SPSS 15 for Windows TUTORIAL

Cross-Sectional Analysis

Short Course Training Materials
Designing Policy Relevant Research and
Data Processing and Analysis with SPSS 15 for Windows
1st Edition

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February 2007

Components of the Cross-Sectional Training Materials

Section 0 - Introduction to the file structure for SPSS for Windows (Data and Syntax Editors and Viewer (Output Navigator)). You should read this section before starting the main tutorial.

Section 1 - Basic functions

Section 2 - Table Lookup & Aggregation

Section 3 - Tables & Multiple Response Questions

Section 4 - Graphs, tables, publications and presentations, how to bring them into a word processor.

Annexes

1. - Presentation of filters versus permanent selections, and graphing and data in chart options.

2. - Six pages from the socio-economic survey of the smallholder survey in the Province of Nampula, Mozambique (NDAE Working Paper 3, 1992).

3. - Computer analysis of survey data - File organization for multi-level data by Chris Wolf, MSU Department of Agricultural Economics. This document can be downloaded in English or French from http://www.aec.msu.edu/fs2/survey/index.htm.

Acknowledgments

Funding for this research was provided by the Food Security III Cooperative Agreement between the Department of Agriculture Economics at Michigan State University and the United States Agency for International Development, Global Bureau, Office of Agriculture and Food Security.

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SPSS for Windows TUTORIAL
SECTION 0 - File structure for SPSS 15 for Windows
(Data, Syntax and Output windows)

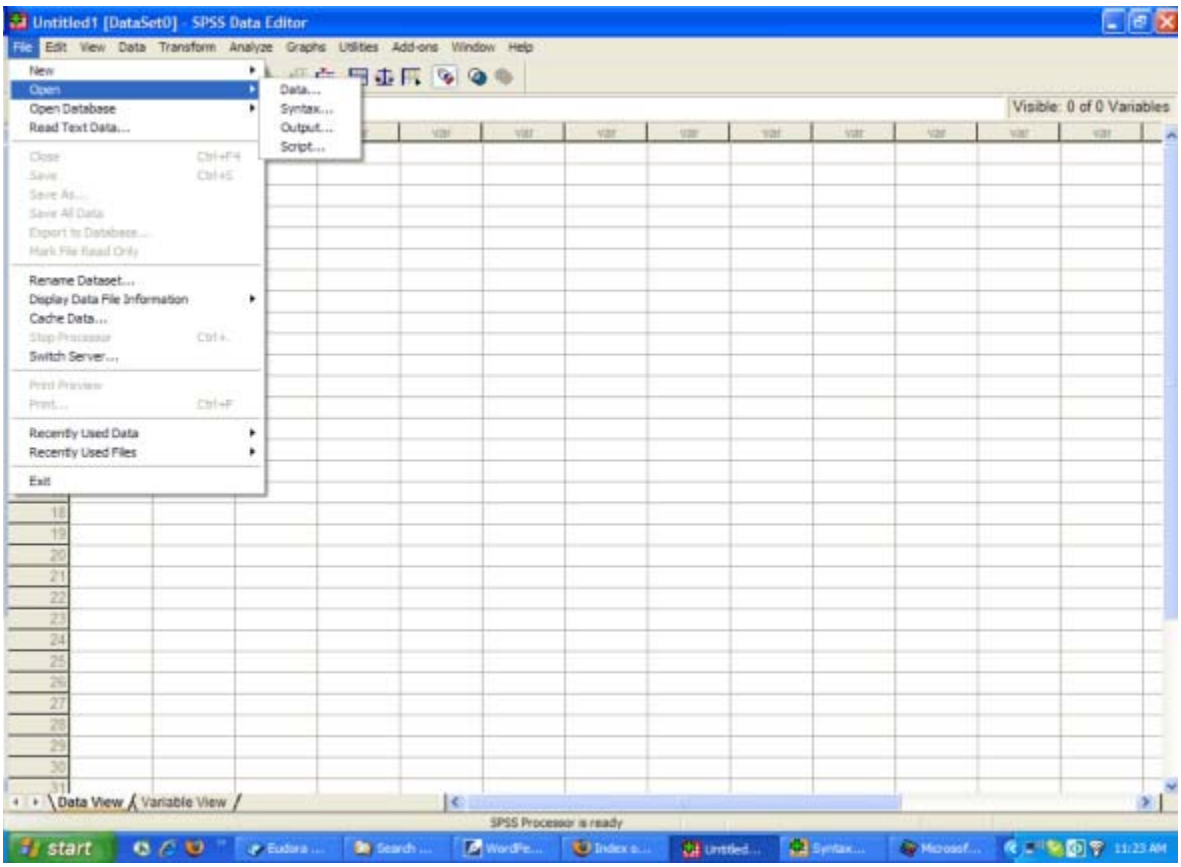
File Types Used in SPSS

This section gives a brief description of the file structure of SPSS for Windows version 15. It is essential that you read through this section before starting the tutorial.

While using SPSS for Windows in the manner taught in this tutorial, you are dealing with three different types of windows within the program—the Syntax Editor, the Data Editor window and the Viewer (including charts). The contents of each can be saved into the appropriate SPSS for Windows file type.

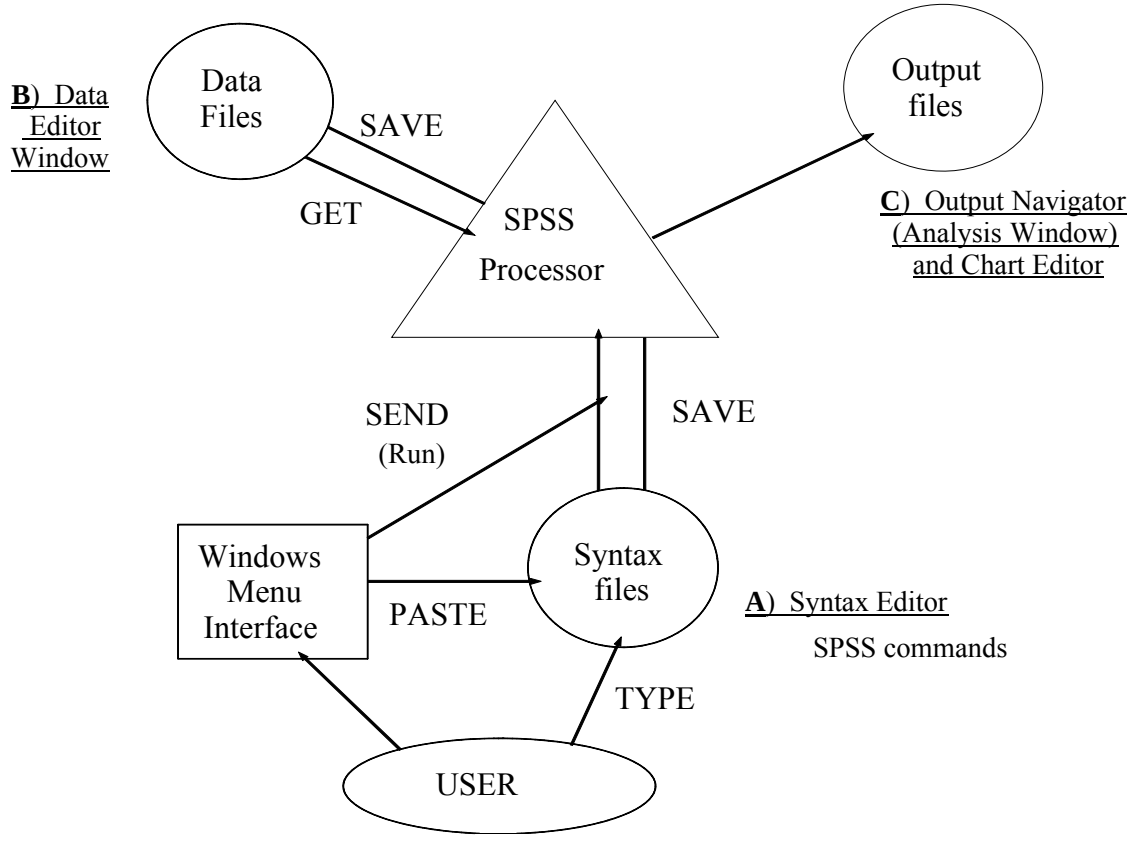
When you open SPSS 15, in the upper left hand corner of the window, select **File**, then **Open.** You will have 4 options of file types from which to select:

Data	data files	(Extension *.sav)
Syntax	syntax or command files	(Extension *.sps)
Output	output files	(Extension *.spo)
Script	advanced programming files for use with Sax BASIC that are created automatically each time an **Output** is created	(Extension *.sbs)



In the Title bar at the top of the screen you see '**Untitled [DataSet0] SPSS Data Editor**". With version 15, more than one data set can be opened within the same SPSS session. Each file that is opened using the menus is given a name which can be used to reference the dataset in the syntax file. In the Title bar at the top of the screen you see '**Untitlted [DataSet0] SPSS Data Editor**". If you open a data file using syntax developed before SPSS 15, a name will not be assigned to the dataset.

It is important to recognize the significance of the different types of files and to understand the various commands you use to create and access the files.



A) The Syntax Editor

The SPSS Syntax Editor is the window where syntax or commands are written before they are submitted to the SPSS processor. To put commands in the Syntax Editor you can **type** the commands directly into the Syntax Editor or you can use the pull down menus and select **Paste** when you are finished customizing the command. There are four main uses of the Syntax Editor:

- To type commands directly or to paste commands from the Data Editor to be processed later by SPSS 15 for Windows,
- To send these commands to the program, SPSS 15 for Windows, for processing,
- To write or save these commands to a file for future use, and
- To retrieve files of commands that you have saved previously.

It is important to understand that the commands you put in the Syntax

Editor will not be executed (no output will be produced) until you send the commands to the processor. The Syntax Editor is simply an area that helps you prepare the commands. To send the commands to the processor, you use the **Run** button in the Syntax Editor window toolbar of SPSS 15.0 (or select **Run ... Current** from the Menus). Once you press the **Run** button, the computer sends the command(s) to the processor, which reads the commands written in the Syntax Editor and executes them. When all the commands have been processed, SPSS opens the Viewer for you to examine the results of your commands. You can then switch back to the Syntax Editor to add new commands or edit old ones and execute these changes to observe different results.

It is good to start viewing the syntax of commands by using the **Paste** option rather than the **OK** option from the choices when you create a command using the menus. If you wish to display the commands in your output file, do the following:

From the Menu (in any of the windows), select

Edit

Options ...

- Select the Viewer tab
- Click in the box next to Display commands in log which is in the lower left corner of the dialog box to check it ✓
- Click on **OK** or **Apply**

When you have successfully completed each step in your analysis (or when you are ready to end an SPSS 15 for Windows session, even if it was not completely successful) you should save the commands to a file for future use. To save the commands, make the Syntax Editor active and select **Save** from the **File** menu.

A file created from the Syntax Editor is called the *syntax (or command) file*. It is a file containing only commands; it never contains any of the data you may be analyzing with the commands. You must save your data separately, as described in the following section. We suggest that you use the default *extension* of `.SPS` when naming syntax files. `REP7.SPS`, `DEM-ALL.SPS`, and `SECTION1.SPS` are some examples.

By writing your commands to a syntax file, you can retrieve, look at, or modify sets of commands and rerun them. You can retrieve a syntax file by pulling down the **File** menu from any of the SPSS windows and selecting **Open**. Select **Syntax** and retrieve the filename under which you had last saved the file. Once you have opened a specific file, you can use the commands from the file, without having to recreate or type them again. If you make changes to the Syntax file that you wish to keep, make sure you save them to disk again.

B) The Data Editor

SPSS 15 for Windows stores your data in a *data file*. In addition to the values themselves, a data file contains such things as variable labels and value labels, formatting information, missing-value specifications, and measurement level. Before you can do any data analysis in SPSS 15, you must first tell SPSS to open a data file. First select **File** from the menu, select **Open / Data** and highlight a data file. You have two choices at this point: 1) click on

Paste

to paste the command to the Syntax Editor and then run the command, or 2) run the command directly from the dialog box by clicking on the

Open

button). After running this command, the data in the file is available to SPSS 15 in the Data Editor window.

Two views of the data are available in the Data Editor window. Data View displays the actual values for the variables in the data file. Variable View displays the data dictionary which includes variable labels, value labels data type and other information. To switch between the views, click on the tabs at the bottom of the screen on the left.

You will often open a data file, compute new variables, make transformations, and finally save the modified set of data to use at another time. For example, you might retrieve a data file with land area per crop, add to it production per crop from another file, and then calculate yield. If you want to use the new production and yield variables at a later time, you must make sure that the data file is saved with the new variables in it. To save a data file, make the Data Editor the active window, select **Save As...** from the **File** menu and give the file a new name. Note, you **must** be in the Data Editor window to save your data unless you run a **SAVE OUTFILE** command from the Syntax Editor. You may choose to write over the old file by saving the file to the same file name or you can give the file a new name.

C) The Viewer

SPSS 15 automatically writes all messages and output that result from the execution of your commands to the SPSS Viewer. For example, if you run a frequency command, the frequency table will be written to the Viewer. Similarly, if you generate a table or a graph, the table or graph will appear in the Viewer.

To save the contents of the Viewer to a file, make the Viewer active by clicking on that window, pull down the **File** menu and select **Save As...**. When you give the file a name, SPSS will automatically attach the *extension* .SPO. It is very important to save the *output file* if you want to review what you have done at a later time.

The Output file gives you access to your results after your SPSS 15 for Windows session has ended. For example, you can print the output of your session in order to examine the results and verify for errors. In the sample session, you will see how to save the contents of the Viewer and

give the file from each session a different name.

One final note, you can manipulate the output produced just as if you were using a file manager (called Windows Explorer). In the Viewer, there are two panes: the one on the right contains the results, the one on the left shows an outline view of the contents. From within this pane, you manage the results by copying, moving or deleting the results, hiding a table or chart, renaming titles, inserting titles or text or a chart.

Summary of the Basic File Types

Syntax files (or command files) contain commands saved in the Syntax Editor. They do not contain output or data—only commands. Syntax files are made accessible to SPSS using the menus with **File / Open / Syntax** . The default extension name is *.SPS. You can have more than one syntax file open. The "active" syntax window is the one with a green plus in the upper left-hand corner of the title bar.

Output files contain statistical output, data information and presentation (tables, graphs, charts), generated by the SPSS 15 for Windows processor, given selected commands. They do not contain data. Output files are made accessible to SPSS for Windows using the menus with **File / Open / Output** where the file is placed in the SPSS Viewer. The default extension name is *.SPO . You can have more than one output file open. The "active" output window is the one with a green plus in the upper left-hand corner of the title bar.

Data files contain data, including original survey variables plus new created variables through various SPSS 15 for Windows commands such as the COMPUTE or AGGREGATE commands. Data files are made accessible to SPSS for Windows using the menus with an **File / Open / Data** which places the file in the Data Editor. The default extension name is *.SAV. A data file can also be opened using syntax commands. With version 15, more than one data file can be open in the same session. The "active" data set is the one with a green plus in the upper left-hand corner of the title bar.

SPSS for Windows SAMPLE SESSION
SECTION 1 - Basic functions: SPSS files, Descriptives and Data Transformations

Introduction

This is a self-paced training aid designed to introduce the commands needed for some typical statistical survey analyses using **SPSS 15 for Windows**. This tutorial is intended to be a stand-alone training tool. To use it most effectively, you should ask a knowledgeable SPSS for Windows user to help you get started and to answer questions as you work independently through the session. It can also be used as a guide for classroom training.

A copy of the questionnaire on which the data are based can be found in the Mozambique project 1992 **NDAE Working Paper 3: A Socio-economic survey of the smallholder survey in the province of Nampula: Research Methods**. Three tables were made available and can be found at the end of the manual in the Annex 2 (for further information please contact Dr. Michael Weber at webermi@msu.edu). Four portions of the questionnaire are referenced, each of which has a corresponding SPSS for Windows data file. Two other SPSS for Windows data files are required for conversion of units of measure to standard units.

Questionnaire Section	SPSS for Windows Data File
Main Household Section	C-HH.SAV
Table IA: Household Member Characteristics	C-Q1A.SAV
Table IV: Characteristics of Production	C-Q4.SAV
Table V: Sales of Farm Products	C-Q5.SAV
Conversion factors for computing kilograms	CONVER.SAV
Conversion factors for computing calories	CALORIES.SAV

This training consists of four sections, each of which should take approximately two hours. We recommend that you complete each section in a single sitting. These tutorial materials make the following assumptions:

- You know how to use Windows with a mouse
- The six data files listed above are stored in the directory c:\docs\sample on your hard disk. If you have not done so already, you need to unzip the files from sample.zip to this directory.
- Under **Options….** in the **Edit** Menu the following items are set:

In the General tab check to see that

- Variables are displayed in the dialog box in the same order they appear in the Data Editor
- Variable names are displayed rather than the variable labels

- The Syntax Editor window does not open when SPSS is started

In the Viewer tab

- The box to the left of Display commands in the log is checked (lower left corner of the dialog box)

In the Output Labels tab

- Names and Labels are selected for both the Outline Labeling and Pivot Table labeling for the Variable labels
- Values and Labels are selected for both the Outline Labeling and Pivot Tale labeling for the Variable Value labels

You can modify any of the settings that control how SPSS works from this screen as well.

Important: *Always remember to SAVE the changes to the data after each exercise and section, using a* ***new*** *file name. Also, you should save the syntax files and output files created during each session, using logical names, such as module1.sps or session1.spo. If you are not sure of any of the above, ask the person helping you to check them or check with the nearest computer service center or specialist.*

Open your SPSS software. If you have not read or completed Section 0, please do so now to clarify the concept of the Syntax Editor, where you **paste** or type commands, the Viewer where SPSS for Windows displays the results of your commands and the Data Editor window where the working data file and variable information are displayed.

Data Files and the Working File

Data from questionnaires that have been entered into SPSS 15 for Windows are stored in what are called *data files*. If we want to work with a set of data, we must open the corresponding data file, so that it is available to the program.

When a data file is opened, it is loaded from the disk into memory (the computer's "RAM") making it the working file. This means that the data from this file are now available for you to use. Let's start with the questionnaire for Table IA: Household Member Characteristics. The data file that corresponds to it is C-Q1A.SAV. To open this file, perform the following steps:

1. From the **File** menu, select **Open...**, select **Data**
   This will open the Open File *dialog box.*
2. Change to the directory where your sample session data are and select the file
   c-q1a.sav.
3. Click on the **Paste** button to place the command in the Syntax Editor. Two lines of commands were written to the Syntax Editor.
   The Syntax Editor *will now become the active window and you will see the text*

```
GET
  FILE='C:\sample\C-Q1A.SAV'.
  DATASET NAME DataSet1 WINDOW=FRONT.
```

in the Syntax Editor.

4. Edit the second line to change the name of the dataset to be the name of the data file. Change "DataSet1" to "c_q1a" so that it looks like

   ```
   DATASET NAME c_q1a WINDOW=FRONT.
   ```

5. **Now, you must block both commands** and then click on the Run ▸ button on the Toolbar.

   Note that the two commands, `GET FILE` *and* `DATASET NAME`*, that you just ran will be written to the Viewer.*

The Data Editor becomes the active window and the household-member data file is now in memory. Because SPSS 15 can open multiple data files in the same session, each file will be given a "DATASET NAME" which can be use to specify which data file (if more than one is open) should be used when a command is run in the Syntax Editor. It is recommended that you change the dataset name from the default that SPSS gives it to a unique name so that you can always know what the dataset name is and you can consistently reference it with the DATASET commands.

If you do not specify which dataset to use with the "DATASET ACTIVATE" command, SPSS will use whichever dataset has the green plus sign in the upper left corner.

New SPSS command: DATASET …

Since more than one data file can be opened in the same SPSS session, a new command has been added - DATASET - with several key word options. They are:

Command	Example

`DATASET NAME name`
`[WINDOW={ASIS }]`
`{FRONT}`
	`GET FILE='c:\data\spssdata.sav'.`
	`DATASET NAME file1.`
	`SORT CASES BY ID.`
	`GET FILE 'c:\data\moredata.sav'`
	`SORT CASES BY ID.`
	`DATASET NAME file2.`

`DATASET ACTIVATE name`
`[WINDOW={ASIS }]`
`{FRONT}`
	`GET FILE='c:\data\spssdata.sav'.`
	`DATASET NAME file1.`
	`COMPUTE AvgIncome=income/famsize.`
	`GET DATA /TYPE=XLS`
	`/FILE='c:\data\exceldata.xls'.`
	`COMPUTE TotIncome=SUM(income1,`
	`income2, income3).`
	`DATASET NAME file2.`
	`DATASET ACTIVATE file1.`

`DATASET DECLARE name`
`[WINDOW={MINIMIZED}]`
`{HIDDEN }`
`{FRONT }`
	`DATASET DECLARE corrmatrix.`
	`REGRESSION`
	`/DEPENDENT=var1`
	`/METHOD=ENTER= var2 to var10`
	`/OUTFILE=CORB(corrmatrix).`
	`DATASET ACTIVATE corrmatrix.`

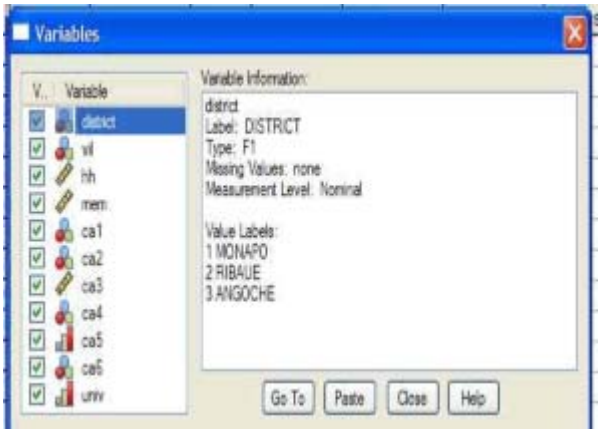
Command	Example
DATASET COPY name [WINDOW={MINIMIZED}] {HIDDEN } {FRONT }	DATASET NAME original. DATASET COPY males. DATASET ACTIVATE males. SELECT IF gender=0. DATASET ACTIVATE original. DATASET COPY females. DATASET ACTIVATE females. SELECT IF gender=1.
DATASET CLOSE {name} {* } {ALL }	DATASET CLOSE file1.
DATASET DISPLAY.	The DATASET DISPLAY command displays a list of currently available datasets. The only specification is the command name DATASET DISPLAY.

Utilities / Variables

One key piece of information we want to know about a data file is what variables it contains. We can find this out, along with other information, by using the **Variables...** command on the **Utilities** menu, which can be found in all three SPSS windows. You can browse through the variable definitions and variable labels. To do this, perform the following steps:

1. From the **Utilities** menu select **Variables...**
2. Select a variable name - the information about that variable will appear to the right.

This dialog box shows definition information about each of the variables. We see the variable names, **district**, **vil**, **ca1**, **ca2**, **ca4**, **ca5**, **ca6**, and **univ**, the value labels for variables, the type of variable (numeric, string, date, etc.), the display width of the variable in characters, the number of decimal places (if Type is Numeric), and any values defined as user missing values. The symbol to the left of the variable denotes whether the variable type is ordinal, nominal or scale – level of measurement.



Click on the **Close** button when you are finished exploring this window.

To write all of this information to your Viewer for later examination, do the following:

Pull down the **File** menu, choose **Display Data files Information** and select **Working File**.

```
This command will execute immediately.  The
  Viewer will become active and will contain a
  listing of all the variables with their
  definitions.
```

DISPLAY DICTIONARY command

The SPSS command is

DISPLAY DICTIONARY

You can see in the Viewer the name of each of the variables, the label associated with the variable, and the format. For example: F8.2 means width of 8 with two decimal places. The width is computed by adding the number of digits to the left of the decimal plus the decimal plus the number of digits to the right of the decimal. With a format of F8.2 five digits are displayed to the left and two to the right of the decimal. The DISPLAY DICTIONARY command is an excellent way to begin to document the contents of the data file. You can copy this information to a word processing file to begin the documentation process.

Another method to use if you want to look at the structure of each variable, is to select the Variable View at the bottom left of the Data Editor screen, rather than the Data View. You can directly change the characteristics of your variables here, just as you can change values in your data in the Data View window. An example of this view is shown in Table 1.1 on the next page for the variable DISTRICT, with a brief explanation of the choices in each column.

If you want to modify one of the parameters about a variable, click on the cell. If there are specific choices to be made, a small shaded box will appear in the right corner for that specific cell. Click on the box to see the choices, add a new value, or view the other options. In some cases, as for Width, Decimals, and Column, instead of a box, arrows are shown to increase or decrease the size. .

Example: For the variable **DISTRICT**, click on the column **Values**. Click in the cell for the variable (DISTRICT). You will see a small gray box  Click on this box. A dialog box appears entitled: Value Labels .

To add a new label of 4 associated with Nampula,

- enter **4** in the **Value** box and press the <tab> key,
- then enter Nampula in the **Value Label** box,
- click on the **ADD** bottom .
- Usually, you would select OK, but we don't want to keep this change so select Cancel .

You can use these steps to modify or delete an existing label. Highlight the specific label and then click **Change** or **Remove**.

Table 1.1. Basic Structure of Variable View in SPSS 15

Number of the variable	**Name**	**Type**	**Width**	**Decimals**	**Label**	**Values**	**Missing**	**Columns**	**Align**	**Measure**
Explana-tion	Variable name	Numeric or alpha-numeric (*String*)	Space required to write variable in the data set	Number of digits to the right of the decimal	Label for the variable	Labels for the values, e.g. labels for categorical variables,	Declared user missing values (example: -99), indicates cases that should be excluded from calculations	Display width of variable in Data View	Alignment of the data in Data View only: *Left*, *Right Center*	Measure-ment level of variable: *Scale*, *Nominal, Ordinal*
Example:										
1	district	Numeric	1	0	DISTRICT	1= MONAPO 2= RIBAUE 3= ANGOCHE	None	8	Right	Nominal

[1] There are three categories of measurement level:

Scale: These are variables with values that are generally continuous or in intervals (integers) (e.g.: yield or age);

Ordinal: Values or alphanumeric variables that consist of categories with an intrinsic ordering (e.g. 1= short; 2=medium; 3 = tall);

Nominal: Values or alphanumeric variables that consist of categories with no intrinsic ordering **(eg. 1=man; 2=woman).**

Descriptive Statistics - involving one variable

The first step at the beginning of analysis is to run descriptive statistics (e.g. counts, averages, maximum, minimum, and standard deviations) for all variables. This type of analysis helps you to find data entry errors, to give you a "feel" for what your data are like, and to be sure that missing values have been defined correctly, etc. It may be tempting to skip this step for some data sets or for some variables, but this is an important step that will almost always save you time later and improve your analysis. For example, finding out the average age of all respondents may not be something you are interested in knowing, but if the average age turns out to be 91.3 yrs, you would be alerted that something is probably wrong.

Basic descriptive statistics can be obtained from two common SPSS for Windows commands—**Descriptives** and **Frequencies**. **Descriptives** is used for continuous (scale) variables, while **Frequencies** is used for categorical (nominal and ordinal) variables.

Continuous / categorical variables definition

A *continuous variable* is a variable that does not have a fixed number of values. A *categorical variable* is a variable that has a limited number of values that form categories. For example, look at Annex 2, Table IA: Household Member questionnaire. Variable **ca3** (age) is a continuous variable because age can take on many different values. Variable **ca2** (relation to head) is a categorical variable because its values are limited to the categories 1-6.

Start by examining the data in the file. Use the Data Editor window to scroll through your data file. To do this, perform the following steps:

1. If you are not in the Data Editor, click on the Go To Data  button on the Toolbar.
2. Scroll through the data.
   A period in a field indicates a missing value or sysmis.

Scrolling through the data will give you a "feel" for what is in the data file. It might also help point out obvious errors, e.g. a variable whose values are missing for all listed cases. Decide which of the variables are continuous and which are categorical (normally you would refer to the questionnaire to make this decision). You need to know this in order to select the right procedure to use for each variable. If you mistakenly perform a **Frequencies** on a continuous variable, you will probably get more output than you really want, with possibly hundreds of different "categories", one for each different value found. If you perform a **Descriptives** on a categorical variable, you will usually get meaningless results, since the average value of a variable that consists of categories may have no real significance.

Descriptives

By examining the data, you should have found that variable **ca3** (age) is continuous (or scale) and the remaining variables are categorical. To run descriptives on **ca3,** do the following:

1. From the **Analyze** menu, select **Descriptive Statistics....Descriptives**
   This will give you the Descriptives *dialog*

box.

2. Select **ca3** (age) from the list on the left and click on the arrow  button

   ca3 will move to the **Variable(s)**: *box on the right*

3. Click on the 

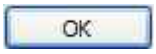
button to place the command into the Syntax window. (If the Syntax Editor did not become active, you can go there by clicking on the syntax ionc on the windows taskbar at the bottom of your screen.)

4. Execute the command by clicking on the Run  button located on the Toolbar. (Note that this time we did not have to move the cursor since it was already positioned in one of the lines of the **Descriptives** command.)

The Viewer will become active and the results of the command will be there. You will see that the mean for age (**ca3**) is 21.34 years.

5. Another useful way to examine a continuous variable is to run a Frequency command to view a histogram and the distribution of a variable. From the **Analyze...Descriptive Statistics...**select **Frequencies** .

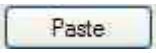
6. Select **ca3** (age) from the list on the left and click on the  button.

7. Remove the check mark ✓ next to the words "Display Frequency Table". An information box pops up to tell you that you have turned off all output and that you must select an item from the charts or statistics dialog box or no output will be displayed. Click on 

8. Click on the 

button and select the radio button next to "Histograms" and check ✓ the "With normal curve" option; then click on the 

button.

9. Click on 

to put the command into the Syntax Editor and switch to the Syntax Editor to make it active.

10. Execute the command by clicking on the Run  button located on the Toolbar.

View the histogram of the distribution of ages in the data.

Save the Output File

Now that you have output in the SPSS Viewer, it is a good time to save that output file. Switch to the Viewer window. Click on the **File...Save as...** on the SPSS toolbar at the top right. In the "File Name" box, type **Session1** - make sure that the directory is the one where you want save the output. SPSS will automatically add the extension **.SPO** to indicate an output file.

Frequencies

Since the variables **ca1** (work on a farm or not), **ca2** (relation to head), **ca4** (sex), **ca5** (level of schooling) and **ca6** (marital status) are categorical, we will run a **Frequencies** on those variables. To run frequencies, do the following:

1. **Analyze...Descriptive Statistics...**select **Frequencies ..**.
   The Frequencies *dialog box will open.*
2. Click the **Reset** button to clear the Variables box**.**
3. Select **ca1** from the list on the left and click on the  button.
   ca1 ***will move to the*** **Variable(s):** ***box on the right***
4. Repeat step 3 until **ca2, ca4, ca5** and **ca6** have all been moved to the **Variable(s):** box.
5. Click on **Paste** to put the command into the Syntax Editor and switch to the Syntax window to make it active.
6. Execute the command by clicking on the **Run**  **b**utton located on the Toolbar.

The Viewer will become the active window. You will see, for example, the results for ca1 show that 70.7% of the household members work on a farm. The results for ca6 show that 38.0% of those surveyed are in monogamous marriages.

SPSS provides a "Results Coach" which explains the output. In the Viewer select one of the frequency tables, <right-click> and choose **Results Coach**. Another option available if you <right-click>, is **Case Studies**. If you select this choice, a window opens containing a tutorial on the use of the Frequencies statistic.

Explore

Another command used to produce many types of descriptive statistics is the Explore command. One useful output for this statistic is that it produces a list of cases that can be considered *outliers*. This command also produces graphs of the distribution of data using a stem and leaf chart or a histogram. The default is a stem and leaf chart. The Explore command can produce large amounts of output if used with its defaults. We will limit the output to statistics. You can explore the other options on your own. Within each of the dialog boxes, there is a **HELP** button on the right which will explain the statistic. Definitions of the terms in the dialog boxes can be obtained by placing the mouse over the word and clicking with the right mouse button.

Run the **Explore** command on the variable **ca3** (age) using the following steps:

1. From the **Analyze...Descriptive Statistics** menu select **Explore...**
2. Select **ca3** from the list on the left and click on the  next to Dependent List.
3. In the lower left corner of the dialog box is a box called Display. Click on the radio button (circle) next to Statistics.
   This will give us statistics only and no plots.
4. Next click on the **Statistics...** button.
   This will bring up the Explore: Statistics *dialog box.*
5. Click once on the square next to Outliers to put an ✓ in the box.

You will notice there is already an ✓ in the box next to Descriptives*.*

6. Click on the **Continue** button.
   This will bring you back to the Explore *dialog box.*
7. Click on **Paste** to put the command in the Syntax Editor and switch to make it active.
8. Click on Run 

You see the Descriptives Table which shows you the standard descriptives and the Extreme Values table which shows you the five highest and five lowest values occurring for age (**ca3**). You can then determine if these values can be considered as *outliers*. The cases are identified by the case number.

Go To Case

To find a case by the case number, in the Data Editor, select **Edit...Go to Case**, type the case number and click on **OK**.

<Right-click> on one of the output tables and select **Results Coach** for a description of the information given with this command.

Save the Syntax File

It is a good practice to frequently save your syntax files while you are working. You may need to re-run the commands on the same file after correcting a data entry error or if your computer "crashes" due to a problem with SPSS or another program. To save the file, make the Syntax Editor window the active window, select **File...Save as...** from the SPSS menu at the top left. In the File Name box, type the name **Session1**.

It is useful to save the syntax file and the corresponding output file with the same name; however each will have a different extension. SPSS will automatically add the .SPS extension to the syntax file. Verify that the directory is the correct one. You must be in the Syntax Editor window to save the syntax file.

Exercise 1.1:

Apply what you've just learned about descriptive statistics. Run descriptive statistics on another sample file. Use the production questionnaire - Table IV, whose data are in the file C-Q4.SAV.

Hints:

a. make C-Q4.SAV your working data file. Note that SPSS did not close the data file that was open. It opened the new file and gave it a label of "Dataset2".
   You will see the text

```
GET
   FILE='C:\sample\C-Q4.SAV'.
DATASET NAME DataSet2 WINDOW=FRONT.
```

   Remember to change the name of the dataset so that if you need, you can reference the dataset specifically. Change the namae to c_q4, e.g.

```
DATASET NAME c_q4 WINDOW=FRONT.
```

   You now have 2 datasets open. The data file with a ***green plus*** *will be the "active"*

dataset. You must be sure that data set C_Q4.sav *has the green "plus" when you switch to the syntax window to run commands that are specifically for that file.*

b. Use the **Descriptives** command for continuous variables, and **Frequencies** for categorical variables.
c. **Prod** is a categorical variable.
d. Quantities (**p1b**, **p2b**, ...) are continuous variables.
e. Units (**p1a**, **p2a**, ...) are categorical variables.
f. **p4** (month in which stocks ran out last year) **& p6** (month in which stocks will run out this year) are categorical variables.

A small sampling of what you should find from running these frequencies and descriptive statistics follows:

prod PRODUCT

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	3 cotton	83	4.9	4.9	4.9
	5 peanuts	144	8.5	8.5	13.4
	6 rough rice	155	9.2	9.2	22.6
	8 bananas	50	3.0	3.0	25.5
	9 sweet potato	12	.7	.7	26.2
	10 cashew liquor	24	1.4	1.4	27.6
	11 sugar cane liquor	11	.6	.6	28.3
	13 dried cashew	2	.1	.1	28.4
	15 sugar cane	13	.8	.8	29.2
	21 cashew nut	130	7.7	7.7	36.9
	23 coconut	45	2.7	2.7	39.5
	30 beans	279	16.5	16.5	56.0
	31 manteiga beans	7	.4	.4	56.4
	35 sunflower	5	.3	.3	56.7
	38 oranges	13	.8	.8	57.5
	39 cashew fruit	44	2.6	2.6	60.1
	41 manioc	338	20.0	20.0	80.0
	44 sorghum	124	7.3	7.3	87.4
	47 maize	192	11.3	11.3	98.7
	50 "ossura"	5	.3	.3	99.0
	67 tobacco	4	.2	.2	99.2
	68 tomato	13	.8	.8	100.0
	Total	1693	100.0	100.0	

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
p1b PROD THIS YR - # OF UNITS	1670	.0	5000.0	26.353	163.4359
p2b PROD NORMAL YR - # OF UNITS	1598	.5	5000.0	22.815	159.5101
p3b STOCK ENTERING HARVEST - # OF UNITS	173	.0	30.0	2.523	4.5746

p5b STORED FOR CONS THIS YR - # OF UNITS	1231	.0	1460.0	15.612	86.1036
p7b STOCK FOR SEED - # OF UNITS	869	.0	100.0	4.938	6.8755
Valid N (listwise)	151				

Descriptive Statistics - involving two or more variables

Crosstabs

The **Crosstabs** command produces a table showing the distribution of cases according to values for two or more categorical variables.

Look at the household member questionnaire in Annex 2, Table IA. One thing you might be interested to know is how the gender of the respondents varied by relationship to the head of household, i.e., how many females are heads of households. The **Crosstabs** command will produce this type of summary. Make the household member file, C-Q1A.SAV, the working data file. If you still have the data file open that was used for the exercise, you can close that file by clicking on the "X" in the upper right hand corner of that data file. However, it would be better to place commands in the syntax window to close the file. As listed above under options for the "DATASET" command, we can type a command to activate the first file, C-Q1A.SAV, and close the file that we used for the exercise.

Switch to the Syntax Editor and below the last command in the file, type the following:

```
DATASET ACTIVATE c_q1a.
DATASET CLOSE c_q4.
```

The first command makes the first data file we opened (c-q1a.sav, which was given the label of "c_q1a") the active data file and closes the second data file (c-q4.sav, which was given the name of "c_q4"). Block these commands and run them.

To use the **Crosstabs** command do the following:

1. Select **Analyze...Descriptive statistics** from the menu**.**
2. Select **Crosstabs...**
   This will bring up the* Crosstabs *dialog box.
3. Select **ca2** (relation to head) from the list on the left and click on the  next to Row(s):
4. Select **ca4** (sex) from the list on the left and click on the  next to Column(s):
5. Click on the **Cells...** button
   This will bring up the Crosstabs: Cell Display dialog box
6. In the **Counts** section, click on the box next to **Observed** to place an ✓ in it, if there is not already one there.
7. In the **Percentages** section click on the boxes next to **Row** and **Column** to put ✓'s in them.
8. Click on **Continue**

9. Click on **Paste**
9. Run the command in the Syntax Editor**.**

The Crosstabs:Cell Display dialog box specifies which statistics you want displayed in each cell of the table—in this case we wanted counts, row percentages, and column percentages. Row percentages sum to 100 across all the cells in a row, while column percentages sum to 100 down all the cells in a column. By default the **Crosstabs** command just gives counts. The table produced by this command tells you that there are 21 female heads of households, and that 6.1% of the total number of heads of households are female (Row percents). The table also shows that of the females in the sample, 2.9% are heads (Column percents).

Means

The **Compare Means** command is somewhat similar to **Crosstabs,** but it gives statistics about continuous variables. It shows how the mean and other statistics for a continuous variable differ by the values of one or more categorical variables. Another way to look at the relationship between **Crosstabs** and **Compare Means** is that **Crosstabs** is a way of getting **Frequencies**-type output broken down by categories of one or more other variables, while **Compare Means** is a way of getting **Descriptives**-type output broken down by categories of one or more other variables.

Suppose we want to know how the age of the respondents varied by relationship to the head of household. If we did this with **Crosstabs** we would get a table with dozens of cells for the different ages represented, which would be an unusable table. Instead we will use **Compare Means.**

1. Select **Compare Means** from the **Analyze** menu
2. Select **Means...**
3. Select **ca3** (age) and click on the ▶ next to Dependent List:
4. Select **ca2** (relation to head) and click on the ▶ next to Independent List:
5. Click on **Paste**
6. Run the command from the Syntax Editor.

This command calculates means of the dependent variable (ca3), which is normally a continuous variable. The means will be calculated separately for each different value of the independent variable, which is a categorical variable ca2, "relation to household head".

From this output you find that the average age of head of households is 41.53 years while the average age of the spouse is 33.19 years.

Data Transformations

After examining the results of the descriptive statistics you might want to do data transformations. A data transformation is an operation that takes existing variables and either changes their values in a systematic way or uses their values to calculate new variables. The next example shows a common data transformation; the conversion of a continuous variable to a categorical variable.

The information we received from the **Means** command is interesting, but it might also be useful to see the actual distribution of the ages grouped into categories, so we can tell, for example, how many heads of household are older than 60. Since the age variable, **ca3**, is continuous, we cannot do this directly—first we have to transform it. Let's suppose we're interested in four categories: 0-10 years old, 11-19 years, 20-60 years, and over 60 years of age.

Recode into a Different Variable

To categorize a continuous variable, you use the **Recode** command. Categorizing a continuous variable makes detailed information more general. You want to keep the detailed information as well as the new general information. Therefore, you must recode the variable into a new variable. If you recode into the same variable the original values will be lost.

In this particular file, if you use the **Recode Into Same Variable** command to transform **ca3** (age), **ca3** will take on the new categorical values assigned in the **Recode** statement, and the original ages will be lost. We want to preserve the original ages and store the categorized values in a separate variable. We will use the menu choice - **Recode Into A Different Variable.**

Let's recode the variable **ca3** into a new variable called **age_gp** for age groups**.**

1. Select **Recode Into A Different Variables** from the **Transform** menu
2. Select **ca3** from the list on the left
3. Click on the ▶ next to **Input Variable -> Output Variable:** box
   ca3 should move to the Input Variable->Output Variable: box and the name of the box will change to Numeric Variable -> Output Variable.
4. Click once in the empty box next to **Name:** in the **Output Variable** section to put the cursor there.
5. Type **age_gp** in the box.
6. Click once in the empty box next to **Label:** in the **Output Variable** section.
7. Type **Age Group** in the box for the label.
8. Click on **Change** to move the variable name into the **Numeric Variable -> Output Variable:** box.
9. Click on **Old and New Values...**
   The Recode into Different Variables: Old and New Values dialog box will appear.
10. In the Old Value section click on the circle next to **Range: _____ through _____**
    Your cursor should be in the first box.
11. Type **0** in the first box
12. Press <**Tab**> and type **10** in the second box.
13. Press <**Tab**> **twice.**
    *Your cursor will now be in the box next to **Value:** in the **New Value** section.*

14. Type **1** for the value of the first category.
15. Click once on **Add**
16. Click on the first box after **Range:** and repeat steps 11 through 16 to recode ages **11 thru 19** to **2** and ages **20 thru 60** to **3.**
17. To recode ages **61** and up to **4,** click on the circle next to **Range: ____ through highest**
18. Enter **61** in the box and repeat steps 14 and 15 using 4 for the value.
19. Click on **Continue**
20. Click on **Paste**
21. Select the following text in the Syntax Editor .

```
RECODE
  ca3
  (0 thru 10=1)(11 thru 19=2)(20 thru 60=3)(61 thru
       Highest=4)INTO
  age_gp .
VARIABLE LABELS age_gp 'age group'.
EXECUTE .
```

22. Run the selected commands.

Recode changes the values for **age_gp** to the codes we want to use—1, 2, 3, and 4. We will switch to the Data Editor to look that the changes were made.

To switch to the Data Editor window (*we will use a different method than we used earlier*):

1. Click on **Window** from the menu and select ***c-q1a.sav [c_q1a] - SPSS Data Editor**.
2. Scroll through the Data Editor using the scroll bars.

SPSS's standard format for displaying a numeric variable includes two decimal places, which is inappropriate for a variable which will always contain an integer value. To change the display format of **age_gp** to the same format as our other variables, one method is to go to the **Variable View** window to make the changes manually.

1. Switch to the Data Editor window if you are not already there.
2. Select the Variable View tab from the bottom left.
3. The variable **age_gp** is on line 12 .
4. First, in the cell under the Decimal column, type 0.
5. Second, in the cell under the Width column, type 1.

These changes tell SPSS for Windows to display **age_gp** with a width of 1 digit with no decimal places. This procedure can also be done with syntax, which we highly recommend. Should you need to rerun your syntax, the formatting will be done with the syntax file.

FORMATS command

Switch to the Syntax Editor. At the end of the commands, type the following:

```
FORMATS age_gp (F1.0).
```

Now the command is in the syntax and it not required that you manually change the format. In the parentheses F stands for fixed. 1 is equal to the width display, and 0 is the number of decimals. To learn about other

formats, place your cursor in the formats command and click on the tool  .

When you Recode into a new variable, it does not have *Value Labels*. The statistical output from SPSS always includes the names of the variables being analyzed, but sometimes the name of a variable does not tell us as much as we would like to know.

> *Note: with SPSS 13 and later, variable names are no longer limited to 8 characters. However, if you share your data files and syntax with someone who is using an earlier version of SPSS, that person will not be able to open the data files or run the syntax if you use longer variable names.*

Variable Labels command

Names of variables may not be descriptive enough for us to remember the complete question from the questionnaire (e.g. the variable **ca1** is work on a farm or not). The name also does not tell us what the individual values of a categorical variable refer to (e.g.**ca4** is sex and a value of 1 indicate man and 2 indicates woman) . To make the output more understandable, we add *Variable Labels* and *Value Labels*. To avoid confusion and mistakes, you should always add labels for any computed variable that you are going to save for later use. The best time to add labels is immediately after you create the new variable, because if you postpone it, you may forget. The **Recode** command facilitates this by allowing you to add the **Variable Label** when you do the recode.

The command format is:

VARIABLE LABELS var1 'label associated with var1'.

Value Labels command

Adding value labels cannot be done from the menus. To add the **Value Labels** use the following steps:

1. Switch to the Data Editor and click on the tab for *Variable View*
2. In the box in the **Label** column for the variable **age_gp**, you should see the text "Age Group" because it was included in the command.
3. If there is no text in the Label: box, enter the text "Age Group" there.
4. Go to box for **age_gp** in the Values column, where it says "None".
5. Click on the small gray box  once to enter the Value Labels dialog box.
6. Type **1** in the Value box, hit <Tab> to move to the Value Labels box and type **0 to 10** in that box.
7. Click on **Add**

   You will have noticed there are two other options available as well,
   Remove *to delete a value and value label set, and*
   Change *to modify the label for a specific value.*

8. Repeat steps 6 and 7 using the following information:
   Value: Value Label:
   2 **11 to 19**
   3 **20 to 60**
   4 **61 and older**
9. Click on **OK**
10. Click to the Data View tab to look at the variable. **age_gp** is now displayed as a single digit when value labels are off and value labels should show when value labels are on.
11. Select **Variables...** from the **Utilities** menu.
12. Click on **age_gp** to verify the changes you just made.
13. Click on **Close** when you are finished.

This new variable is not yet part of the data file stored on disk. We must save the file in order for this variable to be included permanently. It is a good practice to save a file under a different name to preserve the original data file. For this reason we will use the **Save As** command from the **File** menu with the new file name **Q1A-AGE.SAV**.

1. Make sure you are in the Data Editor window (the active window).
2. From the **File** menu select **Save As...**
   The cursor should be in the box under File name: *above the Save as type: SPSS (*.SAV) drop-down box. Typing while that area is highlighted will wipe out the current text.*
3. Type **q1a-age** (The .sav extension will be added automatically.)
4. **Paste,** switch to the Syntax Editor and run the command.

Now each time the data file Q1A-AGE.SAV is opened, the **age_gp** variable will be included.

You might want to analyze this new categorical variable using the Crosstabs command to determine how many people in each age group are heads of households, spouses, or children.

1. Use **Analyze...Descriptive Statistics... Crosstabs**... from the menus.
2. Use **age_gp** for Rows and **ca2** (relation to head) for Columns.
3. Check the proper selections in the Cells choices at the bottom, for we want both Row and Column percentages.
4. **Paste** the command, switch and run it.

From the output, you can see that 12% of heads of households are 61 years of age or older. Also, that of the people 61 years or older, 83.7% are heads of households.

Compare the information you obtained from this **Crosstabs** analysis with the information from the **Compare Means** command performed on **ca3** (age) earlier. To do this, we will explore SPSS's ability to switch between the Syntax, Viewer,

and Data windows.

To switch to the Viewer:

1. From the **Window** menu select Session1 - SPSS Viewer
2. Scroll back through the window with the scroll bars.
3. Find the Crosstabs table and compare with the Compare Means table.

To switch to the Syntax Editor:

1. From the **Window** menu select Session1 - SPSS Syntax Editor.
2. Scroll through the window with the scroll bars.

To switch to the Data Editor:

1. From the **Window** menu select q1a - SPSS Data Editor.
2. Scroll through the window with the scroll bars.

Please note it is also possible to switch from one window to another by clicking on the SPSS icons in the Windows taskbar, found by default at the bottom of the screen (the taskbar may be moved to any side of the screen).

Apply what you have learned about data transformations and descriptive statistics by doing the following exercise.

Exercise 1.2:

Using the Household Data and Questionnaire (available in Annex 2), find out the number of households in each district that have 1-4, 5-7, and more than 7 persons per household.

Hints:
a. Use the file C-HH.SAV.
b. Recode **h1** into **hhsize** using the following groups:
(1 thru 4) (5 thru 7)
(8 thru Highest).
c. Add a variable label and value labels.
d. Run **Crosstabs** on this variable by **district**.

hhsize Household groups * district DISTRICT Crosstabulation

			district DISTRICT			
			1 MONAPO	2 RIBAUE	3 ANGOCHE	Total
hhsize Household groups	1 1 thru 4	Count	65	48	74	187
		% within hhsize Household groups	34.8%	25.7%	39.6%	100.0%
		% within district DISTRICT	60.7%	40.3%	64.3%	54.8%
		% of Total	19.1%	14.1%	21.7%	54.8%
	2 5 thru 7	Count	39	56	36	131
		% within hhsize Household groups	29.8%	42.7%	27.5%	100.0%
		% within district DISTRICT	36.4%	47.1%	31.3%	38.4%
		% of Total	11.4%	16.4%	10.6%	38.4%
	3 8 thorugh highest	Count	3	15	5	23
		% within hhsize Household groups	13.0%	65.2%	21.7%	100.0%
		% within district DISTRICT	2.8%	12.6%	4.3%	6.7%
		% of Total	.9%	4.4%	1.5%	6.7%
Total		Count	107	119	115	341
		% within hhsize Household groups	31.4%	34.9%	33.7%	100.0%
		% within district DISTRICT	100.0%	100.0%	100.0%	100.0%
		% of Total	31.4%	34.9%	33.7%	100.0%

Looking at the results, for group 1 (households with a member size from 1 to 4) 34.8% are in Monapo, 25.7% in Ribaue and 39.6% in Angoche (row percents). In the district, Monapo, 60.7% of all households have 1 to 4 members in a household,, 36.4% have 5 to 7 members and 2.8% have 8 or more members..

Before exiting SPSS for Windows we should save the contents of the Viewer. The output window contains all of the command and the results of these commands. It is useful to keep this output in a file so you can review it later, print it or include it in a report.

1. Make the Viewer the active window using its icon in the Windows taskbar.
2 From the **File** menu select **Save As...**
3 Enter the filename **session1**
   The .spo extension will be added to the name automatically.
4. Click on ***Save***

To exit SPSS for Windows, switch to the Data Editor:

1. From the **File** menu select **Exit**
2. A dialog box will prompt you to save the contents of Syntax Editor . Click on ***Yes***
3. A dialog box will prompt you to save the contents of C:\docs\sample\c-hh.sav. Click **No**
   SPSS for Windows will close.

SPSS for Windows SAMPLE SESSION
SECTION 2 - Restructuring Data Files - Table Lookup & Aggregation

Introduction

For some types of analysis the data files may need to be restructured to a different level. The data from the four questionnaires—household, member, production and sales—are in four separate data files because the data are at different levels. The household data is at the most general, or highest, level - one case per household. The other three files contain more detailed data, which is usually thought of as being at a lower level - there are multiple cases per household. If you are not familiar with the concept of levels of data, read "Computer Analysis of Survey Data -- File Organization for Multi-Level Data" by Chris Wolf, before continuing on with this section. See Annex 3.

The analysis we did in Section 1 was done at each level separately, using just the variables in a single file. However, other types of analysis require combining data from more than one file. Let's look at an example.

Suppose we want to create a table of calories per adult equivalent produced per day from the principal food crops harvested. Furthermore, we want to see how this varies by district and calorie-production quartile.

TABLE:1 Food Production in calories per adult equivalent per day

	Calorie Production Quartile			
Districts	1	2	3	4
Monapo				
Ribaue				
Angoche				

The data in their current form cannot answer the question; therefore, many transformations are required to produce this table. This is a typical example of the complications you will encounter in real-world data analysis. This entire section will be devoted toward the goal of creating this table.

To begin, let's first take a look at the files that we have and at the variables we need to use from each of these:

- C-Q1A.SAV: This file contains data on household member characteristics. It is at the household-member level. We need to use the variables **ca3** (age) and **ca4** (sex) in this exercise to compute the number of adult equivalents per household.
- C-Q4.SAV: This file contains data on crops produced by the household. The variables we need to calculate the total production of the household are:

    a. **prod** - contains the codes for the agricultural crop produced.
    b. **p1a** - contains the codes for the unit in which the production was measured (100 kg sack, 50 kg sack, etc).
    c. **p1b** - contains the number of units produced this year.

Note that the unit of production is not a standard unit for each crop. For example, a "100 kg sack", as the term is used in Mozambique, weighs 100 kgs only when the sack is filled with corn. When it is filled with manioc root, it weighs much less than 100 kg. Thus, we need *conversion factors* to be able to convert each of the units in which production was actually measured to our standard unit, which is the kilogram.

- CONVER.SAV: This is a *table-lookup file*. This file was created specifically to handle the problem of converting non-standard units to a standard unit. For each product-unit combination there is a conversion factor to convert the measurement to equal the weight in kilograms. In other words, there is a different conversion factor for each product-unit combination. For example, the conversion factor for a 50 kg sack of rice is 53; for a 50 kg sack of cotton it is 17.5, while a 50 kg sack of manioc root is 33.33. The variables in this file are:
    a. **prod** - product (crop) code
    b. **unit** - unit of measure
    c. **conver** - conversion factor (equal to the number of actual kilograms for the combination of **prod** and **unit**)

Below, a sample of data from CONVER.SAV shows that

rice (**prod**=7) measured in a 20 liter can (**unit**=8) weighs 19 kg;
rice (**prod**=7) measured in a 50 kg bag (**unit**=24) weighs 53 kg;
beans (**prod**=30) measured in a 20 liter can weighs 17 kg;
beans (**prod**=30) measured in a 50 kg bag weighs 47 kg.

prod (Product)	**unit** (unit)	**conver** (conversion factor)
...	...	...
7	8	19
7	24	53
...	...	...
30	8	17
30	24	47
...	...	...

- CALORIES.SAV: This also is a *table-lookup file*, created for convert kilograms of food into calories of food. It contains two variables:

    a. **prod** - the product (crop)
    b. **calories** - number of calories per kilogram of each of the crops

With this information in hand, we can now think about the specific steps we must take to create the table we want. Logically, there are three steps:

1. We need to know how many calories each household produced for the year. We can generate a file with this information using data we have stored in three places—the production file, C-Q4.SAV, and two table-lookup files, CONVER.SAV and CALORIES.SAV.
2. We need to know how many adult equivalents are in each household. We can generate a file with this information using data from the member file, C-Q1A.SAV.
3. We need to combine the results from steps 1 and 2 into one file so we can compute calories produced per adult equivalent per day.

Step 1: Generate a household level file containing the number of calories produced per household.

In executing this step, we must keep three things firmly in mind.

First, all production is currently measured in non-standard units. The weight is different for each product. Thus, we must first convert all production into kilograms.

Second, we want to know calories produced by each household, not kilograms. After converting all production to kilograms, we must convert it into calories.

Third, an examination of file shows that we have data for each product produced by the household. But we want to know the total calories produced by the household for specific food crops, not the total calories from each separate product. After we convert all production to calories, we must select those crops and then sum the calories within each household to arrive at the household total.

This tutorial assumes that no data files are open at this point. The Data Editor has no data.

With these points firmly in mind, let's begin by opening C-Q4.SAV.

1. Select **File** / **Open / Data...**
2. Select the file name c-q4.sav
3. Paste the command
4. Change the dataset name to "c_q4" and run the two commands.
   Remember to block both commands.

First we want to convert all production of the crops into kilograms. To find the conversion factor appropriate for each case in the production file (C-Q4.SAV), we need to look up the product and unit in the CONVER.SAV file. We will add a variable to the active file where each case has both the data from the production file and a variable containing the conversion factor for that product-unit combination.

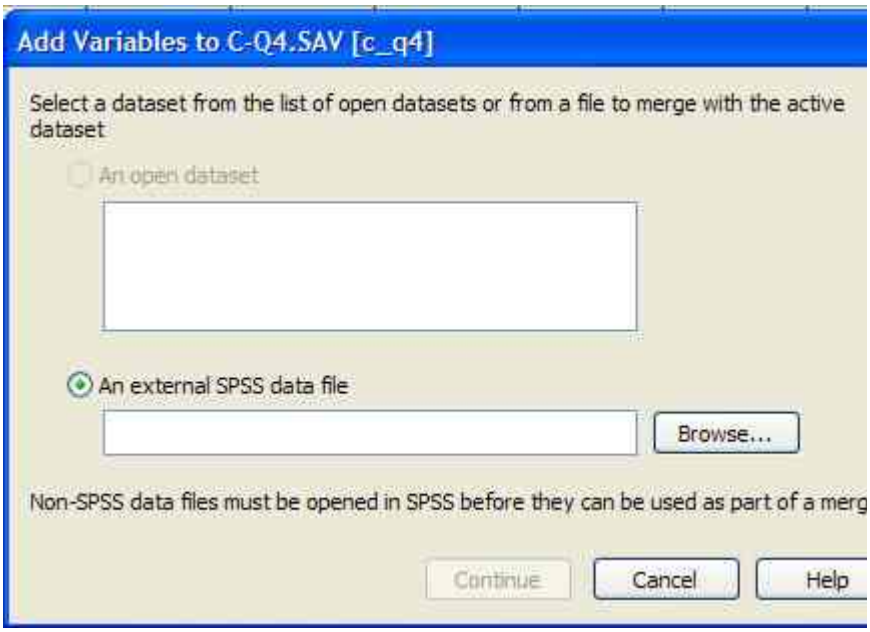
The input files for a merge must be sorted by the key matching variable(s). (K*ey variables are the variables you are using to match the cases between the files.*) Since we have a unique conversion factor for each product-unit combination, both our product variable and our unit variable are key variables. The CONVER.SAV file is already sorted by **prod** and **unit**. We must sort the file we have open (the production file) the same way, while taking account of the fact that the unit variable is named **p1a** and not **unit**. To sort the cases:

1. From the **Data** menu select **Sort Cases...**
   The Sort Cases *dialog box will come up.*
2. Select **prod** and click on ▶ to move it into the Sort by: box.
3. Select **p1a** and click on ▶ to move it into the Sort by: box.
4. Paste and run the command.

Merge files –file-table lookup merge

The files are now ready to be merged. **Merge Files** requires at least two files as input. In this case, the two files are the working data file and CONVER.SAV. We are doing a "File - Table" merge where the second file is our "Lookup Table". The variable we are adding from the CONVER.SAV file will be placed at the end of the active dataset with this command .

1. From the **Data** menu select **Merge Files**, then select **Add Variables...**
   The Add Variables to C-Q4.SAV [c_q4]: *dialog box will open. We have no other open datasets so the default is to use an external SPSS data file. This dialog box is new to SPSS 15 where it is possible to load more than one file into memory. If the file you want to use is in memory, you could select it from the "An open dataset" box. The file must have a "dataset name".*



2. Click on the radio button next to An external SPSS data file. Click on the **Browse** button to select the file conver.sav
3. Click on **Open** .
4. Click on **Continue .**

The variables used to match cases must have the same names. We must select **unit** from the "New Active Dataset" and move it into the box for Excluded Variables. We will rename it to **p1a** to match the variable name in the production file that contains the unit of measure.

5. Select **unit** from the list under New Active Dataset: and click on ◄
6. Click on **Rename**...
   This will allow you to rename **unit** *to* **p1a** *to match the working data file name for this variable.*
7. Next to New Name: type **p1a**
8. Click on **Continue**

We cannot select the variables to match by until we select how we want to match cases.

9. Check the box ✓ next to Match cases on key variables in sorted files
10. Click on radio button next to Non-active dataset is keyed table
11. Select **prod** from the Excluded Variables: list

12. Click on ▶ next to Key Variables: (bottom, right)

13. Repeat steps 11 and 12 for **unit -> p1a**
    Note that the variable "unit" no longer exists, it has been renamed to p1a.
14. Paste the command
    A warning will come up telling you the data files must be sorted. Since we have sorted the files...
15. Click on **OK**
    A dialog box will ask you if you want to save the contents of the data *window. We do not want to save it, the new file can take its place, so...*
16. Click on **NO**
17. Select and run the command. Be sure to include the **EXECUTE** command.

The above steps tell SPSS to merge the active data file (active in your Data Editor window) and the CONVER.SAV file, (using CONVER.SAV as a table lookup) to add the *conver* variable to our active data file. Since the key variables need to have the same names in both files we renamed **unit** (the variable from the conversion file) to match the name in our working dataset **p1a** .

Key Variables are required in a Merge where one of the files is being used as a keyed table. Our key variables specify doing the lookup by product and p1a, because we have a different conversion factor for each product-p1a (or unit) combination. If we had used only **prod**, SPSS would expect each product to have only a single conversion factor, regardless of the unit of measurement used. For example, it would expect the same conversion factor for rice whether it was in a 100 kg bag or a 20 liter can. This would be incorrect.

The active dataset now contains the needed conversion factor variable, **conver**. For every product-unit combination, **conver** contains the value required to convert the quantity harvested to kilograms. It is always important to verify if the merge was successfully completed. Switch to the Viewer, if you are not there, and check the LOG for error messages. If there is an error message, the merge was not done correctly. Return to the Data Editor and look at some cases to verify that the conversion factors match the products. For example, a 20-liter can when filled with maize grain actually has 18 kilograms of maize grain, thus check to see that when PROD=47 and UNIT=8, CONVER=18.

CAUTION: You can only run a Merge (MATCH FILES) command once. If the merge did not work, generally, you must open the original data file, and run all the commands up to the merge command, fix the problem with the merge command and then run the merge.

COMPUTE command

We can now calculate total kilograms produced by multiplying the number of units harvested (**p1b**) by this conversion factor.

1. From the **Transform** menu select **Compute Variable...**
2. Under Target Variable: enter **qprod_tt** (for total quantity of production in kg)
3. Click on **Type & Label** to add a label for **qprod_tt**. Click on the radio button next to "**Use expression as label**", then select

Continue .

4. From the list on the left of the Compute Variable window, select **p1b** and click on ▶ to put it in the right hand window, the numeric expression box.
5. Type * or select the button in the dialog box to add the multiplier sign next to **p1b**.
6. From the list on the left select **conver** and click on ▶
7. Paste, select and run the command.

Switch to the Data Editor and scroll to the right to the end of the variables to find the new variable, which is always added at the end of the file. Look to be sure you see numbers in this new variable. If you only see periods, you have forgotten to include the "**EXECUTE**." command when you blocked the syntax. You can check by looking in the message area at the bottom right of the Data Editor. If you see "**Transformations Pending**", you need to run the "**EXECUTE**" command.

Next, we need to look up how many calories per kilogram each product contains. This information is in the table-lookup file CALORIES.SAV. This file has two variables—product and number of calories per kilogram. The key variable is product (prod). To add the calorie conversion variable to the active data file we need to do another merge with keyed table lookup. This time the key variable only needs to be the product variable. The data file has already been sorted by product (see the previous merge), so we don't need to sort it again.

1. From the **Data** menu select **Merge Files** then **Add Variables...**
2. Click on the radio button next to An external SPSS data file. Click on the **Browse** button to select the file calories.sav
3. Click on **Open** .
4. Click on **Continue** .
5. Check the box ✓ next to Match cases on key variables in sorted files
6. Click on radio button next to Non-active dataset is keyed table
7. Select **prod** from the Excluded Variables: list
8. Click on ▶ next to Key Variables: (bottom, right)
9. Paste the command
10. Clear the warnings as necessary
11. Select and run the command

The dataset now contains the needed calorie variable, **calories**; check the output to be sure there are no error messages and check to see that the variable exists at the end of the dataset. Some products do not have any calories, so you should expect to see missing values. Maize grain (PROD=47) should have 3590 calories per kilogram in the **calories** variable. We are now ready to compute total calories produced.

1. Use **Transform** / **Compute...**
2. Use **cprod_tt** as the Target Variable: (for total calories produced)
3. Click on **Type & Label** to add a label for **cprod_tt** here, then select

Continue .

4. Click in the Numeric Expression box and enter this equation
   qprod_tt * calories
5. Paste, select and run the command

SELECT IF command

We now have a variable that contains the total calories produced per product for each household. We are only interested in the seven staple food crops:

(prod=5) peanuts,
(prod=6) rice,
(prod=30) nhemba bean,
(prod=31) manteiga bean,
(prod=41) manioc,
(prod=44) sorghum, and
(prod=47) maize

We can find these product code by looking at **prod** in the questionnaire. Since we are only interested in those products, we can filter for just those cases. To make only these cases active we use the command **Select Cases**.

Select Cases selects a subset of the cases based on particular criteria. **Select Cases** can either filter out the unselected cases or delete the unselected cases.

If you delete the unselected cases you can return to the original file as long as you do not save the current working file under the same name as the original file.

If you turn a filter on (which we will be doing because it is a safer method) you can always turn the filter off to make the whole dataset available for further analysis.

1. From the Date Editor window, select **Data** / **Select Cases**
   You should see the Select Cases *dialog box.*
2. Select the radio button next to If condition is satisfied
3. Click on **If...** under If condition is satisfied
4. Click **in** the box, to the right of ▶ , **not** on the button itself .
5. Enter the following text (without hard returns):
   PROD = 5 | PROD = 6 | PROD = 30 | PROD = 31 | PROD = 41 | PROD = 44 | PROD = 47
   The "|" is a symbol for the word OR. We are telling SPSS to select all cases with **prod** = *47 or* **prod** = 30 *or* **prod** = 31...
6. Click on **Continue**
7. Under the OUTPUT section of the dialog box, the radio button next to Filter out unselected cases should already be selected.
8. **Paste** the command
9. Select the text (highlight it) in the Syntax Editor from the line with **USE ALL** to the line with **EXECUTE** and run the command.

```
*selecting only staple products.
USE ALL.
COMPUTE filter_$=(prod = 5 | prod = 6 | prod = 30 | prod = 31 | prod = 41 |
prod = 44 | prod  = 47).
```

```
VARIABLE LABEL filter_$ 'prod = 5 | prod = 6 | prod = 30 | prod = 31 | prod =
41 | prod = 44 | prod  = 47  (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
```

SPSS creates a variable called filter_$ which contains values of 0 and 1. 0 = not selected, 1 = selected. Those cases with a 0 will have a slash in the case number column at the left.

NOTE: SPSS 15 has provided a new choice to the output section of the **Select Cases** command. You can choose to copy the selected cases to a new dataset.

Only cases with these product codes will now be used for all active commands. Note that the filter command does not affect any COMPUTE statements (passive command). All cases will be used with a COMPUTE command, even if the filter has been set. This subset of the data will be in effect for analysis until we turn the filter off. To turn the filter off, you would choose **Data / Select Cases / All cases** (unfilter the cases).

We are now ready to calculate the total calories produced per household for these specific staple food products. To do this, we need to sum, for each household, the values of **cprod_tt** for all of the food crops the household produced. In other words, we need to create a new household level file from the current household-product level file which will contain only one case per household. SPSS uses the term "AGGREGATE" to collapse the number of cases at one level to a new higher level. We will sum all the cases for household to one case for household.

AGGREGATE command

To create the new household-level file, we use **Aggregate**. **Aggregate** will create a new data file with one case per household where the variable **cprod_tt** is summed across the products for each household.

1. From the **Data** menu select **Aggregate...**
   The Aggregate Data *window will appear.*
2. Select **district**, **vil**, and **hh,** respectively, for the Break Variable(s):
3. Select **cprod_tt** from the left hand side list of variable and move it to the Summaries of Variables(s): box
4. The default function is to compute a mean. We want to sum the values. We must change the function. Click on **Function...**
5. Under "Summary Statistics", click on the radio button next to Sum and click on **Continue**
6. Click on **Name & Label...**
7. Change the default name **cprod_tt_sum** *to* **cprod_tt**
8. Enter the label: Calories Produced in Staple Foods
9. Click on **Continue**
10. In the "**Save**" section of the dialog box, select the radio button next to Create a new dataset containing only the aggregated variables. In the "dataset name" box, type hh_file1
11. Paste the command.
    In the Syntax Editor *you see the commands:*

```
DATASET DECLARE hh_file1.
AGGREGATE
  /OUTFILE='hh_file1'
  /BREAK=district vil hh
  /cprod_tt 'Calories Produced in Staple Foods'
= SUM(cprod_tt).

These two commands are required.  The "dataset
declare" command creates a new dataset called
hh_file1.  The "aggregate" command places the
new data in the new dataset.
```

12. Block both commands and run.

The Break Variable(s) specify the variables to be used for combining cases in the aggregated file. Any cases from the original file that have identical values for all of the break variables will be combined into a single case in the aggregated file. We want the aggregated file to have one case per household, so we use the variables that identify a household in our survey—**district**, **vil**, and **hh**.

Aggregate Variable(s) creates a new variable **cprod_tt**, which we calculate by summing **cprod_tt**, total calories produced, across all cases (the different food crops) for each household. The only variables which are contained in an aggregated file are the break variables and any new aggregated variables created (e.g. **cprod_tt**).

The original file we started with (C-Q4.sav [c_q4]) is still loaded in memory. That is our default active dataset. In the taskbar, you can see it has a green plus on the icon. There is another dataset that also now open, the aggregated dataset. If we select that dataset, using the task bar, we will see the new file. The graphic below is an example of the taskbar. The first icon is the Output Viewer, the second is the active dataset (which has the green plus), the third is the Syntax Editor, the fourth is the new dataset which is *untitled2.... The *untitled2 is our new aggregated file. Click on that icon to view the new dataset.

It will become our active dataset (note the green plus is now on this icon and also in the title bar). In brackets you will see the dataset name (hh_file1). This dataset has not yet been saved to disk, which is why we see *Untitled2 in the title bar – this dataset only has a dataset name (hh_file1) to permit SPSS to reference it to distinguish it from the other dataset which is open. *Untitled2 is the temporary data file name.

The new dataset contains the variables we need for our analysis: total number of calories from staple foods produced per household, plus the key variables to identify a household (district, vil, hh). There should be only one case per set of key variables.

Let's look at the aggregated variable. Run a **Descriptives** on **cprod_tt**. You should find that the average number of calories produced per household per year is 4,483,964.7. Look at the LOG file in the Viewer. You should see the following:

```
DATASET ACTIVATE hh_file1.
DESCRIPTIVES
  VARIABLES=cprod_tt
  /STATISTICS=MEAN STDDEV MIN MAX .
```

SPSS inserted a command to make the new dataset the active dataset. (DATASET ACTIVATE hh_file1.)

IMPORTANT NOTE: You must copy this command into your syntax file for the syntax to work correctly if you want to rerun all the syntax commands.

We want to save this dataset using the **Save As...** from the **File** menu.

1. Be sure that the green plus sign is in the title bar of this dataset with a name of hh_file1.
   If this dataset does not have the green plus, you will be saving the c_q4.sav file to a new name.
2. Select **Save As...** from the **File** menu
3. Name the file **hh-file1**
4. Paste and run the command.

We want to close the production file (C-Q4.sav). Its dataset name is "DataSet1". In the Syntax Editor, type

DATASET CLOSE c_q4.

And run this command. C-Q4.SAV should no longer be an open dataset in SPSS. You should have only one dataset open with a dataset name of hh_file1.

Step 2: Generate a household level file containing the number of adult equivalents per household.

The data needed to calculate adult equivalents per household is in the member file, C-Q1A.SAV.

1. Click on the open folder button  on the SPSS Data Editor Toolbar
2. Select the file name c-q1a.sav
3. Paste the command, change the dataset name to "c_q1a" and run, blocking both commands.
4. Close down the dataset called hh_file1. Type this command into the syntax file and run it.
   DATASET CLOSE hh_file1.

There should only be one dataset open - the file c-q1a.sav.

The rules we will use to calculating adult equivalents for this survey are:

Males, 10 years and older	= 1.0
Females, 10 to 19 years old	= 0.84
Females, 20 years and older	= 0.72
Children, under 10 years old	= 0.60

The adult equivalents are indicating what percent of a standard calorie load is needed to sustain a person. For example, males 10 years and older need 100% of the calories. A female 10 to 19 years old needs only 84% as many calories as a male 10 years or older, and children under 10 need only 60% as many calories

as the typical male 10 years and older. For each person (case) in the member file we need to look at sex, **ca4**, and age, **ca3**, to calculate the adult equivalent for that person.

COMPUTE / IF command

The command **Compute... / If...** allows us to do this. The adult equivalent variable to be created is **ae**.

1. From the **Transform** menu select **Compute Variable...**
   The Compute Variable *window will appear.*
2. For the Target Variable: enter **ae**
3. Select the **Type & Label** button and enter Adult equivalent for the Label. Click on **Continue**
3. In the Numeric Expression: box enter a **1**
4. Click on the **If...** button.
5. Select the radio button for "Include if case satisfies condition:"
6. Enter the statement **ca4 = 1 & ca3 >= 10**
7. Click on **Continue**
8. Paste the command but don't run it yet.
9. Repeat steps 1, and 3-8 replacing the previous information with the following.

You are not obliged to use the menus within SPSS. Once you have a set of commands that you have pasted to the Syntax editor, it becomes much easier at this stage to simply copy and paste the same command within the Syntax editor itself and then changing the variables names. If you prefer to use the menus, follow the steps above.

Numeric Expression	If... Statement
0.84	**ca4 = 2 & (ca3 >= 10 & ca3 <= 19)**
0.72	**ca4 = 2 & ca3 >= 20**
0.6	**ca3 < 10**

10. Select all of the `If` statements and run.

Your syntax should look like this:

```
IF (ca4 = 1 & ca3 >= 10) ae = 1 .
IF (ca4 = 2 & (ca3 >= 10 & ca3 <= 19)) ae = 0.84 .
IF (ca4 = 2 & ca3 >= 20) ae = 0.72 .
IF (ca3 < 10) ae = 0.60 .
VARIABLE LABELS ae 'Adult equivalent' .
EXECUTE .
```

Check the Viewer to be sure there are no error messages in the LOG.

To verify that the new adult equivalent variable, **ae**, has been calculated, display a frequency table for it.

1. Select **Analyze / Descriptive Statistics / Frequencies...**
2. Select **ae**
3. Paste and run

There are 1524 total cases. Also, there should be four values represented in the table —1, .72, .84, and .60— and no missing cases. You can see we have nine missing cases. This tells us that our data file is missing either the age or the sex for nine people. SPSS will not compute a value for a variable if any of the components of the expression are user or system missing. Missing values should have been identified during the cleaning process and noted. At this point a researcher should go back to the original questionnaires to try to fill in the missing data. Since we can't do this, we will use an alternative method.

If we leave these values missing, the size of those households will be smaller than they actually are, which will distort our results somewhat. We could avoid this problem by eliminating the households of those nine individuals from our analysis, but then we can't use the information about the food production from those households. Instead, we will try to make a reasonable assumption about those nine missing adult equivalents. We know that the adult-equivalent values range from a low of 0.6 for children to a high of 1.0 for adult males, which is not a very wide range. To find out the average adult-equivalent value for our sample...

1. **Analyze / Descriptive Statistics / Descriptives...**
2. Variable to select is **ae**
3. Don't forget to paste before you run the command

The results show that the average value of **ae** for all individuals is .79, with a standard deviation of only 0.17. We will assume that the nine individuals with missing age or sex codes are all "average" individuals, and assign them the adult-equivalent value of .79. (**Warning**: be very cautious about "filling in" missing data. Careless use of this technique can give you misleading results. We are using this as an illustration of SPSS commands, not recommending that you do this routinely to compensate for missing data.)

Recode into the Same Variable

1. **Transform / Recode Into Same Variables...**
   Recode into Same Variables *dialog box will appear.*
2. Move **ae** to Variables:
3. Click on **Old and New Values...**
4. Select the radio button next to System-missing
5. Select Value: in the New Value section and enter **.79** in the box
6. Click on **Add**
7. **Continue**
8. Paste, select and run.

Run a frequencies command to verify the change. You can type the command in the syntax editor and run it from there. SPSS does not require the full command to be typed. Generally only 3 letters are required. In this instance "FRE" is sufficient.

FRE ae.

AGGREGATE command

Now we need to calculate the total number of adult equivalents for each household. The current file is at the member level; however, the values we need should be at the household level. Again we use **Aggregate** to collapse the data from the member level to the household level. A new variable, **ae_tt**, will be calculated by summing **ae** across all members of a household.

1. From the **Data** menu select **Aggregate...**
2. Move **district**, **vil**, and **hh** to Break Variable(s):
3. Move **ae** to Aggregate Variable(s):
4. Click on **Name & Label...**
5. In the Name: box enter **ae_tt**
6. In the Label: box enter **Adult Equivalents** and click on **Continue**
7. Click on the **Function...** to change the function to sum.
8. Select Sum and click on **Continue**
9. In the "**Save**" section of the dialog box, select the radio button next to Create a new dataset containing only the aggregated variables. In the "dataset name" box, type hh_file2
10. Paste the command.

```
In the Syntax Editor you see the commands:

DATASET DECLARE hh_file2.
AGGREGATE
  /OUTFILE='hh_file2'
  /BREAK=district vil hh
  /ae_tt 'Adult eduivalents' = SUM(ae).

These two commands are required.  The "dataset
declare" command creates a new dataset called
hh_file2.  The "aggregate" command places the
new data in the new dataset.
```

11. Block both commands and run.

The original file we started with (C-Q1A.sav [c_q1a] is still loaded. That is our default active dataset. In the taskbar, you can see it has a green plus on the icon. There is another dataset that also now open, the aggregated dataset. If we select that dataset with a dataset name of hh_file2, we will see the new file of adult equivalents with one case per household.

The variable **ae_tt** is the total adult equivalents for that household. Run a **Descriptives** on **ae_tt**.

1. **Analyze / Descriptive Statistics / Descriptives...**
2. Variable to select is **ae_tt**
3. Paste and run.

You should find that the average adult equivalent over all households is 3.49.

Look at the LOG file in the Viewer. You should see the following:

```
DATASET ACTIVATE hh_file2.
DESCRIPTIVES
  VARIABLES=ae_tt
  /STATISTICS=MEAN STDDEV MIN MAX .
```

SPSS inserted a command to make the new dataset the active dataset. (DATASET ACTIVATE hh_file2.)

IMPORTANT NOTE: You must copy this command into your syntax file for the syntax to work correctly if you want to run all the syntax commands.

This completes step 2. Save this file to disk as HH-FILE2.SAV.

1. Be sure that the green plus sign is in the title bar of this new dataset.
   If this dataset does not have the green plus, you will be saving the c_q1a.sav file to a new name.
2. **File / Save As...**
3. Filename hh-file2
4. Paste and run.

Step 3: We need to join the two files created in steps 1 & 2 together in order to compute calories produced per adult equivalent.

Now we have HH-FILE1.SAV containing the calorie-production data for all households, and we have HH-FILE2.SAV containing the adult-equivalent data for all households. We need to combine these files household by household to get both sets of data in a single file. To do this, we use **Merge Files**, but this time neither of the files are keyed tables.

We noted earlier that key variables are required for any merge that includes a keyed table lookup. When you're joining two files at the same level, as we're about to do, it may not seem important to include key variables, but it is. The key variables determine which cases are to be combined.

Merge files –file-file merge

*You should never use **Merge Files** without Key Variables because without them you have no guarantee that SPSS will combine the right cases. The command will execute without any warnings or error messages, but the results may be incorrect.*

Note: hh-file2.sav is still the working file. We should close the other dataset that is open (C-Q1A.sav).

Type in the Syntax Editor, the following:

```
DATASET CLOSE c_q1a.
```

You are now ready to merge the two household level files.

1. **Data / Merge Files / Add Variables...**
2. Click on the radio button next to An external SPSS data file. Click on the **Browse** button to select the file hh-file1.sav
3. Click on **Open** .
4. Click on **Continue** .
5. Check the box ✓ next to Match cases on key variables in sorted files
6. Click on the radio button next to Both files provide cases
7. Key Variables: are **district**, **vil**, and **hh** respectively
8. Paste, clear warning, select both commands and run.

Merge Files added the variable for total calories to the active dataset. The two variables you need to compute calories produced per adult equivalent are now in the same file; the title bar still indicates the name of the data file is hh_file2.sav with a dataset name of [hh_file2].

Total calories produced (**cprod_tt**) per household for the year divided by total adult equivalents per household (**ae_tt**) divided by 365 days per year gives us calories produced per adult equivalent per day (**cprod_ae**).

1. **Transform / Compute...**
2. Target Variable: **cprod_ae**
3. **Type & Label...**
4. Label: **Calories produced per adult equivalent per day**
5. Click on **Continue**
6. Numeric Expression: enter **cprod_tt/ae_tt/365**
7. Paste, select and run

RANK CASES command

Before we can produce the table we want, we have to create one more variable, denoting which calorie-production quartile each household falls in within their district. **Rank Cases** can do this for us. **Rank Cases** computes a new variable, showing how each case ranks within a group according to the value of another variable. In this case, we want to classify each household by how it ranks within its district in terms of calories produced per adult equivalent per day. Specifically, for each district, we want to break the households into four groups of equal size (quartiles), from lowest to highest calorie production. A new variable containing values from 1 to 4 will indicate to which quartile each household belongs.

1. **Transform / Rank Cases...**
2. Move **cprod_ae** to Variable(s):
3. Move **district** to By:
4. Click on **Rank Types...**
5. Remove the check mark next to Rank
6. Select Ntiles: 4
7. **Continue**
8. Paste and run

*The Viewer should pop up where you can see a table describing the new variable that has been created - **Ncprod_a**.*

The first step was to specify the variable to use for the ranking—in this case **cprod_ae**. Then we need the By variable to specify the variable(s) that define the groups—in this case **district**. **Rank Cases** has a number of different methods of ranking. We're using one of the simplest—/NTILES(4) which tells SPSS to break the variable into quartiles. From this command, SPSS will create a new variable that contain the ntile rankings and generate a name for that variable.

MEANS command

We can now use **Means** to produce the values to fill in our table.

1. **Analyze / Compare Means / Means...**
2. Move **cprod_ae** to Dependent List:
3. Move **ncprod_a** to Independent list: layer 1 of 1
   ncprod_a *came from the* **Rank Cases** *procedure.*
4. Click on **Next**
5. Move **district** to Independent List: layer 2 of 2
6. Paste and run.

You should note that the mean for the entire population is 4,014.518 and the mean for the 2nd quartile in Ribaue is 2,517.455. The output from **Compare**

Means gives you the numbers necessary for the final table, although they are not formatted exactly as we showed the table at the beginning of this section. In Section 3 you will learn how to produce the same results but in a nicer-looking table format.

If you want to remove the count and standard deviation from the output table, you can go back to the command and

7. Click on **Options** , select "number of cases" and "standard deviation" from the "Cell Statistics" box and move them back into the "Statistics" box. Click on **Continue** .
8. Paste and run.

Save this dataset as HH-FILE3.SAV.

1. Make the Data Editor window active
2. **File / Save As...**
3. Filename is hh-file3
4. Paste and run

You should save the contents of the Syntax Editor to a permanent command file for later use.

1. Make the Syntax Editor active
2. **File / Save As...**
3. Use the filename session2
   The .sps extension will be added automatically.

This file now contains all the commands from the Syntax Editor. *Whenever you do any substantial amount of work, you should always save the contents of the Syntax Editor to a command file.* You may have noticed that throughout the Sample Session we could have run the commands by clicking on **OK** instead of **Paste** . Pasting commands into the Syntax Editor and then running them, rather than running them directly, gives you documentation for your work and enables you to run the exact same analysis over again at a future date. Documenting now can save much time and many steps later.

Let's see how you would retrieve the command file you just created. To exit SPSS for Windows:

1. **File / Exit**
   SPSS will prompt you to save the contents of the windows that have not been saved; in this case the Viewer*.*
2. Save the Viewer as session2

Start SPSS for Windows again. To open our command file:

1. **File / Open / Syntax...**
2. Select the file session2.sps
3. **OK**
   The Syntax *window* c:\sample\session2.sps *will be active*

You can then re-execute these same commands or edit them as you wish.

Your SESSION2.SPS should look similar to the listing below, with the exception that documentation comments have been added to this example, using an "*" at the beginning of each comment:

```
*session 2 - Produce table on food production in calories per
  adult equivalent per day in quartitles by district.
*Beaver - January 2007.

GET
  FILE='C:\docs\sample\C-Q4.SAV'.
DATASET NAME c_q4 WINDOW=FRONT.

********Step 1 ********.
*preparing to merge conver file with this file - must sort by matching
  variables.

SORT CASES BY
  prod (A) p1a (A) .
MATCH FILES /FILE=*
 /TABLE='C:\docs\sample\CONVER.SAV'
 /RENAME unit=p1a
 /BY prod p1a.
EXECUTE.

*calculating total quantity produced in kgs.

COMPUTE qprod_tt = conver * p1b .
VARIABLE LABELS qprod_tt 'COMPUTE  qprod_tt = conver * p1b
(COMPUTE)' .
EXECUTE .

*merging in calorie conversion value.

MATCH FILES /FILE=*
 /TABLE='C:\docs\sample\CALORIES.SAV'
 /BY prod.
EXECUTE.

*calculating total calories produced.

COMPUTE cprod_tt = qprod_tt * calories .
VARIABLE LABELS cprod_tt 'COMPUTE cprod_tt = qprod_tt * calories
(COMPUTE)'
  .
EXECUTE .

*setting filter to select only staple foods.

USE ALL.
COMPUTE filter_$=( prod = 5 | prod = 6 | prod = 30 or prod = 31 or prod = 41 or
  or prod = 44 or | prod = 47).
VARIABLE LABEL filter_$ 'prod = 5 | prod = 6 or prod = 30 or prod = 31 or'+
 ' prod = 44 or prod = 44 or prod = 47 (FILTER)'.
VALUE LABELS filter_$  0 'Not Selected' 1 'Selected'.
FORMAT filter_$ (f1.0).
FILTER BY filter_$.
EXECUTE .
```

```
*check to be sure correct products are selected.

FREQUENCIES
  VARIABLES=prod
  /ORDER=  ANALYSIS .

*aggregating to the household level to sum total calories produced.

DATASET DECLARE hh_file1.
AGGREGATE
  /OUTFILE='hh_file1'
  /BREAK=district vil hh
  /cprod_tt 'Calories produced in staple foods' = SUM(cprod_tt).

*verify variable is created and value is reasonable.

DATASET ACTIVATE hh_file1.
DESCRIPTIVES
  VARIABLES=cprod_tt
  /STATISTICS=MEAN STDDEV MIN MAX .

*close other dataset.
DATASET CLOSE c_q4.

*save household level file.

SAVE OUTFILE='C:\docs\sample\hh-file1.sav'
  /COMPRESSED.


**** Step2 - calculate adult equivalents ****.

GET
  FILE='C:\docs\sample\C-Q1A.SAV'.
DATASET NAME c_q1a WINDOW=FRONT.

*close other dataset that is open.
DATASET CLOSE hh_file1.

IF (ca4 = 1 & ca3 >= 10) ae = 1 .
VARIABLE LABELS ae 'Adult equivalent' .
IF (ca4 = 2 & ca3 >= 10 &ca3 <= 19) ae = 0.84 .
IF (ca4 = 2 & ca3 >= 20 ) ae = 0.72 .
IF ( ca3 < 10 ) ae = 0.6 .
EXECUTE .

*checking to see if compute is correct.
list ca4 ca3 ae / cases=20.
freq ae.

*get the mean for the total population.

DESCRIPTIVES
  VARIABLES=ae
  /STATISTICS=MEAN STDDEV MIN MAX .

*replace sysmis with the mean for the total population.

RECODE
  ae  (SYSMIS=.79)  .
```

```
EXECUTE .
freq ae.

*aggregating to the household level summing adult equivalents.

DATASET DECLARE hh_file2.
AGGREGATE
  /OUTFILE='hh_file2
  /BREAK=district vil hh
  /ae_tt 'Adult Equivalents' = SUM(ae).

DATASET ACTIVATE hh_file2.

DESCRIPTIVES
  VARIABLES=ae_tt
  /STATISTICS=MEAN STDDEV MIN MAX .

*close the other dataset.
DATASET CLOSE c_q1a.

SAVE OUTFILE='C:\docs\sample\hh-file2.sav'
  /COMPRESSED.

**** Step 3 - join hh calorie and hh ae together ****.

MATCH FILES /FILE=*
 /FILE='C:\docs\sample\hh-file1.sav'
 /BY district vil hh.
EXECUTE.

* calculate calories produced per adult equivalent per day.

COMPUTE cprod_ae = cprod_tt / ae_tt / 365 .
VARIABLE LABELS cprod_ae 'Calories produced per adult equivalent per day' .
EXECUTE .

RANK
  VARIABLES=cprod_ae  (A) BY district  /NTILES (4) /PRINT=YES
  /TIES=MEAN .

MEANS
  TABLES=cprod_ae  BY ncprod_a  BY district
  /CELLS MEAN COUNT STDDEV  .
MEANS
  TABLES=cprod_ae  BY ncprod_a  BY district
  /CELLS MEAN .

SAVE OUTFILE='C:\docs\sample\hh-file3.sav'
  /COMPRESSED.
```

Exercise 2.1:

Produce similar output using calories retained (production minus sales) instead of calories produced. The table should show calories retained per adult equivalent per day using the same seven food crops. The output should be broken down by district and calorie retention quartile.

Hints:

a. The procedure is very similar to the work that we just completed.

b. Sales come from c-q5.sav.
c. Check the file for the appropriate variable for the quantity of sold production. Note that the product codes are the same as for c-q4.sav. Also check for the variables by which to sort.
d. Retrieve the commands from generating the previous table and check each step for needed changes. There will be changes of product code, file names, and variables.
e. Computing the calories sold involves the same basic steps as computing the calories produced. (Step 1)
f. Merge this newly created file, (the file containing calories sold), with the file containing calories produced, hh-file3.sav.
g. Keep in mind that only 256 households sold products, but all 343 households produced and retained calories. If the calories-sold variable is missing, it means the household did not sell food, so it should be recoded to zero.
h. Compute calories retained = calories produced - calories sold.
i. Rank into quartiles.
j. Use the **Compare Means** command to show calories retained by **district** and **quartile**.
k. Save the data file.
l. Save the contents of the Syntax Editor, from the exercise, to a file.
m. Execute the newly created syntax file, select all and run.

This is an example of the output you should produce:

Report

cret_ae Calories retained per adult equivalence

Ncret_ae NTILES of cret_ae by district	district DISTRICT	Mean	N	Std. Deviation
1	1 MONAPO	1148.0448	27	409.61445
	2 RIBAUE	1232.8030	29	350.22596
	3 ANGOCHE	912.7559	28	384.74681
	Total	1098.8770	84	401.03778
2	1 MONAPO	2211.3833	27	205.71992
	2 RIBAUE	2145.8446	30	202.81580
	3 ANGOCHE	1698.5099	29	168.49973
	Total	2015.5753	86	297.99128
3	1 MONAPO	3314.8568	28	477.12339
	2 RIBAUE	3126.3578	30	329.89358
	3 ANGOCHE	2405.0077	29	336.48560
	Total	2946.5741	87	547.14537
4	1 MONAPO	7619.1018	27	3557.13545
	2 RIBAUE	5759.0391	30	1649.58387
	3 ANGOCHE	4954.7625	29	2426.82446
	Total	6071.8027	86	2821.27091
Total	1 MONAPO	3570.9752	109	3032.69607
	2 RIBAUE	3081.4162	119	1902.73924
	3 ANGOCHE	2506.4982	115	1957.99071
	Total	3044.2336	343	2370.14648

SECTION 3 - Tables & Multiple Response Questions

TABLES

Using **Tables** you can calculate various statistics and present them in a variety of ways that are completely under your control. Unlike other SPSS for Windows procedures, **Tables** allows you to do the following:

1. choose how you want to assemble variables and statistics for display in rows, columns, and layers. (The variables can be stacked or nested. *Stacked* means that the more than one variable can be displayed in the rows below one another or in columns next to each other. *Nested* means that all of the values for one variable are displayed below the individual values of another variable.)

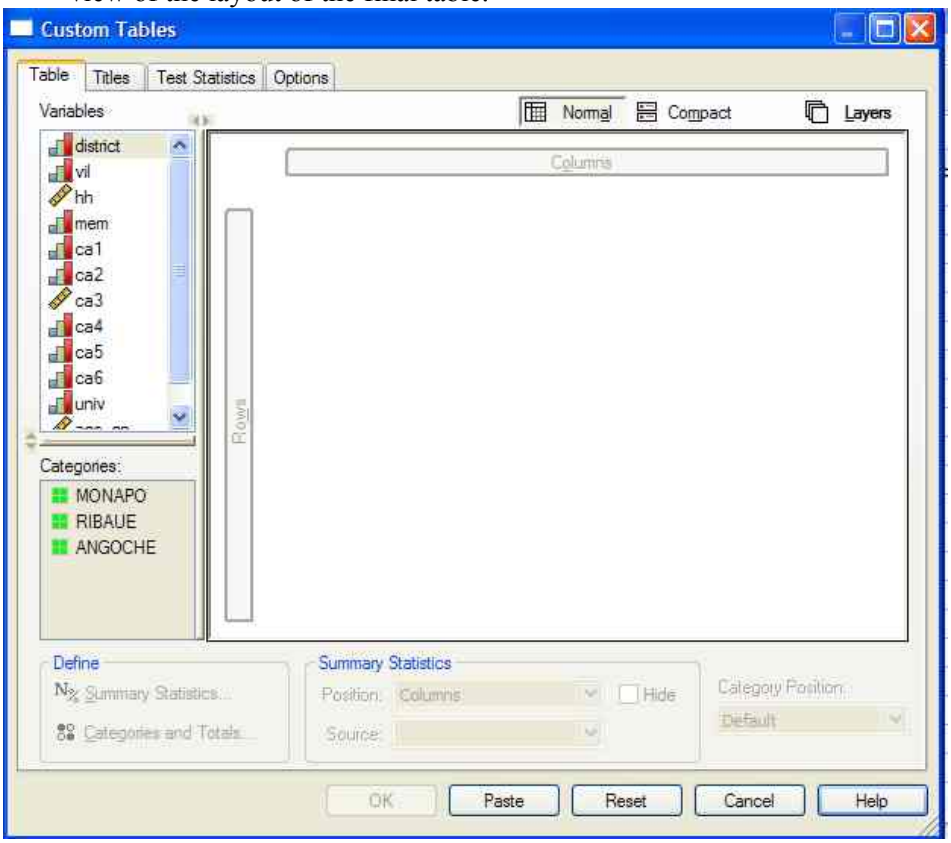
2. manipulate table structure, content, and presentation format.

3. include flexible percentages, specifying the base for the percentages (their denominator) so that they add to 100% across rows, columns, sub-tables, or whole tables.

4. display up to 60 characters for variable labels and value labels.

There are 5 types of tables under the **Tables** menu:

Custom tables - A canvas pane will open. You build a table by dragging and dropping variables onto the rows and columns of the canvas pane. You can see a preview of the table that will be created. The pane does not show actual data values in the cells, but should show a fairly accurate view of the layout of the final table.

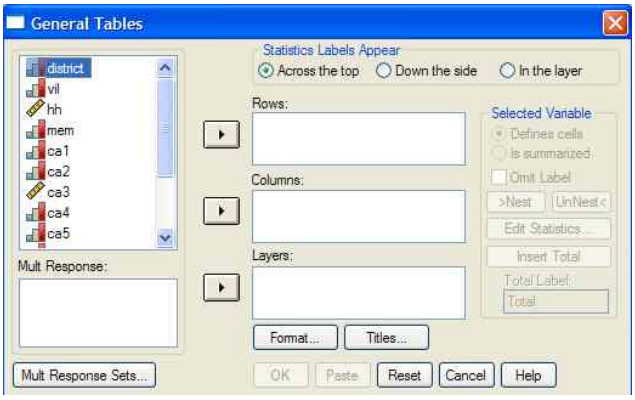


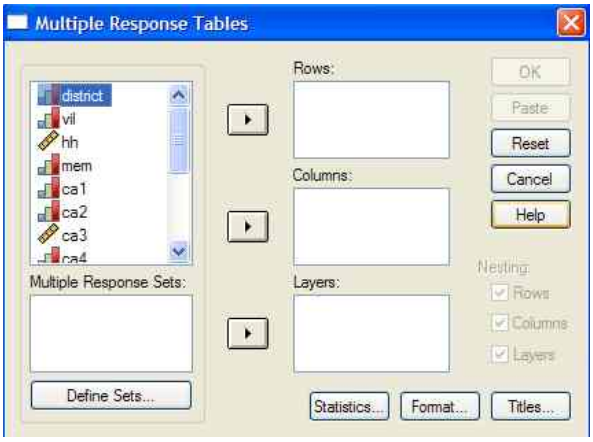
Basic tables - all tools available under tables are applied uniformly to all variables

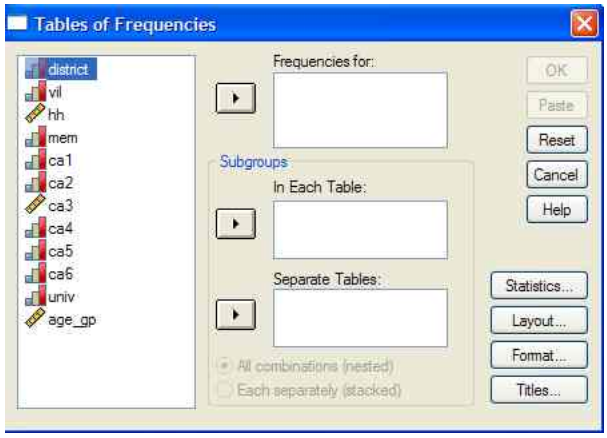
General tables - nesting, stacking, statistics, or totals can be applied differently to different variables

Multiple response tables - variables where respondent can give more than one response to a question

Table of Frequencies - special purpose table - frequency of categorical variables that have the same categories, e.g. Most important ... Least important







CROSSTABS vs. TABLES

Let's compare the **Crosstabs** procedure with the **Tables** procedure for cross tabulation.

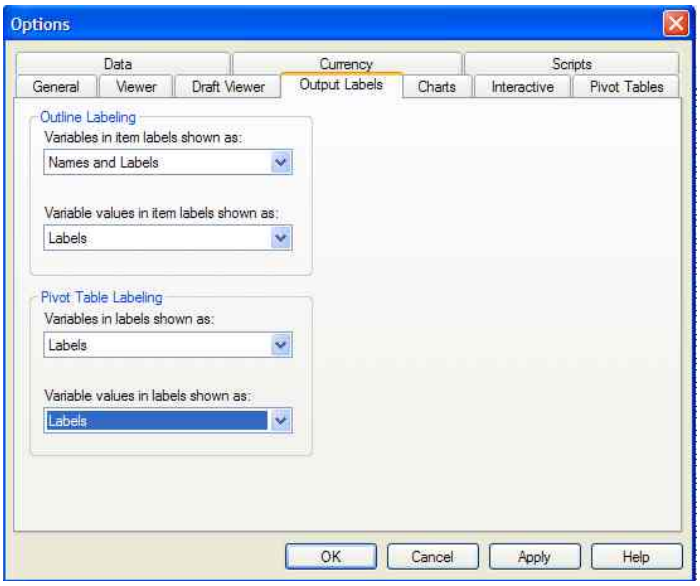
Open the member file we created that contains the age variable, Q1A-AGE.SAV.

1. **File / Open / Data...**
2. Select q1a-age.sav
3. Paste, change the dataset name to "q1a_sage", select both commands and run.

We are ready to produce tables that we want to use in our report. We do not want to see the actual values of the categorical variables in the output, only the value labels. We'll change the options for output to show only value labels.

1. **Edit / Options...**
2. Click on the **Output Labels** tab
3. Change the boxes under **Pivot Table Labeling** to show labels only

5. Click on **OK**



Now we will do a simple cross tabulation using the **Crosstabs** command.

1. **Analyze / Descriptive Statistics / Crosstabs...**
2. Move **ca2** to Row(s):
3. Move **age_gp** to Column(s):
4. **Cells...**
5. Select Observed in the Counts section
6. Select Row in the Percentages
7. **Continue**
8. Paste and run.

Below is the output

.

RELATION TO HEAD * Age group Crosstabulation

			Age group				Total
			0 to 10	11 to 19	20 to 60	61 and older	0 to 10
RELATION TO HEAD	HEAD	Count	0	6	296	41	343
		% within RELATION TO HEAD	.0%	1.7%	86.3%	12.0%	100.0%
	WIFE/HUSBAND	Count	0	25	280	5	310
		% within RELATION TO HEAD	.0%	8.1%	90.3%	1.6%	100.0%
	SON/DAUGHER	Count	503	184	31	0	718
		% within RELATION TO HEAD	70.1%	25.6%	4.3%	.0%	100.0%
	MOTHER/FATHER	Count	0	0	5	1	6
		% within RELATION TO HEAD	.0%	.0%	83.3%	16.7%	100.0%
	OTHER RELATIVE	Count	70	55	16	2	143
		% within RELATION TO HEAD	49.0%	38.5%	11.2%	1.4%	100.0%
Total		Count	573	270	628	49	1520

	% within RELATION TO HEAD	37.7%	17.8%	41.3%	3.2%	100.0%

BASIC TABLES

Let's use the **Basic Tables** command to produce the same table:

1. **Analyze / Tables / Basic Tables...**
2. Move **ca2** to Down:
3. Move **age_gp** to Across:
4. Click on the **Statistics** button on the right.
5. Select **count** and **Row%** and click on **Add**
6. **Continue**
7. Click on the **Layout** button on the right.
8. Under Statistics Labels, click on the radio button next to "Down the left side" and click on **Continue**
9. Paste and run.

Below is the output:

			Age group			
			0 to 10	11 to 19	20 to 60	61 and older
RELATION TO HEAD	HEAD	Count		6	296	41
		Row %		1.7%	86.3%	12.0%
	WIFE/HUSBAND	Count		25	280	5
		Row %		8.1%	90.3%	1.6%
	SON/DAUGHER	Count	503	184	31	
		Row %	70.1%	25.6%	4.3%	
	MOTHER/FATHER	Count			5	1
		Row %			83.3%	16.7%
	OTHER RELATIVE	Count	70	55	16	2
		Row %	49.0%	38.5%	11.2%	1.4%

The row labels correspond to the value labels for variable **ca2** (relation to head). The column labels are the value labels which you designated for the variable **age_gp**.

If you want to customize the table for your needs, it can become much more complex.

GENERAL TABLES

Let's create a more complex table using **General Tables**.

1. **Analyze / Tables / General Tables...**
2. Move **ca2** to Rows:
3. Move **age_gp** to Columns:
4. Select **age_gp**, click on **Edit Statistics...**

Modifying statistics:

1. Select **Count** under Cell Statistics:
2. Change Label: to **N**
3. Check to see that the Width: = **5**
4. Click **Change**
5. Select Row % from under Statistics:

6. Change the Label: to **%**
7. Check to see that the Width: = **5**
8. **Add**
9. **Continue**

Adding Totals:

1. Click on **Insert Total**
2. Select age_gpTotal, click on **Edit Statistics...**
3. Select the radio button next to Custom Total Statistics
4. Select **Count** under Statistics:
5. Change Label: to **N**
6. Change Width: to **5** and click on **Add**
7. **Continue**
8. Select **ca2**, click on **Insert Total**

Modifying format:

1. Check the box ✓ to the left of Omit Label under Selected Variable
2. Click on **Format...**
3. Set Empty Cell Appearance to Zero
4. **Continue**

Adding title:

1. Click on **Titles...**
2. In the Title box:
   Type **Table 1: SPSS for Windows Sample Session**.
   Press <Enter>
   Type **Age Breakdown by Relation to Head**
3. In the Caption box:
   Type **Source: Nampula family sector household survey, 1991**.
4. In the Corner box: type **Relation to Head**
5. **Continue**
6. Paste the command.

Before you run this command, look at the two commands before the TABLES command. They are:

```
* General Tables.
TEMPORARY.
VARIABLE LABELS ca2 " .
```

The "TEMPORARY" command is not available specifically from the menus. This command will temporarily remove the variable label from the variables *ca2*. After the TABLES command is run, the label will be available again. You must block these two commands as well as the TABLES command before you run it.

Below is the table produced from those commands. Note: You may change the table properties, formats, use the pivot tray to rearrange the table and other options that are available.

Table 1: SPSS for Windows Sample Session
Age Breakdown by Relation to Head

	Age group								Total
	0 to 10		11 to 19		20 to 60		61 and older		
	N	%	N	%	N	%	N	%	N
HEAD	0	.0%	6	1.7%	296	86.3%	41	12.0%	343
WIFE/HUSBAND	0	.0%	25	8.1%	280	90.3%	5	1.6%	310
SON/DAUGHTER	503	70.1%	184	25.6%	31	4.3%	0	.0%	718
MOTHER/FATHER	0	.0%	0	.0%	5	83.3%	1	16.7%	6
OTHER RELATIVE	70	49.0%	55	38.5%	16	11.2%	2	1.4%	143
Total	573	37.7%	270	17.8%	628	41.3%	49	3.2%	1520

Source: Nampula family sector household survey, 1991

The corner label does not show automatically. To get the label to show, select the table, <right-click> and choose **SPSS pivot table object / edit** . You should see hatch marks around the pivot table. That means you are in edit mode. <Right-click> on the same table and from the pop-up menu, select **Table Properties...** In the Table Properties dialog box, select the *Nested* Radio button in the *Row Dimension Labels* box. Click on OK. And then click outside the table to resume your work in the SPSS Viewer. You should now see the label in the corner box. We want to save the output file.

1. Make the Viewer window active.
2. Use **Save As...** from the **File** menu
3. Name the file session3.spo and save.

To be able to use TABLES effectively, you will need to practice creating tables. Open the Help Menu and under the Topics tab, scroll down to the Tables Option. There are many examples of how to use these commands as well as how to use the Custom Tables. The benefits of having SPSS produce nice looking tables far outweigh the effort to create the table. For example: with periodic data, such as monthly prices, where each month the table should be updated, using syntax to produce the tables becomes very productive. Once you create a table format you like, you can use that code over and over, changing the variable names and titles as needed.

Compare Means vs. TABLES

Next we will compare computing averages using **Compare Means** and **Tables**, based on an example from section 2.

1. **File / Open / Data...**
2. Select hh-file3.sav
3. Paste, change the dataset name to "hh_file3", select both commands and run

```
Note that you now have 2 datasets open,
this file is labeled "hh_file3".
```

4. **Analyze / Compare Means / Means...**
5. Move **cprod_ae** to Dependent List:
6. Move **ncprod_a** to Independent list: layer 1 of 1
7. Click on **Next**
8. Move **district** to Independent List: layer 2 of 2

9. Paste and run

Report

Calories produced per adult equivalent per day

NTILES of cprod_ae by district	DISTRICT	Mean	N	Std. Deviation
1	MONAPO	1221.7281	27	416.12856
	RIBAUE	1484.0298	29	422.11606
	ANGOCHE	1272.0519	28	486.25928
	Total	1329.0592	84	452.22243
2	MONAPO	2494.8048	27	377.12144
	RIBAUE	2517.4551	30	366.08053
	ANGOCHE	2431.9673	29	296.80050
	Total	2481.5167	86	345.82242
3	MONAPO	3968.1419	28	621.34028
	RIBAUE	4000.8905	30	549.83405
	ANGOCHE	3640.3535	29	453.28705
	Total	3870.1717	87	562.97704
4	MONAPO	9150.0222	27	4686.21141
	RIBAUE	7520.2527	30	2158.86354
	ANGOCHE	8364.3191	29	4054.90269
	Total	8316.5516	86	3764.16975
Total	MONAPO	4206.4675	109	3813.56406
	RIBAUE	3900.7967	119	2559.31057
	ANGOCHE	3950.2610	115	3390.51145
	Total	4014.5183	343	3271.40106

This is the information we needed to fill in the numbers of our table in section 2. Let's use **Tables** to produce output that looks similar to the table we were shooting for throughout section 2. Let's also add the Minimum and Maximum to the table for more information.

1. **Analyze / Tables / Basic Tables...**
2. Move **kprod_ae** to Summaries:
3. Move **nkprod_a** to Down:
4. Move **district** to Across:

5. Click on **Statistics...**
6. Select Mean, use the label **Mean**, Format: **ddd.dd**, Width: **5** and Decimals: **0**
7. Click on **Add**
8. Select Minimum, use **Min,** Format: **ddd.dd**, Width: **5** and Decimals: **0**
9. **Add**
10. Select Maximum, use the label **Max**, Format: **ddd.dd**, Width: **5** and Decimals: **0**
11. **Add**
12. **Continue**

13. Click on **Layout...**
14. In the Statistic Labels section, select, Down the Left side.
15. At the bottom of this dialog box, check the box ✓ next to Label groups with value labels only and press **Continue**
16. Click on **Titles...**
17. Type in the Title box: **Table 1: Food Production in Calories**. Press <Enter>, then type **per Adult Equivalent per Day**
18. Type in the Corner box: **Production Quartile**
19. Click on **Continue**

20. Click on **Paste.**

Switch to the Syntax Editor. You should see the TEMPORARY command above the TABLES command.

```
* Basic Tables.
TEMPORARY.
VARIABLE LABELS Ncprod_a " district " .
```

We need to add one more variable to the variables labels command to remove the value label for cprod_ae. Type the name of the variable, a space and then a single quote two times, e.g.

```
VARIABLE LABELS Ncprod_a " district " cprod_ae ".
```

Block all the commands starting with "TEMPORARY" and run. Check your output to be sure there are no error messages. Your table should look similar to the one below.

Table 1: Food Production in Calories per Adult Equivalent per Day

		MONAPO	RIBAUE	ANGOCHE
1	Mean	1222	1484	1272
	Min	294	429	354
	Max	1956	1938	1952
2	Mean	2495	2517	2432
	Min	1973	2030	2024
	Max	3169	3120	2961
3	Mean	3968	4001	3640
	Min	3176	3141	2996
	Max	5067	4834	4563
4	Mean	9150	7520	8364
	Min	5107	4984	4692
	Max	28466	13124	20485

Some of you might not have the **Production Quartile** showing in the Corner box. You need to have the Corner box "Nested" which you can do through the *Table Editor*. Select the table by double-clicking on it in the Viewer. Right-click on the same table and select **Table Properties...** in the pop-up menu. Select the ***Nested*** Radio button in the *Row Dimension Labels* box. Click on OK. Close the table box to resume your work in the SPSS Viewer. You should now see the title in the corner.

In the **Basic Tables** dialog box, continuous variables are usually placed in the Summaries box. This is usually the most important variable, one for which the statistics will be computed. In the above example the variable **cprod_ae** is a continuous variable for which minimums, means, and maximums are calculated for each category of **ncprod_a.**

Subgroups determines how to group the cases into rows and columns of the table. These variables should always be category variables (variables that have a finite number of values).

If variables are placed in the Summaries box, the statistics specified under the **Statistics** button will be appropriate for continuous variables, e.g. mean, sum, etc. If there are no variables in the Summaries box, the statistics will be what are usually used for categorical variables: counts, row percents, column percents, etc.

If SPSS for Windows reports an error for a **Table** it usually has to do with using an incorrect variable for the requested function or variable width is too large for the table. If you get one of these errors check to be sure that you listed a continuous variable under Summaries and that variable widths and column widths are adequate.

A simple way to print a table you have just created, is to select the table(s) in the Viewer and print.

1. Make the Viewer active
2. Select the table you wish to print
3. Click on **File / Print...**. The Selection button should already be chosen. Then select OK.

Exercise 3.1:

Produce a similarly formatted table using calories retained which you calculated in Exercise 2.1. Include totals by retention quartile (you will have to use **Basic Tables**). Your table should look similar to:

Food retention in calories per adult equivalent per day

Quartiles		MONAPO	RIBAUE	ANGOCHE	Total
1	Mean	1148	1233	913	1099
	Min	224	429	208	208
	Max	1806	1783	1391	1806
2	Mean	2211	2146	1699	2016
	Min	1807	1790	1396	1396
	Max	2544	2556	1936	2556
3	Mean	3315	3126	2405	2947
	Min	2555	2566	1984	1984
	Max	4303	3730	3055	4303
4	Mean	7619	5759	4955	6072
	Min	4360	3731	3064	3064
	Max	20874	9465	12675	20874
Total	Mean	3571	3081	2506	3044
	Min	224	429	208	208
	Max	20874	9465	12675	20874

Multiple Response

Occasionally questions are asked that require the respondent to select multiple answers. A single variable cannot record all the answers to this type of question adequately, since a variable can have only one value for each case. The solution is to record each possible response in a different variable. The responses can be analyzed separately using commands you have already seen (**Frequencies**, **Crosstabs**), but ideally we want to analyze these related variables together. SPSS provides two analysis options for this type of question. There is a choice under the **TABLES** command to do this type of analysis using the **Multiple Response Tables** option and another option under **Analyze / Multiple Response**.

To analyze groups of variables, they must be defined as a "*set*". If you want to only run frequencies and crosstabs with the set of multiple response variables, you can choose the Analyze / Multiple Response option. The set that is defined will not be saved for future use. Each time you open the file and want to use this option, you will have to redefine the set.

If you want to do other types of analysis using sets of variables, use the Multiple Response Tables option. Sets that are defined within the Analyze / Multiple Response option will not be available to use under the Multiple Response Tables option. However, those defined under the Tables / Multiple Response Tables will be saved with the data file so the set can be used again.

SPSS allows two different grouping methods, to handle the two different ways to ask a multiple response question.

1. One type of multiple response is where there are several choices, but the respondent is asked to choose only the 3 "most important items". Only three categorical variables are defined to hold the values chosen. These are called "*category*" variables.
2. The other type of multiple response is the "check all that apply" where a value of 1 is assigned if the response is checked,, a value of 0 is assigned if the value is not checked. These are called *multiple dichotomy* variables.

Refer to the **Help / Contents** menu for more detail.

Question 35 in the household questionnaire is an example of a multiple response category question. It asks about crops grown principally to be sold. Each household is asked to specify up to three main crops. Three variables were defined to hold the codes; these are: **h35a**, **h35b**, and **h35c**. The values allowed for these variables are the same. The question is left open-ended, however, since a code of 6 is allowed to specify another crop. The new crop is written down during data collection and the value for each the new crops are assigned after the survey is completed. The same set of value labels is applied to each of the variables. As you will see with the following commands, 12 different crops were coded for question 35.

Analyze / Multiple Response command

Category variables

You could run **Frequencies** on each of the variables individually, but you would then have to sum the results by hand to get the total number of households that choose that particular crop. Assuming that we only want to use Frequencies and/or Crosstabs, we will use **Analyze / Multiple Response** . **Multiple Response** will calculate these statistics for you if you create a group variable which SPSS calls Multiple Response Sets. Remember, with this method, the sets that are defined are not saved to the data file. Open the household data file.

1. **File / Open / Data...**
2. Select c-hh.sav
3. Paste, select and run

To create the table do the following:

1. **Analyze /Multiple Response / Define Variable Sets...**
   Note that the only **Define Variable Sets** *is available to choose.*
2. Select **h35a**, **h35b**, **h35c** and move to Variables in Set:
3. Click on the radio button next to Categories in the Variables Are coded As section. For the Range, use **1** through **12**
4. For the name of the variable - Name: **crops**
5. For the label Label: **Crops grown principally to be sold**
6. Click on **Add** , and then **Close**
7. Now click on **Analyze /Multiple Response / Frequencies...**
   Now Frequencies and Descriptives are available to choose.
8. move **$crops**, into the Table(s) for: box
9. Click on **Paste**
10. Switch and run the command.

The Syntax editor should show this:

```
MULT RESPONSE
  GROUPS=$crops 'Crops grown principally to be sold'
(h35a h35b h35c (1,12))
  /FREQUENCIES=$crops  .
```

The subcommand "Groups" defines the variables as a set with the name $crops. Any variable that starts with a $ is a temporary variable. The output table is shown on the next page.

The Percent under Responses shows the percent of the total responses and adds to 100%. The Percent of Cases gives the percent of households choosing the particular crop and can add to more than 100% since a household can choose up to three different crops.

$crops Frequencies

		Responses		Percent of Cases
		N	Percent	
Crops grown principally to be sold(a)	COTTON	90	27.9%	43.1%
	PEANUTS	85	26.3%	40.7%
	SESAME	3	.9%	1.4%
	SUNFLOWER	1	.3%	.5%
	RICE	85	26.3%	40.7%
	MAIZE, BEANS	41	12.7%	19.6%
	BANANA	4	1.2%	1.9%
	MANIOC	7	2.2%	3.3%
	SUGAR CANE	4	1.2%	1.9%
	TOBACCO	1	.3%	.5%
	SWEET POTATO	1	.3%	.5%
	CASHEW NUT	1	.3%	.5%
Total		323	100.0%	154.5%

a Group

Analyze / Multiple Response / Crosstabs

We can look at the same information by district to determine which crops are most important in each district.

1. **Analyze /Multiple Response / Crosstabs**
2. Move **district** to Columns: Note that there are 2 question marks after district, i.e. district(?,?). We must define a range of values to use. We want all 3 districts.
3. Click on **Define Ranges** . Minimum is **1**, Maximum is **3**. Click on **Continue**
4. Select **$crops** which is in the Mult Response Sets box and move it into Rows:
5. Click on the **Options** . You can <right-click> on any of the items to get an explanation of each item. Under Cell Percentages, check ✓ Column and ✓ Total. Click on **Continue**
6. Paste and run.

The Syntax editor should show:

```
MULT RESPONSE
  GROUPS=$crops 'Crops principally grown to sell' (h35a h35b h35c (1,12))
  /VARIABLES=district(1 3)
  /TABLES=$crops  BY district
  /CELLS=COLUMN TOTAL
  /BASE=CASES .
```

$crops*district Crosstabulation

			DISTRICT			
			MONAPO	RIBAUE	ANGOCHE	Total
Crops principally grown to sell(a)	COTTON	Count	63	24	3	90
		% within district	84.0%	54.5%	3.3%	
		% of Total	30.1%	11.5%	1.4%	43.1%
	PEANUTS	Count	13	2	70	85
		% within district	17.3%	4.5%	77.8%	
		% of Total	6.2%	1.0%	33.5%	40.7%
	SESAME	Count	0	0	3	3
		% within district	.0%	.0%	3.3%	
		% of Total	.0%	.0%	1.4%	1.4%
	SUNFLOWER	Count	0	1	0	1
		% within district	.0%	2.3%	.0%	
		% of Total	.0%	.5%	.0%	.5%
	RICE	Count	5	2	78	85
		% within district	6.7%	4.5%	86.7%	
		% of Total	2.4%	1.0%	37.3%	40.7%
	MAIZE, BEANS	Count	7	18	16	41
		% within district	9.3%	40.9%	17.8%	
		% of Total	3.3%	8.6%	7.7%	19.6%
	BANANA	Count	0	2	2	4
		% within district	.0%	4.5%	2.2%	
		% of Total	.0%	1.0%	1.0%	1.9%
	MANIOC	Count	0	2	5	7
		% within district	.0%	4.5%	5.6%	
		% of Total	.0%	1.0%	2.4%	3.3%
	SUGAR CANE	Count	3	1	0	4
		% within district	4.0%	2.3%	.0%	
		% of Total	1.4%	.5%	.0%	1.9%
	TOBACCO	Count	0	1	0	1
		% within district	.0%	2.3%	.0%	
		% of Total	.0%	.5%	.0%	.5%
	SWEET POTATO	Count	0	0	1	1
		% within district	.0%	.0%	1.1%	
		% of Total	.0%	.0%	.5%	.5%
	CASHEW NUT	Count	1	0	0	1
		% within district	1.3%	.0%	.0%	
		% of Total	.5%	.0%	.0%	.5%
Total		Count	75	44	90	209
		% of Total	35.9%	21.1%	43.1%	100.0%

Percentages and totals are based on respondents.
a Group

You can edit the table in the Viewer to get an explanation of each of the headings. Double-click on the table. In edit mode, move your mouse to the heading you want to look at, <right-click> and choose What's this?

From the table you can see that in Monapo cotton is the main cash crop; in Ribaue, it is cotton and maize/beans; in Angoche peanuts and rice are the main cash crops.

Save this output file with all the tables and output in it using the **Save As...** command.

1. Make the Viewer window active.
2. Use **Save** from the **File** menu to automatically save under the name Session3.spo.

Multiple Dichotomy Variables

Let's now look at the *multiple dichotomy* type of mutiple response. Question 64 on the survey asks:

"Over the last five years, have you increased the quantities marketed of the following crops:"

The respondent is to answer yes if they have increased the quantities and no if they have not. There are 8 crops listed. There are 8 variables defined with values of 1 = yes and 2 = no. We will use the **Multiple Response Tables** command to look at this set of variables.

Multiple Response TABLES

1. **Analyze / Tables / Multiple Response Tables...**
2. Click on **Define Sets**
3. Select variables **h64a through h64h** and move them into the Variables in Set box.
4. The radio button next to Dichotomies is the default in the Variables Are Coded As section. For Counted value, type **1**.
   ```
   which means we are looking at the values
   that are equal to yes
   ```
5. For the name of the variable - Name: **incprod**
6. For the label Label: **Increased quantities marketed in last 5 years**
7. Click on **Add** , and then **Save**
7. Move **$incprod** to Rows:
8. Move **district** to Columns:
9. Click on **Statistics** and place a check ✓ in Count and Row percentages boxes. You have the option to change the labels in the boxes to the right. Click on **Continue** .
10. Paste, switch, and run the syntax.

Note that we were able to save the Set definition when we defined the sets in **Multiple Response Tables**. Now if you want to produce another table using **General Tables** or **Multiple Response Tables**, that variable is available to use in those dialog boxes. You could also save the data file to a new name. The Set definition will be saved. When you open that new file, the set definition will be available to use again.

Custom Tables is considered an advanced topic and will not be covered in this tutorial.

You should save the output file. We will use it in the next Section.

SECTION 4 - Graphs, tables, publications and presentations, how to bring them into word processor

Copy table output to a word processor

The objective of this section is to give you the tools necessary to prepare reports, i.e. to learn how to move SPSS results into other applications. We will focus on a chart or table for examples. The methods used in this example would be quite similar for other SPSS output.

The method is simple: once the SPSS results such as a chart or a table are produced, it can be printed or incorporated into reports prepared using word processors or publishing programs. It is always good to save the SPSS output file as well, in case you need to copy the output again. Incorporating tables and charts from SPSS can be done using a copy and paste procedure. We will use the output file from Section 3. Find the following table in that file:

1. Click on **File / Open / Output...** in SPSS 15 for Windows
2. Select Session3.spo in the folder where you saved your output from the sample session (*.spo extension)
3. Locate one of the tables. Click once on the table to select it.
4. Select **Edit / Copy** from the menu. You could also use the mouse to <right-click> and select **Copy**.
5. Next open your word processor software.
6. With your word processor open, from the menus select **Edit**

- If you select **Paste**, the table is pasted in "RTF" (rich text format). It can then be edited as any other table. WordPerfect does not bring the text in as well as you would like. Much editing will be required. Word does a much better job. Usually no editing is required.
- If you choose to use the **Paste Special** from the **Edit** menu, you are given three choices,
  a) the RTF format - which is the same as using **Paste**
  b) unformatted text - which pastes the table using tabs to separate the information rather than placing the data into a table.
  c) picture - pastes the table as a graphic image which cannot be edited other than with a graphic editor.

7. Back in the SPSS Viewer, select the table and choose **Edit / Copy Objects** from the menu. You could also use the mouse to <right-click> and select **Copy Objects** .
8. Switch back to the word processes and click on **Edit / Paste** .

The table is pasted as a picture. In WordPerfect, the picture does not look as nice as if you just used the Copy from SPSS and used Paste Special as a picture. In Word it doesn't seem to make any difference. The preferable choice is picture for WordPerfect. Either a picture or text works for Word.

If you want to insert words into the table from within the SPSS Table editor in the heading section of the table, the table does not copy well. The columns for the heading are misaligned. Insert words after you

have copied the table to the word processor. If you want to change the format of the numbers, do the changes in SPSS. It is much easier, either to specify the formatting in the TABLES command or use the Table editor to change the format.

You can also copy tables and paste the output from SPSS into a spreadsheet program, using the Copy/Paste procedure. The format does not look as nice in the spreadsheet. Lots of manual formatting will be required.

Other options available for the Viewer are to export the *.spo into a power point and pdf format. Click on **File / Export** and choose the type of output from the drop down box under Export Format. Quoting from the help menu in SPSS

"• PowerPoint file (.ppt). Pivot tables are exported as Word tables and are embedded on separate slides in the PowerPoint file, with one slide for each pivot table. All formatting attributes of the pivot table are retained--for example, cell borders, font styles, and background colors. Text output is exported as formatted RTF. Text output in SPSS is always displayed in a fixed-pitch (monospaced) font and is exported with the same font attributes. A fixed-pitch font is required for proper alignment of space-separated text output.*

• Portable Document Format (.pdf). All output is exported as it appears in Print Preview, with all formatting attributes intact.* "

Copy graphics to a word processor

The process is basically the same for Graphics, such as pie charts and histograms, but there is more flexibility in the ways to save the file, along with more difficulties in getting just the look you want. As an example, we will look at the distribution of cashew tree ownership across households in the Mozambique data, using a histogram.

With SPSS 15, graphics has been enhanced. The old legacy charts and interactive charts are still available. Syntax already developed using the legacy commands for charts should still work. The new option is called **Chart Builder**. Read the **Help / Contents / Chart Builder** to learn more about this new option and how to use it.

Open the household level file, C-HH.SAV, which contains the tree ownership variable.

1. **File / Open / Data...**
2. Select C-HH.sav
3. Paste, select and run.

GRAPH command

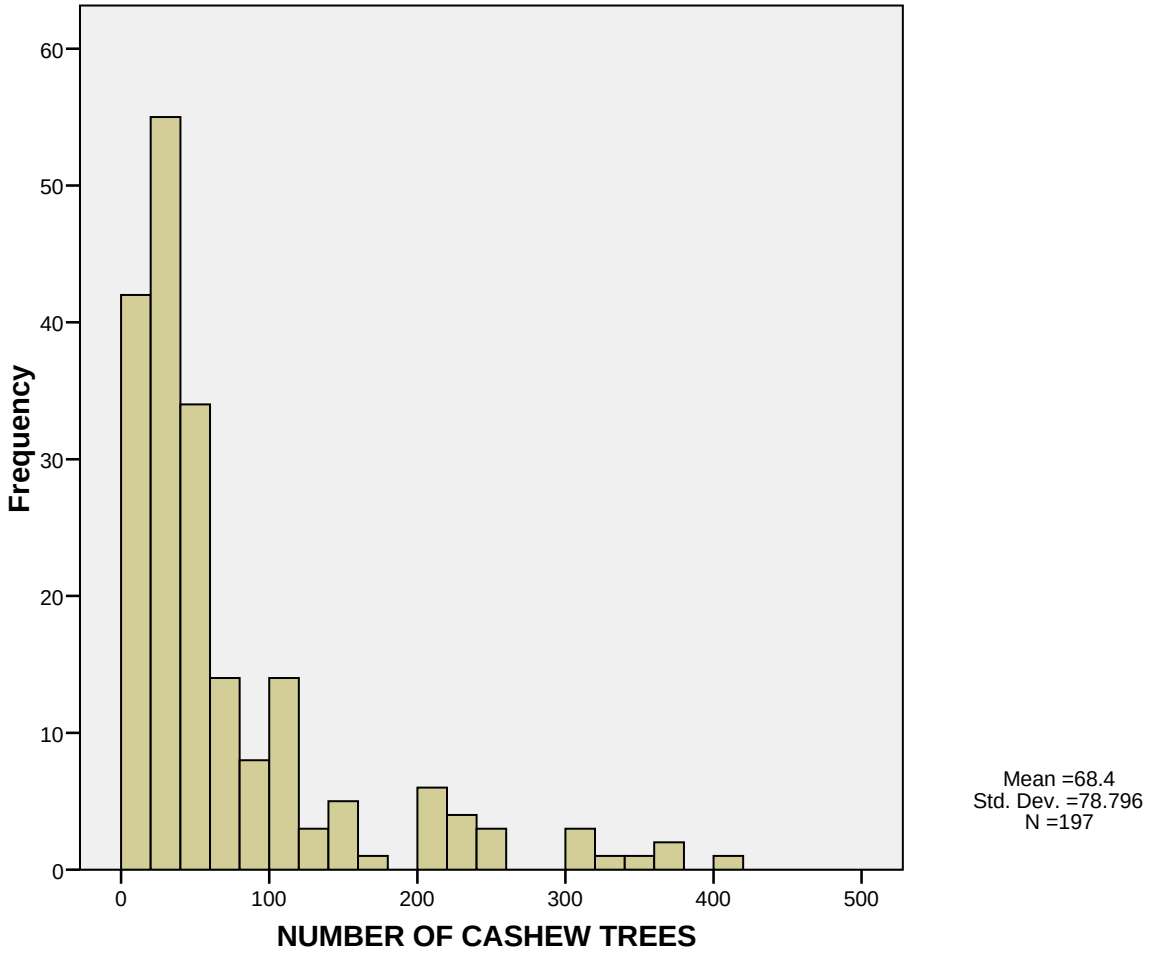
Using the Legacy system, create the Histogram chart using the variable H57 (number of trees owned):

4. Select **Graphs / Legacy Dialogs / Histogram...**.
5. Find *H57* (Number of cashew trees) in the variable list and move it into the Variables box.
6. Paste, select and run.

The command pasted is:

```
GRAPH
  /HISTOGRAM=h57 .
```

You should get a histogram chart like this:



IGRAPH command

Let's build the chart using the interactive graph method.

1. Select **Graphs / Interactive / Histogram...**
2. Find *H57* (Number of cashew trees) in the variable list and drag it to the box representing the horizontal axis (X-axis). The vertical or Y-axis will display the count by default.
3. Paste and run.

The command is:

```
IGRAPH /VIEWNAME='Histogram'
  /X1 = VAR(h57) TYPE = SCALE
  /Y = $count /COORDINATE = VERTICAL
  /X1LENGTH=3.0 /YLENGTH=3.0
  /X2LENGTH=3.0 /CHARTLOOK='NONE'
  /Histogram  SHAPE = HISTOGRAM CURVE = OFF X1INTERVAL
        AUTO X1START = 0.
EXE.
```

The output should look like:

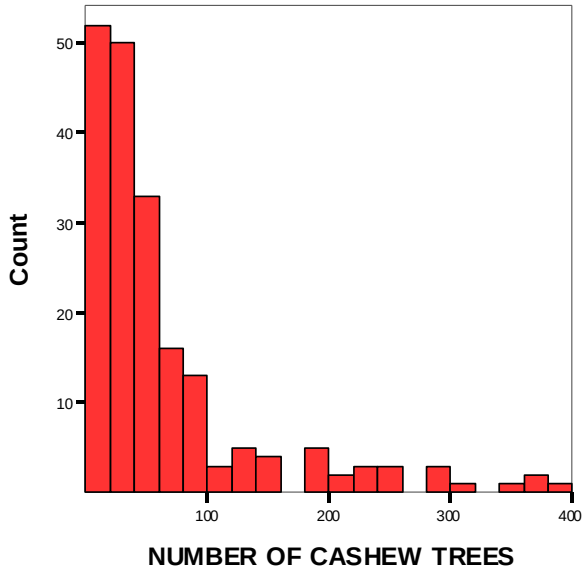


CHART BUILDER: GGRAPH command

Let's now use the new Chart Builder.

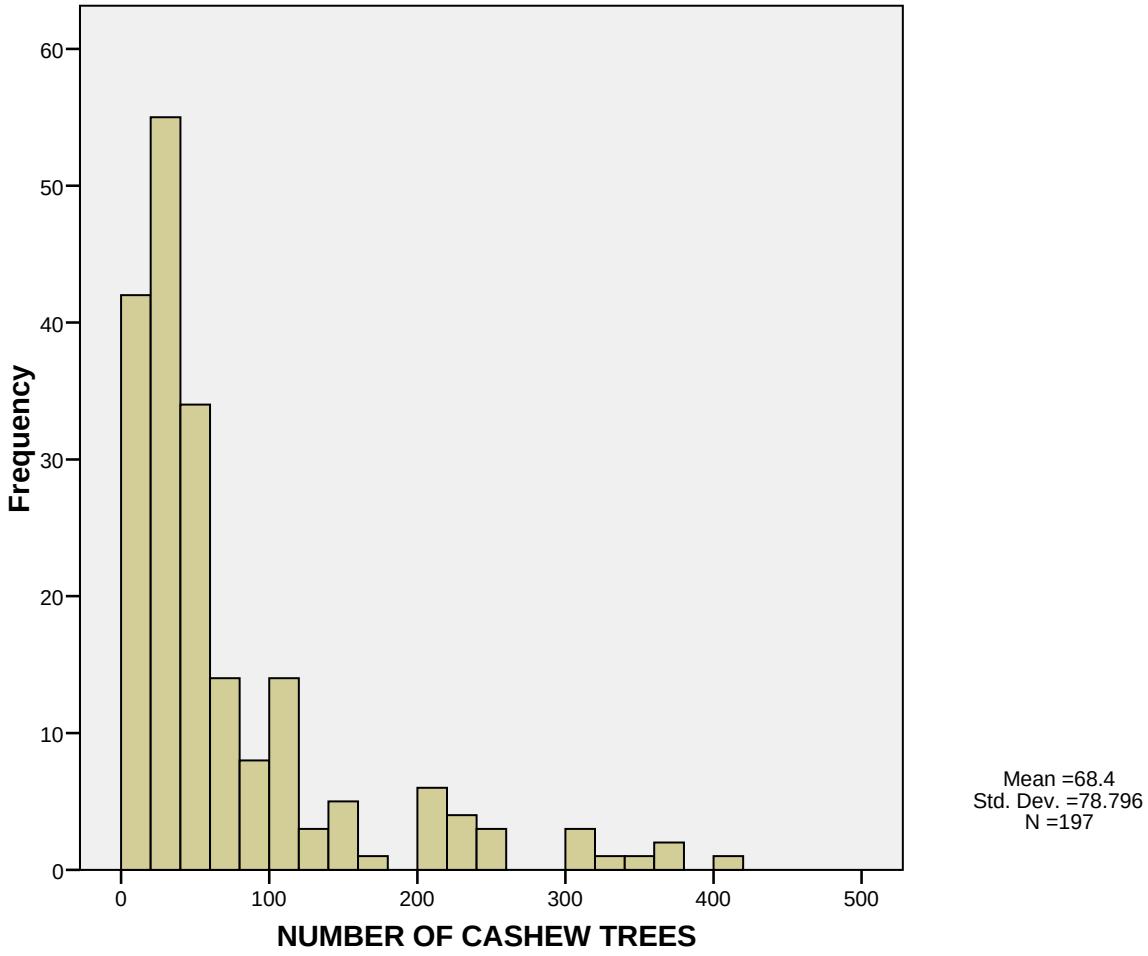
1. Select **Graphs / Chart Builder...**
   A dialog box opens giving you the opportunity to define your variables correctly with respect to measurement level and to add value labels. If you do not need to do any of these things, click on OK.
2. Select the type of chart you want to build from the **Gallery** tab. Click on **Histogram** and select the first example, labeled **Simple Histogram.** Move your mouse over the graph type, click and drag it up into the box above and drop it.
3. Another dialog box opens on the right with a Title bar labeled - Element Properties. Selecting any of the items in the Edit Properties of: box displays different information below for you to choose how you want the items to display. You can explore this dialog box. We will use the defaults.
4. Find *H57* (Number of cashew trees) in the variable list and drag it to the box labeled X-axis?. Note that the Y-axis changes from Y-axis? to Histogram.
5. Paste, block starting at the GGRAPH through END GPL and run.

The command is:

```
* Chart Builder.
GGRAPH
  /GRAPHDATASET NAME="graphdataset" VARIABLES=h57
MISSING=LISTWISE
  REPORTMISSING=NO
  /GRAPHSPEC SOURCE=INLINE.
```

```
BEGIN GPL
 SOURCE: s=userSource(id("graphdataset"))
 DATA: h57=col(source(s), name("h57"))
 GUIDE: axis(dim(1), label("NUMBER OF CASHEW TREES"))
 GUIDE: axis(dim(2), label("Frequency"))
 ELEMENT: interval(position(summary.count(bin.rect(h57))),
shape.interior(
  shape.square))
END GPL.
```

The output looks like:



We can copy any one of the above charts to put it into a word processor.

1. Go to the Viewer and click once on one of the graphs to select it. Click twice to open the Chart Editor. You can add Titles or change fonts or other actions, if you want.
2. From within the Chart Editor, select **Edit / Copy Chart**.
3. Close the Chart Editor and open your word processor.
4. In the word processor, click on **Edit / Paste Special** . Select **Device Independent Bitmap** and click on **OK** .

You will not be able to edit this graph once it is in the word processor, other than the size, placement, wrapping of text and other basic aspects available within the word processor.

Exercise 4.1

Select another table from your Session3.spo file. Repeat the steps above to copy the chart into your word processing document. Try making changes to the chart from within SPSS and then copy the new chart to your word processor document.

Annexes

The following annexes were prepared for users of the sample session to have a brief reference guide, to explain the various functions of the SPSS commands most commonly used in the sample session, to describe the numerous options available to the user within the various menus and finally, to help manipulate results in the Output navigator.

Filters Versus Permanent Selections

You can filter or delete cases that don't meet the selection criteria. In Section 2 of the cross-sectional training, we filtered the data but we did not delete any cases. When you set a filter from the **Data/Select cases** command, unselected cases are filtered by default. A new option in SPSS 15 allows you to copy the filtered cases to a new dataset window, where you can work with that dataset of cases.

Filtered cases remain in the data file but are excluded from analysis. You can see which cases are filtered out by looking at the far left column of the Data View window, where the case numbers are given. Numbers with a slash through them have been filtered and will not be included in an analysis or reporting. SPSS creates a filter variable, FILTER_$, to indicate filter status. Selected cases have a value of 1; filtered cases have a value of 0. To turn filtering off and include all cases in your analysis, select **All cases** in the **Data/Select cases** command. If you want to delete specific cases from the data set, use the **Data/Select cases** command, complete an IF statement for those cases that you want to keep, and then select **Delete unselected cases** in the Output section of this dialog box. Be sure to save this file under a new name or you will permanently delete the cases from the data file.

The Three Line Charts and Three Data in Charts Options

The **Graph/Line** command allows you to make selections that determine the type of chart you obtain: simple, multiple and drop-line. In the menu, select the icon for the chart type you want, and select the option under Data in Chart Are that best describes your data. You can see a description of the three available Data in Chart types below. A category axis on a chart is an axis that displays values individually, without necessarily arranging them to scale. (A scale axis, in contrast, displays numerical values to scale.) Bar charts, line charts, and area charts usually have one category axis and at least one scale axis. Scatterplots and histograms do not have a category axis.

The Missing Values options are available only when the new chart will display or summarize more than one variable (not including variables that define groups):

- Exclude cases listwise excludes a case from the entire chart if is has a missing value for any of the variables summarized.

- Exclude cases variable by variable excludes a case separately from each summary statistic calculated. Different chart elements may be based on different groups of cases.

Display groups defined by missing values is available only when you use a categorical variable to define groups for a new chart. If selected, each missing value for the grouping variable (including the system-missing value) will appear as a separate group in the chart. If not, cases with system-missing or user-missing values for the grouping variable are excluded from the chart. It is recommended to always uncheck this box as it is not of interest to show on a graph the missing values or sysmis.

Simple lines

Summaries for Groups of Cases
Categories of a single variable are summarized. The y-height of the points is determined by the Line Represents option.
A single Category Axis variable.

Summaries of Separate Variables
Two or more variables are summarized. Each point represents one of the variables.
Two or more Line Represents variables.

Values of Individual Cases
A single variable is summarized. Each point represents an individual case.
A single Line Represents variable.

Multiple lines

Summaries for Groups of Cases
Categories of one variable are summarized within categories of another variable. The y-height of
the points is determined by the Lines Represent option.
A Category Axis variable (Category Variable 1).
A Define Lines by variable (Category Variable 2).

Summaries of Separate Variables
Two or more variables are summarized within categories of another variable.
Two or more Lines Represent variables (Var 1, Var 2).
A Category Axis variable (Category Variable).

Values of Individual Cases
Two or more variables are summarized for each case.
Two or more Lines Represent variables (Var 1, Var 2).

Manipulating Output in SPSS for Windows

Numerous modules could be dedicated to working with the Output navigator. Section 4 only discussed simple cutting and pasting of results. One suggestion would be to follow the tutorial within SPSS to learn about the countless possibilities and options which are available to the SPSS user in the Output navigator. Your results have never looked this good! Easier and faster data exploration and to ability to drag icons in the navigator outline and content panes on the left, expand and collapse the outline - see the output you want; multi-dimensional pivot tables, swapping and hiding rows and columns, new and numerous styles for charts and tables, colors, fonts, line styles, text attributes; no loss of any custom formatting, dragging output from SPSS to a word processor (in windows metafile format); change a title directly within the output, right click for pop-up menus as shortcuts, and much more.

You may have trouble viewing the complete output following a SPSS command like **Frequencies** or **Tables**. It may run hundred and thousands of cases but will only show the first 50 for example. To view all of the specific output in this case, simply double click or right click on the selected output and choose Open. This will open a separate window called a pivot table. Then scroll down to see the output in whole. You may also edit the table here as well. Enjoy using the various options given to you to modify the styles, formats, colors, text attributes and so on.

ANNEX 2

Socio-Economic Survey of Family Sector Farms
in the Province of Nampula
(Angoche, Monapo e Ribaúe)
July/August 1991
Departamento de Preços e Mercados
Food Security Project

Name of Household Head _____

Household Number _____ HH

Aldeia _____ VIL

Distrito _____ DIST

(Subset of questions from original questionnaire)

I.HOUSEHOLD CHARACTERÍSTICS

H1 1. How many persons are in this household?

H4 4. Has your family always lived in this village?
1=yes 2=no

H8 8. Is your family registered as "deslocada"?
1=yes 2=no

H19 19. Do you presently have lands in fallow?
1=yes 2=no

H21 21. What is the total area of these fallowed parcels? (hectares)

H24 24. Do you have lands that you have completely abandoned?
1=yes --> question 25 2=no --> question 27

H25 25. What is the total area of these abandoned lands? (hectares)

H26 26. What was the principal motive for abandoning these lands?
1=no security
2=lands lost fertility
3=lack of labor
4=insect attacks
5=other

[**We would like to ask you about the food crops you grow**.]

H29 29. Over the last five years, have you increased or decreased the amount of land in food crops?
1=increased 2=decreased 3=no change

H31 31. During a normal year, is your farm production sufficient to feed your entire family?
1=yes 2=no

[**We would like to ask you about the cash crops you grow on your farm?**]

H34 34. Do your grow any crops that are principally destined for the market?
1=yes 2=no

35. Which crops are grow principally to be sold? (List the three most important)

H35A 1=cotton 4=sunflower
H35B 2=peanuts 5=rice
H35C 3=sesame 6=other

H36 36. Over the last five years, have you changed the area grown in these cash crops?
1=increased
2=decreased
3=no change

H39 39. Do you normally grow cotton?
1=yes 2=no

H52 52. Since your involvement with the cotton companies, have you reduced your area dedicated to food crops, such as maize and manioc?
1=yes 2=no

IV. **PRODUCTION**

H56 56. Do you have cashew trees?
1=yes 2=no

H57 57. How many trees do you presently have? (number)

H57A 57A. Of these trees, from how many did you harvest during the last year? (number)

V. AGRICULTURAL SALES

We would like to ask about the marketing of your agricultural products since August of 1990.

64. Over the last five years, have you increased the quantities marketed of the following crops:

H64A	a. maize	1=yes	2=no
H64B	b. manioc	1=yes	2=no
H64C	c. rice	1=yes	2=no
H64D	d. cotton	1=yes	2=no
H64E	e. peanuts	1=yes	2=no
H64F	f. beans	1=yes	2=nao
H64G	g. sorghum	1=yes	2=nao
H64H	h. cashew nuts	1=yes	2=no

H65 65. Compared with five years ago, has the marketing of these products been more difficult or easier?
1=more difficult --> question 66
2=easier --> question 67

H66 66. If more difficult, why?
1=fewer buyers
2=transportation problems
3=security problems
4=low prices
5=lack of consumer goods
6=other _____

H67 67. If easier, why?
1=more buyers
2=better transportation
3=better security
4=attractive prices
5=more consumer goods
6=other_____

H83 83. Does your family usually receive traditional gifts or participate in exchange relations?
1=yes 2=no

H84 84. If yes, how often?
1=only when there is a lack of food
2=only during feasts and rituals
3=frequently

XI. **TYPICAL CONSUMPTION PATTERNS**.

H86 86. How many meals did these people have yesterday? (Number of meals)

H89 89. Do you consider these meals adequate to maintain the health of all the household members?
1=yes 2=no

We would also like to ask you about your diet during the hungry period (January to May).

H91 91. How meals do you customarily prepare daily during hungry period?

H92 92. In general, are these hungry period meals adequate to maintain the health of all household members?
1=yes 2=no

H96 96. During the hungry period, was there always food available to purchase from the market or from your neighbors?
1=yes 2=no

I. HOUSEHOLD MEMBER CHARACTERISTICS

Table IA: Household Characteristics

Name	Family Member Number	This person works on-farm or off-farm 1=yes 2=no	Relation to Head 1=head 2=spouse 3=child 4=parent 5=other kin 6=other	Age	Sex 1=m 2=f	Level of Schooling (enter the last completed year) 0=illiterate 12=post-high school 98=no formal schooling but literate	Marital Status 1=monogamous 2=polygamous 3=single 4=widowed 5=divorced 6=emigrant wife (husband out longer than six months
	MEM	**CA1**	**CA2**	**CA3**	**CA4**	**CA5**	**CA6**
	1		Head				
	2						
	3						
	4						
	5						
	6						
	7						
	8						
	9						
	10						
	11						

IV. PRODUCTION

Table IV: Characteristics of Production

Product		**Quantity harvested**		**Quantity harvested in a normal year**		**Existing stocks at harvest time**		**Month in which last year's stock ran out**	**Amount to be stored from this year's harvest for consumption**		**How long will this year's stocks last?**	**Quantity reserved for seed**	
1=corn 2=beans 3=manteiga beans 4=manioc 5=rice 6=sorghum 7=cotton	8=peanuts 9=cashew nuts 10=cashew drink 11=cane drink 12=coconut 13=coconut drink others	Unit 1=sack 100 2=sack 50 3=kilo 4=liter 5=can 20	Qt	Unit 1=sack 100 2=sack 50 3=kilo 4=liter 5=can 20	Qt	Unit 1=sack 100 2=sack 50 3=kilo 4=liter 5=lata 20	Qt	(enter the month)	Unit 1=sack 100 2=sack 50 3=kilo 4=liter 5=can 20	Qt	(enter the month or "all year", if appropriate)	Unit 1=sack 100 2=sack 50 3=kilo 4=liter 5=can 20 other	Qt
PROD		**P1A**	**P1B**	**P2A**	**P2B**	**P3A**	**P3B**	**P4**	**P5A**	**P5B**	**P6**	**P7A**	**P7B**

V. AGRICULTURAL SALES

Table V: Sales of Farm Products

Sale	Crop	Quantity sold		Period of sale	Motive for sale at this time	Buyer	Locale of sale	Distance from the farm	Why sold to this buyer	Value of Sales		Who in the household is responsible for the sale
	1=corn 2=manteiga bean 3=beans 4=manioc 5=rice 6=cotton 7=peanuts 8=cashew nut 9=cashew drink 10=cocos others	Units 1=sack 100 2=sack 50 3=kilo 4=liter 5=can 20	No. of Unit	1= planting (Aug-Dec.) 2= hungry period (Jan-April) 3=this year's harvest 4= various times	1=needed money 2=buyers available 3=consumer goods available 4=attractive price	1=lojista 2=wholesaler 3=AGRICOM 4=ambulante 5=brigada 6=company	1=farmgate/ house 2=village 3=locality 4=district 5=province	(enter the kms between farmer and point of sale)	1=the only one available 2=always sell to this one 3=best price 4=transportation provided 5=carries consumer goods	meticais	Unit 1=unit price 2=total value	1=husband 2=wife
VEN N	**V1**	**V2A**	**V2B**	**V3**	**V4**	**V5**	**V6**	**V7**	**V8**	**V9A**	**V9B**	**V10**
1												
2												
3												
4												
5												
6												
7												
8												
9												

N.B. Not all of the variables that appear in the printed table are in file C-Q5.sav. Only variables VEN, V2a, V2b, V9a and V9b were kept for this exercise. The PROD variable replaces the V1 variable.

ANNEX 3

Computer analysis of survey data - File organization for multi-level data, by Chris Wolf, MSU Department of Agricultural Economics

This is downloadable at http://www.aec.msu.edu/fs2/survey/index.htm as a separate document in English or French.