The installation procedure is automatic. If something goes wrong during installation, delete the *C:\Program Files\NCSS\NCSS 2007* directory and start the installation process at the beginning. If trouble persists, contact our technical support staff as indicated below.

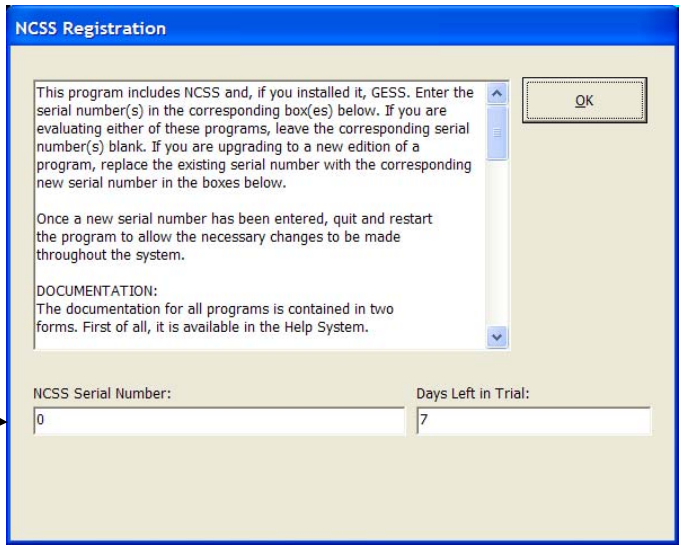
Starting NCSS

NCSS may be started using your keyboard or your mouse using the same techniques that you use to start any other Windows application. You can start ***NCSS*** by selecting **NCSS 2007** from your Start menu using standard mouse or keyboard operations.

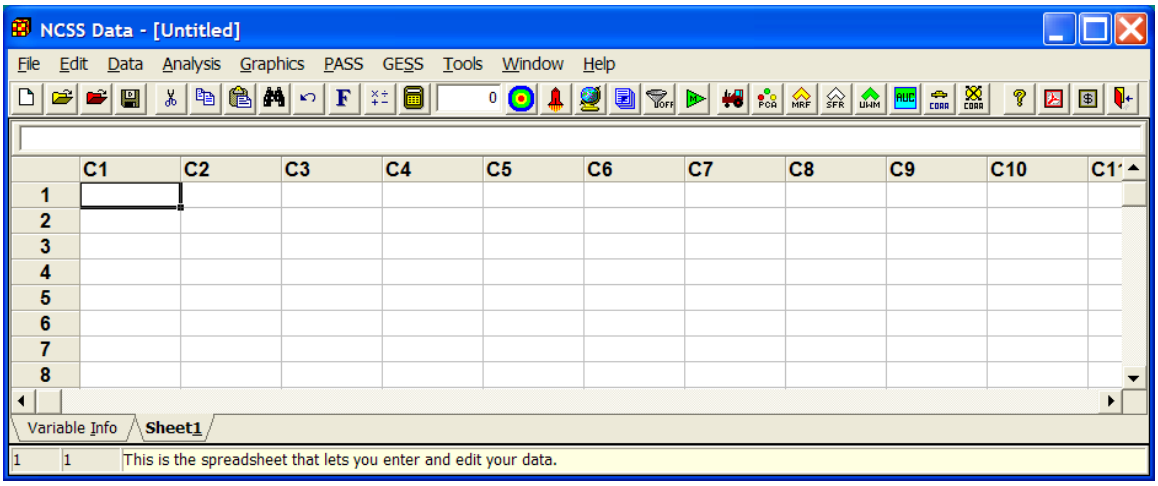
Entering Your Serial Number

The first time you run ***NCSS***, enter your serial number in the appropriate box in the pop-up window that appears. If you do not enter a serial number, ***NCSS*** will enter trial mode and you will have 7 days to evaluate ***NCSS***. When in trial mode, ***NCSS*** is fully-functional but is limited to 100 rows of data.

Enter your ***NCSS*** serial number here.



When you click **OK**, the **NCSS Data** window will appear. If you entered a serial number, you must quit and restart the program for the serial number to take effect.



The Three Main NCSS Windows

NCSS is controlled by three main windows:

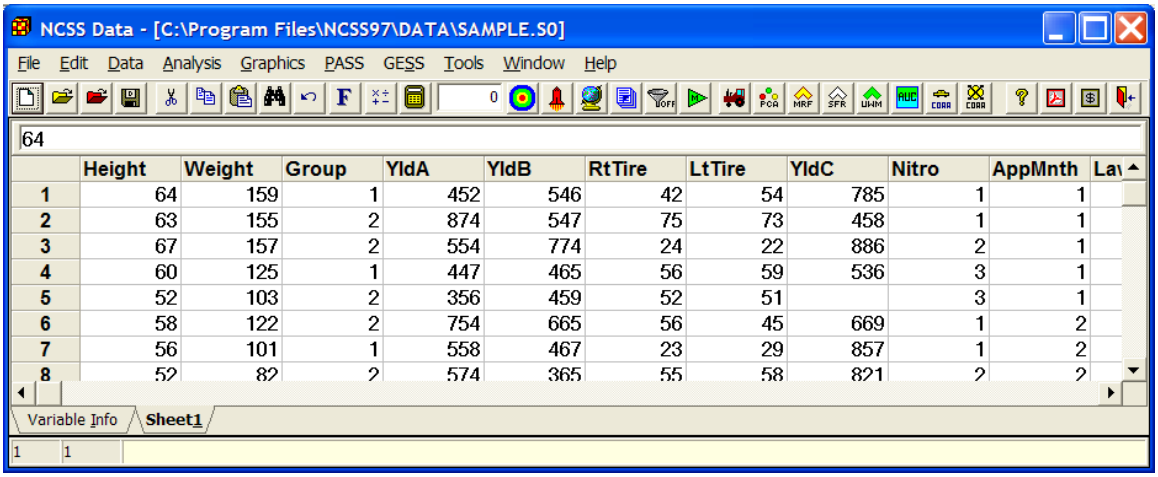
1. **Data Window**
2. **Procedure Window**
3. **Output Window**

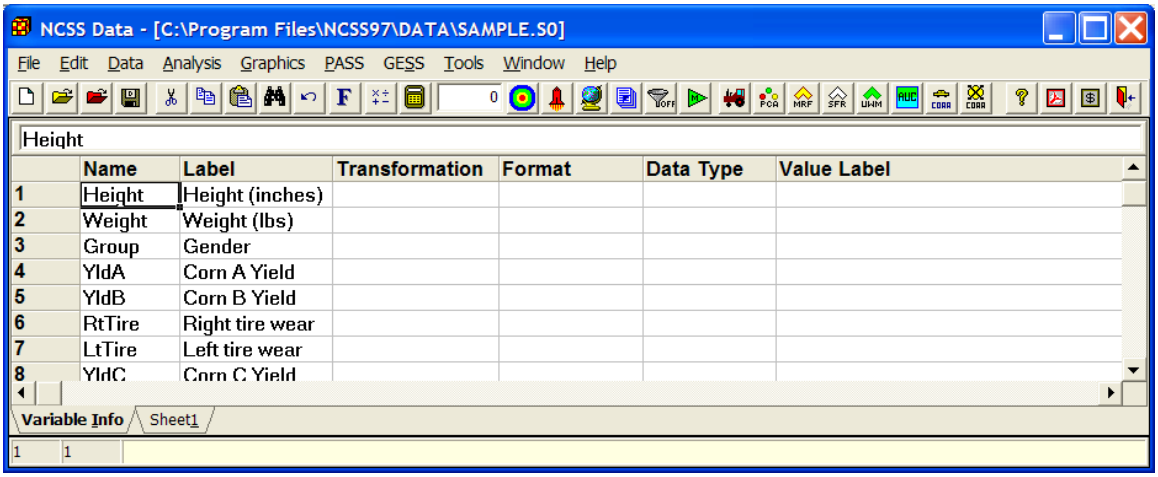
Each window has its own menu bar and tool bar. We will now briefly describe each of the three.

The NCSS Data Window

The **NCSS Data** window contains the data that is currently being analyzed. This window lets you view, modify, and save your data. It has the look and feel of a spreadsheet. This is the main *NCSS* window. Closing this window will exit *NCSS*.

Chapter 7 provides a closer look at the Data window.

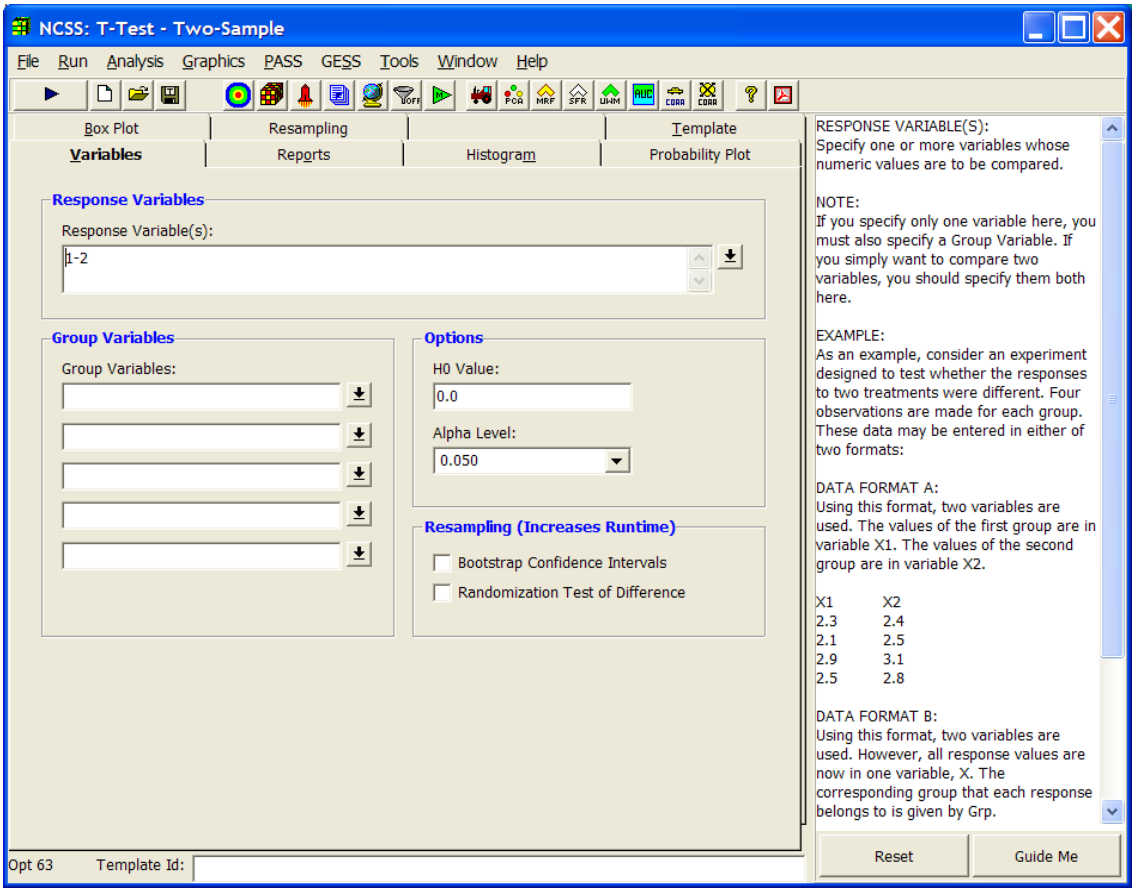




The NCSS Procedure Window

The **NCSS Procedure** windows let you set the options for a particular analysis. Whether you are running a multiple regression, an ANOVA, or a scatter plot, you will set the options of this procedure in the Procedure window. Closing this window will not exit ***NCSS***.

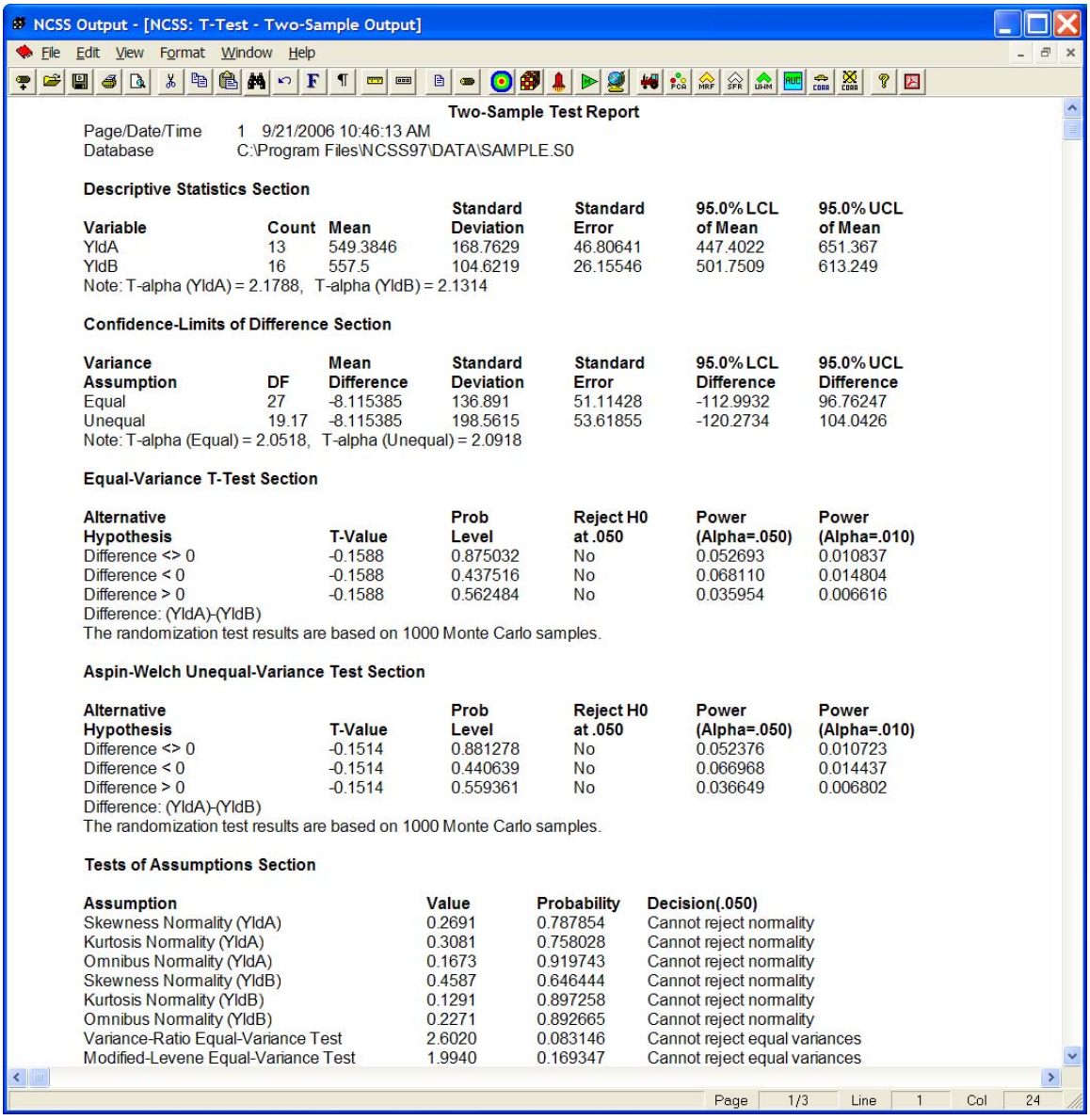
Chapter 8 provides a closer look at the Procedure window.



The NCSS Output Window

The **NCSS Output** window displays the output from the statistical and graphics procedures. It serves as a mini-word processor --- allowing you to view, edit, save, and print your output. Closing this window will not exit ***NCSS***.

Chapter 9 takes a closer look at the Output window.



Moving from Window to Window

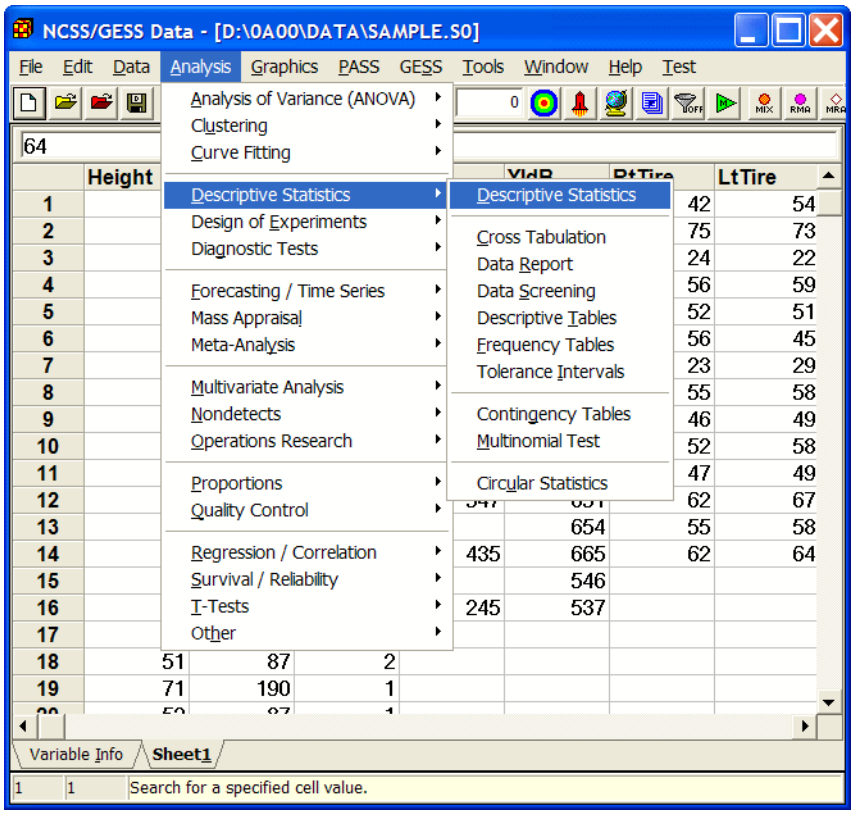
There are several ways of moving among the windows:

1. Remove the windows you are not currently using by minimizing them.
2. Arrange the windows on your screen so that all can be seen.
3. Use the task bar along the bottom of your screen.
4. Use the Windows menu.
5. Use the Navigator.
6. Use the toolbar (this is usually the quickest and easiest).

Selecting a Procedure

There are three primary ways to select a procedure:

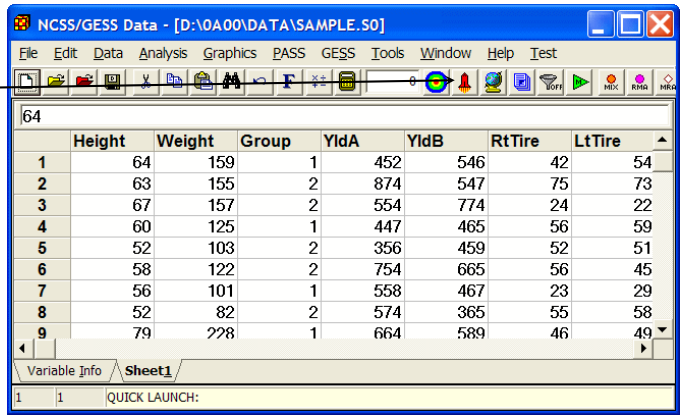
1. Select the procedure from the Analysis or Graphics menu



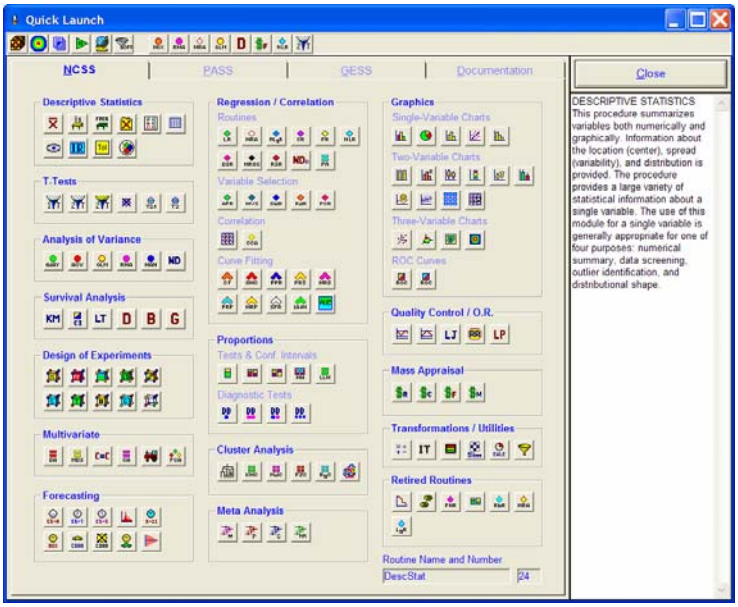
2. Click the button of the corresponding procedure from the Quick Launch buttons or from the quick access buttons of the tool bar

Click on the Quick Launch button from the tool bar.

The Quick Launch window will open.



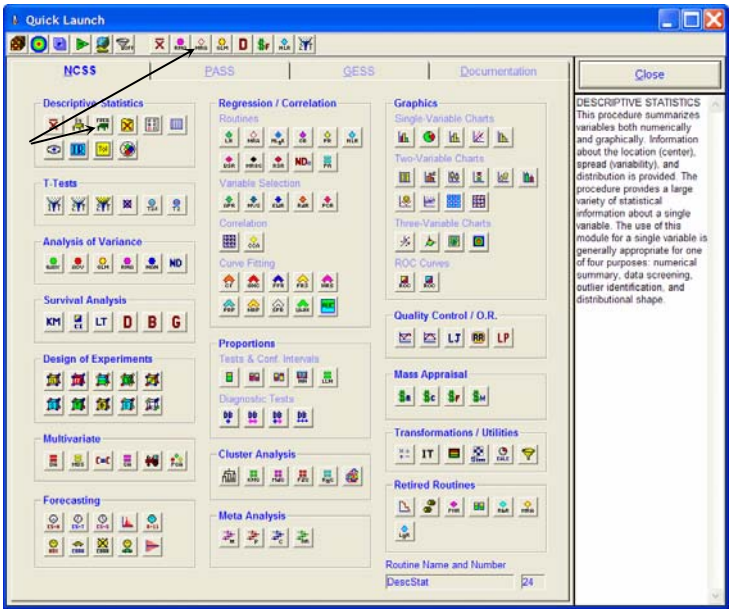
Find the desired procedure and click the corresponding button.



Buttons for the most commonly used procedures may be added to the tool bar by dragging and dropping them to the tool bar.

Eight procedure buttons are available on the tool bar.

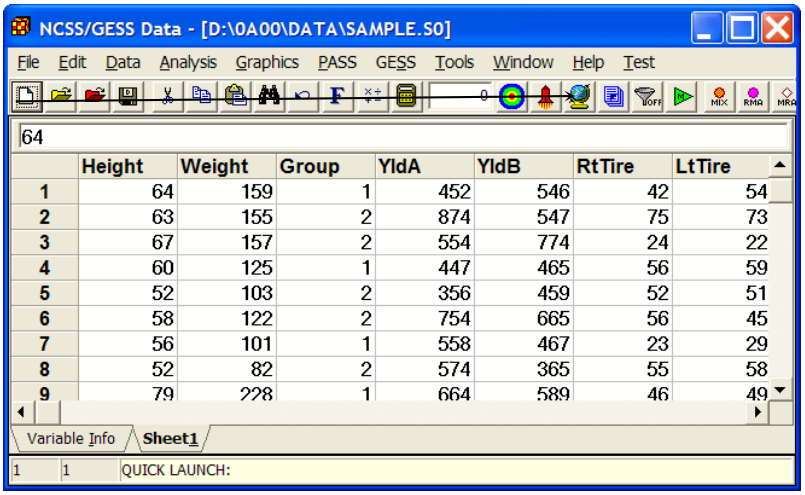
The procedure of the tool bar buttons may also be changed by right-clicking on one of the eight buttons of the tool bar and selecting the desired procedure.



3. Select the procedure using the Navigator

Click on the Navigator button from the tool bar.

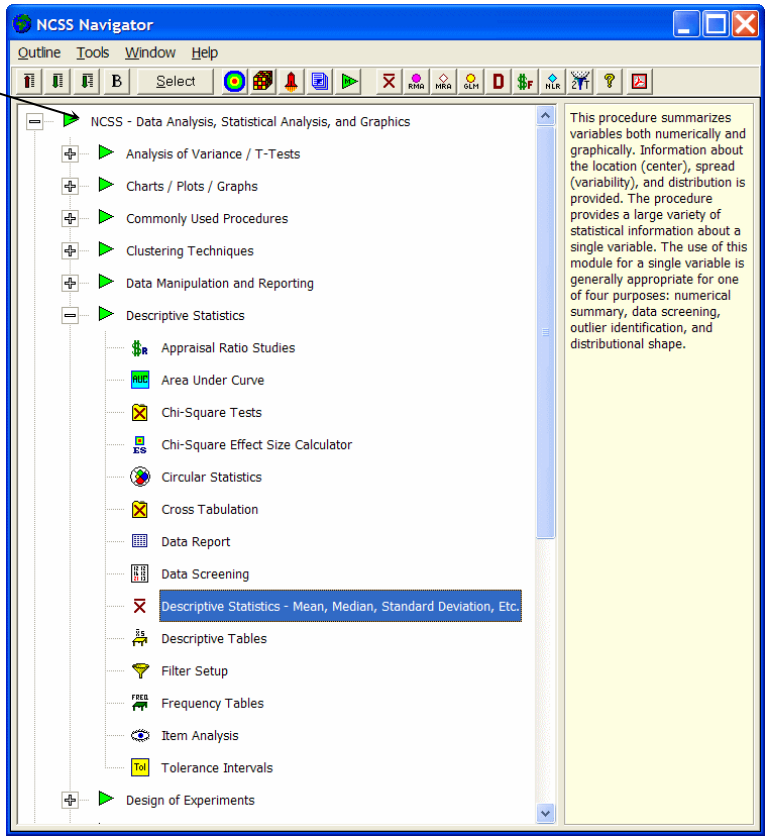
The Navigator window will open.



Click to the left of a category to open the category.

Continue until the desired procedure is reached.

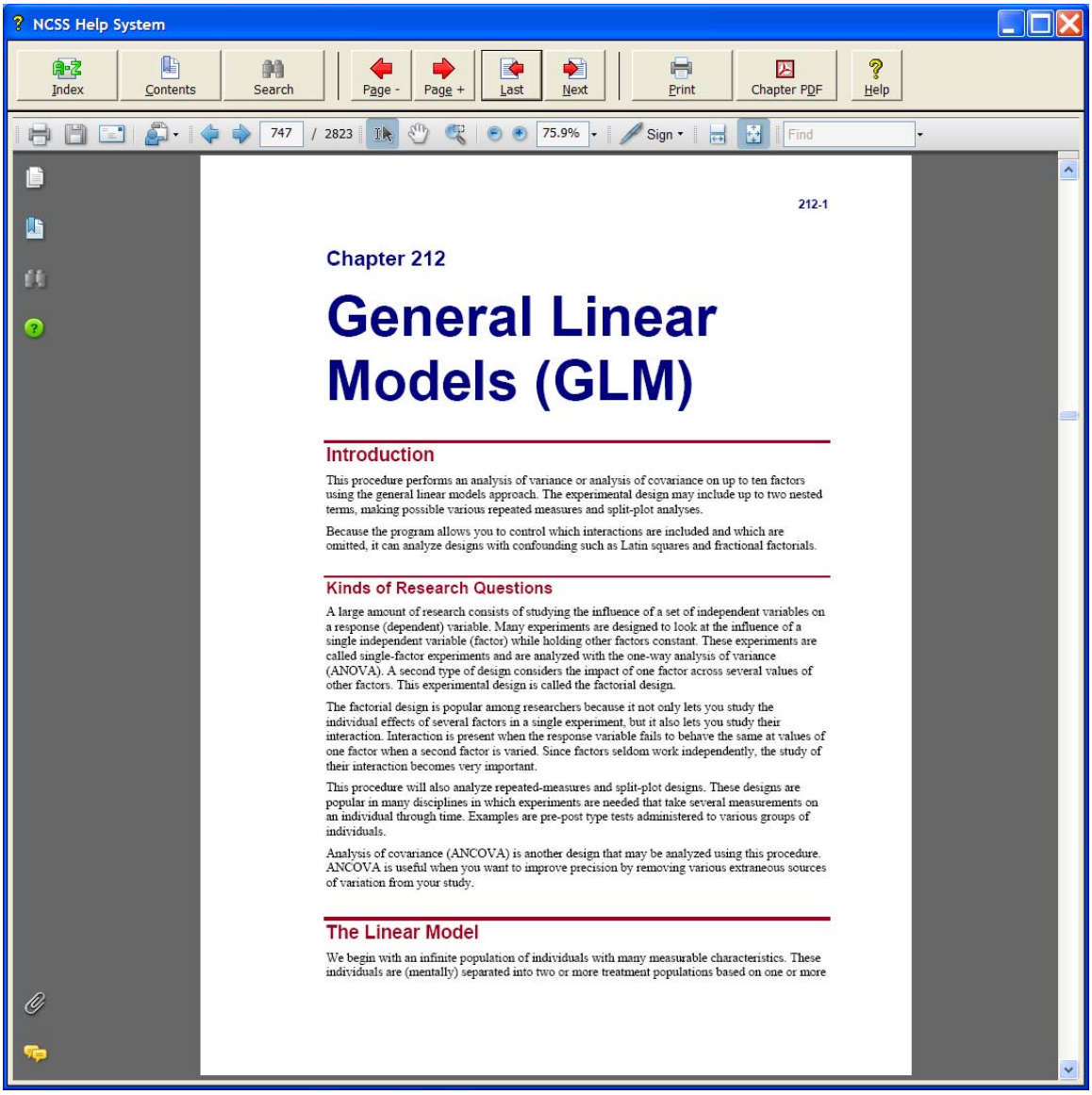
Double-click on the procedure name or symbol to open it.



Obtaining Help

Help System

To help you learn and use ***NCSS*** efficiently, the material in this manual is included in the ***NCSS*** Help System. The Help System is started from the Help menu or by clicking on the yellow '?' icon on the right side of the toolbar. ***NCSS*** updates, available for download at www.ncss.com, may contain adjustments or improvements of the ***NCSS*** Help System. Adobe Acrobat or Adobe Reader version 7 or 8 is required to view the help system. You can download Adobe Reader 8 for free by going to www.adobe.com. Adobe Reader 8 can also be installed from the *Utilities* folder on your ***NCSS*** installation CD.

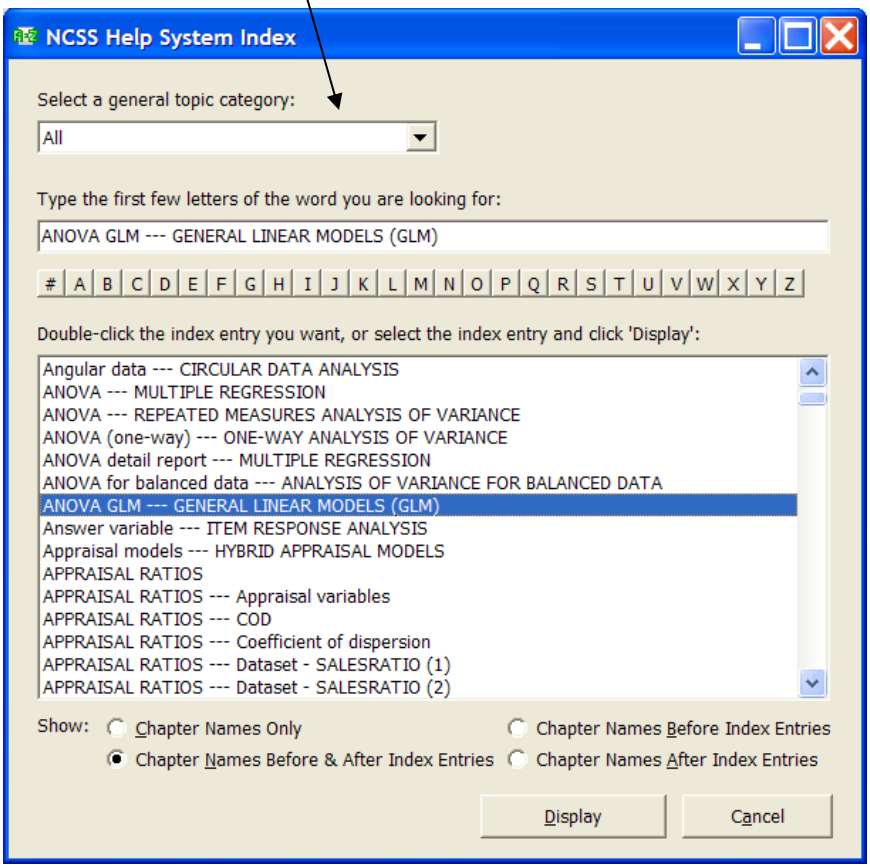


Navigating the Help System

There are a few key features of our help system that will let you use the help system more efficiently. We will now explain each of these features.

Index Window

The Index Window can be launched at any time by clicking on the Index button on the ***NCSS*** Help System display window. The index allows you to quickly locate keywords and/or statistical topics. You can narrow the list of index entries displayed by selecting a specific topic category in the uppermost dropdown box.



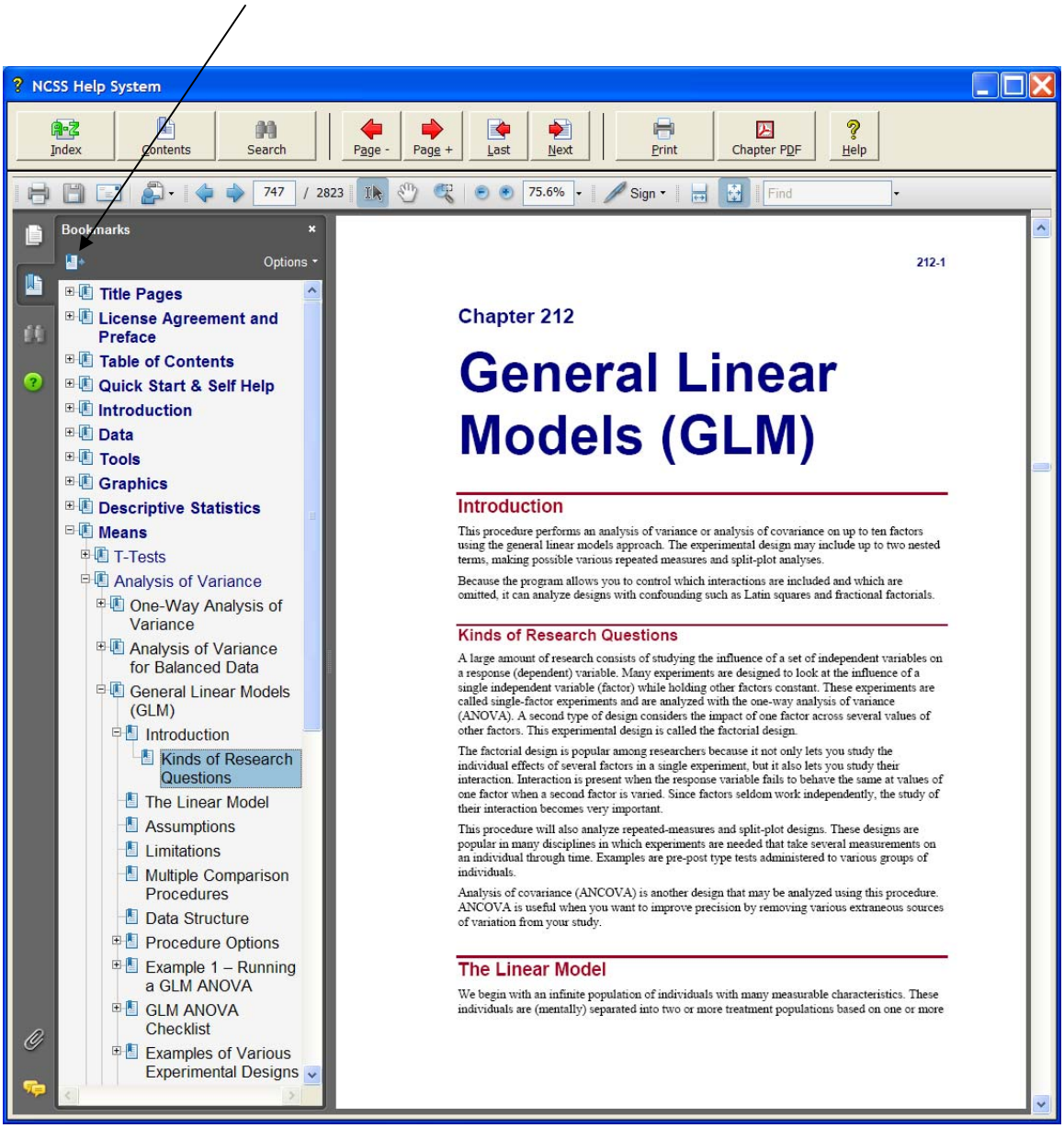
Index entries are displayed in the format

Index Entry --- CHAPTER NAME or CHAPTER NAME --- Index Entry.

You can control which entries are displayed by clicking on the radio buttons at the bottom of the window.

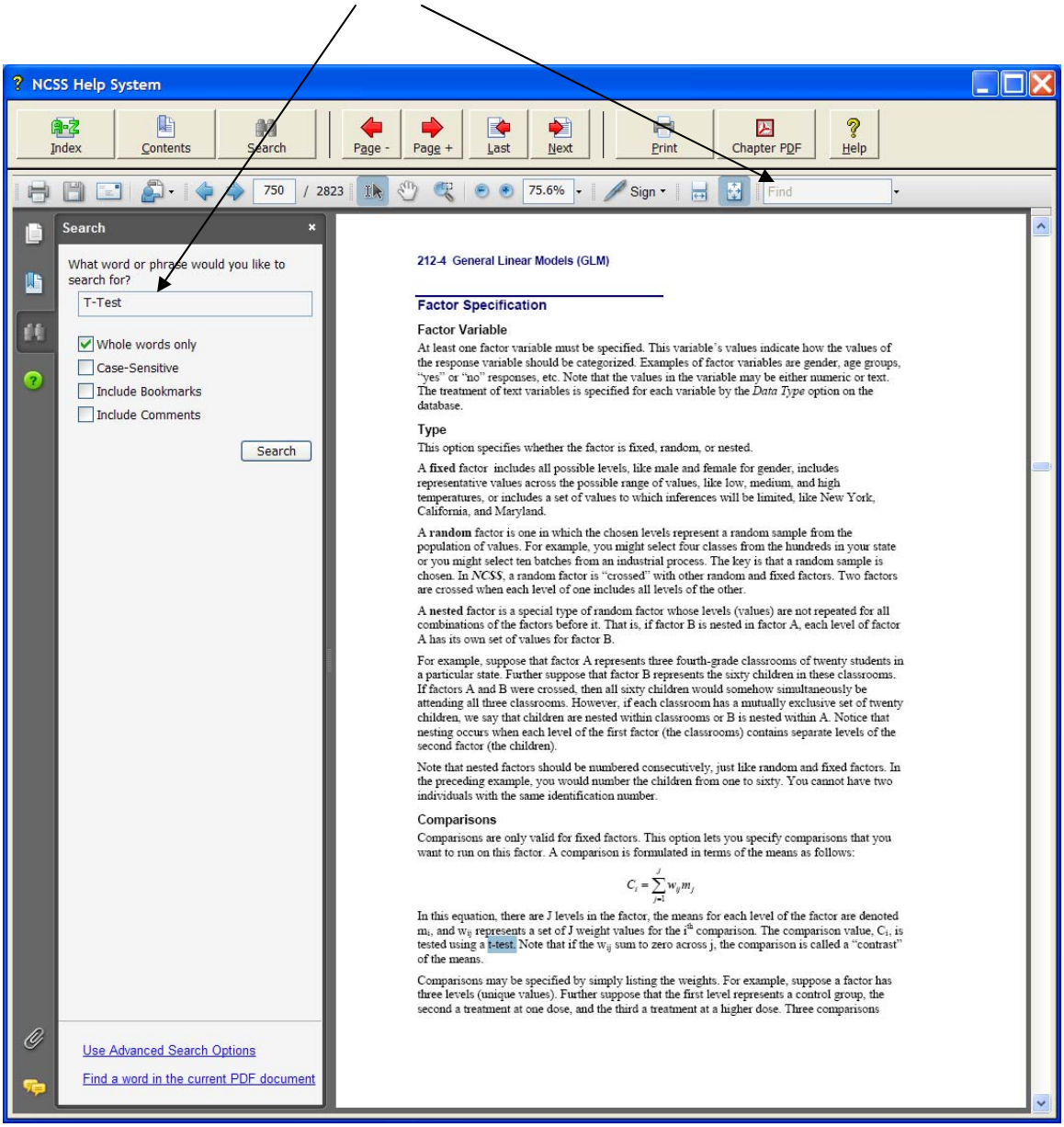
Contents Window

Clicking on the Contents button opens the Contents (Bookmarks) Window of the viewer. From this window you can expand the table of contents to view nested headings. You can click on the "Expand Current Bookmark" icon to instantly find the bookmark location for the currently-displayed page in the help document.



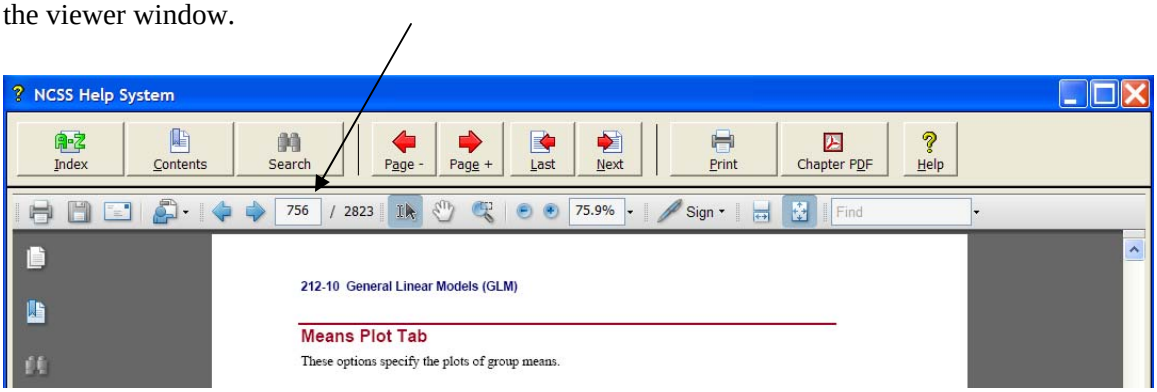
Search Window

Clicking on the Search button opens the Search Window of the viewer. From this window you can search the entire help system for any word or phrase. A search can also be initiated from the Find box in the viewer toolbar.



Printing the Documentation

To print pages from the documentation, click on the **Print** button on the ***NCSS*** Help System toolbar. This will launch the Adobe Reader print dialogue screen. You can choose to print a single page or a range of pages from the help file. When entering page numbers, remember to use the PDF file page numbers (e.g., 750-756) and not the page numbers found in the document pages (e.g., 212-4 to 212-10 is not a valid page range). The Adobe Reader page numbers can be seen in the viewer window.

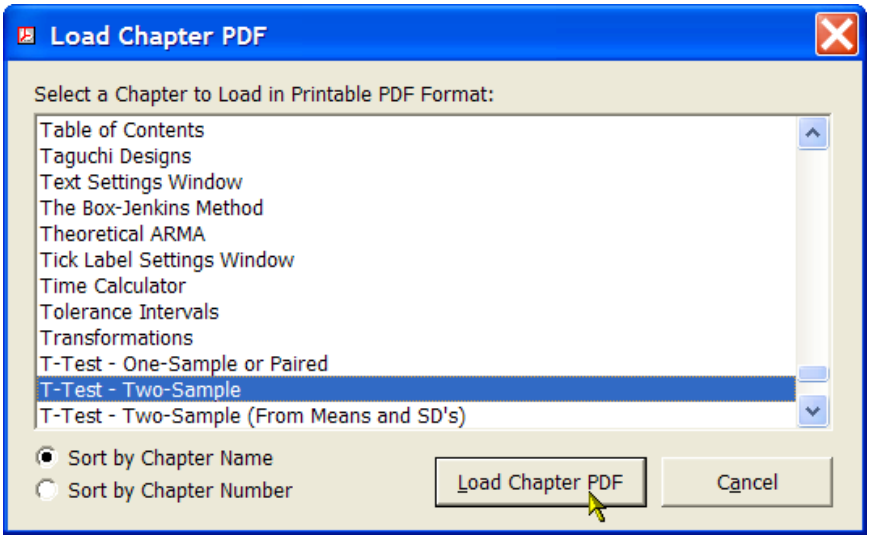


If you are using Adobe Reader 7, then the page numbers are found at the bottom of the viewer window.

One of the benefits of the ***NCSS*** Help System is the ease with which you can print any chapter or topic from the electronic help manual. To print a single chapter or topic using your default PDF viewer, take the following steps:

1. Click on the **Chapter PDF** icon in the ***NCSS*** Help System toolbar.

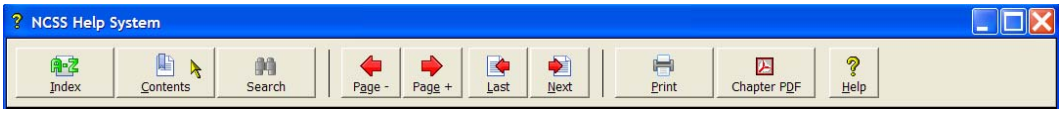
2. Choose the chapter you would like to print from the list and click **Load Chapter PDF**. This will launch the individual chapter PDF in a separate window using your default PDF viewer (e.g., Adobe Reader).



3. Use the **Print** function of your PDF viewer to print the entire chapter or individual pages from the chapter.

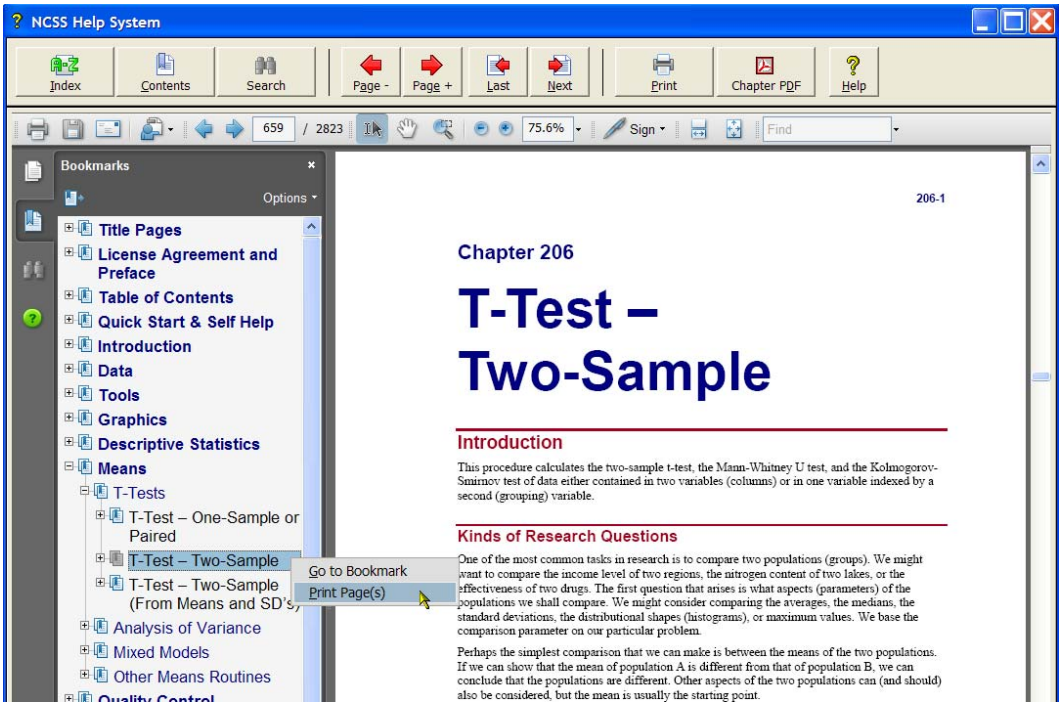
If you have Adobe Reader 8 or later, you can print entire chapters using an alternative method as follows (**This will not work with Adobe Reader 7**):

1. Open the Contents (Bookmarks) Window by clicking on the **Contents button** at the top of the ***NCSS*** Help System display window.



2. Expand the bookmarks to display the chapter or topic name you wish to print (e.g., the Two-Sample T-Test Chapter). Then, **highlight** the chapter name, **right-click** on the highlighted selection (or select Options in the panel above), and select **Print Page(s)**. This will automatically print only the pages from the selected chapter.

   CAUTION: When you click Print Page(s), the command is sent to the printer automatically without any intermediate Print Setup window being displayed. Make sure that you have selected only the topic you want before clicking Print Page(s).



If you do not want to print the entire chapter, continue to expand the bookmark tree to the topic you wish to print before completing step 2. The Print Page(s) command prints all pages containing bookmarks that are nested within the highlighted bookmark.

Technical Support

If you have a question about ***NCSS***, you should first look to the printed documentation and the included Help system. If you cannot find the answer there, look for help on the web at www.ncss.com/support.html. If you are unable to find the answer to your question by these means, contact ***NCSS*** technical support for assistance by calling (801) 546-0445 between 8 a.m. and 5 p.m. (MST). You can contact us by email at support@ncss.com or by fax at (801) 546-3907. Our technical support staff will help you with your question.

If you encounter problems or errors while using ***NCSS***, please view our list of recent corrections before calling by going to www.ncss.com/release_notes.html to find out if you problem or error has been corrected by an update. You can download updates anytime by going to http://www.ncss.com/download.html. If updating your software does not correct the problem, contact us by phone or email.

To help us answer your questions more accurately, we may need to know about your computer system. Please have pertinent information about your computer and operating system available.

Chapter 2

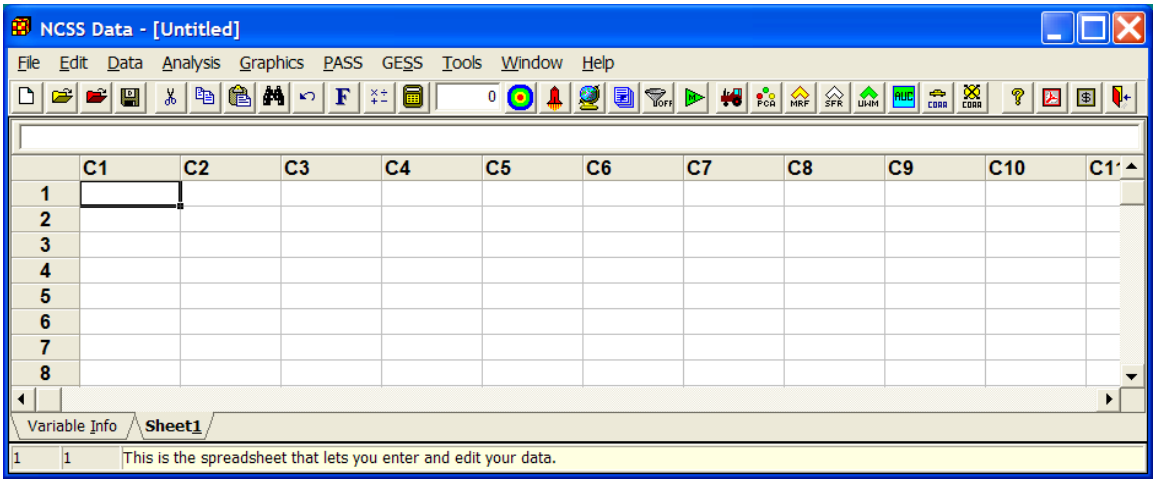
Creating / Loading a Database

About This Chapter (Time: 21 minutes)

This chapter will show you how to enter, label, save, and print a database. You will find complete coverage of these subjects in *NCSS User's Guide I*.

Starting NCSS

Select **All Programs** > **NCSS** from the Windows Start menu to start ***NCSS***. After starting, the ***NCSS*** spreadsheet program appears with an empty datasheet. We will begin by entering data into this datasheet.



Brain Weight Data

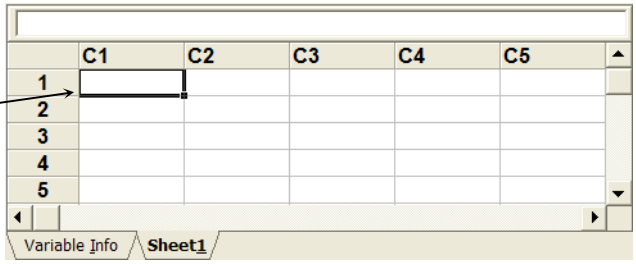
The following data give the body weight in kilograms and the brain weight in grams of various mammals. This chapter will show how to enter these data into an ***NCSS*** database and perform basic database operations such as saving and printing.

Mammal Name	Body Weight	Brain Weight
African Elephant	6654	5712
Asian Elephant	2547	4603
Giraffe	529	680
Horse	521	655
Cow	465	423
Gorilla	207	406
Pig	192	180
Jaguar	100	157
Man	62	1320
Chimpanzee	52	440
Gray Wolf	36	120
Kangaroo	35	56
Baboon	11	179
Red Fox	4	50
Cat	3	26

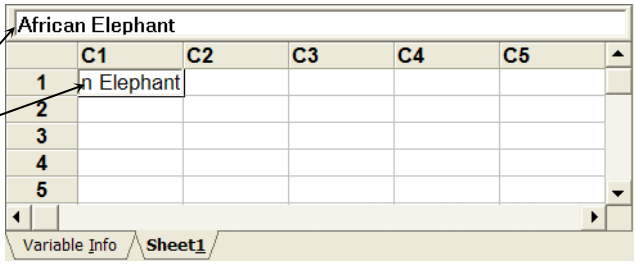
Entering a Column of Data

Take the following steps to enter the brain weight data into ***NCSS***:

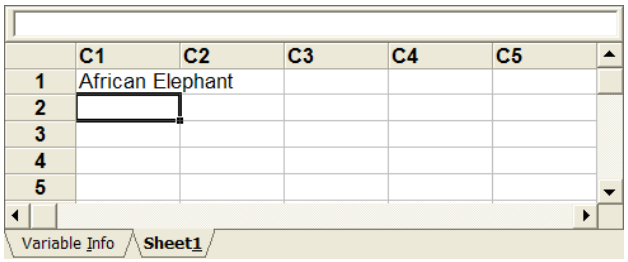
1. Position the cursor in the upper-left cell. This is done by clicking in the cell just below the title **C1**.



2. Type **African Elephant**. Notice that as you type, the characters appear in two places: in the cell where you are typing and in the cell-edit box at the top of the sheet.

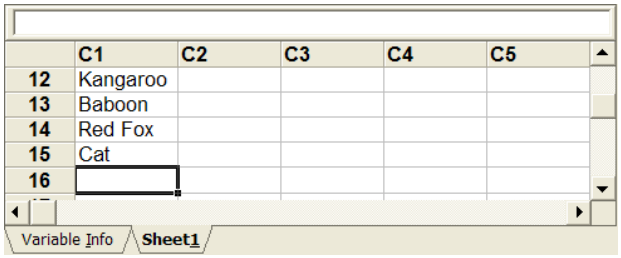


3. Press **Enter**. The text is entered and the cell cursor (the dark border around the cell) moves down to the next cell.

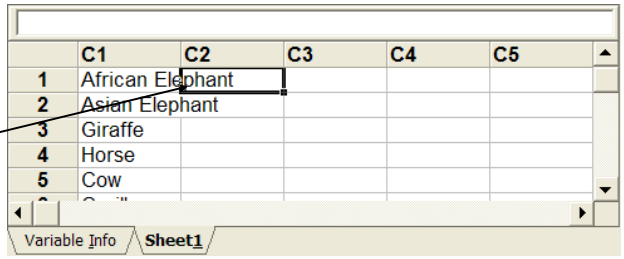


4. Type **Asian Elephant**.
Press **Enter**.
Type **Giraffe**.

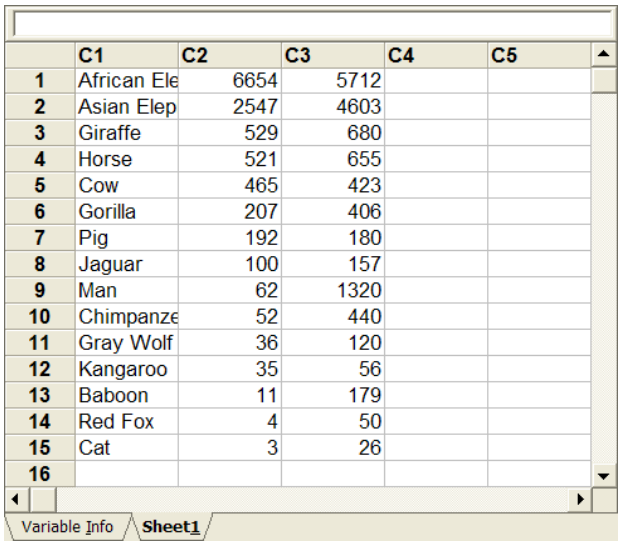
Continue until you finish entering all of the names.



5. Using the vertical scroll bar or the **Page Up** key, reposition the screen so that you can begin entering data in the second column. Click in the first row of column two. This will highlight this cell.



6. Type in the second and third columns of numbers. The completed table should appear as shown.



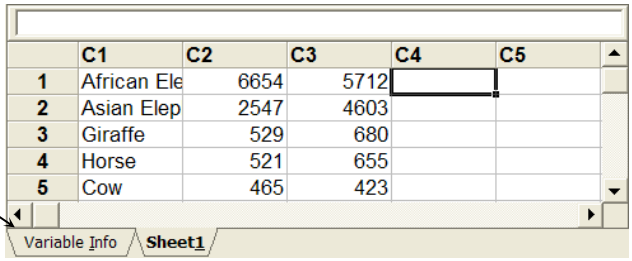
To cancel an entry, you can press the **Esc** key. If you have already pressed Enter, you can choose Undo from the Edit menu.

Labeling a Variable

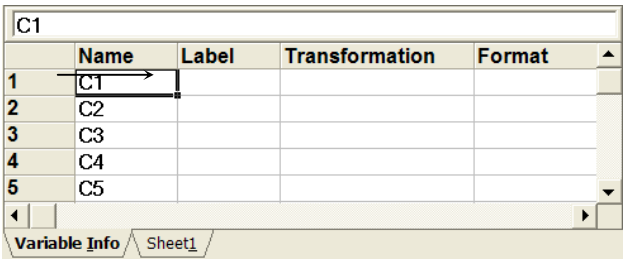
In ***NCSS***, a column of data is called a variable. Each variable has a column number and a name. The name is the label at the top of the column. The name of the variable will be displayed in all statistical reports and graphs that you generate, so it is important to name variables so that they will be remembered.

In a new database, the variables receive the default names C1, C2, C3, etc. Hence, you have just entered data into variables C1, C2, and C3. We will now show you how to change the names of these variables.

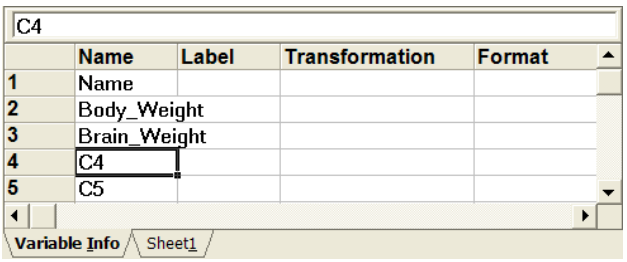
1. Click on the **Variable Info** tab.



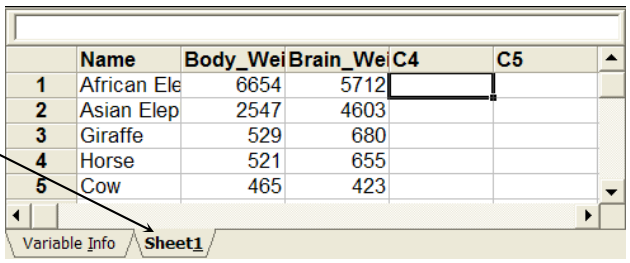
2. Click in the **C1** cell. This will position the cell cursor in that cell. (The cell cursor may already be there.)



3. Type **Name**.
Press **Enter**.
Type **Body_Weight**.
(Use the underscore, not the minus sign in these names.)
Press **Enter**.
Type **Brain_Weight**.
Press **Enter**.

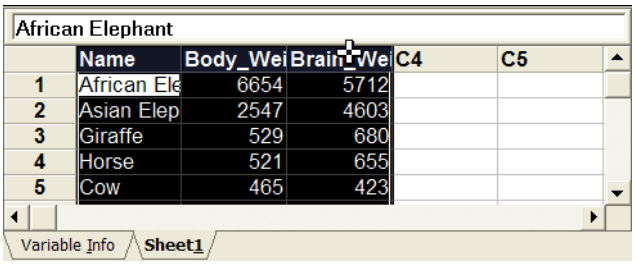


4. Click on the **Sheet1** tab. This will return you to a view of the data. The screen should appear like this.

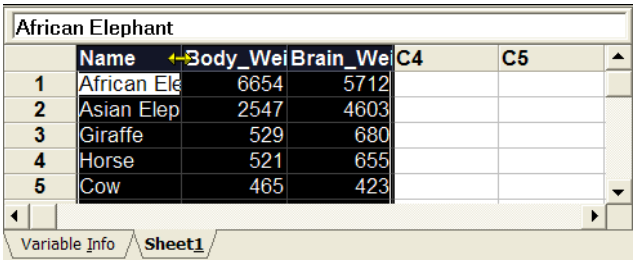


The final step is to widen the columns so that the complete names and labels are shown.

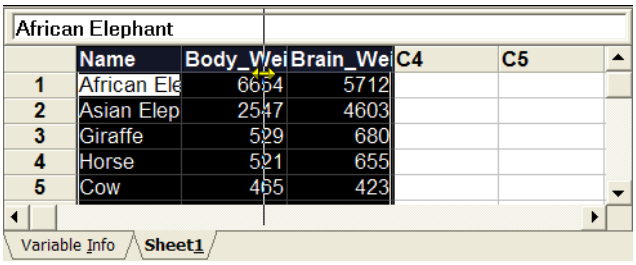
5. Drag the mouse from the **Name** heading to the **Brain_Weight** heading. This is done by pressing the left mouse on the heading **Name** and, without letting up, moving the mouse pointer to the heading **Brain_Weight** and finally letting up on the mouse. All three columns (headings and data) will be darkened.



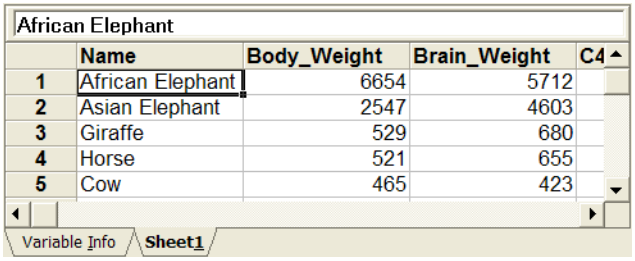
6. Now, position the mouse between the two columns. The mouse pointer will change to a two directional arrow.



7. Drag the mouse to the right until you are almost to the next border and let go of the mouse button. The columns will be widened, showing the complete variable names (column headings) and animal names.



8. Click on a cell in the body of the table to cancel the selection (the reverse video).

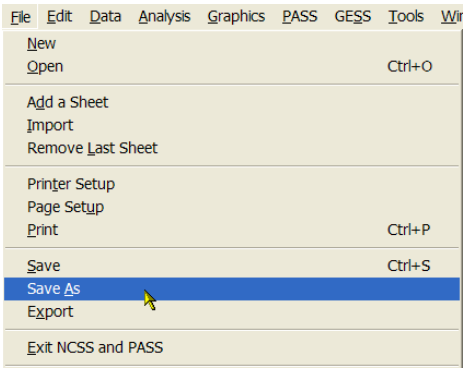


Variable names are used throughout the program to identify which columns of data to analyze. A variable name must begin with a letter (not a number); should contain only letters, numbers, and the underscore; and should not contain blanks. For correct formatting on reports, variable names should be less than fourteen characters, although there is no maximum length.

Saving Your Database

As you enter data, it is stored in your computer's temporary memory but not on your hard disk. If the computer loses power, you lose your data. We will now show you how to save the data to your hard disk.

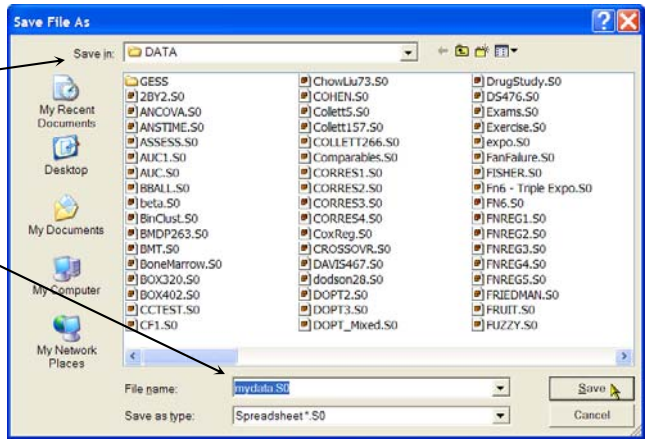
1. Select ***Save As*** from the File menu of the Data window.



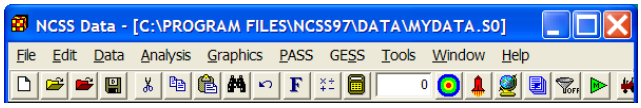
2. Select the **DATA** directory in your NCSS directory.

3. Enter **mydata.s0** in the File Name box.

4. Click **Save** button.



The database is stored as two files on your hard disk. If you use Windows Explorer to view the Data directory, you will find that you have created two files: **mydata.s0** and **mydata.s1**. The name of the database is now displayed at the top of the data window.

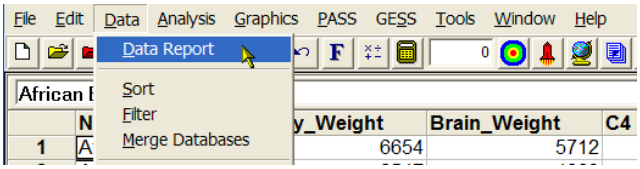


An ***NCSS*** database name must end with the file extension ".s0". Hence, a valid file name would have numbers, spaces, and letters followed by the extension ".s0". For example, you might use "abc.s0".

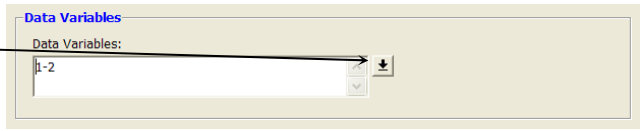
Printing Your Database

You will often want to create a printout of the data you have entered. We will now show you how this is accomplished.

1. Select **Data Report** from the Data menu. The Data Report procedure appears. This window allows you to control the format of your report.

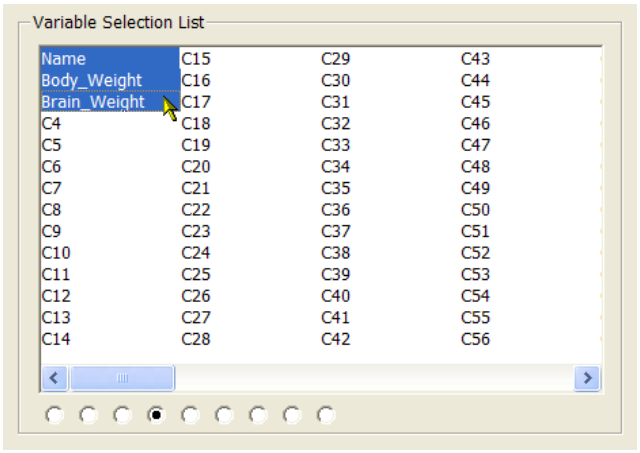


2. Click on the button to the right of the Data Variables line.

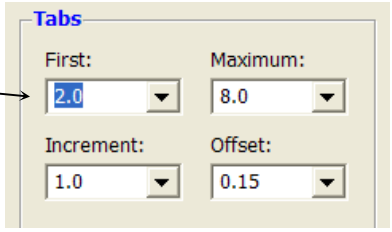


3. Select the first three variable names: **Name, Body_Weight,** and **Brain_Weight.**
Press **Ok**.

These variable names will appear in the Data Variables box.



4. Enter **2.0** in the **First** box of the **Tabs** section.



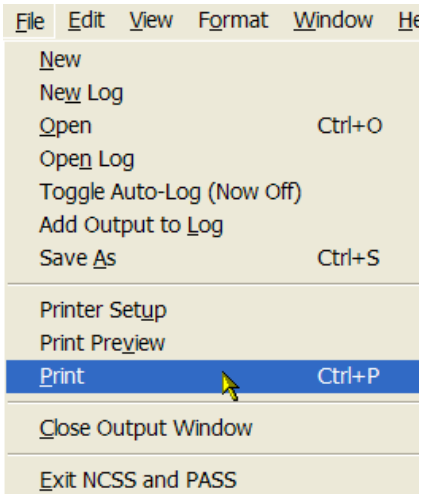
5. Press the **Run** button on the left of the toolbar at the top of the window.

The report will appear as shown below.

Data List Section

Row	Name	Body_Weight	Brain_Weight
1	African Elephant	6654	5712
2	Asian Elephant	2547	4603
3	Giraffe	529	680
4	Horse	521	655
5	Cow	465	423
6	Gorilla	207	406
7	Pig	192	180
8	Jaguar	100	157
9	Man	62	1320
10	Chimpanzee	52	440
11	Gray Wolf	36	120
12	Kangaroo	35	56
13	Baboon	11	179
14	Red Fox	4	50
15	Cat	3	26

6. Finally, select **Print** from the File menu of the Output window. This will display the Print dialog box from which you can print the report. Or, highlight the text using the mouse, and cut and paste the report directly into a word processor or slide show.

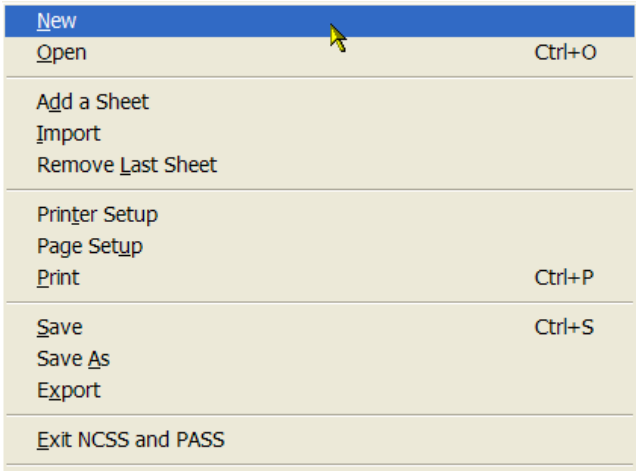


Congratulations! You have successfully entered and printed a set of statistical data. Analyzing these data using the various statistical procedures will not be much more difficult.

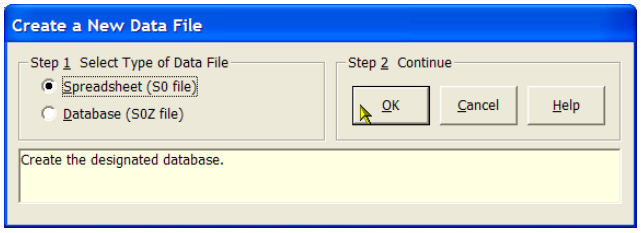
Clearing the Database

As you move from analysis to analysis, you will often have to clear the data screen so that new data may be entered. This is done as follows. (Of course, you should save your data before clearing it!)

1. Select **New** from the File menu of the Data window. Use the Windows menu to transfer from the Output window to the Data window. If you have not previously saved your data, choosing New will cause the program to ask you if you want to save the current datasheet before it is cleared.



2. Click **OK.** This will clear the screen and present you with an empty file just like when you start the program.

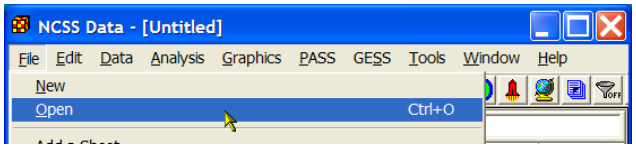


NCSS maintains two data formats. The spreadsheet (S0-type) format is for routine databases of fewer than 16,384 rows and 256 columns. The database (S0Z-type) format is for databases with more than 16,384 rows and/or 256 columns.

Loading a Database

Take the following steps to load the brain weight data into ***NCSS***:

1. Select **Open** from the File menu of the Data window. The File Open window will appear.

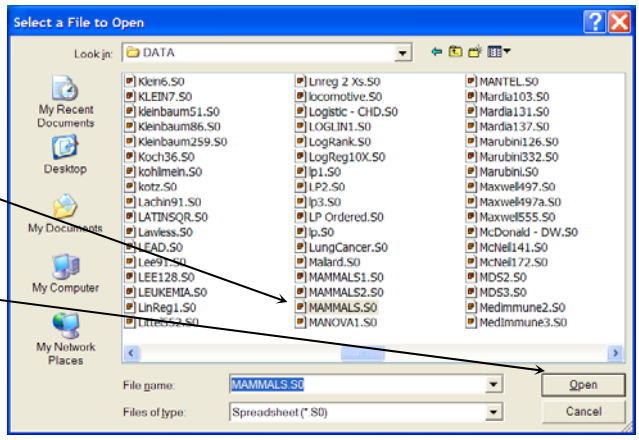


2. Double click the **Data** subdirectory to select it.

3. Double click **MAMMALS.S0** in the list of available files.

4. Click the ***Open*** button.

This will load the MAMMALS database into the Data window.



Chapter 3

Data Transformation

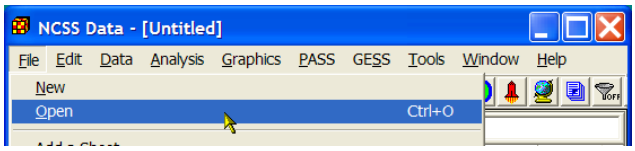
About This Chapter (Time: 13 minutes)

This chapter continues the introduction to the ***NCSS*** system by taking you through examples of using transformations to create new variables. Specifically, you will be shown how to calculate percentages and how to recode the values of a variable.

Loading the MAMMALS Database

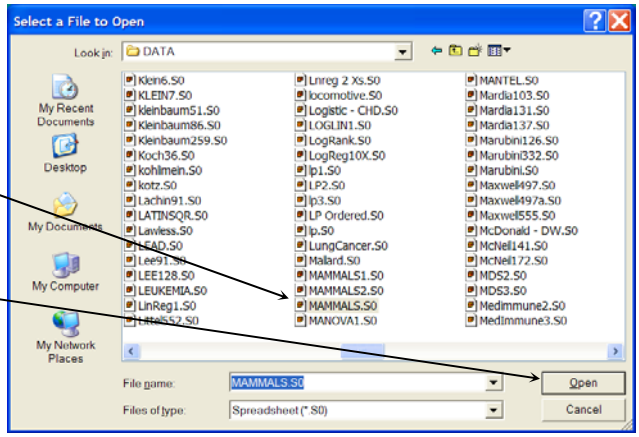
Take the following steps to load the brain weight data into ***NCSS***:

1. Select **Open** from the File menu of the Data window. The File Open window will appear.



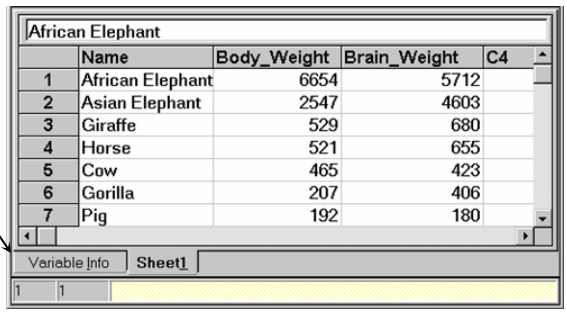
2. Double click the **Data** subdirectory to select it.
3. Double click **MAMMALS.S0** in the list of available files.
4. Click the ***Open*** button.

   This will load the MAMMALS database into the Data window.

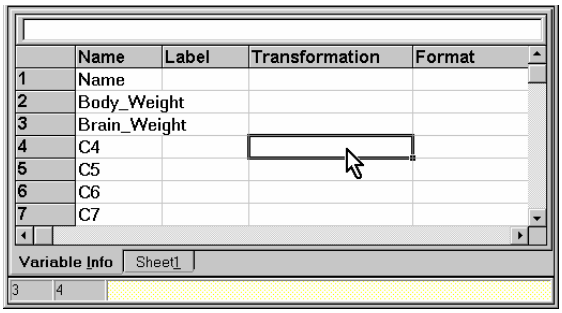


Creating a Percentage Variable

1. Click on the **Variable Info** tab. This will position you in the Variable Info datasheet.



2. In the **Transformation** column, click on the fourth cell down--the one in the **C4** row. This will position the spreadsheet cursor in this cell. This is where the transformation will be entered.

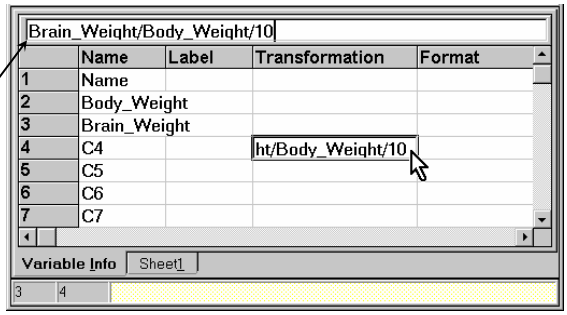


3. Type in the transformation expression: **Brain_Weight/Body_Weight/10**. (Be sure to type the underscores!)

Press **Enter**.

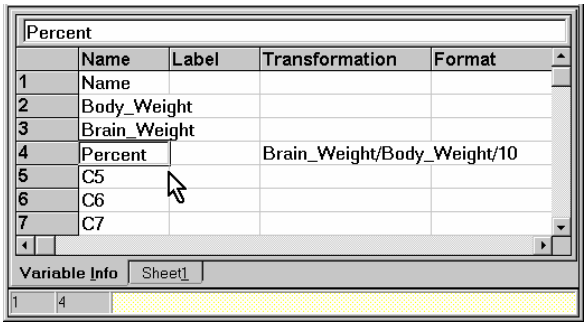
Notice that you edit the transformation in the edit bar at the top of the spreadsheet.

This step enters the new transformation expression, but does not change the data. The data are not generated until the spreadsheet is manually recalculated.



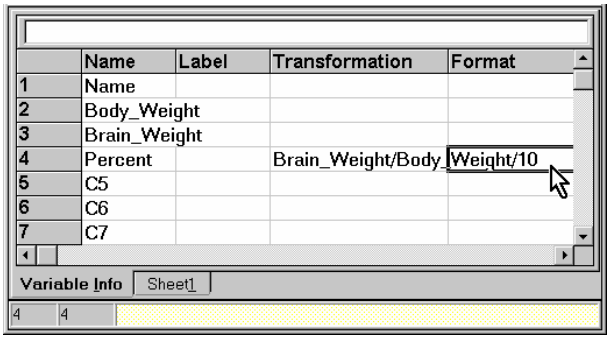
4. Click on **C4** in the Name column and type **Percent** and press **Enter**.

This renames the variable from the default of C4 to a new value that better describes the data in this column.



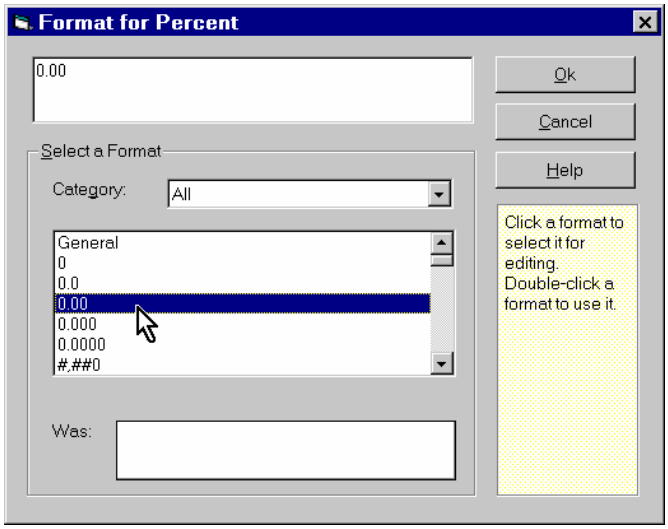
5. Double click on the cell in the fourth row in the **Format** column.

This will display the Format window for editing the format of the Percent variable. Note that this format will not influence the internal precision of the data.

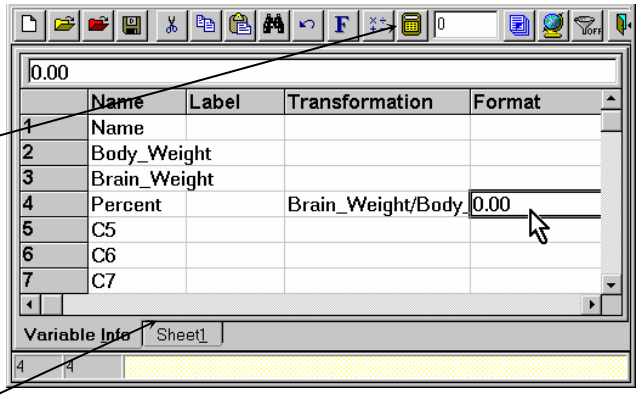


6. Select the two-decimal format: 0.00 from the list.

Although it is not necessary to reformat the numbers, it will make
viewing them much easier.



The completed screen will appear like this.



7. Click the **Apply Transformation** button on the toolbar.

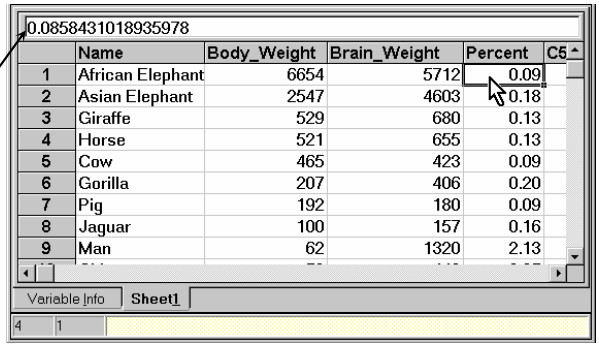
This will cause all transformations to be recalculated.

8. Click the **Sheet1** tab.

The final result appears like this.

Notice the new column of data in the Percent variable's column.

By clicking on a cell, you can see that the data is actually stored in double precision.



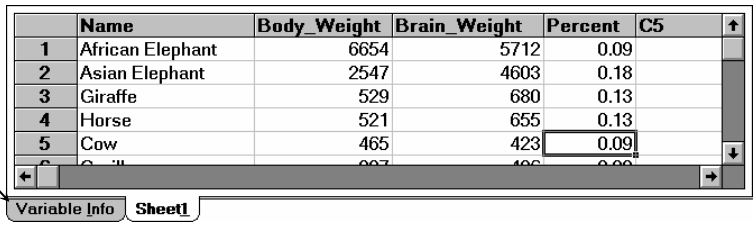
If you change or add data to either ***Body_Weight*** or ***Brain_Weight***, the ***Percent*** variable's values will not be automatically recalculated. You must recalculate the database using the **Apply Transformation** button or the **Recalc All** option of the Data menu.

Also remember that these changes are not automatically saved on your hard disk. If you want a permanent copy of a database with new transformations, you must save this modified version of the database using the Save option of the File menu in the Data window.

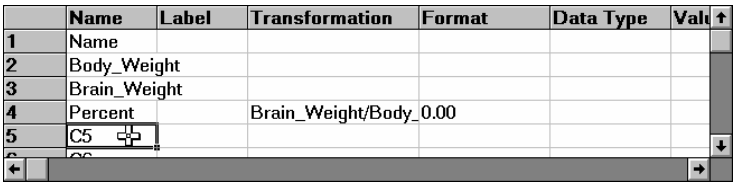
Recoding a Variable

It is often necessary to recode the values of a variable. As an example, we will recode the body weights to form a new variable as follows. Animals with a body weight less than 100 kg will receive a value of 1. Animals with a body weight greater than or equal to 100 kg will receive a value of 2. The transformation formula that will accomplish this is ***(Body_Weight>=100)+1***. The expression inside the parentheses results in a "1" if it is true or "0" if it is false. We will call the new variable ***SizeGroup***.

1. Click the **Variable Info** tab.

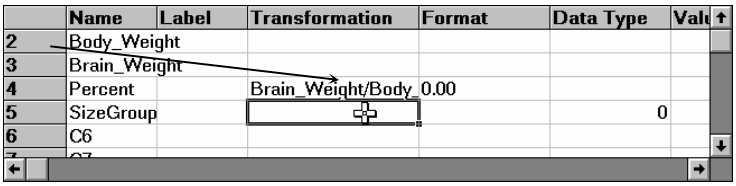


2. Click the **C5** name.

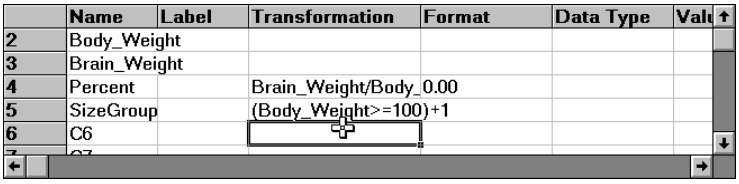


3. Type **SizeGroup** and press **Enter**.

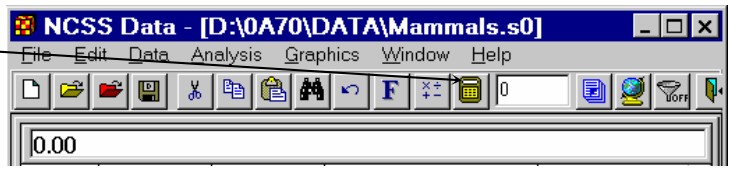
4. Click in the cell in the fifth row and third column.



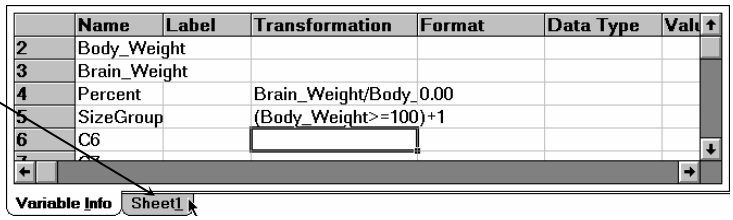
5. Type **(Body_Weight>=100)+1** and press **Enter**.



6. Press the **Apply Transformations** button to generate the new values.



7. Click on the **Sheet1** tab to return to the data.



The final result appears like this.

	Name	Body_Weight	Brain_Weight	Percent	SizeGrou	C6
1	African Elephant	6654	5712	0.09	2	
2	Asian Elephant	2547	4603	0.18	2	
3	Giraffe	529	680	0.13	2	
4	Horse	521	655	0.13	2	
5	Cow	465	423	0.09	2	
6	Gorilla	207	406	0.20	2	
7	Pig	192	180	0.09	2	
8	Jaguar	100	157	0.16	2	
9	Man	62	1320	2.13	1	
10	Chimpanzee	52	440	0.85	1	
11	Gray Wolf	36	120	0.33	1	
12	Kangaroo	35	56	0.16	1	
13	Baboon	11	179	1.63	1	
14	Red Fox	4	50	1.25	1	
15	Cat	3	26	0.87	1	

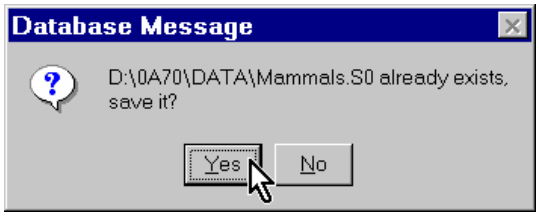
Saving the Changes

It is important to save changes to your database. Take the following steps to do this.

1. Choose ***Save*** from the File menu of the Data window.

2. Click ***Yes***.

   The MAMMALS database on your hard disk will be replaced with the revised edition.



Chapter 4

Running Descriptive Statistics

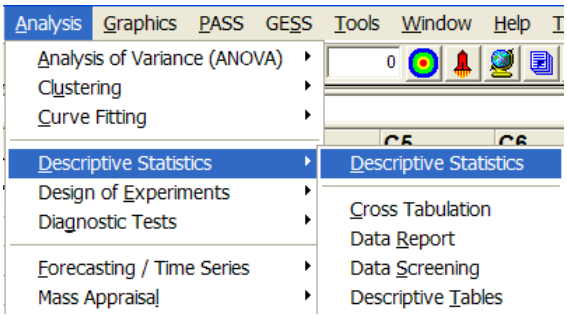
About This Chapter (Time: 8 minutes)

This chapter continues the introduction to the **NCSS** system by taking you through an example of using **NCSS** to obtain descriptive statistics.

Running Descriptive Statistics

In this section, you will generate descriptive statistics (mean, standard deviation, etc.) on the Body_Weight variable in the MAMMALS data. To begin, start **NCSS** and load the MAMMALS database. Detailed instructions for doing this are at the beginning of Chapter 3. After the database is loaded, follow these steps to run the procedure:

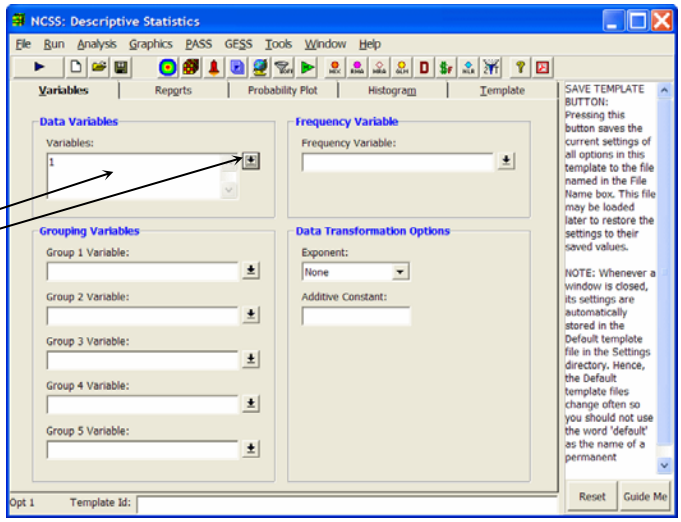
1. Click on the Analysis menu. From the Descriptive Statistics menu, select **Descriptive Statistics**.



4-2 Quick Start – Running Descriptive Statistics

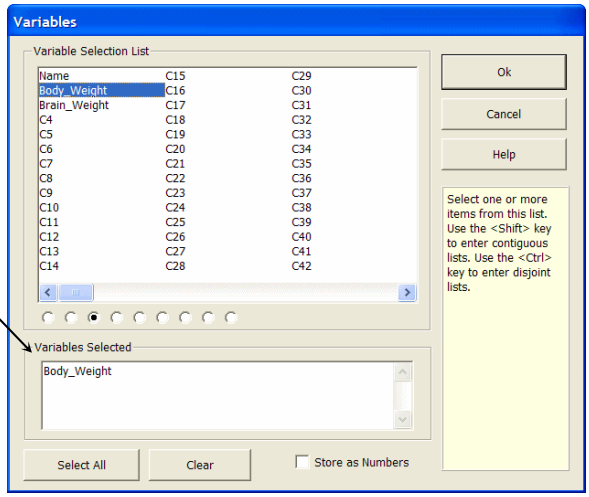
The Descriptive Statistics window will appear.

The next step is to select the variables to be analyzed.



2. Double click in the **Variables** box or click the small button to the right of this box.

This will cause the Variables window to appear.

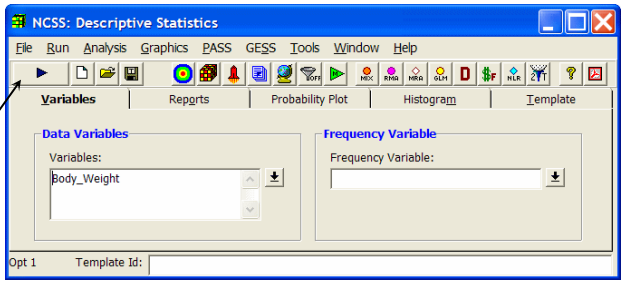


3. Click on **Body_Weight** in the Variable Selection List box.

The variable will appear in the Variables Selected box.

4. Click **Ok**.

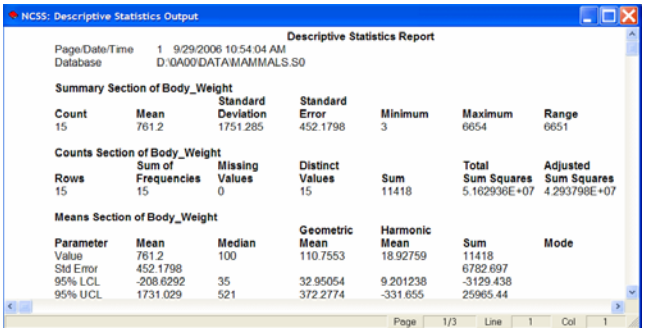
The procedure window reappears. Note that the Variables option now has a value of ***Body_Weight***. This is the name of the variable that was selected.



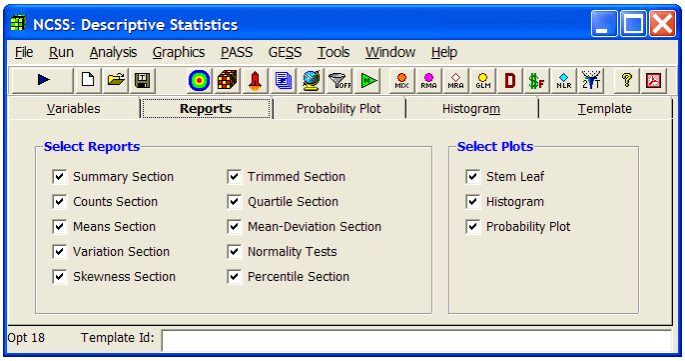
5. Press the **Run** button to run the procedure and generate the following output report.

The results are displayed in NCSS's word processor.

You can scroll through the output using the scroll bars. You can enlarge this window by double-clicking the title bar--the bar at the top containing the words NCSS: Descriptive Statistics Output.

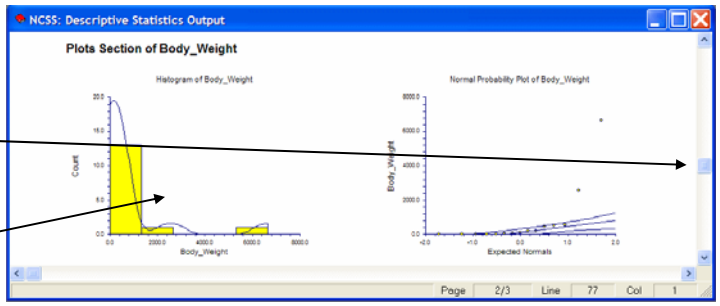


Don't be intimidated by the amount of output. The default descriptive statistics report contains much more information than would normally be used. You can generate only those reports you want by making appropriate selections on the Reports panel of the Descriptive Statistics window.

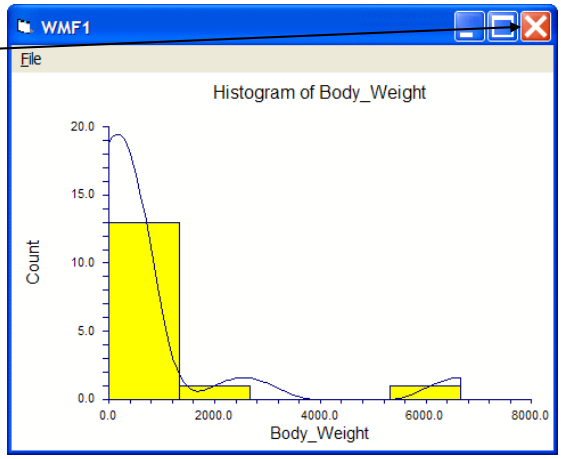


We will now show how to view the graphics in more detail.

6. Scroll down through the output until reach the histogram.
7. Double-click the histogram to obtain a full-screen version of the histogram.



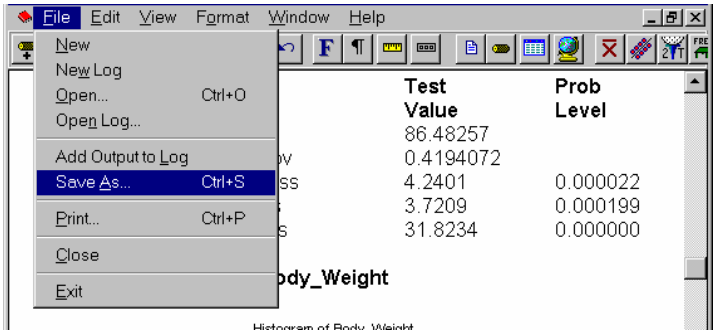
8. After viewing the graph, close it by clicking the close button.



Saving the Output

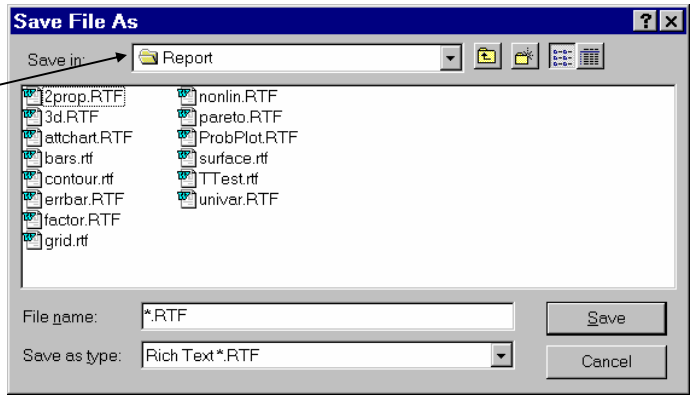
We will now show you how to save the output so that it can be imported into your word processor.

1. Select ***Save As*** from the File menu of the Output window.



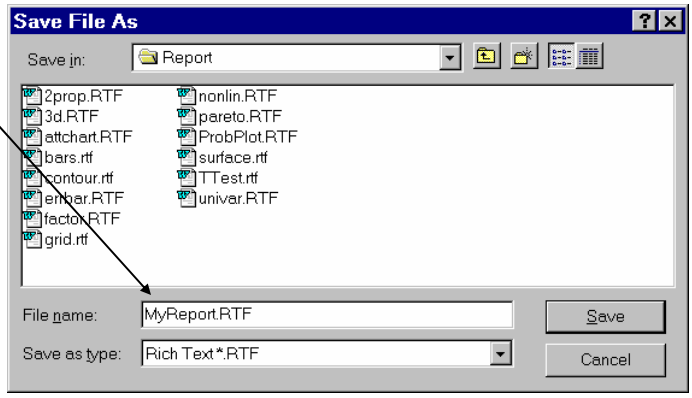
This will bring up the Save File As dialog box.

Switch the current directory to the **Report** subdirectory, which is provided as a convenient place to save your reports.



2. Type **myreport.rtf** in the File name box.

3. Click ***Save*** to save the report.



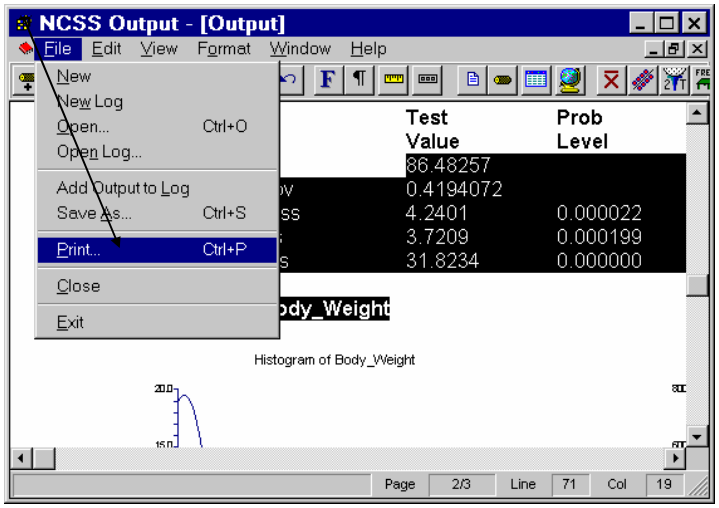
Note that the three-character extension “rtf” is very important. RTF stands for rich text format. Other programs, such as Microsoft Word and WordPerfect, recognize files with this extension as importable. Hence, using this extension makes sure that other programs will be able to import your report files.

As an exercise, run your word processor and load the **myreport.rtf** file.

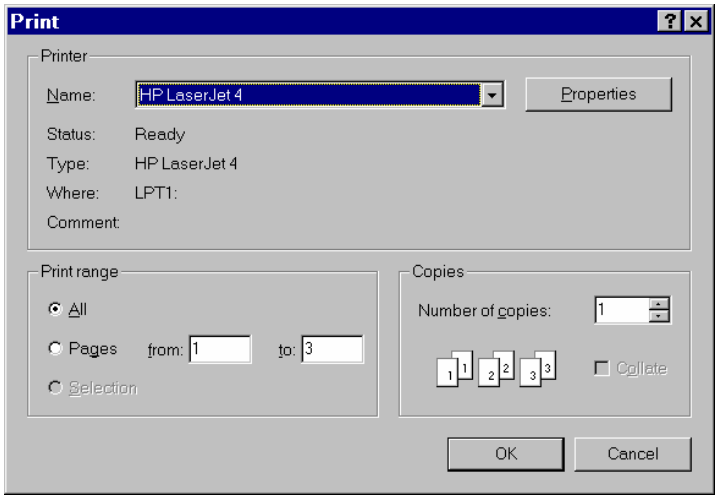
Printing the Output

We will now show you how to print the output.

1. Select ***Print*** from the File menu.



This will bring up the Print dialog box.



You can select which pages you want to print.

2. Click ***OK*** to begin printing.

Chapter 5

Running a Two-Sample T-Test

About This Chapter (Time: 6 minutes)

This chapter continues the introduction to the **NCSS** system by taking you through an example of using **NCSS** to run a two-sample t-test.

Running a Two-Sample T-Test

In this section, you will conduct a two-sample t-test on data in the MAMMALS1 database. To begin, start **NCSS** and load the MAMMALS1 database (be careful to load MAMMALS1, not MAMMALS). Detailed instructions for loading a file are at the beginning of Chapter 3.

Remember to load the database from the Data window.

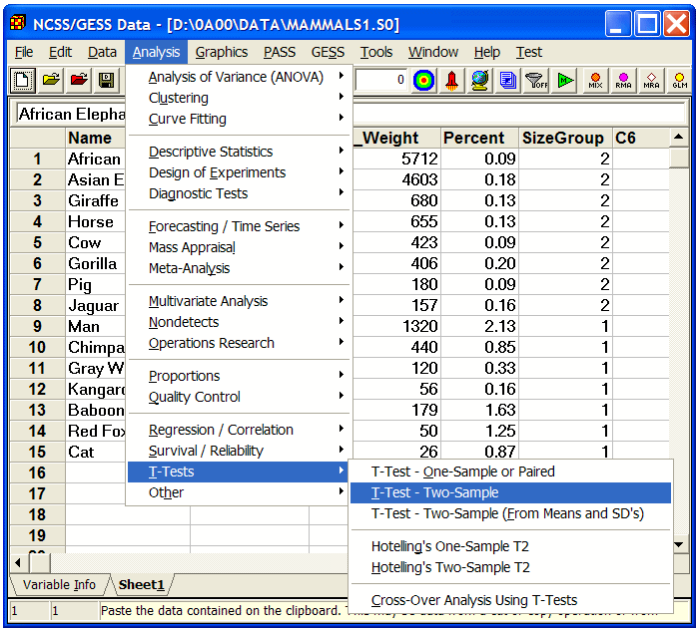
In this example, we will compare the average percent brain weight of small mammals (those under 100 kg in weight) to the same average for large mammals. That is, the response variable will be **Percent** and the grouping variable will be **SizeGroup.**

	Name	Body_Weight	Brain_Weight	Percent	SizeGrou	C6
1	African Elephant	6654	5712	0.09	2	
2	Asian Elephant	2547	4603	0.18	2	
3	Giraffe	529	680	0.13	2	
4	Horse	521	655	0.13	2	
5	Cow	465	423	0.09	2	
6	Gorilla	207	406	0.20	2	
7	Pig	192	180	0.09	2	
8	Jaguar	100	157	0.16	2	
9	Man	62	1320	2.13	1	
10	Chimpanzee	52	440	0.85	1	
11	Gray Wolf	36	120	0.33	1	
12	Kangaroo	35	56	0.16	1	
13	Baboon	11	179	1.63	1	
14	Red Fox	4	50	1.25	1	
15	Cat	3	26	0.87	1	
16						
17						

After the database is loaded, follow these steps to run the procedure:

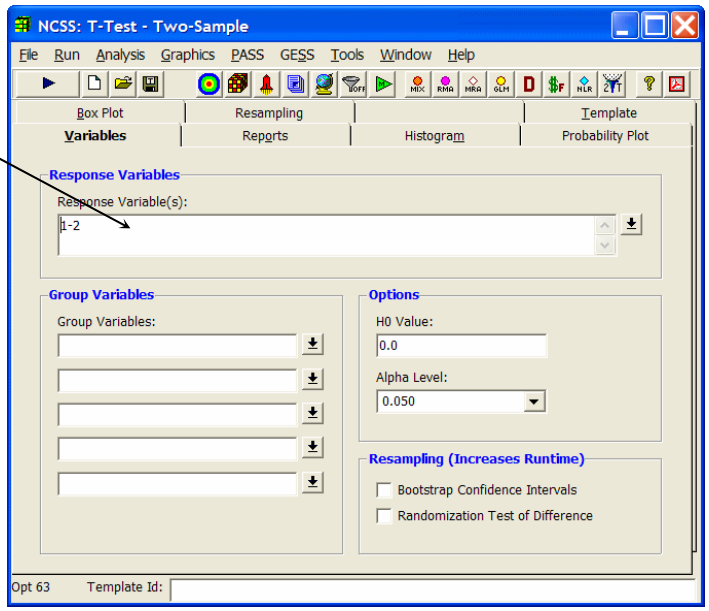
5-2 Quick Start – Running a Two-Sample T-Test

1. From the T-Tests submenu of the Analysis menu, select **T-Test - Two-Sample**.



The Two Sample Tests procedure window will appear.

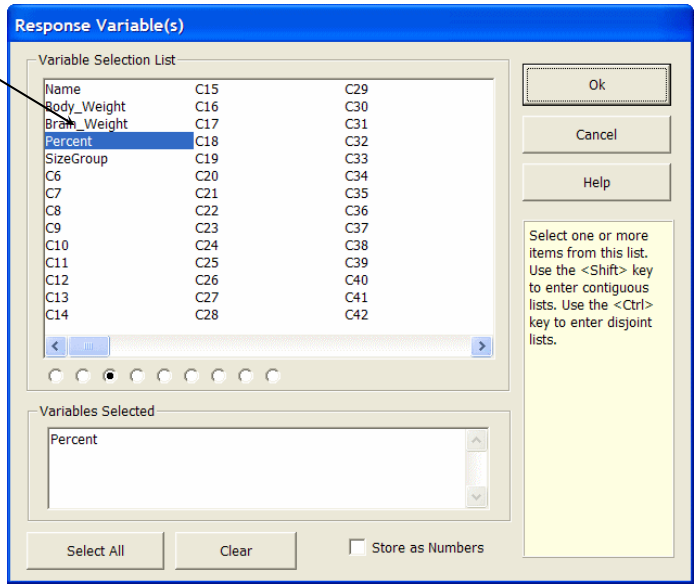
2. Double click in the **Response Variables** box.



This will cause the Response Variables selection window to appear.

3. Click on the **Percent** item in the Variable Selection List box.

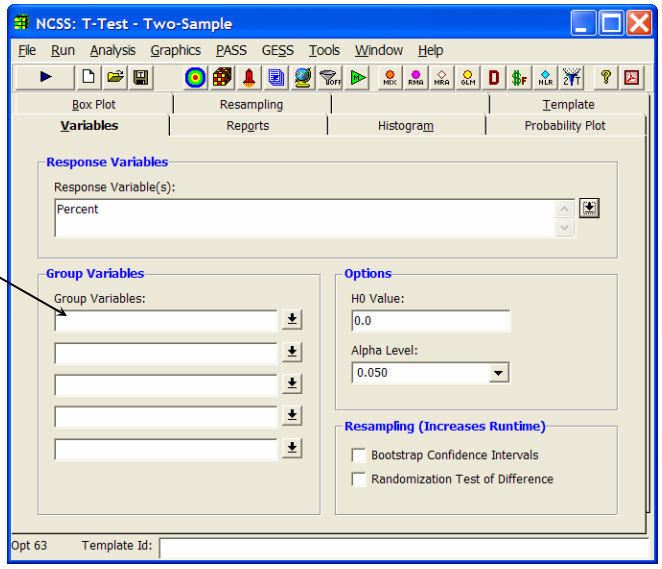
4. Click **Ok**.



The Response Variables now has the entry **Percent**. This is the variable that was selected.

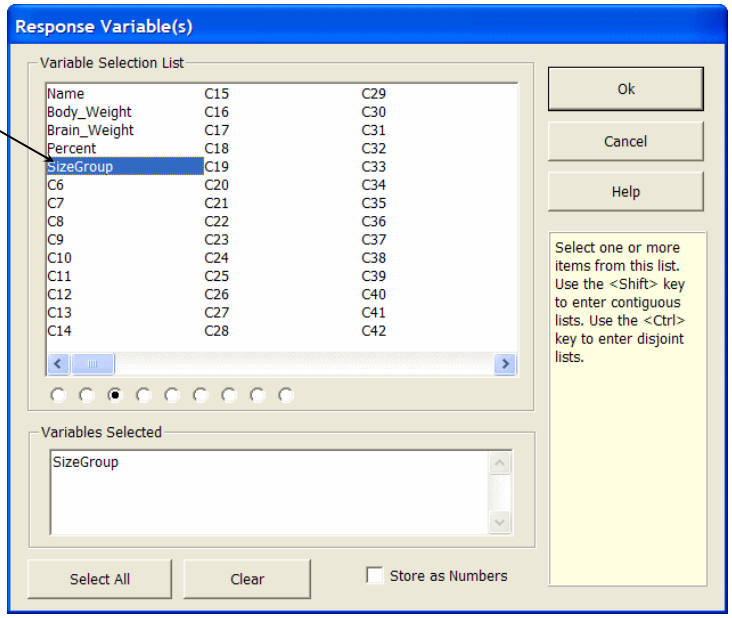
5. Double click the top **Group Variable** box.

This is the grouping variable. The average percent of those rows with a SizeGroup value of 1 (small animals) will be compared with the average percent of those rows with a SizeGroup value of 2 (large animals).

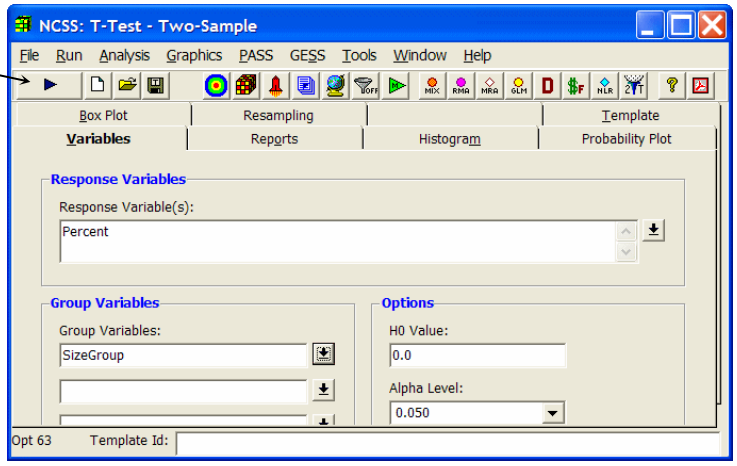


6. Select **SizeGroup** from the list of available variables.

7. Click ***Ok***.



8. Click the ***Run*** button to run the analysis.



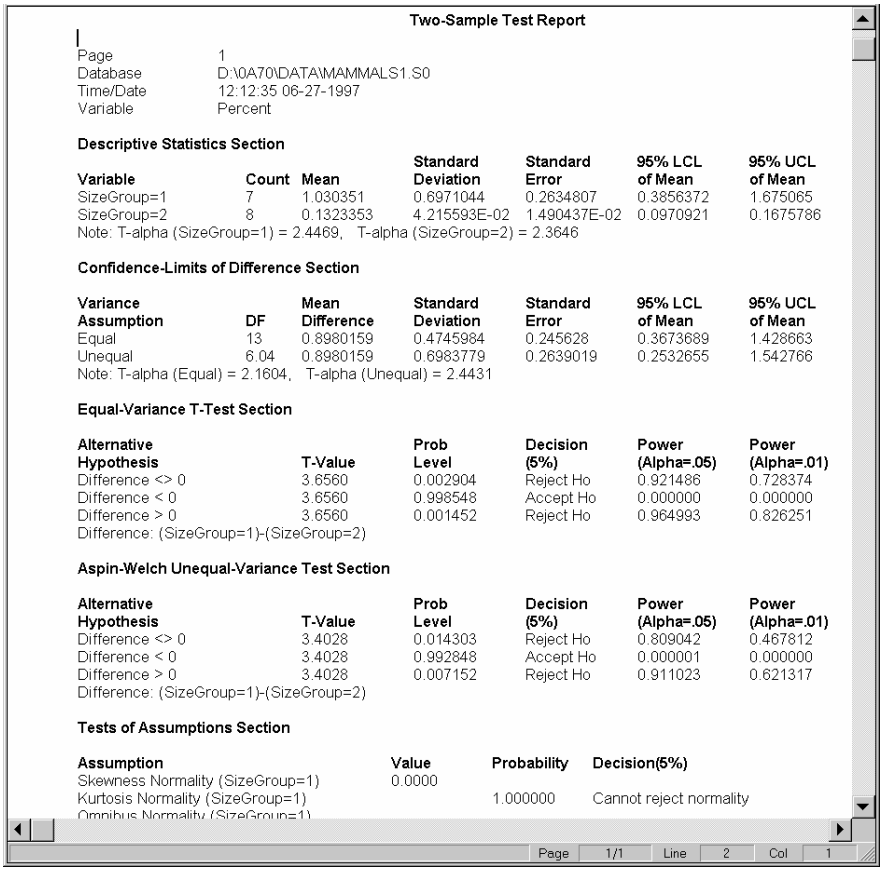
The results are displayed in ***NCSS***'s word processor.

The T-Test compares the mean percent of two groups. Often, all you will need is the t-value and associated probability level. These are contained in the Equal-Variance T-Test Section. In this case the T-value is 3.6560 and the probability level is 0.002904. Hence we reject the null hypothesis that means are equal.

A quick glance at the means of the two groups shows that the mean percent for small animals is 1.03 and for large animals is 0.13. Hence the two percentages are an order of magnitude apart!

The T-Test chapter of the User's Guide goes into much more detail on how to perform a T-Test analysis.

At this point, you could save or print the t-test report.



Two-Sample Test Report

Page 1
Database D:\0A70\DATA\MAMMALS1.S0
Time/Date 12:12:35 06-27-1997
Variable Percent

Descriptive Statistics Section

Variable	Count	Mean	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
SizeGroup=1	7	1.030351	0.6971044	0.2634807	0.3856372	1.675065
SizeGroup=2	8	0.1323353	4.215593E-02	1.490437E-02	0.0970921	0.1675786

Note: T-alpha (SizeGroup=1) = 2.4469, T-alpha (SizeGroup=2) = 2.3646

Confidence-Limits of Difference Section

Variance Assumption	DF	Mean Difference	Standard Deviation	Standard Error	95% LCL of Mean	95% UCL of Mean
Equal	13	0.8980159	0.4745984	0.245628	0.3673689	1.428663
Unequal	6.04	0.8980159	0.6983779	0.2639019	0.2532655	1.542766

Note: T-alpha (Equal) = 2.1604, T-alpha (Unequal) = 2.4431

Equal-Variance T-Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	3.6560	0.002904	Reject Ho	0.921486	0.728374
Difference < 0	3.6560	0.998548	Accept Ho	0.000000	0.000000
Difference > 0	3.6560	0.001452	Reject Ho	0.964993	0.826251

Difference: (SizeGroup=1)-(SizeGroup=2)

Aspin-Welch Unequal-Variance Test Section

Alternative Hypothesis	T-Value	Prob Level	Decision (5%)	Power (Alpha=.05)	Power (Alpha=.01)
Difference <> 0	3.4028	0.014303	Reject Ho	0.809042	0.467812
Difference < 0	3.4028	0.992848	Accept Ho	0.000001	0.000000
Difference > 0	3.4028	0.007152	Reject Ho	0.911023	0.621317

Difference: (SizeGroup=1)-(SizeGroup=2)

Tests of Assumptions Section

Assumption	Value	Probability	Decision(5%)
Skewness Normality (SizeGroup=1)	0.0000		
Kurtosis Normality (SizeGroup=1)		1.000000	Cannot reject normality
Omnibus Normality (SizeGroup=1)			

Page 1/1 Line 2 Col 1

5-6 Quick Start – Running a Two-Sample T-Test

Chapter 6

Running a Regression Analysis

About This Chapter (Time: 10 minutes)

This chapter continues the introduction to the **NCSS** system by taking you through an example of regression analysis. Regression techniques analyze the relationship between a dependent (Y) variable and one or more independent (X) variables. **NCSS** has regression procedures for many different situations.

Running a Regression Analysis

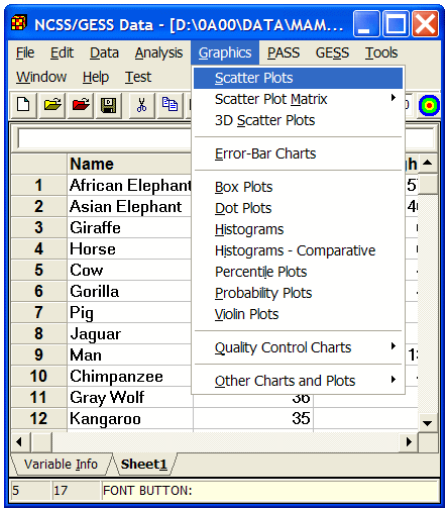
In this section, you will conduct a regression analysis using the MAMMALS1 database. To begin, start **NCSS** and load the MAMMALS1 database. Detailed instructions for loading a database are at the beginning of Chapter 3.

In this example we will investigate the relationship between ***Brain_Weight*** (dependent variable) and ***Body_Weight*** (independent variable).

	Name	Body_Weight	Brain_Weight	Percent	SizeGrou	C6
1	African Elephant	6654	5712	0.09	2	
2	Asian Elephant	2547	4603	0.18	2	
3	Giraffe	529	680	0.13	2	
4	Horse	521	655	0.13	2	
5	Cow	465	423	0.09	2	
6	Gorilla	207	406	0.20	2	
7	Pig	192	180	0.09	2	
8	Jaguar	100	157	0.16	2	
9	Man	62	1320	2.13	1	
10	Chimpanzee	52	440	0.85	1	
11	Gray Wolf	36	120	0.33	1	
12	Kangaroo	35	56	0.16	1	
13	Baboon	11	179	1.63	1	
14	Red Fox	4	50	1.25	1	
15	Cat	3	26	0.87	1	
16						
17						

Creating a Scatter Plot

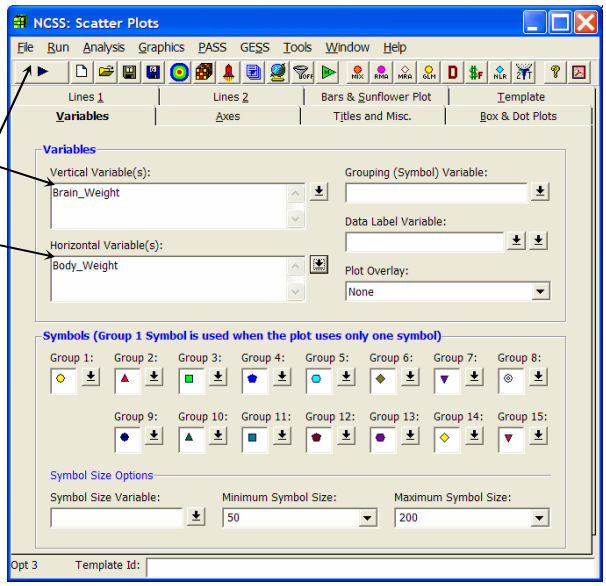
The first step in a regression analysis is to plot the data.



1. From the Graphics menu, select **Scatter Plots**.

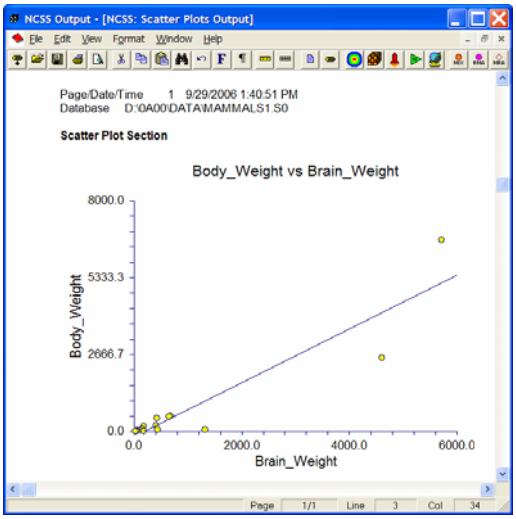
   The Scatter Plot window will appear.

2. Click in the ***Vertical Variable(s)*** box.
3. Enter ***Brain_Weight***.
4. Click in the ***Horizontal Variable(s)*** box.
5. Enter ***Body_Weight***.
6. Click the ***Run*** button on the toolbar.



The scatter plot shown at the right will appear. In order for regression analysis to be applied, the points in the plot should fall along an imaginary straight line.

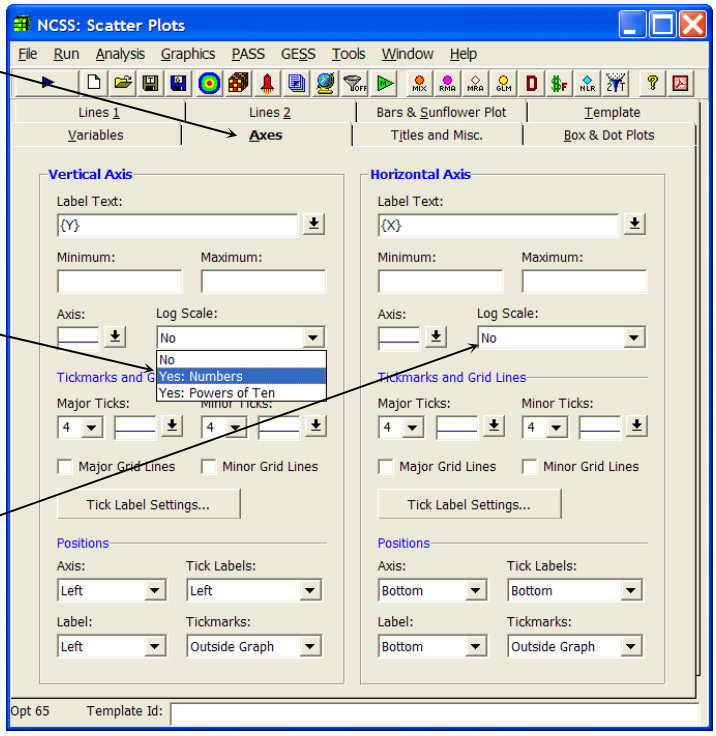
While studying the plot, notice that all but two of the points are clustered in the lower left-hand corner. You cannot tell whether the points fall along a straight line. This suggests that a logarithmic scale should be used to display the data. This will be done next.



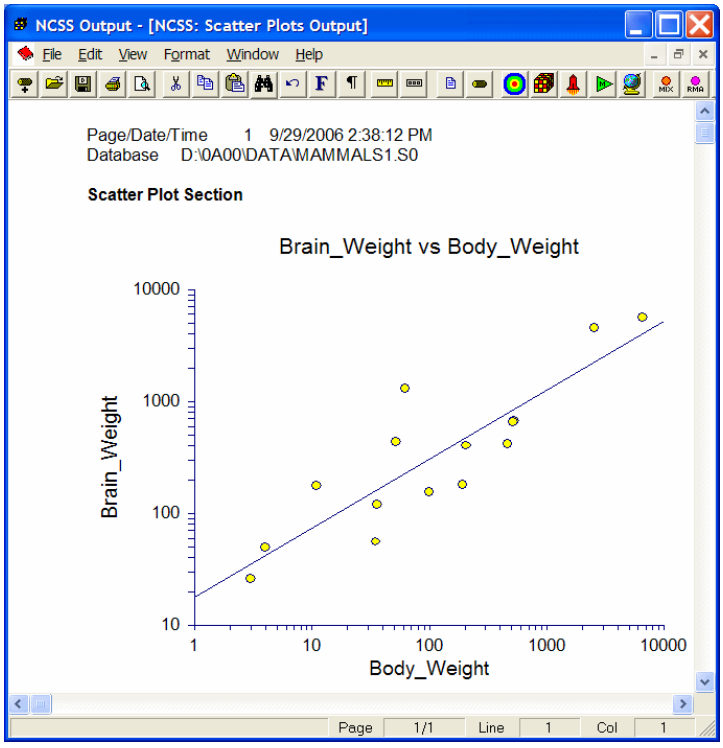
7. Press the **Axes** tab to display the Axes panel.

8. Select **Yes: Numbers** from the **Log Scale** pull-down list box for the vertical axis.

9. Select **Yes: Numbers** from the **Log Scale** pull-down list box for the horizontal axis.



10. Press the **Run** button to run the program and generate the following output.

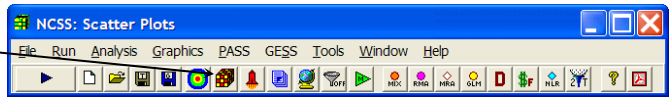


The final result is the plot at the right. Notice that the points now appear to be evenly spread across the plot. Also note that the points appear to fall along an upward-sloping straight line. This implies that a standard regression analysis should produce a reasonable model of this data.

Because of the visual results from using the logarithmic scale, our next task will be to create logarithmic versions of the two variables.

Create the Logarithmic Variables

1. Press the **Data Window** button on the toolbar to bring the **NCSS Data** window to the front of your screen.



This will bring up the **NCSS Data** window.

	Name	Body_Weight	Brain_Weight	Percent	SizeGroup
1	African Elephant	6654	5712	0.09	
2	Asian Elephant	2547	4603	0.18	
3	Giraffe	529	680	0.13	
4	Horse	521	655	0.13	
5	Cow	465	423	0.09	
6	Gorilla	207	406	0.20	
7	Pig	192	180	0.09	

Variable Info | Sheet1

This is the spreadsheet editor which lets you enter and edit your data.

2. Click on the **Variable Info** tab.

This will bring up the **Variable Info** screen.

LogBrain

	Name	Label	Transformation	Format	Data Type
2	Body_Weight				
3	Brain_Weight				
4	Percent		Brain_Weight/Body	0.00	
5	SizeGroup		(Body_Weight>=100)+1		
6	LogBody		Log(Body_Weight)		
7	LogBrain		Log(Brain_Weight)		
8	C8				

Variable Info | Sheet1

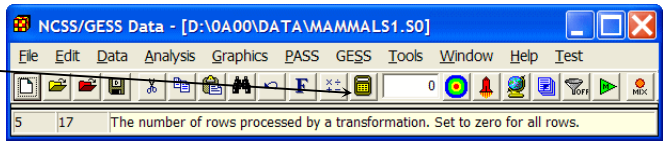
3. In the sixth row of the Transformation column enter **Log(Body_Weight)**.

4. In the seventh row of the Transformation column enter **Log(Brain_Weight)**.

5. In the sixth row of the Name column enter **LogBody**.

6. In the seventh row of the Name column enter **LogBrain**.

7. Click on the **Apply Transformations** button to create the transformed data.



8. Click on the **Sheet1** tab to return to your data. The datasheet will now appear as shown.

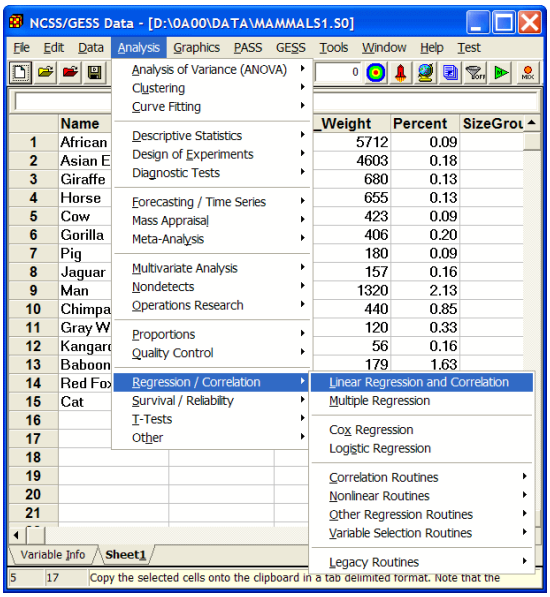
2.60852603357719

	Name	Body_Weight	Brain_Weight	Percent	SizeGroup	LogBody	LogBrain
1	African Elephant	6654	5712	0.09	2	3.8230828	3.7567882
2	Asian Elephant	2547	4603	0.18	2	3.40602894	3.66304097
3	Giraffe	529	680	0.13	2	2.72345567	2.83250891
4	Horse	521	655	0.13	2	2.71683772	2.8162413
5	Cow	465	423	0.09	2	2.66745295	2.62634037
6	Gorilla	207	406	0.20	2	2.31597035	2.60852603
7	Pig	192	180	0.09	2	2.28330123	2.25527251
8	Jaguar	100	157	0.16	2	2	2.19589965
9	Man	62	1320	2.13	1	1.79239169	3.12057393
10	Chimpanzee	52	440	0.85	1	1.71600334	2.64345268
11	Gray Wolf	36	120	0.33	1	1.5563025	2.07918125
12	Kangaroo	35	56	0.16	1	1.54406804	1.74818803
13	Baboon	11	179	1.63	1	1.04139269	2.25285303
14	Red Fox	4	50	1.25	1	0.60205999	1.69897
15	Cat	3	26	0.87	1	0.47712125	1.41497335
16							

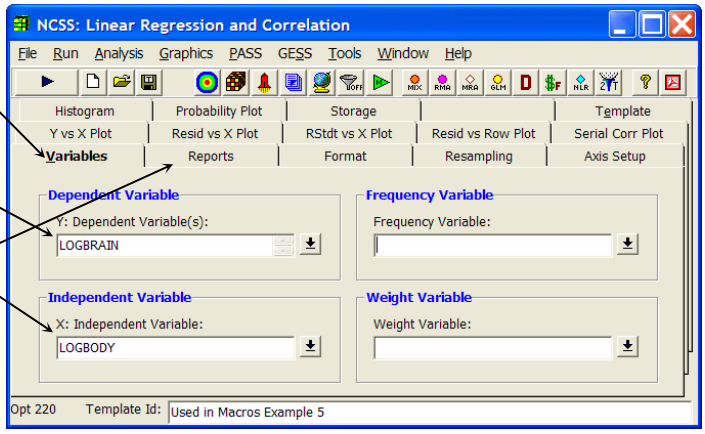
Variable Info | Sheet1

Run the Regression

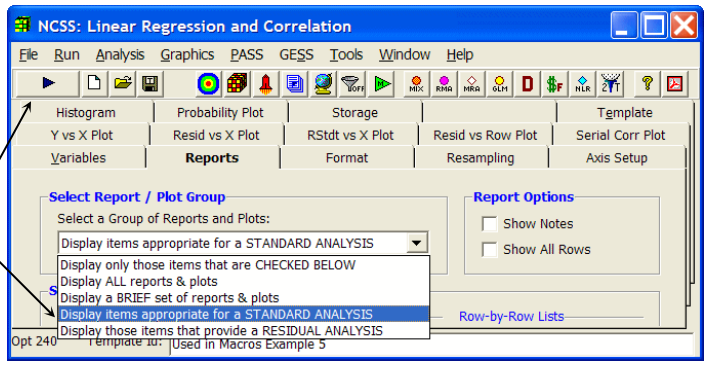
1. Select **Linear Regression and Correlation** from the Regression / Correlation submenu of the Analysis menu.



2. Click on the **Variables** tab.
3. Enter **LogBrain** for the **Y: Dependent Variable**.
4. Enter **LogBody** for the **X: Independent Variable**.
5. Click on the **Reports** tab.



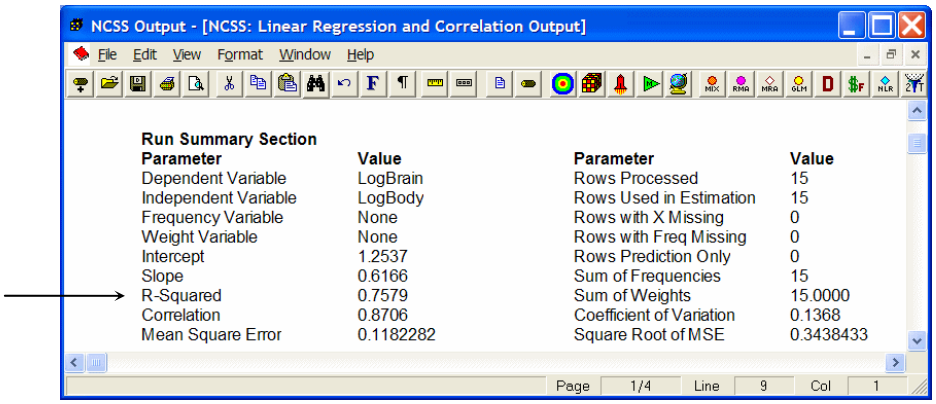
6. Under 'Select a Group of Reports and Plots', select **Display items appropriate for a STANDARD ANALYSIS**.
7. Click the **Run** button on the toolbar.



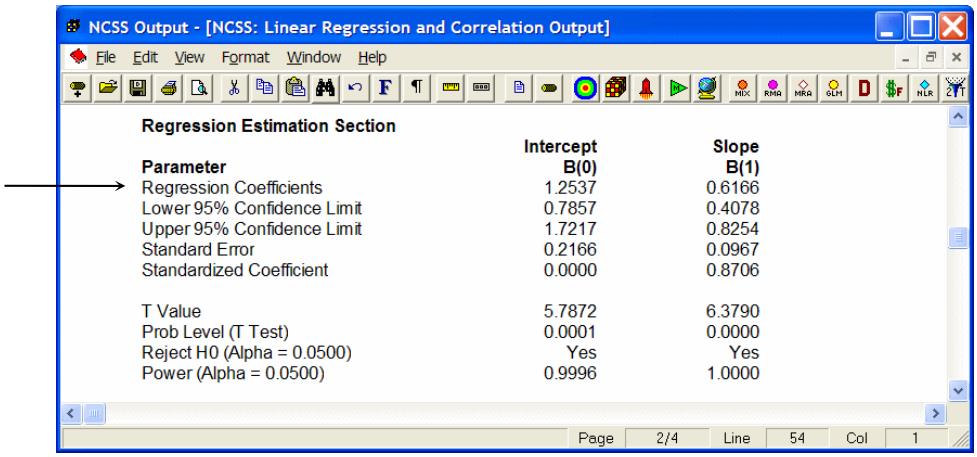
This will generate the output that follows.

6-6 Quick Start – Running a Regression Analysis

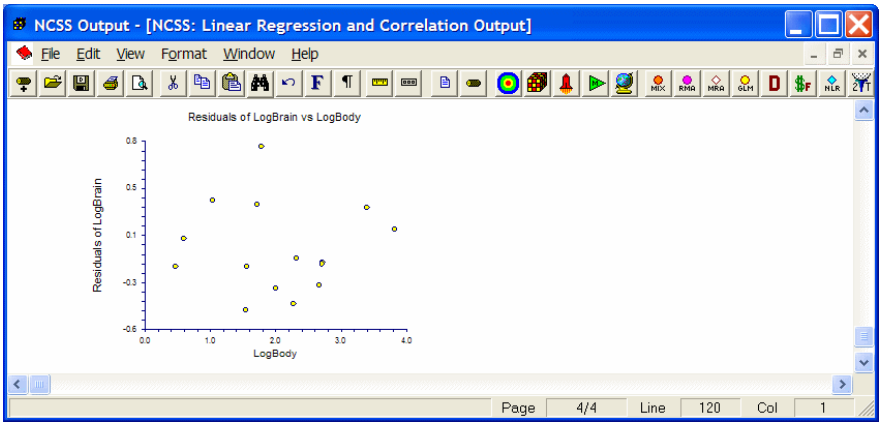
The main statistics of interest in a regression analysis are the R-Squared and the regression coefficients. The R-Squared is shown in the Run Summary Section:



The regression coefficients are shown in the Run Estimation Section.



The residual plot is found at the bottom of the output:



Of course, a complete regression analysis would require the studying of several reports and plots. A complete discussion of this is found in the regression chapters of the ***User's Guide***.

Chapter 7

Data Window

About This Chapter

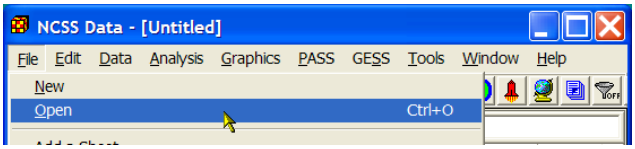
Data may be entered manually or imported from other files. The data are loaded in a spreadsheet from which they may be viewed, changed, stored, or printed. This chapter will show you how to manipulate your data using the spreadsheet.

Loading a Database

The tutorial in Chapter 2 explained the mechanics of entering, storing, and printing a database, so that material will not be repeated here. Instead, this chapter will focus on manipulating the data with the spreadsheet after it has been loaded. Our first task will be to load in a previously saved database.

If **NCSS** is not already running, start it now by selecting **NCSS** from the Windows Start menu (refer to the beginning of Chapter 2 for details). We will use the brain weight data that was entered in Chapter 2. These data are stored in the MAMMALS database in the \NCSS2007\DATA subdirectory. To begin this tutorial, take the following steps to load the MAMMALS database.

1. Select **Open** from the File menu of the Data window. The File Open window will appear.

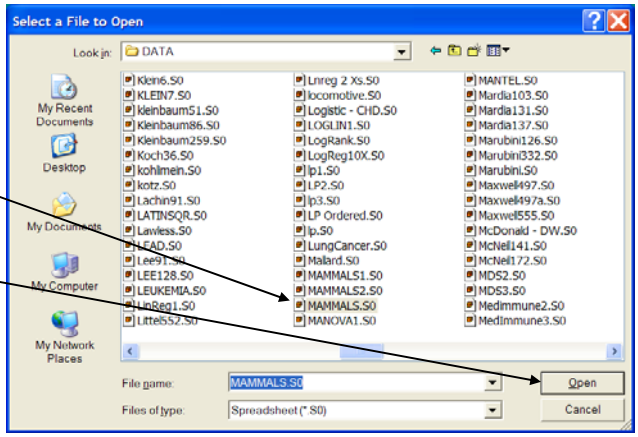


2. Double click the **Data** subdirectory to select it.

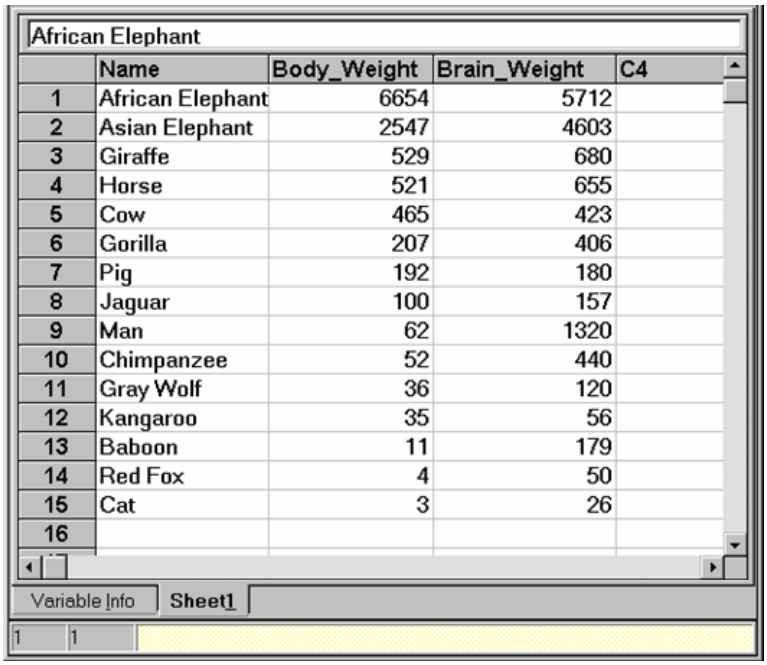
3. Double click **MAMMALS.S0** in the list of available files.

4. Click the ***Open*** button.

This will load the MAMMALS database into the Data window.



The Data window will appear as shown to the right.


African Elephant

	Name	Body_Weight	Brain_Weight	C4
1	African Elephant	6654	5712	
2	Asian Elephant	2547	4603	
3	Giraffe	529	680	
4	Horse	521	655	
5	Cow	465	423	
6	Gorilla	207	406	
7	Pig	192	180	
8	Jaguar	100	157	
9	Man	62	1320	
10	Chimpanzee	52	440	
11	Gray Wolf	36	120	
12	Kangaroo	35	56	
13	Baboon	11	179	
14	Red Fox	4	50	
15	Cat	3	26	
16				

Variable Info | Sheet1

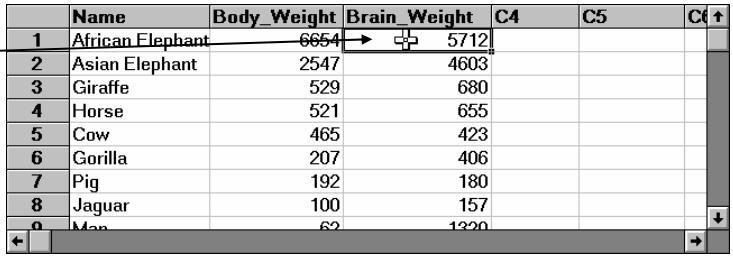
1 1

We next examine how to copy and paste data in the spreadsheet.

Copying and Pasting Data

We will now take you through the steps to copy and paste the data.

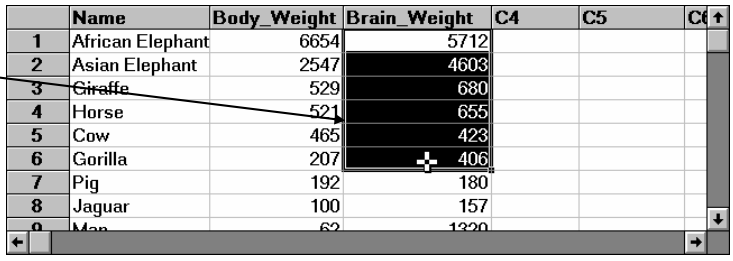
1. Position the cursor in row one column three (at the value ***5712***).



	Name	Body_Weight	Brain_Weight	C4	C5	C6
1	African Elephant	6654	5712			
2	Asian Elephant	2547	4603			
3	Giraffe	529	680			
4	Horse	521	655			
5	Cow	465	423			
6	Gorilla	207	406			
7	Pig	192	180			
8	Jaguar	100	157			

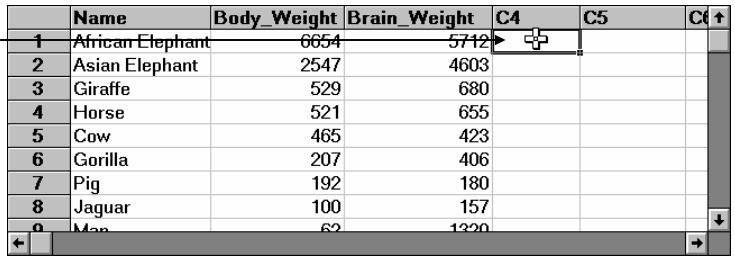
2. Drag the mouse down to row six. This will select the first six rows.

3. Press ***Ctrl-C***. This will copy the data to a temporary storage area called the *clipboard*.



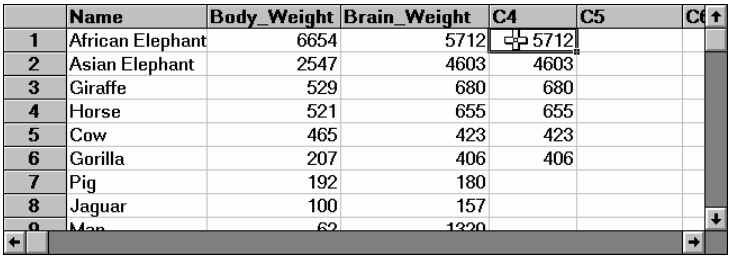
	Name	Body_Weight	Brain_Weight	C4	C5	C6
1	African Elephant	6654	5712			
2	Asian Elephant	2547	4603			
3	Giraffe	529	680			
4	Horse	521	655			
5	Cow	465	423			
6	Gorilla	207	406			
7	Pig	192	180			
8	Jaguar	100	157			

4. Position the cursor in the cell at row one and column four.



	Name	Body_Weight	Brain_Weight	C4	C5	C6
1	African Elephant	6654	5712			
2	Asian Elephant	2547	4603			
3	Giraffe	529	680			
4	Horse	521	655			
5	Cow	465	423			
6	Gorilla	207	406			
7	Pig	192	180			
8	Jaguar	100	157			
9	Man	62	1320			

5. Press ***Ctrl-V*** to paste the data from the clipboard. The resulting screen will appear as shown.

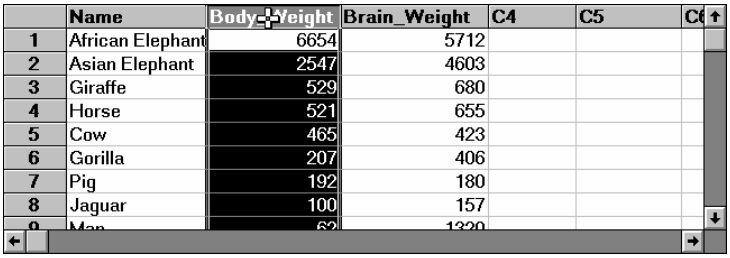


	Name	Body_Weight	Brain_Weight	C4	C5	C6
1	African Elephant	6654	5712	5712		
2	Asian Elephant	2547	4603	4603		
3	Giraffe	529	680	680		
4	Horse	521	655	655		
5	Cow	465	423	423		
6	Gorilla	207	406	406		
7	Pig	192	180			
8	Jaguar	100	157			
9	Man	62	1320			

Changing Column Widths

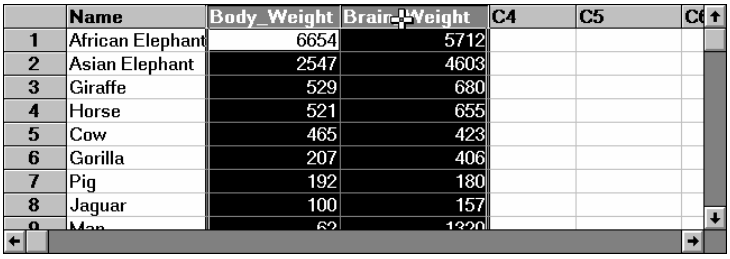
Occasionally, you will want to change the width of one or more columns. This section will show you how this is accomplished. We will resize the columns headed ***Body_Weight*** and ***Brain_Weight***.

1. Click on the column heading: ***Body_Weight***.



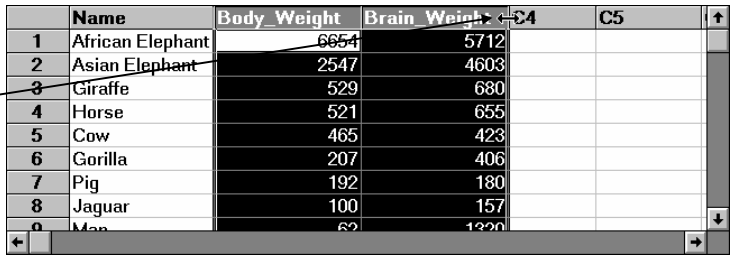
	Name	Body_Weight	Brain_Weight	C4	C5	C6
1	African Elephant	6654	5712			
2	Asian Elephant	2547	4603			
3	Giraffe	529	680			
4	Horse	521	655			
5	Cow	465	423			
6	Gorilla	207	406			
7	Pig	192	180			
8	Jaguar	100	157			
9	Man	62	1320			

2. Drag the mouse into the next column to the right and let go of the mouse button. This will select these two columns.



	Name	Body_Weight	Brain_Weight	C4	C5	C6
1	African Elephant	6654	5712			
2	Asian Elephant	2547	4603			
3	Giraffe	529	680			
4	Horse	521	655			
5	Cow	465	423			
6	Gorilla	207	406			
7	Pig	192	180			
8	Jaguar	100	157			
9	Man	62	1320			

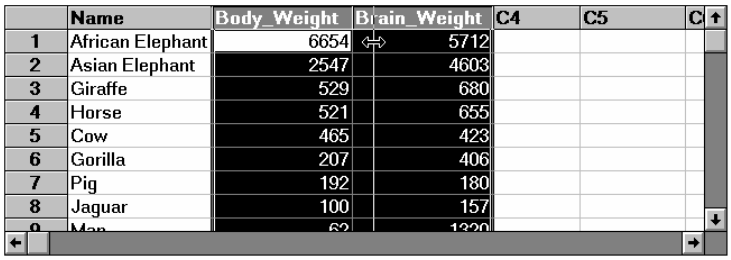
3. Move the cursor between the third and fourth columns. The cursor will change into a double-pointing arrow.



	Name	Body_Weight	Brain_Weight	C4	C5
1	African Elephant	6654	5712		
2	Asian Elephant	2547	4603		
3	Giraffe	529	680		
4	Horse	521	655		
5	Cow	465	423		
6	Gorilla	207	406		
7	Pig	192	180		
8	Jaguar	100	157		

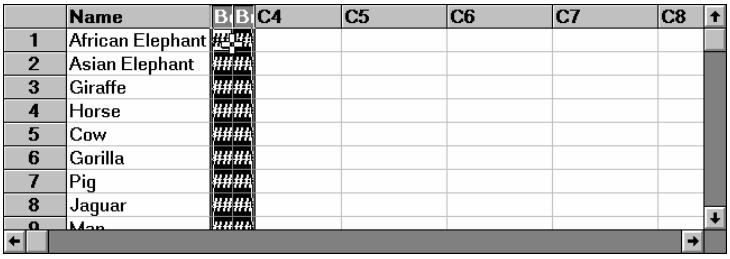
4. While holding down on the mouse button, drag it to the left until you are almost to the next cell border.

5. Let go of the mouse button.



	Name	Body_Weight	Brain_Weight	C4	C5	C
1	African Elephant	6654	5712			
2	Asian Elephant	2547	4603			
3	Giraffe	529	680			
4	Horse	521	655			
5	Cow	465	423			
6	Gorilla	207	406			
7	Pig	192	180			
8	Jaguar	100	157			

The resulting display will appear like this.



	Name	B	B	C4	C5	C6	C7	C8
1	African Elephant	###						
2	Asian Elephant	###						
3	Giraffe	###						
4	Horse	###						
5	Cow	###						
6	Gorilla	###						
7	Pig	###						
8	Jaguar	###						

6. Reverse this process to reset these columns to their original width.

Chapter 8

Procedure Window

About This Chapter

All **NCSS** procedures (e.g., T-Test, Multiple Regression, and Scatterplot) are controlled by a procedure window. The Procedure window contains all the settings, options, and parameters that control a particular procedure. These options are separated into groups called *panels*. A particular panel is viewed by pressing the corresponding *panel tab* that appears just below the toolbar near the top of the window.

The current values of all options available for a procedure are referred to as a *template*. By creating and saving template files, you can tailor each procedure to your own specific needs.

Below is a picture of the Descriptive Statistics procedure window. This chapter presents a brief tutorial of how to operate the Procedure window.

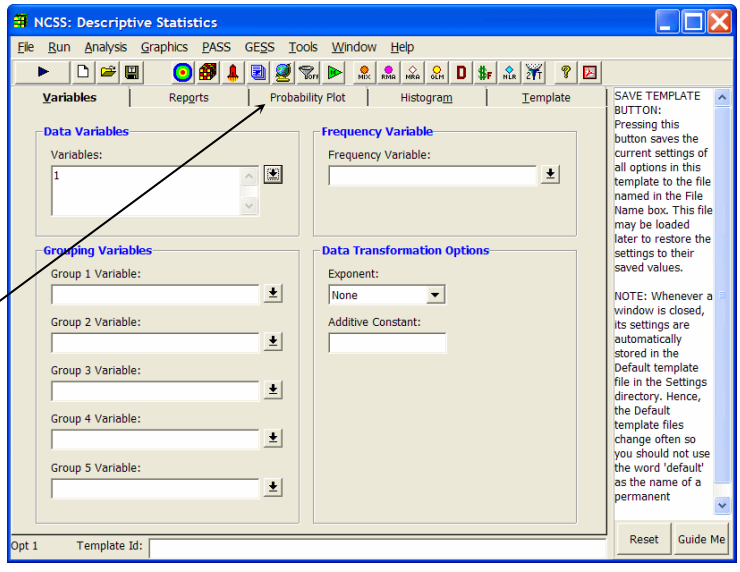
Navigating a Procedure Window

This section will show you how to move around a procedure window. The window is made up of two or more panels (in this example there are five panels: Variables, Reports, Probability Plot, Histogram, and Template). You control a procedure by changing the settings on each of these panels. Hence, navigating a procedure window simply means that you move from panel to panel.

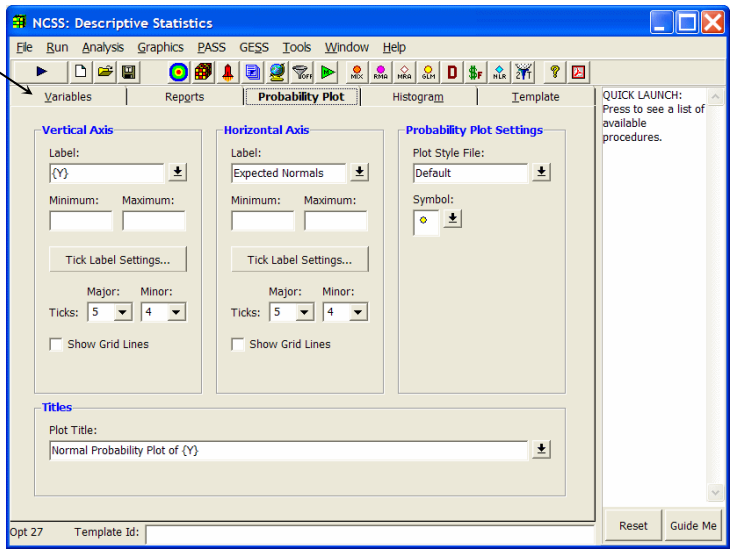
1. From the **Analysis** menu, select **Descriptive Statistics**, then **Descriptive Statistics**.

   The Descriptive Statistics procedure window will appear.

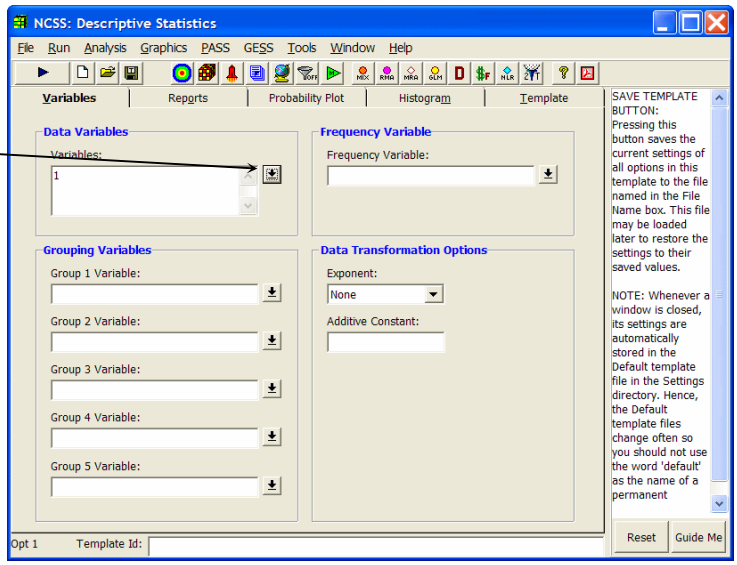
2. Press the **Probability Plot** tab to display the Probability Plot panel.



3. Press the ***Variables*** tab to redisplay the Variables tab.



Notice that many of the option boxes have small buttons on their right. These buttons may be used to activate a separate input window. For example, if you press the button to the right of the Variables box, the Variable Selection window will appear. This window will help you select the variables to be used.



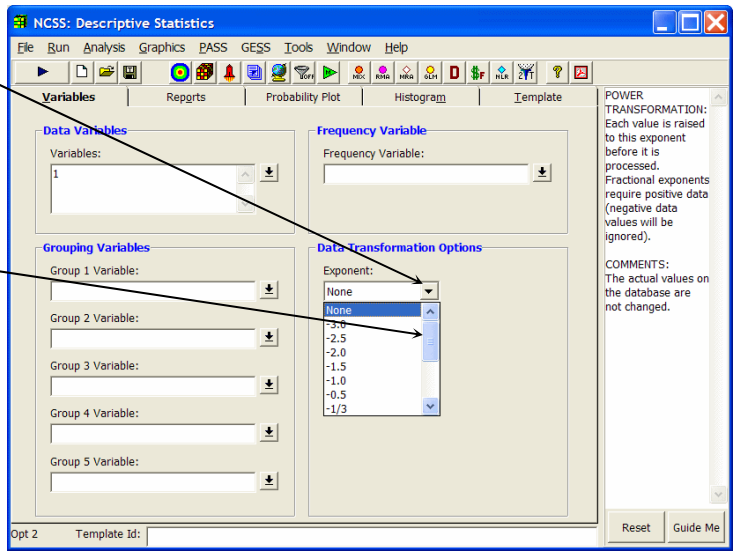
Changing an Option

Suppose you want to change the Exponent option from **None** to **3**.

1. Press the drop-down button on the right of the ***Exponent*** box.

This will activate the drop-down menu.

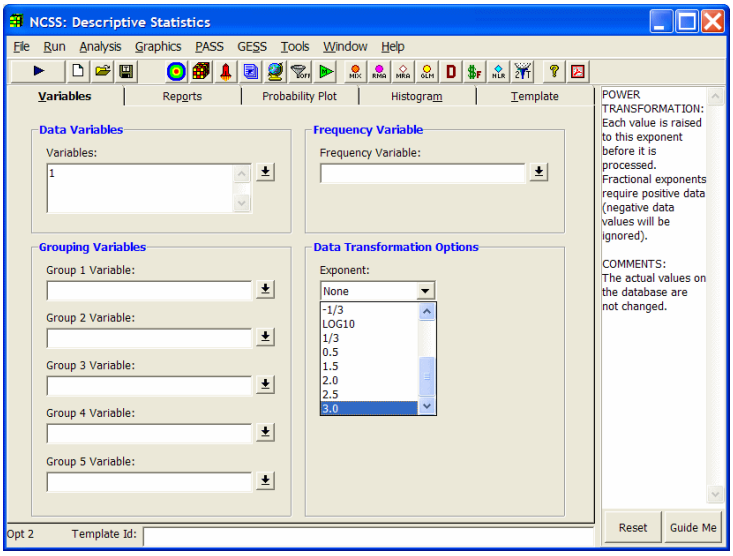
2. Move the scroll bar thumb down until the **3.0** appears.



3. Move the cursor down so that the **3.0** is highlighted.

4. Select the **3.0** by clicking it (or by pressing the Enter key while the 3.0 is highlighted).

Another way to change this option is to select it and press 3. The program searches through the options for the first item that begins with a 3.



Notes on Modifying Options

Many of the option boxes have alternative methods of entering data. For example, when you need to select a variable, you can type the variable name directly in the box or you can double click on the box to bring up a variable selection window.

Entering Text

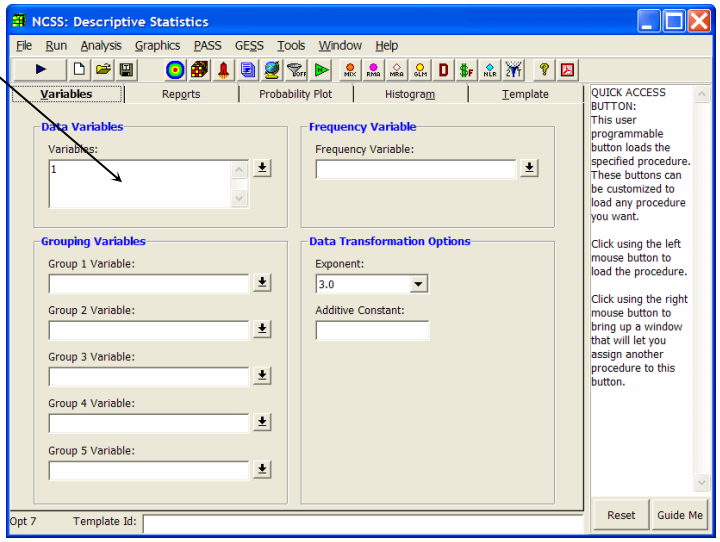
When an option needs text (such as the title of a graph), type the text directly into the box. Note that while you are typing, if you decide to revert back to the original text, you can hit the Escape (Esc) key.

Selecting Variables

When you need to specify variables, you can type their names directly into the box, you can enter their numbers directly into the box, or you can activate the variable selection window.

1. Double click in the **Variables** box.

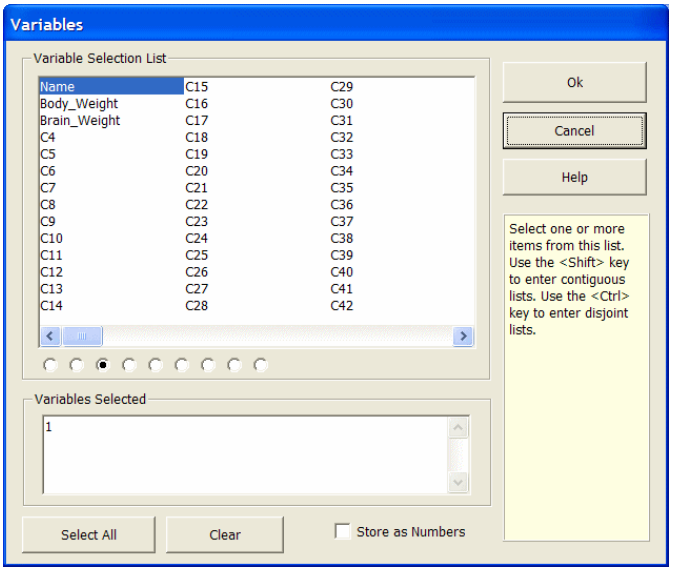
This will display the variable selection window. You can select the variables of interest and press the **Ok** button when you are finished.



Press the **Ctrl** key when you want to select several, noncontiguous, variables.

As you select variables in the Variable Selection List box, they will appear in the Variables Selected box at the bottom.

It may be convenient to specify variables by number rather than by name. For example, when you use numbers, you can use the same settings on several databases, even though the variables have different names.

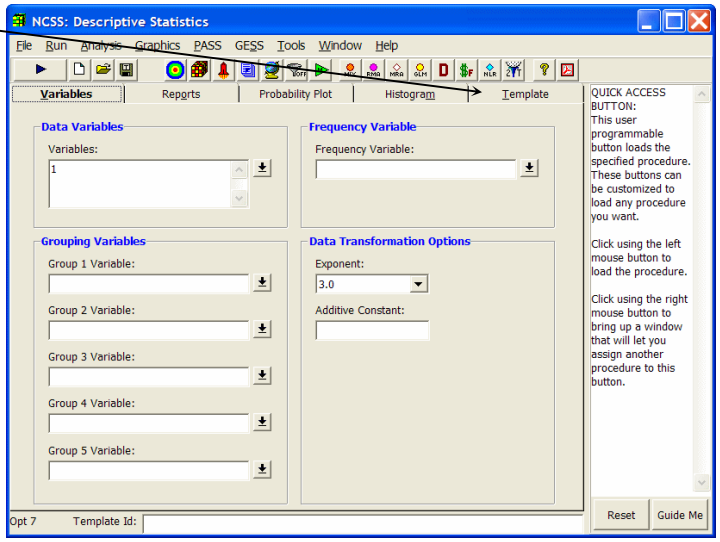


Saving a Template

Once you have filled out a procedure, you may want to save your choices so that you do not have to reset them again the next time you use the procedure. This is accomplished using the Template panel.

In this example, we will save the current settings to a file called TUTOR1.

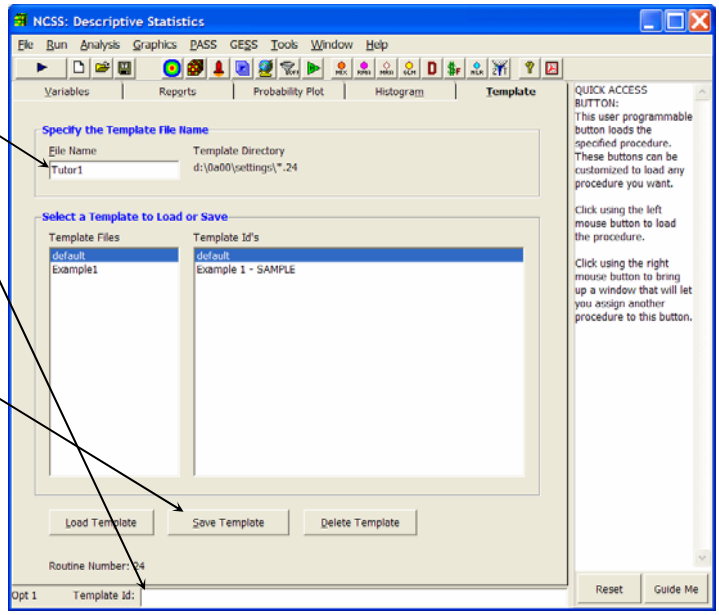
1. Press the **Template** tab to display the Template panel.



2. Enter **Tutor1** in the File Name box. This is the name where the template is stored.

3. Enter an identifying phrase in the Template Id box at the bottom of the screen.

4. Press the **Save Template** button to store the template file.



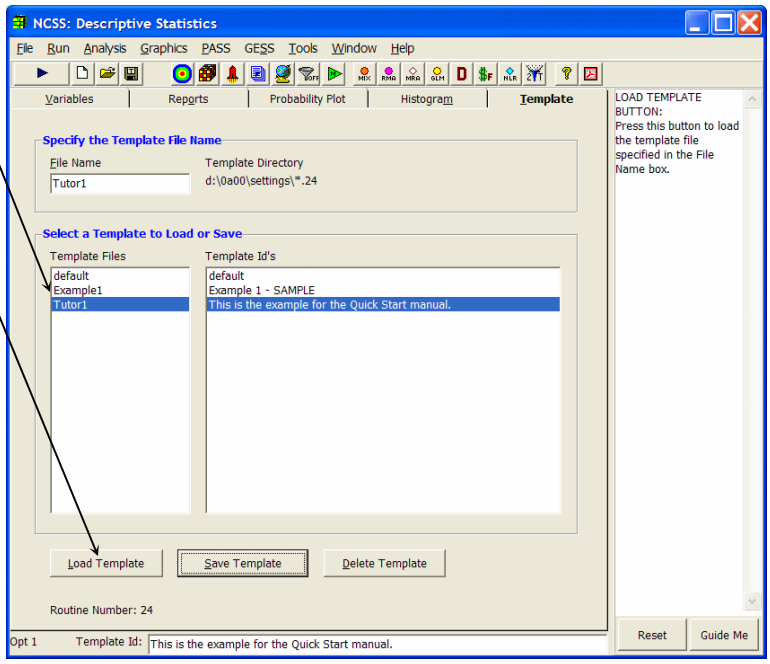
When you supply the template file name, you do not enter a three-character extension. **NCSS** adds the appropriate extension. This extension may be determined by looking at the Template Directory. In this example, the extension is the number 24. You can delete these files using your Windows Explorer program.

Loading a Template File

In this example, we will load the previously saved Tutor1 template file.

1. Select **TUTOR1** from the available template files.
2. Press the **Load Template** button.

   The settings are reset to how they were when Tutor1 was saved.



The Default Template

Whenever you close a procedure window, the current settings are saved in a template file named Default. When a procedure is loaded, **NCSS** checks to determine if the template file Default exists. If such a file exists, it is automatically loaded after the procedure window is loaded. Hence, the current settings of each procedure window are preserved between sessions. Because of this, you should avoid using Default as a template file name.

Chapter 9

Output Window

About This Chapter

NCSS sends all statistics and graphics output to its built-in word processor. In the word processor, the output can be viewed, edited, printed, or saved. Reports and graphs are saved in rich text format (RTF). Since RTF is a standard Windows document transfer format, these files may be loaded directly into your word processor for further processing. You can also cut data from the report and paste it into an **NCSS** datasheet for further analysis. This chapter covers the basics of our built-in word processor.

This chapter will continue the analysis of the brain weight data that was begun in Chapter 3. If you have not already done so, run the Descriptive Statistics reports as described in Chapter 4. Our analysis here will pick up where that chapter ended.

Viewing the Output

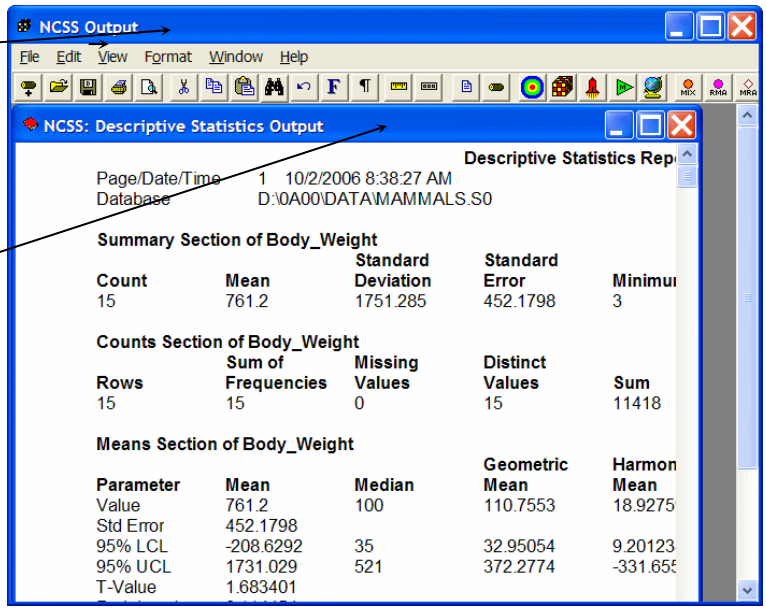
The output of the Descriptive Statistics program is shown below. Usually, you will find it useful to put the output window into full-screen mode.

1. Double click on the Output title bar.

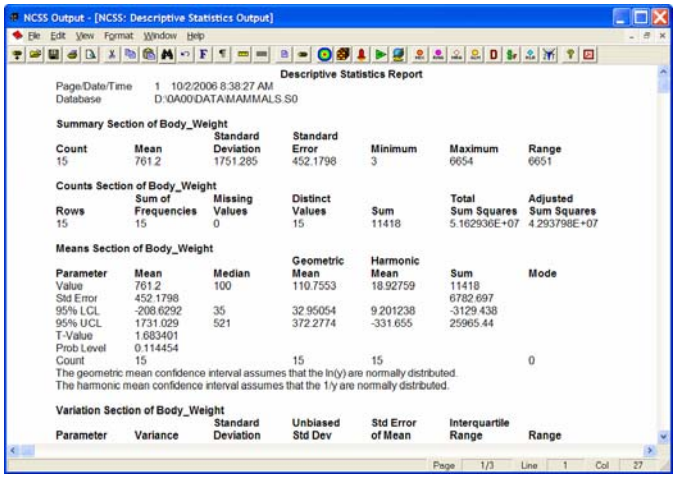
   This will put the word processor into full-screen mode.

2. Double click on the document title bar.

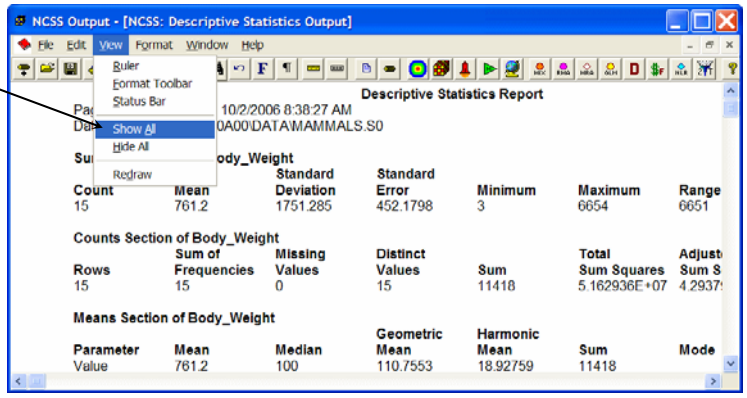
   This will put the document in full-screen mode also.



The screen will look similar to this. Note that the actual size of your screen depends on the resolution of your monitor, so it will vary.

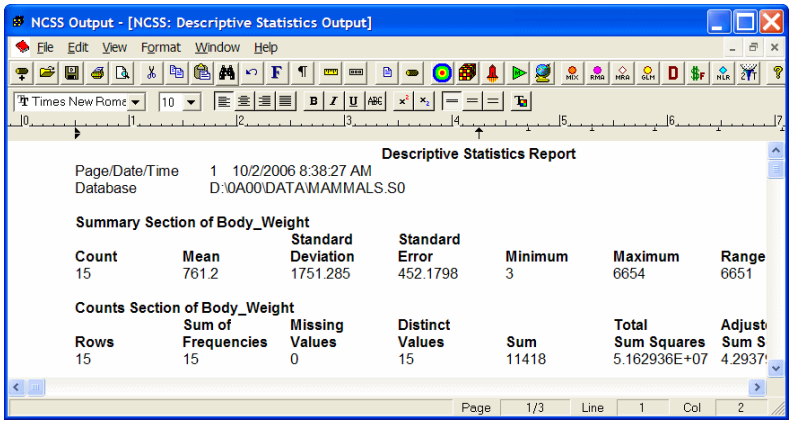


3. Select **Show All** from the View menu.



The screen will look similar to this.

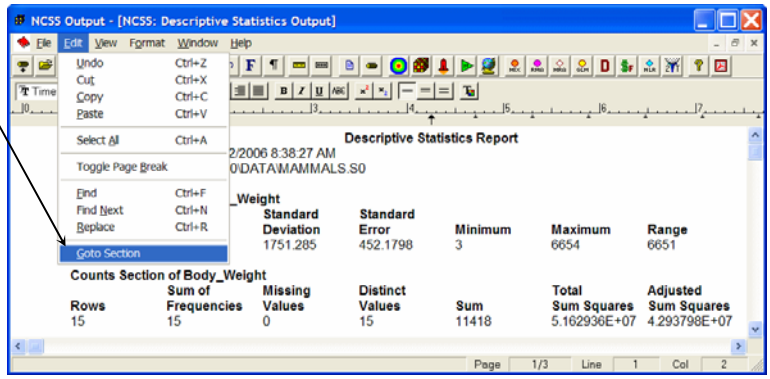
Notice the standard word processing ruler, tab bar, and button bar. These will aid you in editing your document.



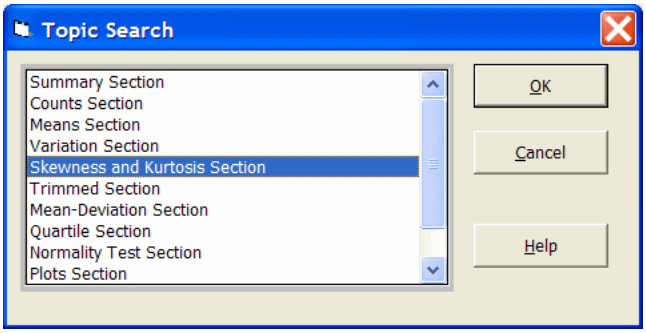
We will now show you a quick way to move about a lengthy document such as the current one.

1. Select **Goto Section** from the Edit menu.

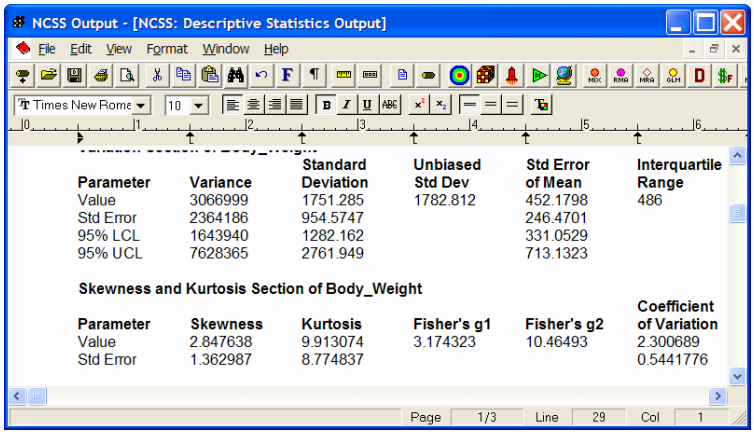
   This will load the Topic Search window.



2. Select **Skewness and Kurtosis Section**.
3. Press **OK.**



This will position the report so that the desired section title is showing.



At this point, you would scroll down through your output, perusing the results. Once you determine that you want to retain your results, you have four choices:

1. Print the document.
2. Save the document to a file.
3. Add the document to the log. (The log holds the output from several analyses in one file.)
4. Copy the report to a temporary holding area (the Windows clipboard) and paste it into another application.

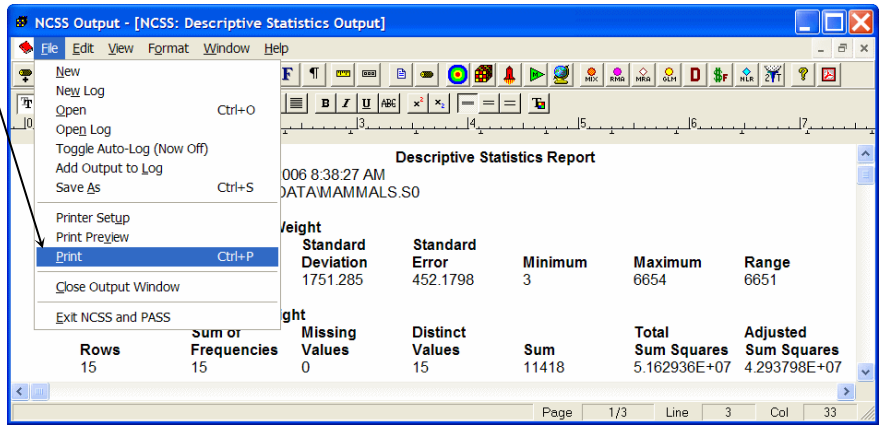
Note that you cannot just leave the output in the current window if you want to keep it because it will be replaced by the next analysis that is run.

Printing the Output

Before printing the report, you should scroll through it to determine if there are any portions that you want to delete before printing. To print the report, take the following steps.

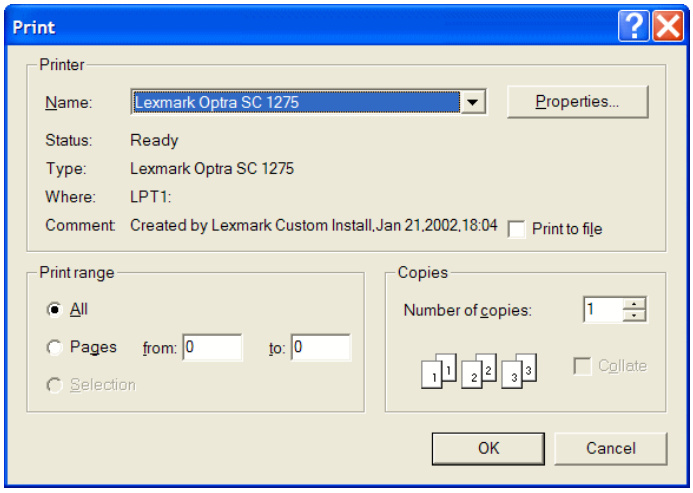
1. Select **Print** from the File menu.

This will bring up the Print Dialog box.



2. Click **OK** to begin printing your report.

This dialog box may appear different in different versions of Windows. However, the basic functionality will be the same.



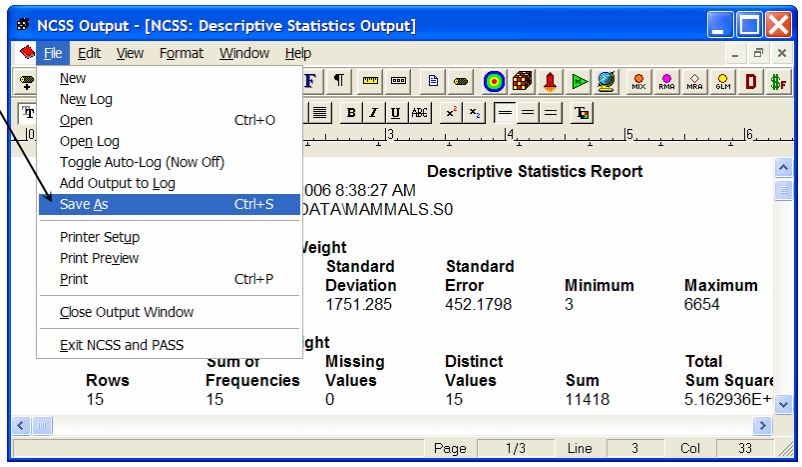
Saving the Output to a File

You can save the output to a file. The report is saved in rich text format (RTF) which is a standard document interchange format. This format may be read into commercial word processors such as Word and Word Perfect. This will allow you to export the reports to your favorite word processor.

Take the following steps to save the output to a file.

1. Select **Save As** from the File menu.

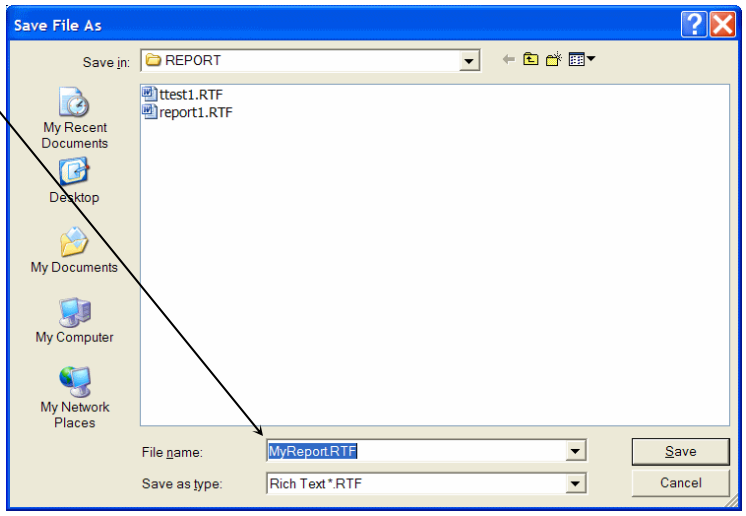
This will bring up the Save File As dialog box. Note that this dialog box may look different in Windows 95, but the basic functionality will be the same.



2. Enter a file name such as **MyReport.rtf**.

Note that the file name must end with the extension “rtf.”

3. Click **Save** to save your report.



Saving the Output to the Log

An analysis of a set of data usually requires the running of several statistical procedures. The *log* document provides a convenient way to store the output from several procedures together in one file. When you have a report or graph you want to keep, copy it from the output document to the log document.

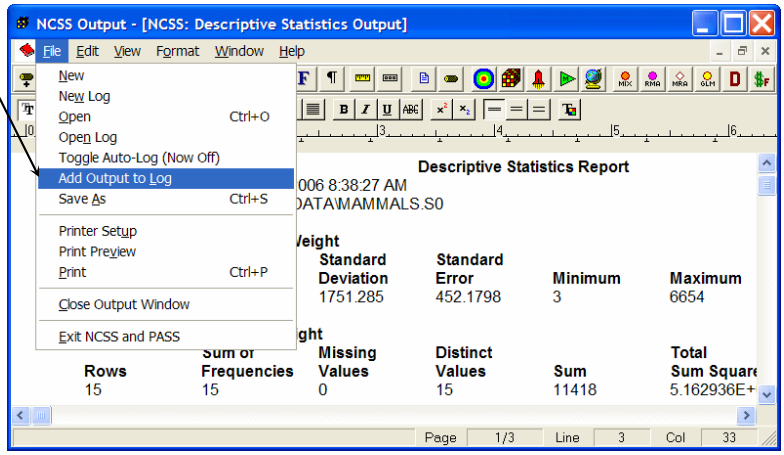
The log document provides four main word processing functions: loading, editing, printing, and saving. When you load a file into the log document, you can add new output to it. In this way, you can record your work on a project in a single file, even though your work on that project is may be spread out over a large time period.

Take the following steps to add the current output to the log document.

1. Select **Add Output to Log** from the File menu.

   This will copy the current document to the log file.

   To view the log document, select Log from the Window menu.



The log document resides in memory until you store it. To store the log document, take the following steps:

1. Select **Log** from the Window menu so that the log document is active.
2. Select **Save As** from the File menu and complete the Save File As dialog.

Warning: The log document is not automatically stored. You must store the contents of the log document to a file before exiting **NCSS**.

Chapter 10

Filters

About This Chapter

This chapter explains how to use *filters* to limit which rows (observations) are used by a particular procedure and which are skipped. For example, you might want to limit an analysis to those weighing over 200 pounds. You would use a filter to accomplish this.

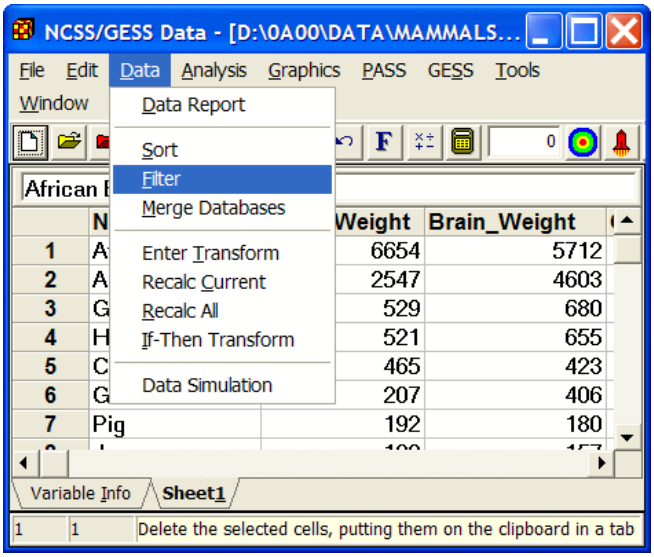
Setting Up a Filter

Using the MAMMALS database (see Chapter 3), we will setup up a filter so that only those animals with a body weight greater than 200 kilograms are used in the statistical calculations.

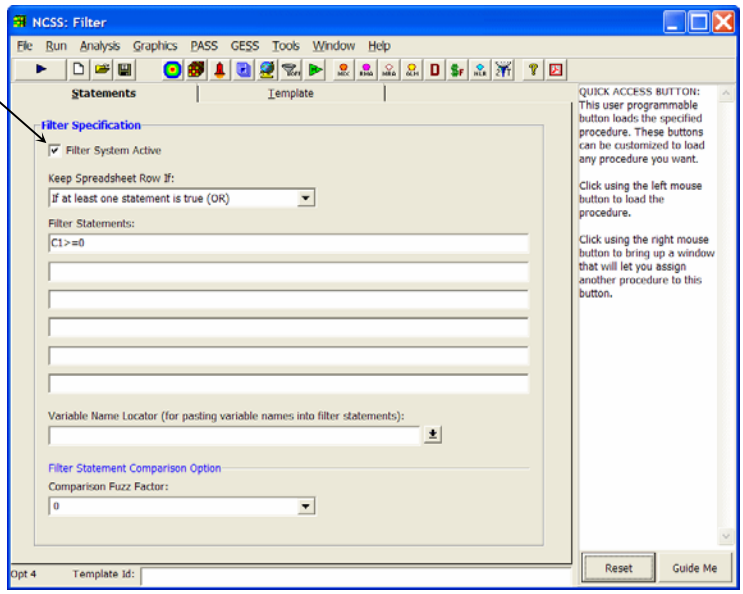
If the MAMMALS database is not currently loaded, select Open from the File menu, move to the \NCSS2007\DATA subdirectory, and double click on the file MAMMALS.S0. Your display should appear as follows.

1. Select **Filter** from the Data menu.

This brings up the Filter template.

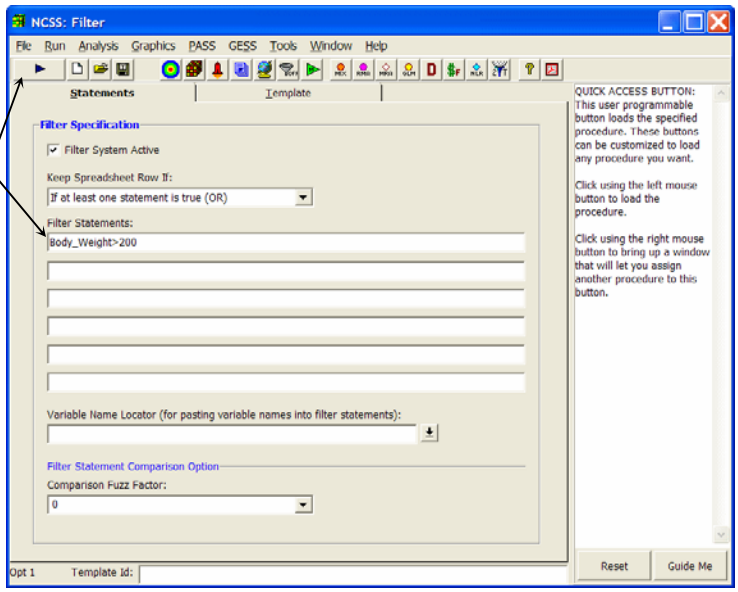


2. Check the **Filter System Active** box.

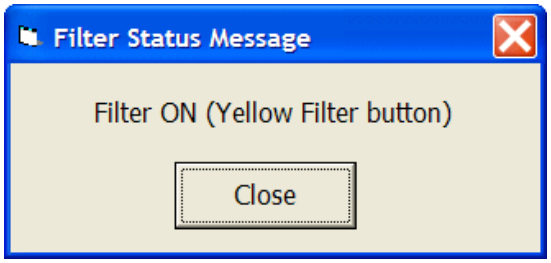


3. Enter the filter condition, **Body_Weight>200**, in the Filter Statements box.

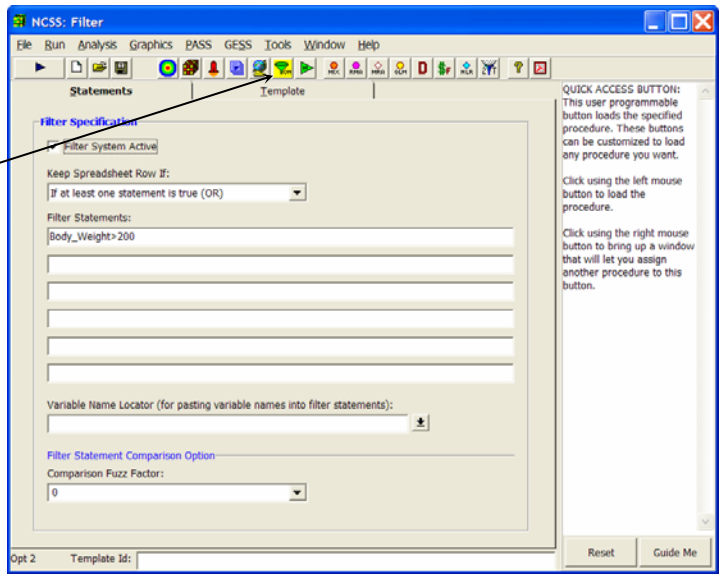
4. Press the **Run** button to activate the filter.



5. The Filter activated box will be displayed. You may press **Close**, or the message will automatically disappear.



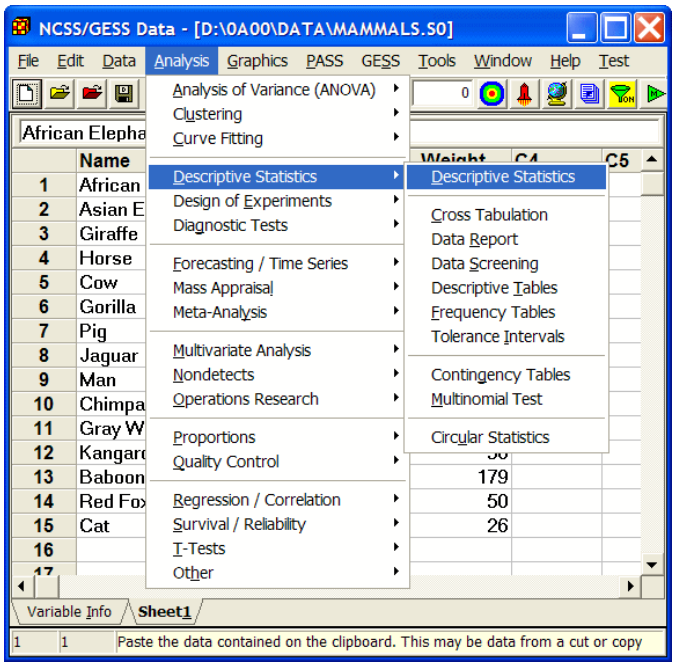
The filter is now setup. Notice that the Filter button on the both the Data and Filter toolbars has now changed to a green funnel with a yellow background and the word ON below it. This is a reminder that the filter system is active.



Using a Filter

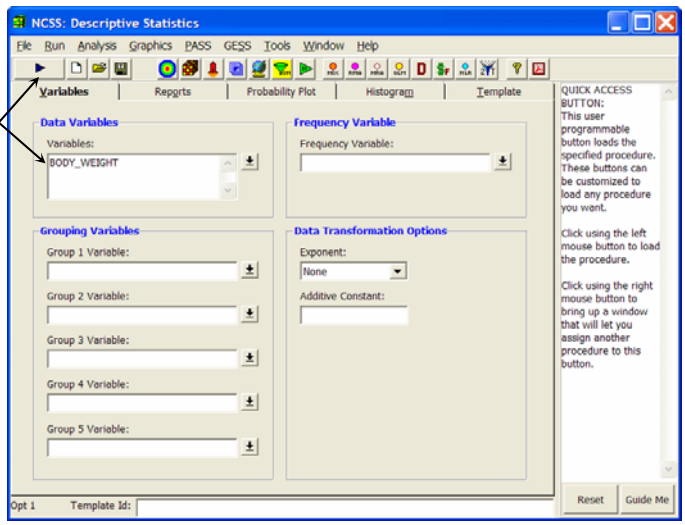
We will now show you how to use it in a procedure by obtaining the mean and standard deviation of the filtered database.

1. Open the **Descriptive Statistics** procedure by going to Analysis, Descriptive Statistics, Descriptive Statistics.



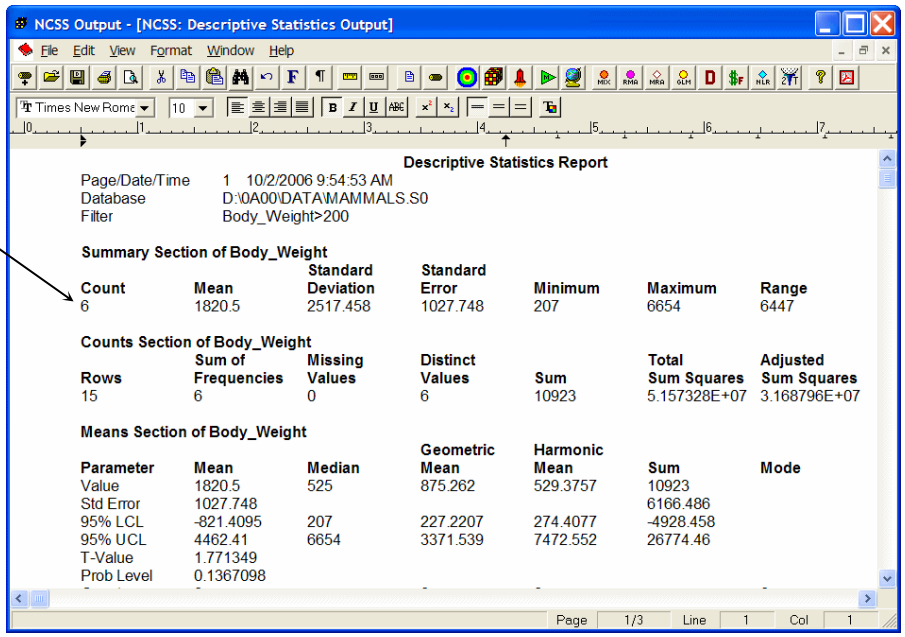
2. Enter **Body_Weight** in the Variables box.

3. Press the **Run** button to run the procedure.



4. Finally, view the output.

Notice that although fifteen rows were processed, only six rows were actually used in the computations.



Disabling the Filter

When you are finished using a filter, you can bring up the Filter procedure window, click the **Filter System Active** button so that it is not checked, and press the **Run** button to run the filter procedure. This will deactivate the filter.

Chapter 11

Writing Transformations

About This Chapter

The basics of entering transformations were covered in Chapter 3. This chapter gives examples of how to write more advanced transformations.

Recoding

Data *recoding* refers to replacing one set of values with another. For example, suppose you have each individual's age stored in a variable called AGE. Suppose that you want to create a new variable called AGEGROUP that classifies each individual into one of four age groups according to the following rule:

AGE Values	AGEGROUP Value
1 to 12	1
13 to 19	2
20 to 29	3
30 and above	4

Example of *Recode*

RECODE(Age; (1:12 = 1) (13:19 = 2) (20:29 = 3) (Else = 4))

Notice the basic syntax of this function. The variable being recoded is given first (here Age). Next, a set of statements that define the recoding are given.

Example Results

	Age	AgeGroup	C3	C4	C5
1	23	3			
2	15	2			
3	5	1			
4	33	4			
5	19	2			
6	46	4			
7	22	3			
8					

Basic Indicator

Indicator transformations are used in logic (if - then) situations. An indicator function evaluates to one if the condition is true, or to zero if the condition is false. The basic syntax is two arguments between parentheses separated by a logic operator. The possible logic operators are <, >, <=, >=, <>, and =.

Example of Indicator

(AGE > 20)

If AGE is greater than 20, the result will be a one. Otherwise, the result will be a zero.

Example Results

	Age	Indicator	C3	C4	C5
1	23	1			
2	15	0			
3	5	0			
4	33	1			
5	19	0			
6	46	1			
7	22	1			
8					

Compound Indicators

Since indicator functions evaluate to a numeric value (either 0 or 1), they may be combined with other functions, including other indicator functions. When combining several indicators, the logical AND is achieved by multiplying the indicators and the logical OR is achieved by adding.

Example of Compound Indicator

(AGE > 20)*(AGE<=40)

If age is greater than 20 *and* less than or equal to 40, the result will be a one. Otherwise, the result will be a zero.

Example Results

	Age	Indicator	C3	C4	C5
1	23	1			
2	15	0			
3	5	0			
4	33	1			
5	19	0			
6	46	0			
7	22	1			
8					

Using Indicators for If – Then Transformations

Indicator functions may be used in place of *if - then* statements. The following examples show how this is done.

Example 1 of If-Then Indicator

If Age is less than 20 set AdjIncome to 5000. Otherwise, set AdjIncome equal to Income.

(Age < 20)*5000+(Age>=20)*Income

Note that the indicator functions used here are opposites. When (Age<20) is 0, (Age>=20) will be equal to 1.

Example 1 Results

	Age	Income	AdjIncome	C4	C5
1	23	22000	22000		
2	15	5500	5000		
3	5	100	5000		
4	33	35400	35400		
5	19	9000	5000		
6	46	54000	54000		
7	22	6000	6000		
8					
9					

It may be helpful to look at how this expression works on the first two rows.

Calculation for the first row:

(23<20)*5000+(23>=20)*22000 = 0(5000) + 1(22000) = 22000

Calculation for the second row:

(15<20)*5000+(15>=20)*22000 = 1(5000) + 0(5500) = 5000

Example 2

If Age is less than 20 set AdjIncome equal to Income + 1000. Otherwise, set AdjIncome to Income + 2000.

(Age < 20)*(Income+1000)+(Age>=20)*(Income+2000)

Example 2 Results

	Age	Income	AdjIncome	C4	C5
1	23	22000	24000		
2	15	5500	6500		
3	5	100	1100		
4	33	35400	37400		
5	19	9000	10000		
6	46	54000	56000		
7	22	6000	8000		
8					
9					

It may be helpful to look at how this expression works on the first two rows.

Calculation for the first row:

(23<20)*(22000+1000)+(23>=20)*(22000+2000) = 0(23000) + 1(24000) = 24000

Calculation for the second row:

(15<20)*(5500+1000)+(15>=20)*(5500+2000) = 1(6500) + 0(7500) = 6500

Chapter 12

Importing Data

About This Chapter

This chapter presents an example of importing data from a comma delimited ASCII (text) file into **NCSS**.

The ASCII File

Following is a set of data contained in the file ASCII.TXT in your \DATA subdirectory. We will now go through the steps necessary to import the data from this file.

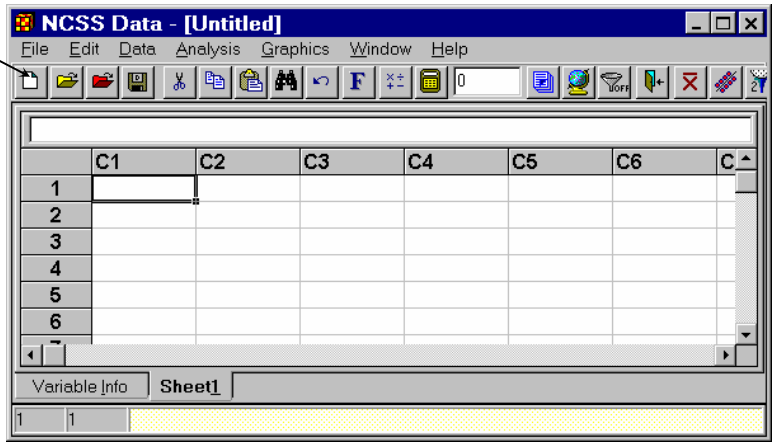
Bob,2,4,22,5
Judy,5,44,22,4
Sam,1,32,42,9
Mary,4,1,22,23
John,19,22,44,1
Linda,3,11,2,14

How to Import ASCII.TXT

1. Press the **New Database** button on the toolbar.

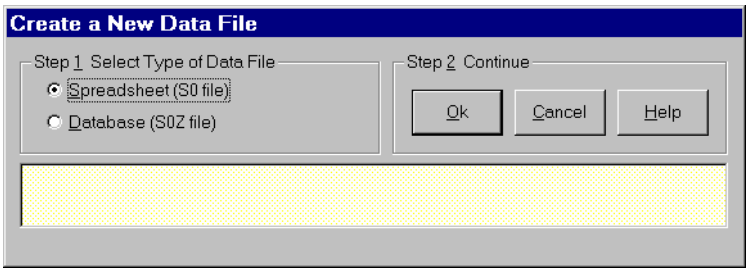
It is necessary to clear the previous database. Otherwise, the imported data would be added to it.

A dialog box, entitled **Create a New Data File**, will appear.

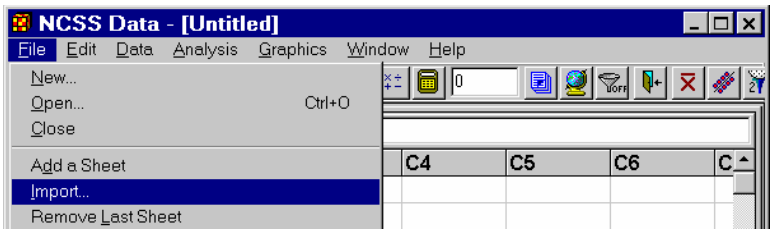


2. Indicate that you want a Spreadsheet-type data file since this is a small set of data.

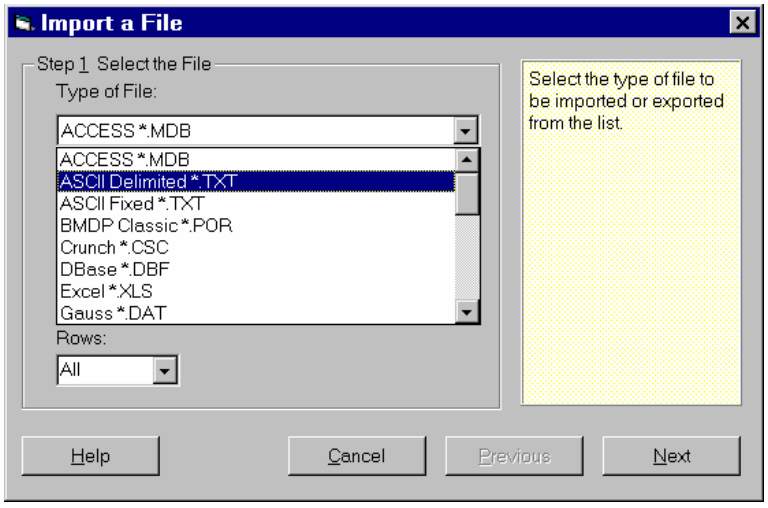
Since this is the default, just click **OK**.



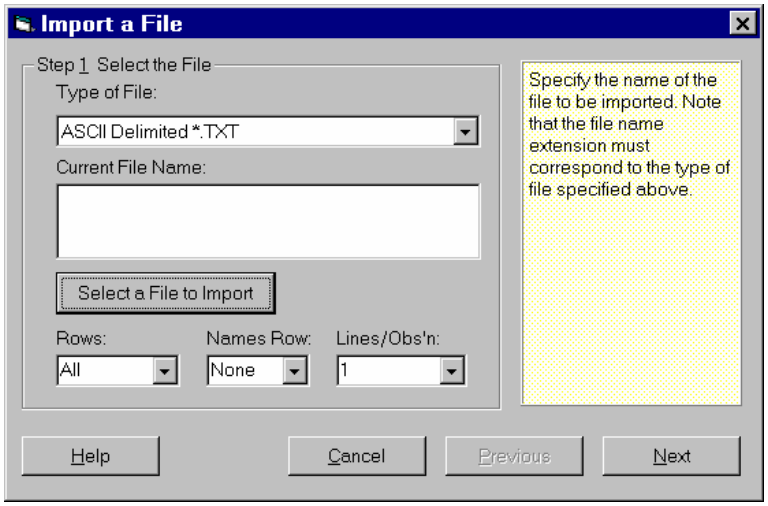
3. Select **Import** from the File menu.



4. Select **ASCII Delimited *.TXT** from the Select the File Type selection box.

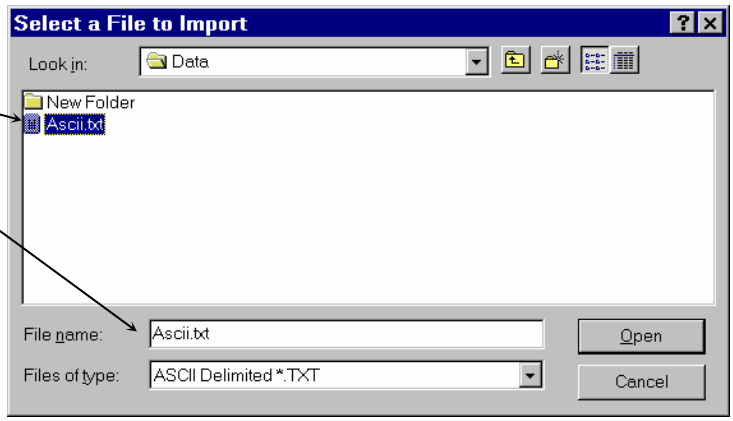


5. Press the **Select a File to Import** button to specify the file name.

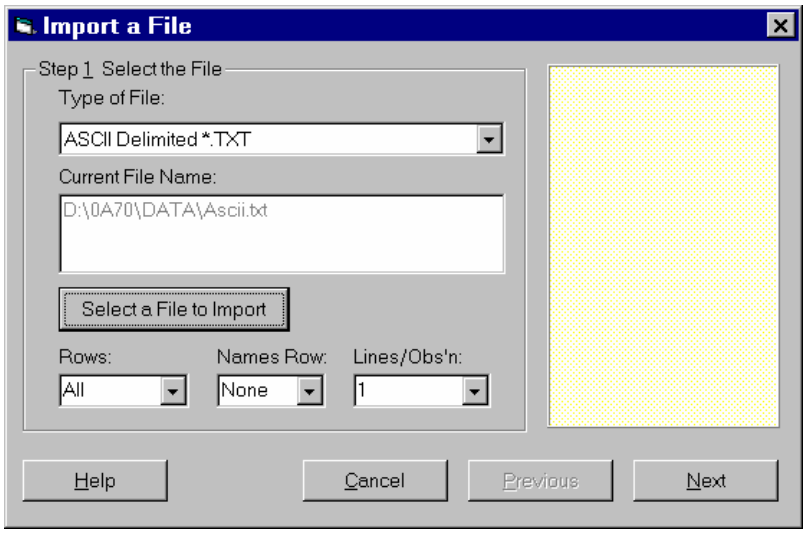


6. Click on the **Ascii.txt** in the Data directory to specify the desired file.

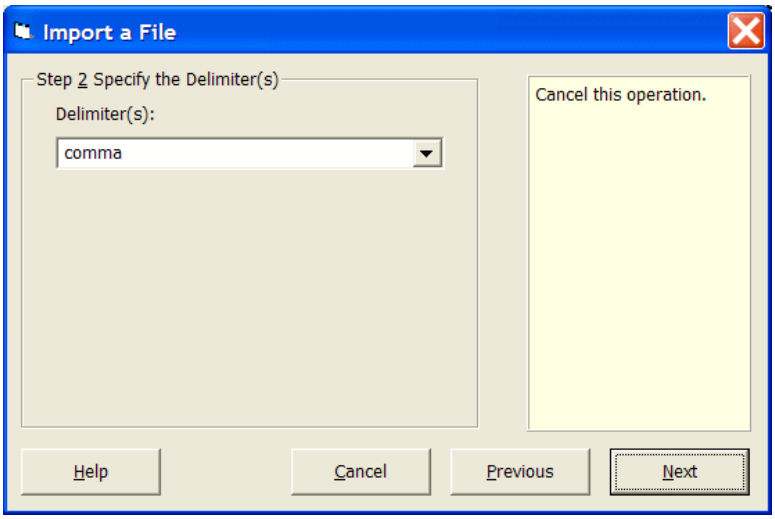
7. Press the **Open** button to finish selecting the file.



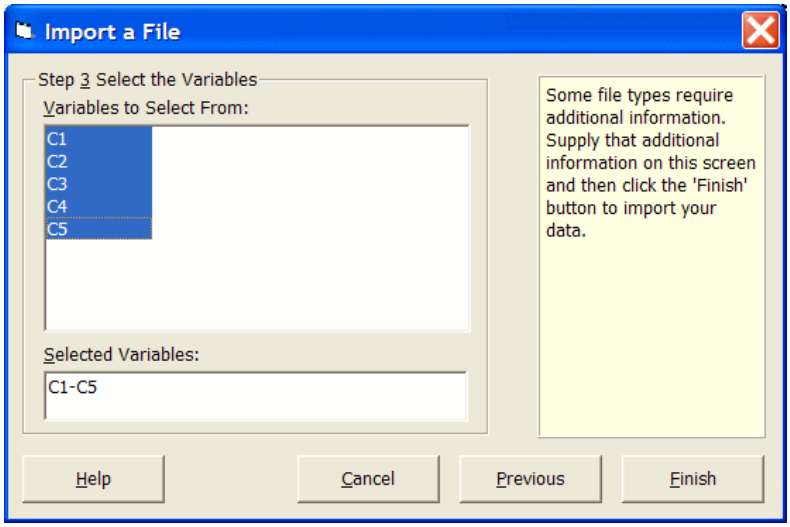
8. Press the **Next** button to move on to the next import screen.



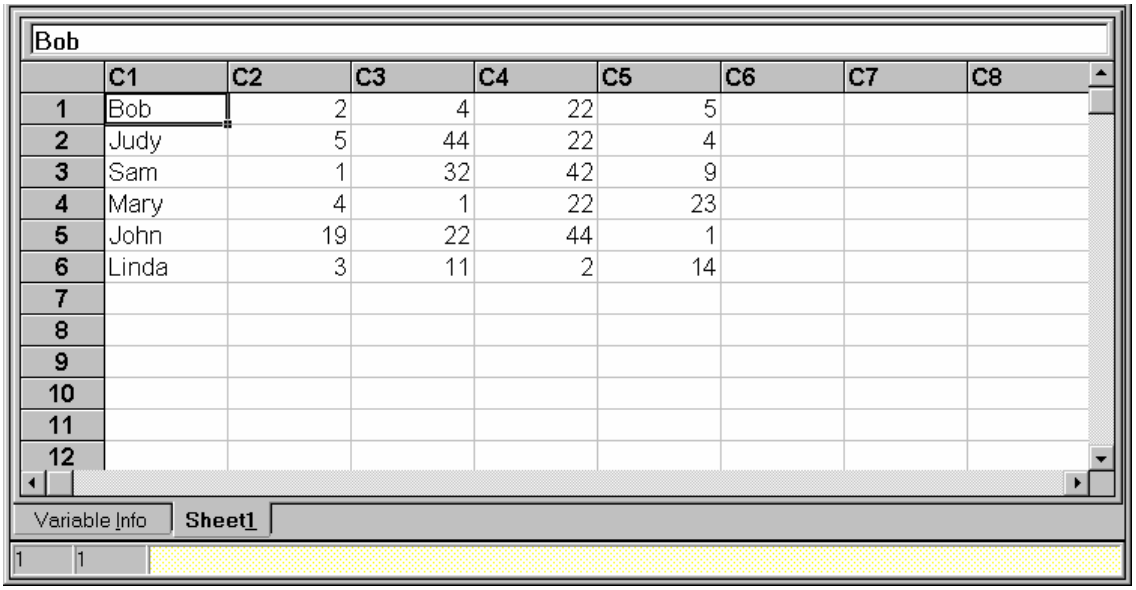
9. Since the correct delimiter (a comma) is specified, you are ready to continue. Press the **Next** button to move on to the next import screen.



10. Since we want to import all the data, we leave all the variables **C1 – C5** selected. Click the **Finish** button to begin the import.



The imported data will appear in the Data window.



Note that the imported database resides in your computer's memory, not on the hard disk. If you want to make a permanent copy of your data, you should select **Save As** from the File menu and save a copy of the imported data to your hard disk.

Chapter 13

Value Labels

About This Chapter

Value Labels provide a mechanism to attach labels to coded data. For example, in a questionnaire you might have questions whose responses fall along a Likert scale. Perhaps you have entered the data as numeric values from 1 to 5. Value labels may be attached to the responses so that 1 shows up on your printout as “Strongly Agree” and 5 is displayed as “Strongly Disagree.”

This chapter will provide you with a step by step outline of how to use value labels. The data for this example come from a four-item questionnaire that was given to twenty people as part of a political poll. The first three questions contain demographic information about the individual. The fourth question is their opinion about a hot political issue. You will find these data in the POLITIC database. The data were coded numerically for easy data entry as follows:

POLITIC Database

AgeGroup
- 1 = 25 and under
- 2 = 26 to 34
- 3 = 35 to 55
- 4 = 56 and above

State
- 1 = California
- 2 = Virginia
- 3 = Texas
- 4 = Other

Party
- 1 = Democrat
- 2 = Republican
- 3 = Other

Issue
- 1 = Strongly agree
- 2 = Agree
- 3 = Neutral
- 4 = Disagree
- 5 = Strongly disagree

	AgeGroup	State	Party	Issue	C5
1	1	1	3	4	
2	4	2	2	2	
3	3	2	1	3	
4	2	1	1	4	
5	2	4	2	5	
6	4	4	2	4	
7	2	3	1	1	
8	4	1	3	2	
9	2	2	2	1	
10	2	1	1	3	
11	1	4	3	2	
12	1	3	2	2	
13	3	3	2	1	
14	2	2	1	4	
15	3	1	2	5	
16	1	2	1	5	
17	4	2	3	2	
18	4	1	3	1	
19	2	4	1	1	
20	3	4	2	3	
21					

Adding the Value Labels

The next step is to add the value labels to the database. This is done by entering the values and corresponding labels in adjacent columns of the database. Leaving space for additional response variables, we put the value labels in columns 15 through 22. C15 contains the values of AgeGroup, C17 contains the values of State, and so on.

Note that we have resized the column widths to make the display easier to read (C15, C17, C19, and C21 are narrower than usual).

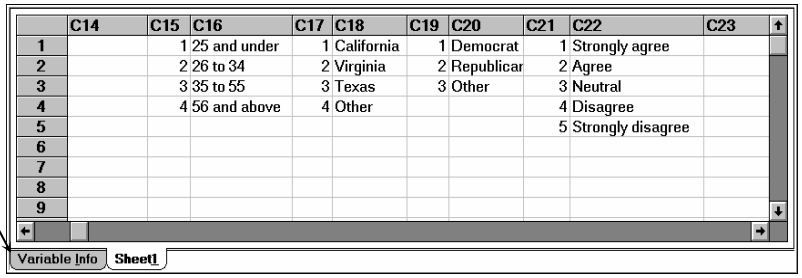
Although in this example we are constructing value labels for each variable, you do not have to do this. You can label as many or as few variables as you like.

	C14	C15	C16	C17	C18	C19	C20	C21	C22	C23
1		1	25 and under	1	California	1	Democrat	1	Strongly agree	
2		2	26 to 34	2	Virginia	2	Republicar	2	Agree	
3		3	35 to 55	3	Texas	3	Other	3	Neutral	
4		4	56 and above	4	Other			4	Disagree	
5								5	Strongly disagree	
6										
7										

Attaching the Value Labels to the Variables

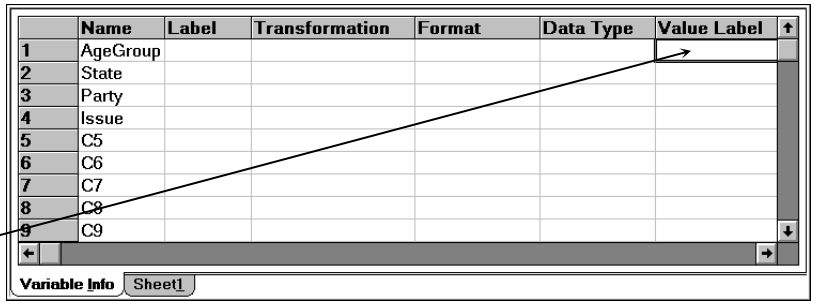
The final step is to attach the value-label columns to the appropriate variables. This is accomplished as follows:

1. Click the **Variable Info** tab.



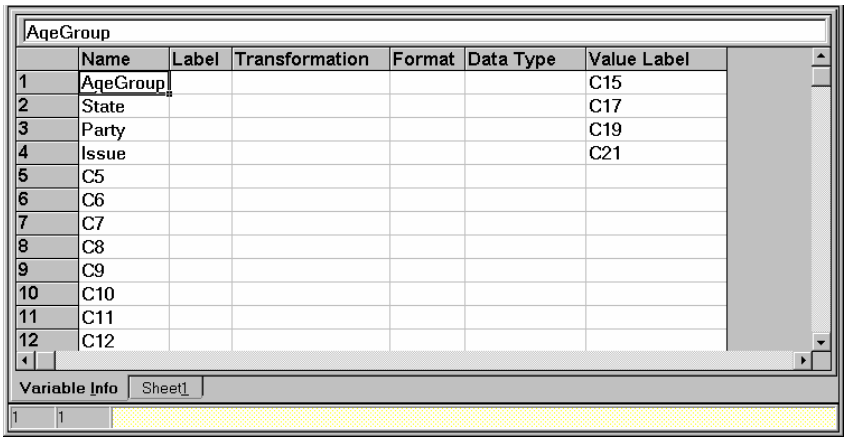
2. Use the **vertical scroll bar** or the **Page Up** key to reposition the view to the top of the Variable Info datasheet.

3. Click in the first cell under **Value Labels** to set the spreadsheet cursor there.



4. Type **C15.**
   Press **Enter.**
   Type **C17.**
   Press **Enter.**
   Type **C19.**
   Press **Enter.**
   Type **C21.**
   Press **Enter.**

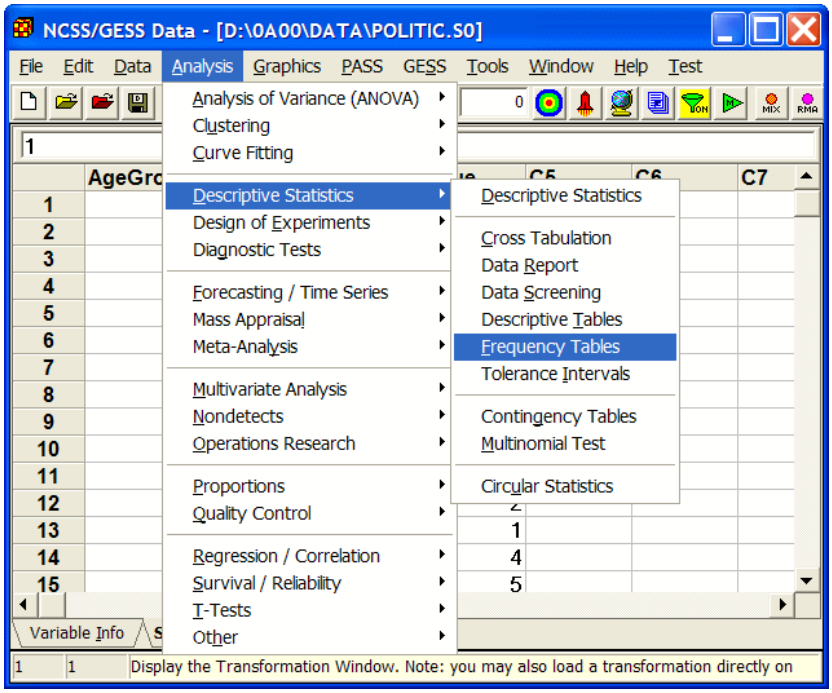
   This attaches each value label column to the appropriate variable. Note that you may use the same value label variable more than once.



Using the Value Labels in a Report

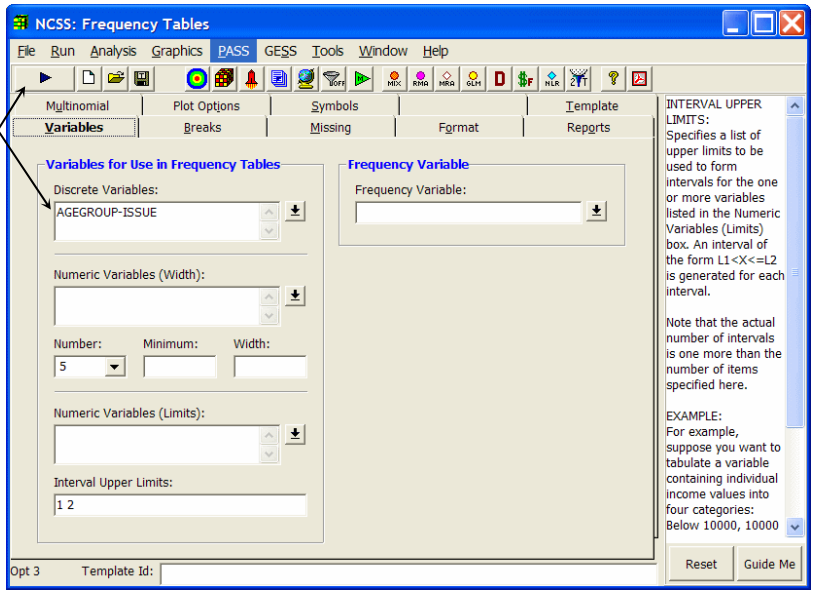
We will now show you how the value labels change the output of the Frequency Table procedure.

1. Select **Frequency Tables** from the Descriptive Statistics menu.



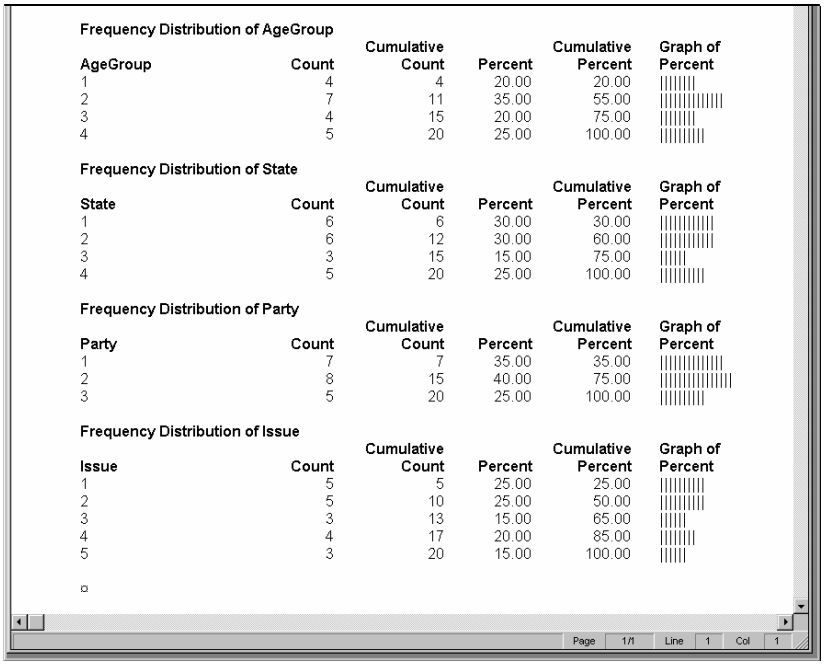
2. Enter **AgeGroup-Issue** as the Discrete Variables.

3. Run the procedure by pressing the **Run** button.



The output appears as shown.

Notice that the value labels have *not* been used.



Frequency Distribution of AgeGroup

AgeGroup	Count	Cumulative Count	Percent	Cumulative Percent	Graph of Percent
1	4	4	20.00	20.00	|||||||
2	7	11	35.00	55.00	||||||||||||
3	4	15	20.00	75.00	|||||||
4	5	20	25.00	100.00	|||||||||

Frequency Distribution of State

State	Count	Cumulative Count	Percent	Cumulative Percent	Graph of Percent
1	6	6	30.00	30.00	||||||||||
2	6	12	30.00	60.00	||||||||||
3	3	15	15.00	75.00	|||||
4	5	20	25.00	100.00	|||||||||

Frequency Distribution of Party

Party	Count	Cumulative Count	Percent	Cumulative Percent	Graph of Percent
1	7	7	35.00	35.00	||||||||||||
2	8	15	40.00	75.00	||||||||||||||
3	5	20	25.00	100.00	|||||||||

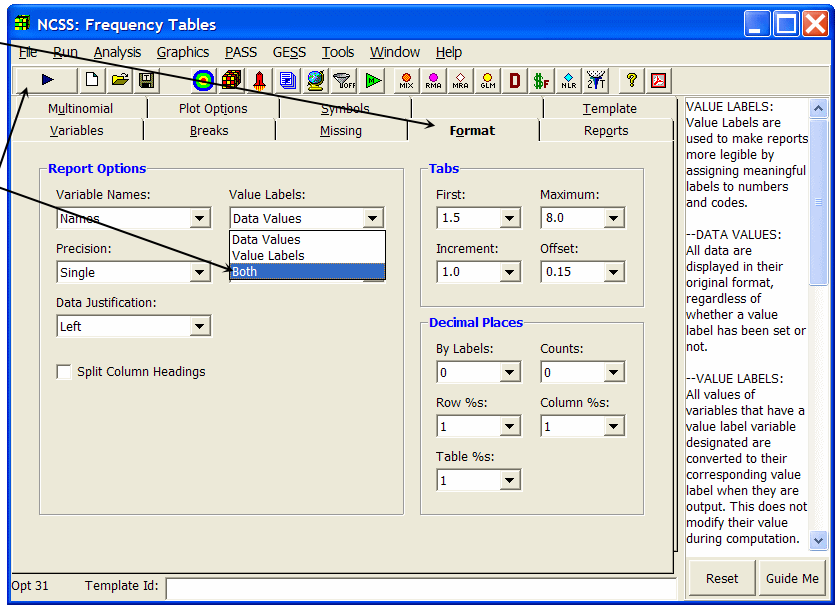
Frequency Distribution of Issue

Issue	Count	Cumulative Count	Percent	Cumulative Percent	Graph of Percent
1	5	5	25.00	25.00	|||||||||
2	5	10	25.00	50.00	|||||||||
3	3	13	15.00	65.00	||||||
4	4	17	20.00	85.00	||||||||
5	3	20	15.00	100.00	||||||

4. Select the **Format** tab to display the Format panel.

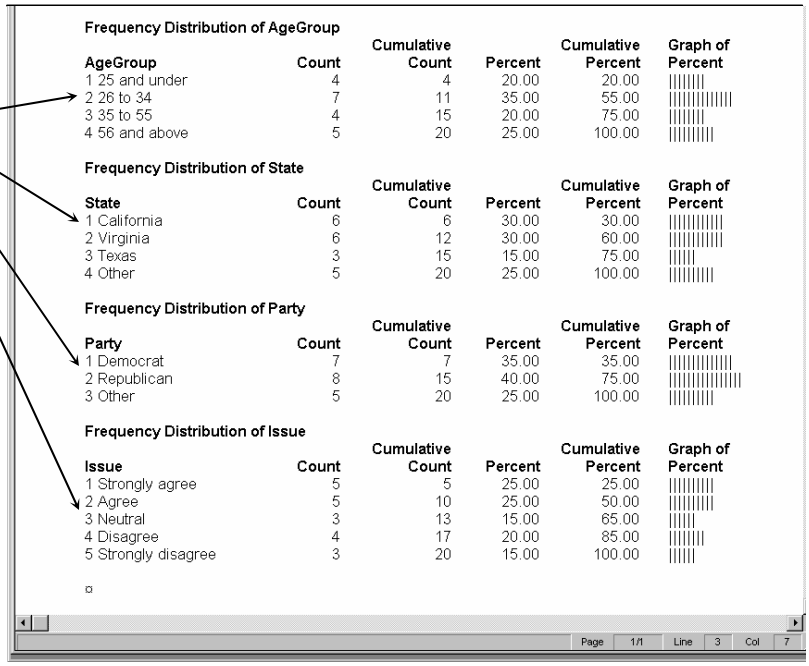
5. Select **Both** in the Value Labels box.

6. Run the analysis again by pressing the **Run** button.



The output window appears as shown.

Note that the value labels are now displayed.



Frequency Distribution of AgeGroup

AgeGroup	Count	Cumulative Count	Percent	Cumulative Percent	Graph of Percent
1 25 and under	4	4	20.00	20.00	|||||||
2 26 to 34	7	11	35.00	55.00	||||||||||||
3 35 to 55	4	15	20.00	75.00	|||||||
4 56 and above	5	20	25.00	100.00	|||||||||

Frequency Distribution of State

State	Count	Cumulative Count	Percent	Cumulative Percent	Graph of Percent
1 California	6	6	30.00	30.00	||||||||||
2 Virginia	6	12	30.00	60.00	||||||||||
3 Texas	3	15	15.00	75.00	|||||
4 Other	5	20	25.00	100.00	|||||||||

Frequency Distribution of Party

Party	Count	Cumulative Count	Percent	Cumulative Percent	Graph of Percent
1 Democrat	7	7	35.00	35.00	|||||||||||
2 Republican	8	15	40.00	75.00	|||||||||||||
3 Other	5	20	25.00	100.00	|||||||||

Frequency Distribution of Issue

Issue	Count	Cumulative Count	Percent	Cumulative Percent	Graph of Percent
1 Strongly agree	5	5	25.00	25.00	|||||||||
2 Agree	5	10	25.00	50.00	|||||||||
3 Neutral	3	13	15.00	65.00	|||||
4 Disagree	4	17	20.00	85.00	|||||||
5 Strongly disagree	3	20	15.00	100.00	|||||

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Chapter 14

Database Subsets

About This Chapter

It is often useful to store all of your data in one large database and then analyze various subsets of the database as necessary. This can often be accomplished using the Filter mechanism. Sometimes you will find it more convenient to create a subset of the original database that only contains those rows that you want to analyze.

This chapter will take you through the steps necessary to create a subset of the POLITIC database (described in Chapter 13) that contains only those individuals with AgeGroup equal to 2 (26 to 34).

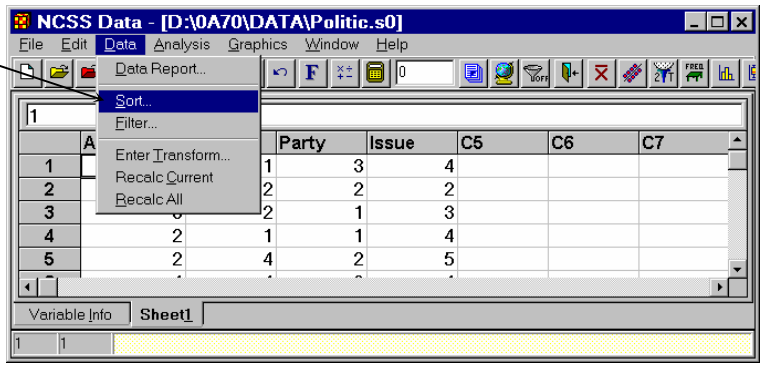
Creating a Database Subset

Use the following steps to create a database subset. If you have not already done so, open the POLITIC database now by selecting **Open** from the File menu of the Data window.

Step 1 – Sort the Database

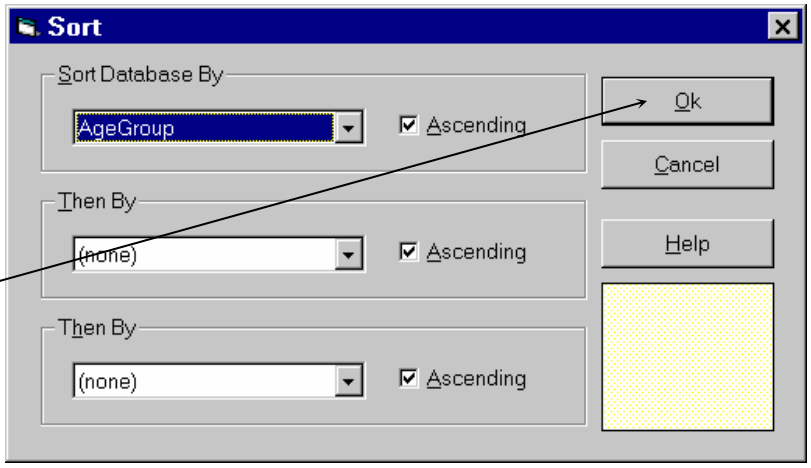
The first step is to sort the POLITIC database by the variable (or variables) that you want to subset on. This is done as follows.

1. Select **Sort** from the Data menu.



2. Select ***AgeGroup*** as the variable to sort the database by. This may be done by using the drop-down menu or by double clicking.

3. Click ***Ok*** to sort the database by the selected variable.

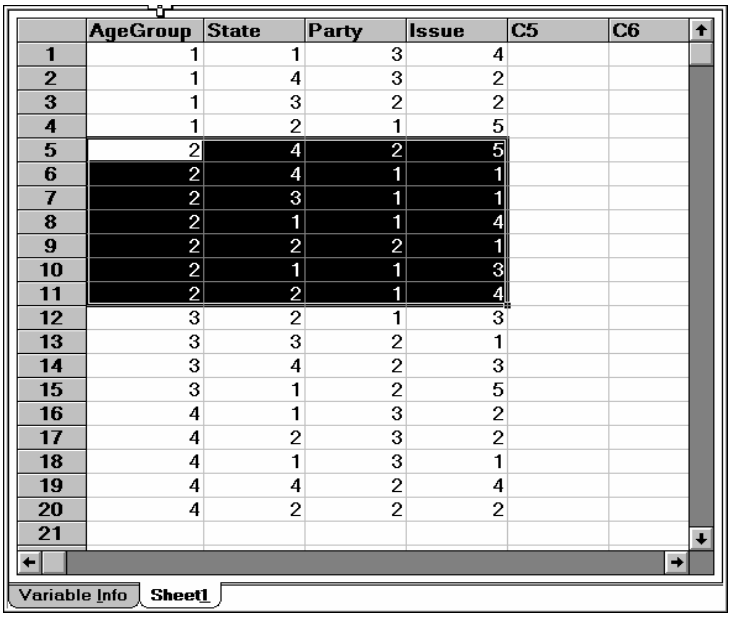


Step 2 – Copy Subset into New Database

The next step is copy the selected data from the POLITIC database to the new database (which will be named POLITIC2).

The database will be sorted by ***AgeGroup***.

1. Select the desired subset by dragging the mouse from row 5 of column 1 (AgeGroup) to row 11 of column 4 (Issue). Your selection should appear as shown.



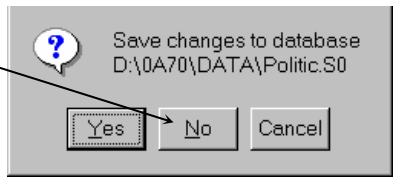
	AgeGroup	State	Party	Issue	C5	C6
1	1	1	3	4		
2	1	4	3	2		
3	1	3	2	2		
4	1	2	1	5		
5	2	4	2	5		
6	2	4	1	1		
7	2	3	1	1		
8	2	1	1	4		
9	2	2	2	1		
10	2	1	1	3		
11	2	2	1	4		
12	3	2	1	3		
13	3	3	2	1		
14	3	4	2	3		
15	3	1	2	5		
16	4	1	3	2		
17	4	2	3	2		
18	4	1	3	1		
19	4	4	2	4		
20	4	2	2	2		
21						

Variable Info | Sheet1

2. Press **Ctrl-C** to copy the selected data to the Windows clipboard (the clipboard is the name of temporary holding area used by Windows to store information that has been cut or copied).

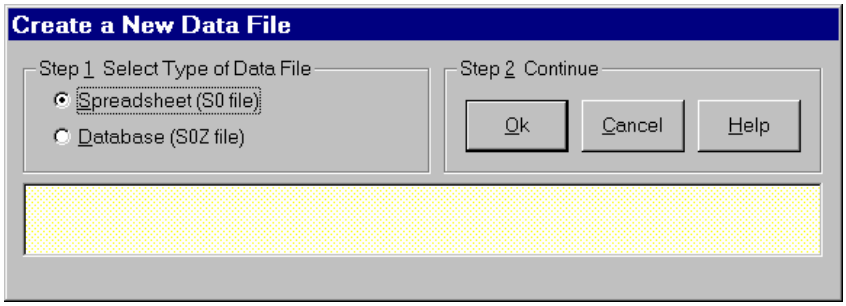
3. Select **New** from the File menu to create the subset database.

4. Select **No** from the message box that appears and asks if you want to save changes.



It is important not to save the sorted database because the value labels have also been sorted – something we do not want in this case.

5. Click **Ok** to create a spreadsheet type database.



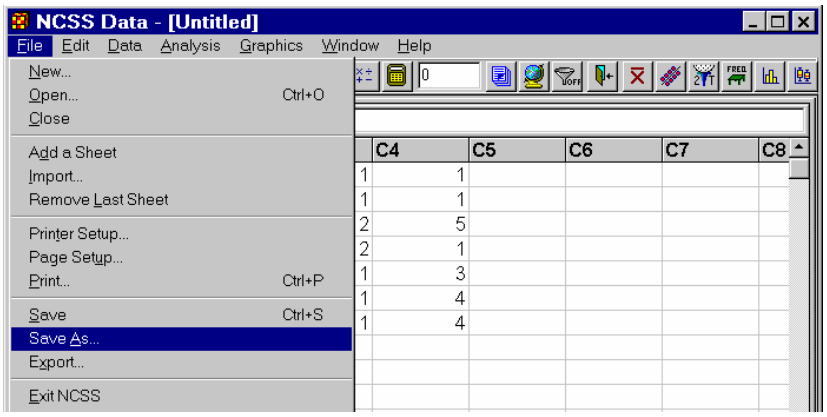
6. Position the cursor in the upper left cell of the new database by clicking in it.

	C1	C2	C3	C4	C5	C6
1						
2						
3						
4						
5						

7. Press **Ctrl-V** to paste the clipboard data into the new database.

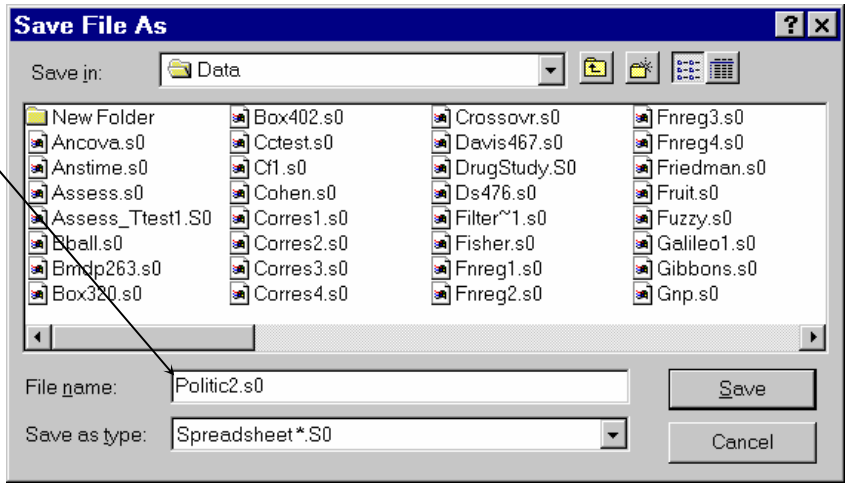
	C1	C2	C3	C4	C5	C6
1	2	4	2	5		
2	2	4	1	1		
3	2	3	1	1		
4	2	1	1	4		
5	2	2	2	1		
6	2	1	1	3		
7	2	2	1	4		
8						
9						

8. Select **Save As** from the File menu to name and save this new database.



9. Enter **Politic2.s0** as the name of the new database.

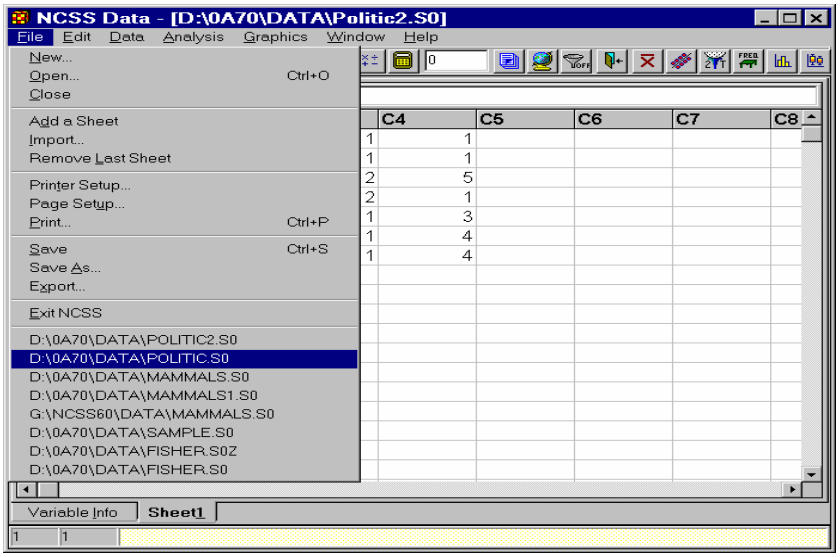
Click **Save**.



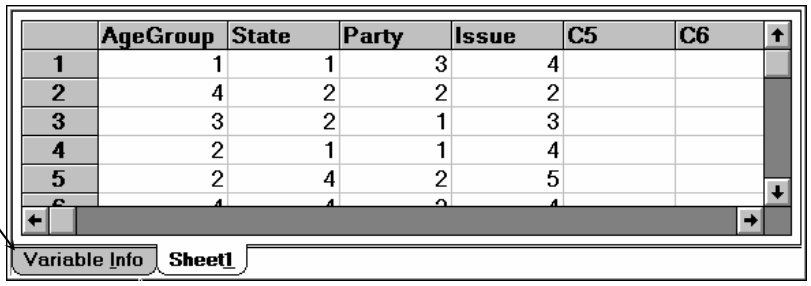
Step 3 – Copy Variable Info to New Database

The next step is to copy the variable information datasheet to the new database.

1. Open the **POLITIC** database by selecting it from the File menu.

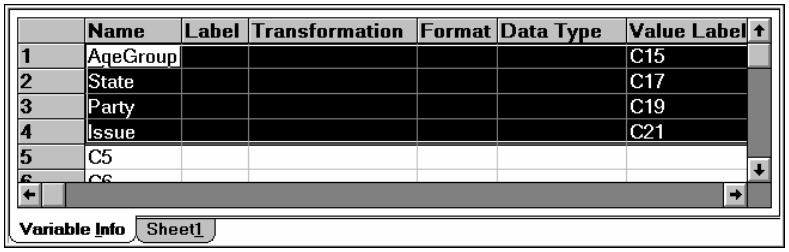


2. Click on the **Variable Info** tab to move to the Variable Info datasheet.

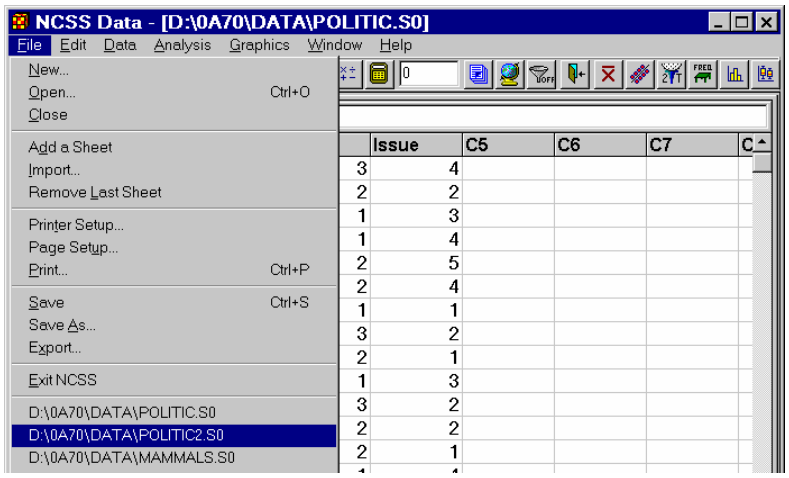


3. Select the information to be copied by dragging the mouse across it.

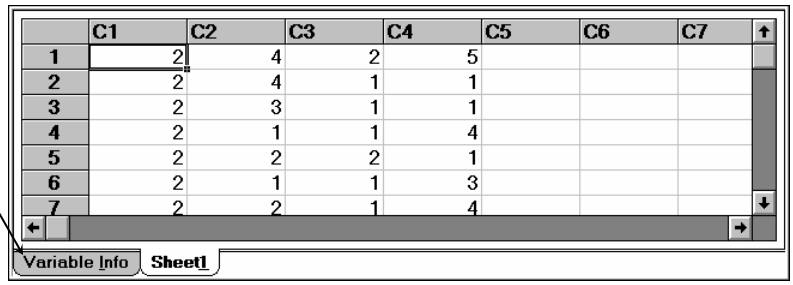
4. Press **Ctrl-C** to copy the information to the clipboard.



5. Open **POLITIC2.S0** by selecting it from the File menu.

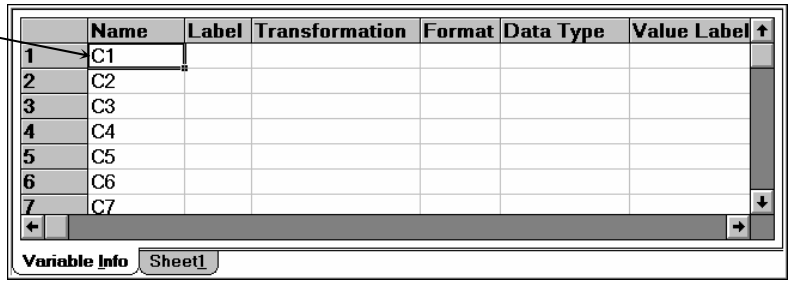


6. Move to the Variable Info datasheet by clicking the **Variable Info** tab.

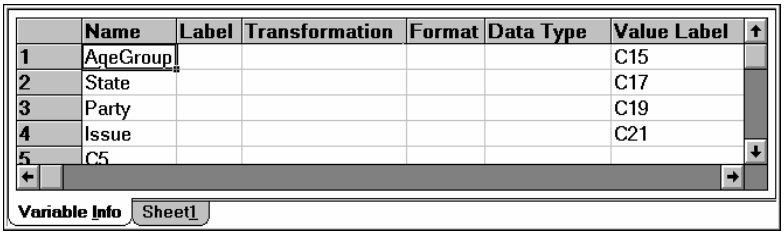


7. Position the cell cursor over the cell containing **C1**.

8. Press **Ctrl-V** to paste the label information into the subset database.



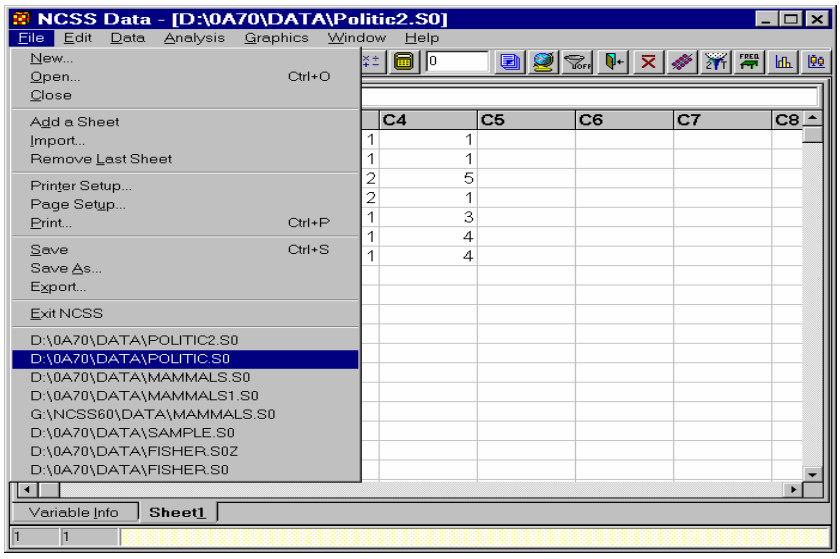
The result will appear as shown.



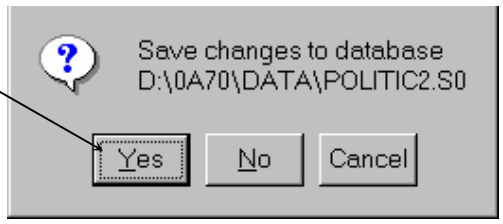
Step 4 – Copy Value Labels to the New Database

The final step is to copy the value labels from the old database to the subset database.

1. Open the **POLITIC.S0** database by selecting it from the File menu.



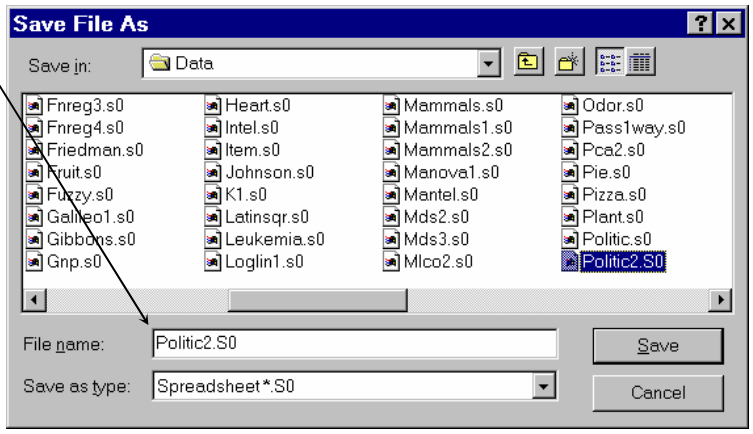
2. Select **Yes** to save the changes that you have just made to the POLITIC2 database.



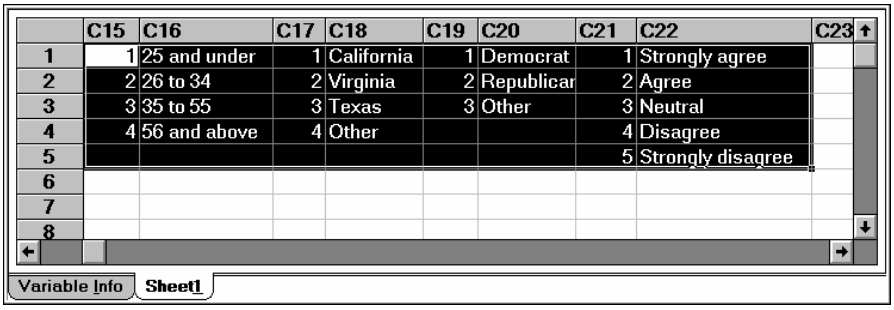
3. Enter **politic2.s0** in the File Name field of the Save File As dialog box.

Click the **Save** button.

When asked, indicate that you want to replace the previous version of this file.



4. Reposition the datasheet so that the first column is **C15**. Drag the mouse across and down so that all of the value labels are selected as shown below.

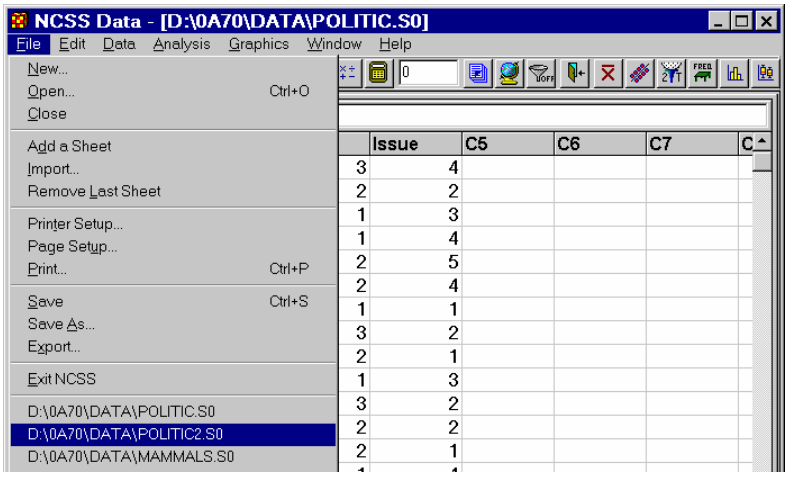


	C15	C16	C17	C18	C19	C20	C21	C22	C23
1	1	25 and under	1	California	1	Democrat	1	Strongly agree	
2	2	26 to 34	2	Virginia	2	Republicar	2	Agree	
3	3	35 to 55	3	Texas	3	Other	3	Neutral	
4	4	56 and above	4	Other			4	Disagree	
5							5	Strongly disagree	
6									
7									
8									

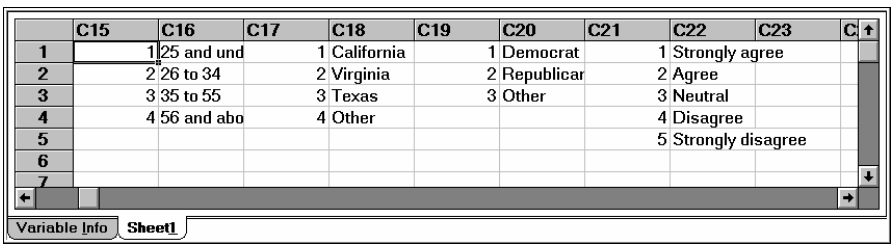
Variable Info | Sheet1

5. Press **Ctrl-C** to copy the selected information to the clipboard.

6. Open the **POLITIC2.S0** database by selecting it from the File menu.



7. Reposition the datasheet so that variable **C15** is at the left.



	C15	C16	C17	C18	C19	C20	C21	C22	C23
1	1	25 and und	1	California	1	Democrat	1	Strongly agree	
2	2	26 to 34	2	Virginia	2	Republicar	2	Agree	
3	3	35 to 55	3	Texas	3	Other	3	Neutral	
4	4	56 and abo	4	Other			4	Disagree	
5							5	Strongly disagree	
6									
7									

Variable Info | Sheet1

8. Click in the first row of variable **C15** so that this is the active cell.
9. Press **Ctrl-V** to copy the information. The final result should appear as below.
10. Select **Save** from the File menu to save the database.

Review

The following is a review of the steps for creating a database subset:

1. Sort the database by the variables on which you want to subset.
2. Copy the subset data to a new database.
3. Copy the variable info from the old database to the subset database.
4. Copy value label information (if it exists) from the old database to the subset database.

Chapter 15

Data Simulation

About This Chapter

There are many situations in which you want to generate data that follow a known distribution. For example, you may want to generate 100 uniform random numbers as an aid in selecting a random sample or you may want to generate five columns of normal random numbers to experiment with a particular statistical test. This chapter will show you how to use transformations to generate simulated data.

For transformations, **NCSS** directly generates two types of random numbers: uniform and normal. Other types of random numbers may be generated by using their inverse probability function on a set of uniform random numbers.

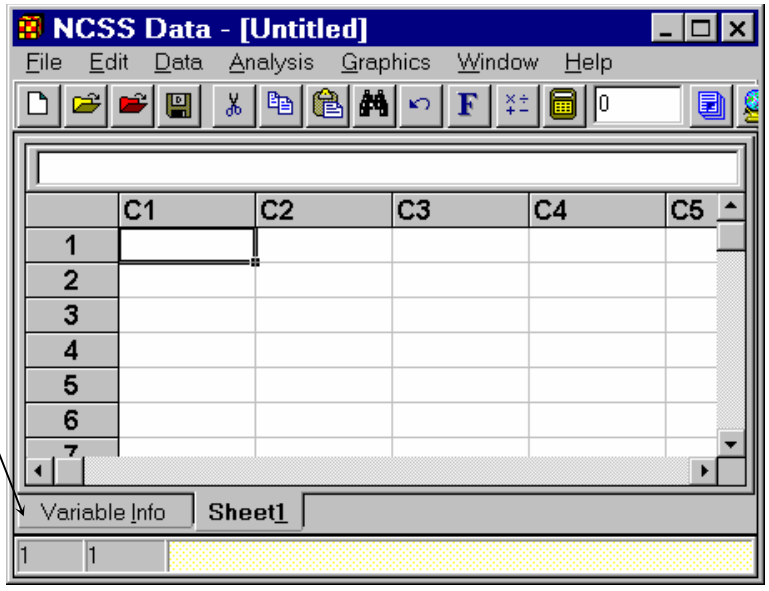
NCSS also has the Data Simulator procedure (Chapter 122), in which many more options for simulating data of various distributions, including mixture distributions, is discussed.

Generating Uniform Random Numbers

In this tutorial you will generate 100 uniform random numbers.

You should begin this tutorial with an empty database. If your database is not empty, select New from the File menu to clear it.

1. Move to the **Variable Info** datasheet by clicking the **Variable Info** tab.

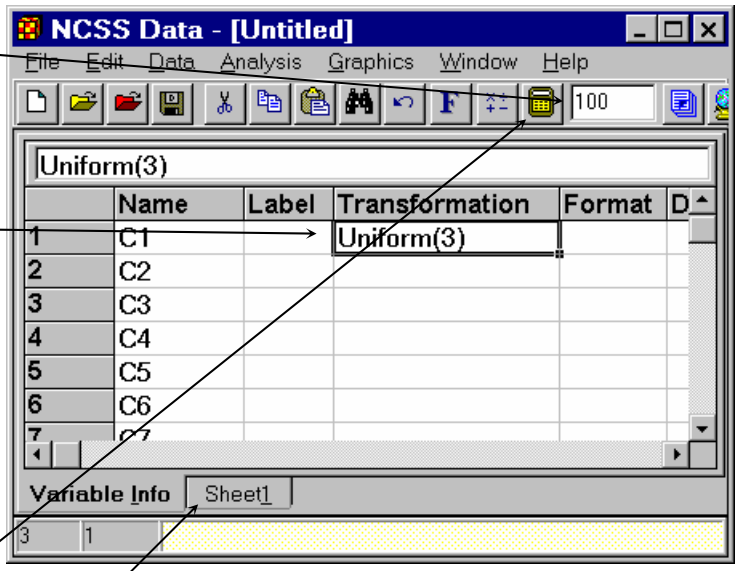


2. Enter **100** in the Number of Rows box.

This specifies the number of rows to be generated.

3. Enter **Uniform(3)** as the transformation for variable C1.

Note that the "3" in the parenthesis is ignored. The program generates a random "seed" so that a different set of random numbers will be used each time you recalculate the spreadsheet.

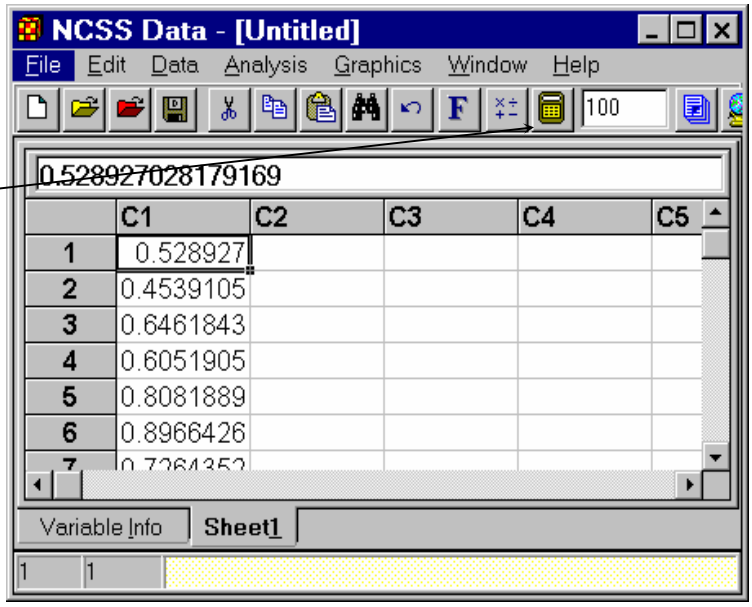


4. Press the **Apply Transformation** button to generate the random numbers.

5. Click the **Sheet1** tab to view the data.

The data will appear as shown. However, the numbers themselves will be different since each recalculation uses a different starting seed.

6. Press the **Apply Transformation** button a few more times to generate new sets of random numbers.



Simulating the T-Test with N = 5

We will now run a simulation in which we generate 100 one sample t-test values with a sample size of five. Four of the values will come from a normal distribution with mean 50 and standard deviation 2. The fifth value will come from a normal distribution with mean 50 and standard deviation 15. The t-test will test the null hypothesis that the population mean of the sample is 50.

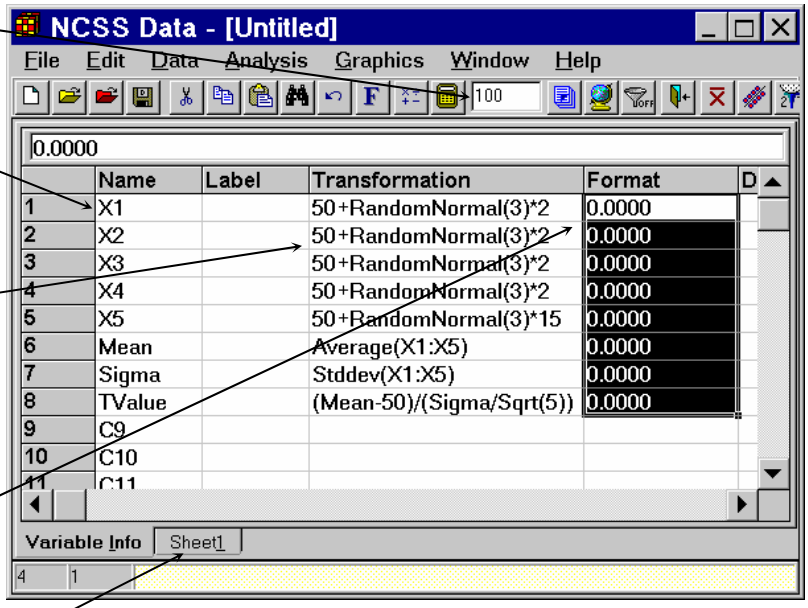
It will be interesting to study the distribution of these T-values since the T-Test makes the assumption that all five data values follow identical distributions. This simulation will allow us to study the distortion that occurs when this assumption is not met.

1. Enter **100** for the number of rows.

2. Enter the new variable names.

3. Enter the transformations. Notice that we multiply the random normal by the standard deviation (2 or 15) and then add the mean (50).

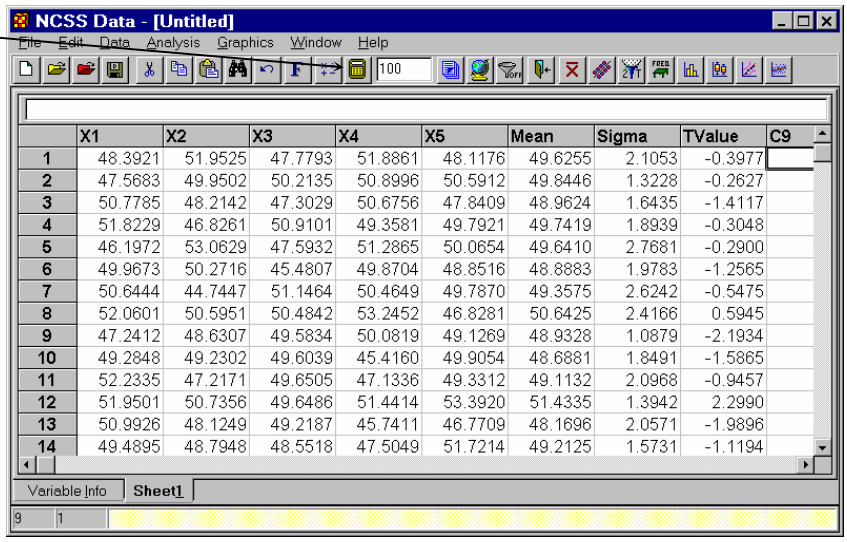
4. Enter **0.0000** as the format for each of the variables. This will make the data much easier to read.



5. Move to the empty spreadsheet by clicking **Sheet1.**

6. Click the **Apply Transformation** button to generate the simulated data. Your results will be similar to those shown here.

If you have made an error in entering the transformation formulas, you will have to go back to the Variable Info datasheet to make corrections.



	X1	X2	X3	X4	X5	Mean	Sigma	TValue	C9
1	48.3921	51.9525	47.7793	51.8861	48.1176	49.6255	2.1053	-0.3977	
2	47.5683	49.9502	50.2135	50.8996	50.5912	49.8446	1.3228	-0.2627	
3	50.7785	48.2142	47.3029	50.6756	47.8409	48.9624	1.6435	-1.4117	
4	51.8229	46.8261	50.9101	49.3581	49.7921	49.7419	1.8939	-0.3048	
5	46.1972	53.0629	47.5932	51.2865	50.0654	49.6410	2.7681	-0.2900	
6	49.9673	50.2716	45.4807	49.8704	48.8516	48.8883	1.9783	-1.2565	
7	50.6444	44.7447	51.1464	50.4649	49.7870	49.3575	2.6242	-0.5475	
8	52.0601	50.5951	50.4842	53.2452	46.8281	50.6425	2.4166	0.5945	
9	47.2412	48.6307	49.5834	50.0819	49.1269	48.9328	1.0879	-2.1934	
10	49.2848	49.2302	49.6039	45.4160	49.9054	48.6881	1.8491	-1.5865	
11	52.2335	47.2171	49.6505	47.1336	49.3312	49.1132	2.0968	-0.9457	
12	51.9501	50.7356	49.6486	51.4414	53.3920	51.4335	1.3942	2.2990	
13	50.9926	48.1249	49.2187	45.7411	46.7709	48.1696	2.0571	-1.9896	
14	49.4895	48.7948	48.5518	47.5049	51.7214	49.2125	1.5731	-1.1194	

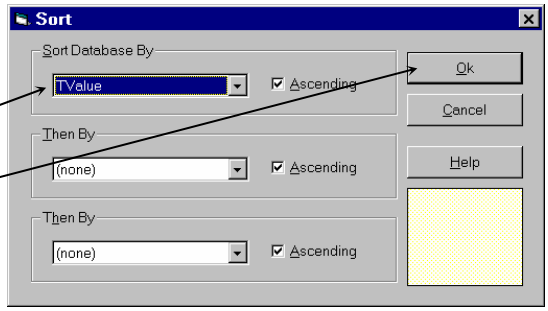
There are many ways to analyze the results. One of the easiest is to sort the TValue column and count the number of rows whose values are outside the theoretical bounds. If these data had come from a normal distribution with a mean of 50 and a standard deviation of 2, you could use the Probability Calculator to determine the theoretical cut off values. The two-tail critical value for a T distribution with 4 degrees of freedom and alpha = 0.05 is 2.78. Hence, you would expect that five of the one hundred values would be less than -2.78 or greater than 2.78.

Here's how to sort the data:

1. Select **Sort** from the Data menu. This will bring up the Sort window.

2. Select **TValue** as the sort variable.

3. Click **Ok** to perform the sort.



4. Scroll from through your data counting how many values are less than -2.78 or greater than 2.78.

	X5	Mean	Sigma	Tvalue	C9
1	49.3032	48.4274	1.3275	-2.6489	
2	29.2799	43.8124	8.2079	-1.6857	
3	40.6481	47.0399	3.9910	-1.6585	
4	43.0464	48.1429	3.0174	-1.3762	
5	40.2060	47.3166	4.4716	-1.3419	
6	30.3861	45.2287	8.3311	-1.2806	
7	24.2173	43.7391	11.3038	-1.2385	

	X5	Mean	Sigma	Tvalue	C9
94	54.8138	51.9395	2.6372	1.6445	
95	57.6396	52.3783	3.1958	1.6640	
96	57.1890	52.2512	3.0049	1.6752	
97	56.9590	52.1490	2.8435	1.6899	
98	56.6380	52.0277	2.6669	1.7002	
99	61.8765	53.8225	4.6030	1.8569	
100	51.1518	51.8507	1.1012	3.7580	
101					

In our case, only one row is outside the range. We repeated this simulation several times and never found more than three values outside the range, much less than the five values that the null hypothesis predicted.

Chapter 16

Cross Tabs on Summarized Data

About This Chapter

This chapter presents an example of how to enter and analyze a contingency table that has already been summarized.

Sample Data

The following data are the results of a study that tested the impact of three drugs on a certain disease.

	Drug		
Disease	Type 1	Type 2	Type 3
Yes	15	28	44
No	4	7	9

These data are entered into an **NCSS** database as follows.

	Drug	Disease	Count	C4
1	1	1	15	
2	1	0	4	
3	2	1	28	
4	2	0	7	
5	3	1	44	
6	3	0	9	
7				

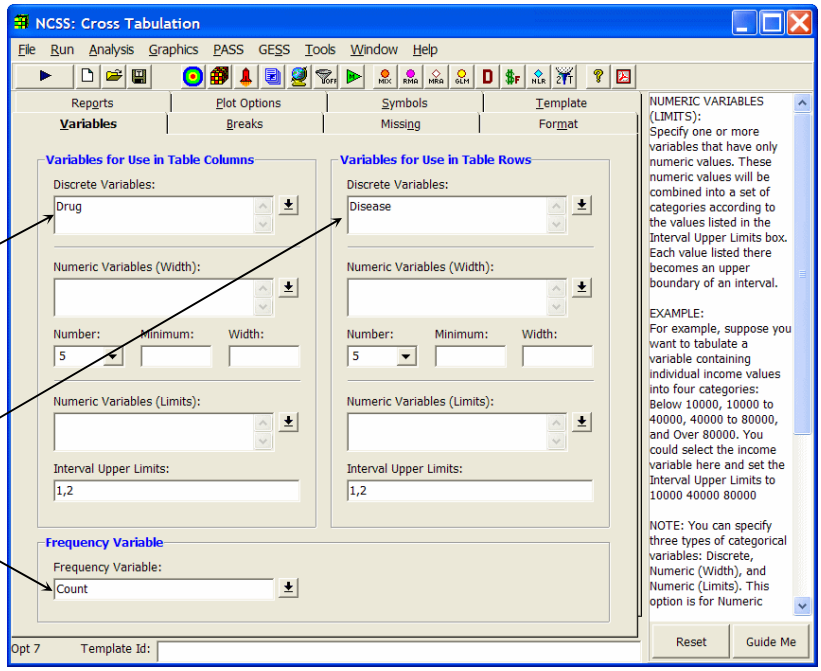
Notice that we have created three variables:

1. One containing the column identification number (**Drug**).
2. One containing the row identification number (**Disease**).
3. One containing the counts (**Count**).

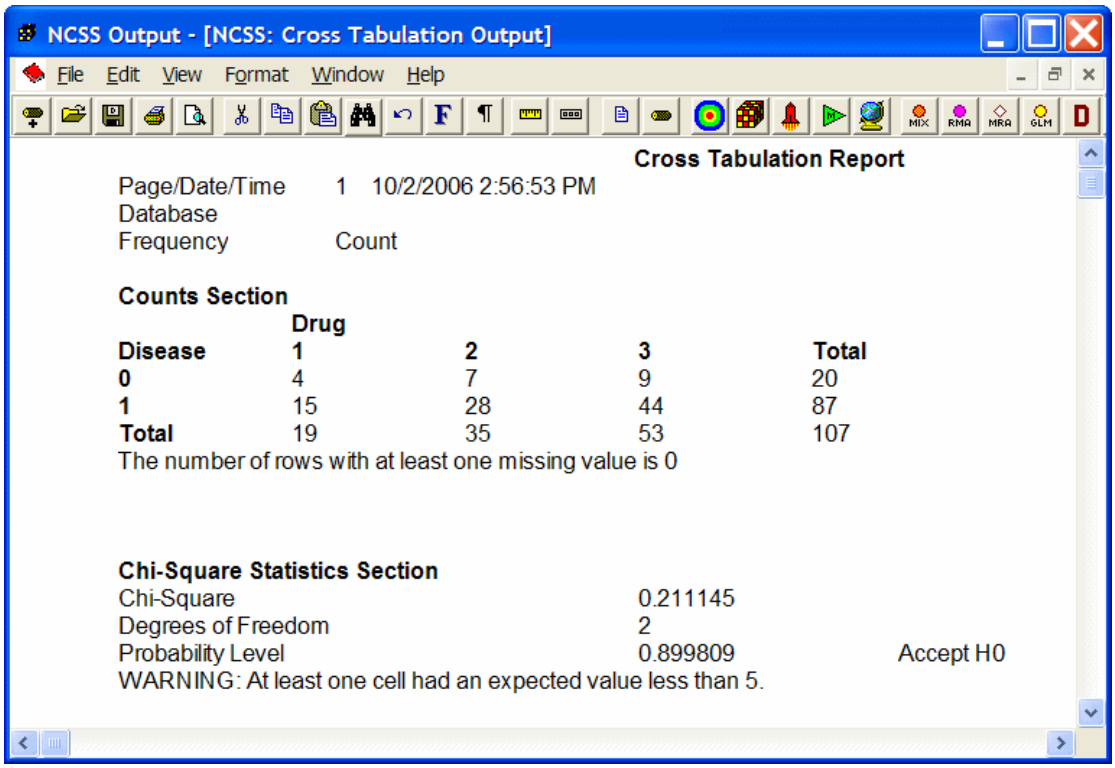
Filling Out the Cross Tabulation Window

The next step would be to fill out the Cross Tabulation window. This is done as follows.

1. Choose **Cross Tabulation** from the Descriptive Statistics submenu of the Analysis menu. This will load the Cross Tabulation window.
2. Enter **Drug** in the Discrete Variables box under Table Columns heading.
3. Enter **Disease** in the Discrete Variables box under Table Rows heading.
4. Enter **Count** in the Frequency Variable box.
5. Press the **Run** button to run the analysis.



The final result will appear as follows.



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